TABLE OF CONTENTS

PORT EVERGLADES FRANCHISE APPLICATION

An application will not be deemed complete and ready for processing until all required documents and fees are received.

A separate application must be filed for each type of franchise applied for.

FRANCHISE TYPE
CHECK ONE

☐ STEAMSHIP AGENT ☐ STEVEDORE

☐ CARGO HANDLER ☐ TUGBOAT & TOWING ☑ VESSEL BUNKERING

☐ VESSEL OILY WASTE REMOVAL ☐ VESSEL SANITARY WASTEWATER REMOVAL

☐ MARINE TERMINAL SECURITY **FIREARMS CARRYING SECURITY PERSONNEL**

☐ MARINE TERMINAL SECURITY **NON-FIREARMS CARRYING SECURITY PERSONNEL**

Note: Applicant is the legal entity applying for the franchise. If the Applicant is granted the franchise, it will be the named franchisee. All information contained in this application shall apply only to the Applicant and not to any parent, affiliate, or subsidiary entities.

Applicant's Name West Coast Clean Fuels, LLC dba East Coast Clean Fuels

(Name as it appears on the certificate of incorporation, charter, or other legal documentation as applicable, evidencing the legal formation of the Applicant)

Applicant's Business Address 4040 Civic Center Drive, Suite 350, San Rafael, CA 94903
Number / Street City/State/Zip

Phone # 415-927-6292 E-mail address lisa_guerrero @ pashanet.com

Fax #: _____

Name of the person authorized to bind the Applicant (Person's signature must appear on Page 13.)

Name Edward Washburn

Title Senior Vice President Fleet Operations

Business Address 4040 Civic Center Drive, Suite 350, San Rafael, CA 94903
Number / Street City/State/Zip

Phone # (415) 308-8195 Fax# _____

E-mail address Edward_Washburn @ pashanet.com

Provide the Name and Contact Information of the Applicant's Representative to whom questions about this application are to be directed (if different from the person authorized to bind the Applicant):

Representative's Name Amy Manning

Representative's Title Senior Vice President, Executive Counsel

Representative's Business Address 4040 Civic Center Drive, Suite 350 San Rafael, CA 9
Number / Street City/State/Zip

Representative's Phone # 415-218-9624 Fax# _____

Representative's E-mail address amy_manning @ pashanet.com

PLEASE COMPLETE THIS APPLICATION AND LABEL ALL REQUIRED BACKUP DOCUMENTATION TO CLEARLY IDENTIFY THE SECTION OF THE APPLICATION TO WHICH THE DOCUMENTATION APPLIES (I.E...., SECTION A, B, C, etc.).

Section A

1. List the name(s) of Applicant's officers, including, CEO, COO, CFO, director(s), member(s), partner(s), shareholder(s), principal(s), employee(s), agents, and local representative(s) active in the management of the Applicant.

Officers:

Title Co-President/Manager (Pasha Hawaii Holdings LLC)
First Name Edward Middle Name
Last Name Washburn
Business Street Address 4040 Civic Center Drive, Suite 350
City, State, Zip Code San Rafael, CA 94903
Phone Number 415-308-8195 Fax Number
Email Address edward_washburn @ pashanet.com .

Title Co-President/Manager (Clean Marine Energy, LLC)
First Name Pace Middle Name
Last Name Ralli
Business Street Address 132 Water Street, 3rd Floor
City, State, Zip Code South Norwalk, CT 06854
Phone Number 914-844-0840 Fax Number
Email Address pace @ cleanmarineenergy.com .

Title Manager (World Fuel Services, Inc.)
First Name Richard Middle Name
Last Name McMichael
Business Street Address 9800 NW 41st Street
City, State, Zip Code Doral, FL 33178
Phone Number 305-428-8000 Fax Number
Email Address rmcmichael @ wfscorp.com .

Title General Counsel (Pasha Hawaii Holdings LLC)
First Name Michael Middle Name R.
Last Name Johnson
Business Street Address 4040 Civic Center Drive, Suite 350
City, State, Zip Code San Rafael, CA 94903
Phone Number 415-927-6315 Fax Number
Email Address michael_johnson @ pashanet.com .

Attach additional sheets if necessary.

2. RESUMES: Provide a resume for each officer, director, member, partner, shareholder, principal, employee, agent, and local representative(s) active in the management of the Applicant, as listed above. Edward Washburn, Pace Ralli, Michael Johnson, M

Edward Washburn

Project Manager
Edward_Washburn@pashanet.com
(415) 308-8195

EXPERIENCE

Senior Vice President, Fleet Operations
***Pasha Hawaii**, San Rafael, CA, 2015–present*

- Responsible for the safe, efficient, and environmentally compliant operation of six Jones Act container, PCTC and ConRo ships
- Management responsibilities include new building, engineering and technical services, operations, crew management, budgetary planning and controls, regulatory compliance and environmental health
- Responsible for all Pasha Group Capital projects and facilities
- Project Manager and owner for new construction of two 2,525 dual-fueled container vessels
- Project Manager for seven vessel overhaul and life extension shipyard projects
- Project Manager for vessel conversion and repower
- Transition team lead on acquisition of Horizon Lines Hawaii business and vessels (4)

General Manager, Engineering and Technical Services
***Horizon Lines LLC**, Dallas, TX, 2012–2015*

Management responsibilities included engineering and technical services, operations, crew management, budgetary planning and controls, regulatory compliance, environmental health, vessel modifications, vessel maintenance, vessel dry dock and vessel life extension for a fleet of vessels built 28 to 47 years ago

Supervisor Port Engineer, Vessel Maintenance, Marine Inventory and Crane Maintenance
***Horizon Lines LLC**, Oakland, CA, 1990–2012*

Responsible for vessel maintenance and planning, vessel dry dock planning and attendance, vessel budgets, vessel crewing, crane engineer and electrician supervision, crane maintenance and planning, vessel planning, designed and installed laser automatic truck position spotters improving crane moves per hour, marine inventory engineer, teamster, and OPEIU supervision

Licensed Marine Engineer
***Marine Engineers Beneficial Association**, Jacksonville, FL, 1990–2012*

First Class Marine Electrician
***North Florida Shipyard**, Jacksonville, FL, 1985–1989*

EDUCATION

MBA, **Decision Sciences**, San Francisco State University
BS, **Marine Engineering**, Massachusetts Maritime Academy

OTHER PROFESSIONAL QUALIFICATIONS
USCG Engineers License – Steam and Diesel
University of New Orleans – Course work towards MS-Engineering Management

INDUSTRY & ASSOCIATIONS

ABS Special Committee on Ship Operations, Regional Committee Member
Board of Trustees, San Francisco Maritime National Park Association
Board of Directors, California Maritime Academy Foundation

MICHAEL R. JOHNSON

(603) 801-8514 linkedin.com/in/michaelrjohnson4 michaelrjohnson4@gmail.com

STRATEGIC LEGAL AND COMPLIANCE EXECUTIVE

Accomplished legal executive with proven track record of structuring, managing, and closing business acquisitions, asset-based financing, and complex corporate debt financings. Skilled multi-party negotiator, creative problem solver, and strategic influencer who develops creative approaches to bridge differences and create value. Demonstrated ability to analyze and manage multiple relationships (often involving diverse cultures) to achieve effective solutions for complex issues. Known by board members, executive management, colleagues, and commercial partners as a credible, reliable, and effective advisor and advocate who consistently demonstrates excellent risk management and compliance practices.

Strategic Business Partner – Trusted strategic advisor to the CEO, CFO, Board of Directors, and members of executive management. A veteran attorney valued for providing practical and proactive solutions to complex, often multi-jurisdictional issues. Skilled at working with different business functions to form a cohesive strategy for managing a project and striving for flawless execution. Effective manager of external and internal legal resources by leveraging outside counsel to develop more efficient staffing, reporting, and training of team members to reduce overall legal expenses.

Transactions – Extensive cross-border transactional success including structuring and closing asset-based and corporate financings, managing workouts and corporate restructurings, negotiating and closing acquisitions, and associated financings. Raised and refinanced in excess of $1.2 billion of asset backed debt and in excess of $2.8 billion in common terms platform corporate debt.

Compliance – Developed enterprise risk management programs and training across geographically and culturally diverse businesses, including cyber security, anti-money laundering and corruption, and diversity and inclusion. Responsible for tracking and reporting Environmental, Social, and Governance (ESG) metrics.

Leader and Advisor – Acknowledged by industry peers as a leader in big-ticket equipment finance, including shipping, offshore, and rail. Extensive capital markets experience in Dollar, Euro, and Sterling denominated debt. Substantial expertise advising the workout and restructuring of distressed transactions and the disposition of distressed portfolios.

Communication & Complex Negotiations – Skilled at communicating complex issues clearly, concisely, and effectively to all levels of an organization, including board members, senior management, employees, and clients. Adept at negotiating business transactions, including acquisitions, dispositions, and structured investments. Able to bring together people with competing interests, evaluate risk, and negotiate positive outcomes.

CAREER PROGRESSION

NFS LEASING, INC., Beverly, MA 2020 – Present

NFS Leasing, Inc. is a privately held North American lender in Equipment Finance with more than 18 years of experience. NFS provides solutions supporting businesses and organizations with challenged credit including early stage, start-up & pre-revenue, financially distressed companies, and turn-arounds.

Chief Restructuring Officer

- Responsible for leading, monitoring, and resolving customer defaults and restructuring across a portfolio of small and mid-ticket leasing transactions.
- Lead negotiations and related proceedings for complex and difficult customer defaults by identifying, recommending, and executing multi-tiered strategic solutions.
- Analyze and underwrite assets and collateral as part of the credit approval process. Work with business development professionals to negotiate appropriate vendor support and remarketing agreements to mitigate risks associated with asset recovery and remarketing in default scenarios.
- Manage and direct the activities of the Equipment Logistics Coordinator (recovery and warehouse) and Collateral Specialist (asset underwriting and equipment remarketing).
- Member of executive management team.

BEACON RAIL LEASING, INC., Boston, MA 2015 – 2019

Beacon Rail Leasing is a leading provider of high utility rolling stock to the Pan-European operator base with the goal to provide the company's equity investors with superior returns by being the best managed and most efficiently operated rail operating lease company.

Chief Legal Officer, General Counsel, and Chief Compliance Officer

- Led and coordinated all internal and external legal aspects for the Beacon Rail Leasing Group, including executing capital markets, documenting leasing transactions, complying with laws, regulations, and internal policies, and supervising internal and external legal counsel, corporate governance, and human resources.
- Successfully partnered with other senior management to structure, negotiate, and execute the closing and refinancing of more than $1.1 billion in asset-based bank debt and more than $2.8 billion in a common terms platform debt capital consisting of bank facilities and institutional private placements (European and US). The June 2019 €1.45 billion refinancing was the winner of the Rail Deal of the Year Europe award at the Project Finance International (PFI) Awards 2019.
- Managed the transition of the business from private equity ownership to infrastructure fund ownership, including creating board committees and coordinating board materials for committee and board meetings.
- Actively engaged with the board and committees to assure effective and timely reporting, efficient communications, and appropriate corporate governance. Served as Secretary for all subsidiaries.
- Tracked and reported Environmental, Social, and Governance (ESG) metrics for entire group of companies and coordinating annual GRESB reporting.
- Executed multiple corporate restructurings, including cross-border migration of operating assets among group companies, structuring interim financing, transferring employees, and developing policies, procedures, and corporate governance for the restructured group in Luxembourg.
- Served as Chief Compliance Officer for Beacon Rail Leasing and as such was accountable for the company's compliance with all laws, regulations, and internal policies.

AMHERST ADVISORS PLLC, Bedford, NH 2013 – 2014

Founder, Managing Director

- Provided outside general counsel and strategic advice to companies to scale their business organically and through accretive transactions.
- Developed and executed strategies to maximize recovery and unwind complex commercial problems.
- Represented private equity and institutional investors, middle market, and small businesses in commercial negotiations, corporate governance, finance, and transactional matters.
- Served as external general counsel for Beacon Rail Leasing from May to December 2014 and was responsible for capital markets activities, human resources, compliance, and developing corporate policies and procedures.

BTMU CAPITAL CORPORATION (subsidiary of the Mitsubishi UFJ Financial Group), Boston, MA 2006 – 2013

Vice President, Senior Counsel

- Provided legal counsel for large ticket transportation asset financing, including developing transaction structures, negotiating term sheets and transaction documentation through closing, restructuring and workout of distressed transactions, and coordinating enforcement actions.
- Primary counsel managing the workout and restructuring of the maritime (offshore and shipping) portfolio through loan restructuring, enforcement actions, vessel warehousing, and loan sales.
- Closed over 25 financing transactions in two and a half years involving aviation (helicopters), land-based transportation (railcars, locomotives, and trailers), offshore energy (liftboats, drillships, jack-up rigs, semi-submersible accommodation units, and PSVs), and shipping (bulkers, tankers, tugs, and barges).
- Successfully managed the workout and restructuring of distressed offshore transactions in the maritime portfolio during 2009 and 2010, resulting in no realized losses and reduced exposure to distressed operators.
- Actively involved in managing arbitration cases in London and Singapore regarding charterparty and shipbuilding construction contract disputes.
- Developed and implemented a policy for tracking maritime assets to ensure trade sanction compliance.

- Reviewed and negotiated commercial agreements (e.g., property leases, software licenses, service and maintenance agreements, consulting and advisory agreements, and professional service engagements).

NIXON PEABODY LLP, Manchester, NH 2000 – 2006

Associate, Business Department

Broad corporate law experience including:

- Mergers & Acquisitions: due diligence, term sheet structuring, negotiation of purchase agreements and financing documentation for manufacturing, professional services, retail, and technology companies.
- Equipment Financing: drafted template leasing documents for industrial client, large ticket lease portfolio acquisition, financed acquisition of rail rolling stock and aircraft.
- Commercial Lending: asset based commercial lending and loan restructuring.
- Syndicated Lending: financed PE backed acquisitions with syndicated loans and performed investment reviews for institutional investor in syndicated loans.
- Corporate Governance: maintained records for corporations, limited liability companies, and partnerships.
- Commercial Agreements: negotiated commercial agreements, including license agreements, property leases, service and maintenance agreements, and consulting and advisory agreements.

UNIVERSITY OF NEW HAMPSHIRE FRANKLIN PIERCE SCHOOL OF LAW, Concord, NH Fall 2005
Adjunct Professor, Securities Regulation

MCLANE, GRAF, RAULERSON & MIDDLETON, P.A., Manchester, NH 1996 – 2000
Associate, Corporate Department

EDUCATION

UNIVERSITY OF NEW HAMPSHIRE FRANKLIN PIERCE SCHOOL OF LAW, Concord, NH
Juris Doctor (1996)

UNIVERSITY OF PENNSYLVANIA, WHARTON SCHOOL, Philadelphia, PA
Bachelor of Science, Economics (1987)

PROFESSIONAL ACTIVITIES

NEW HAMPSHIRE BAR ASSOCIATION, Concord, NH 1996 – Present
Member (NH BAR No. 12110) (1996 – Present)
Chairman, Corporation, Banking and Business Law Section (2002 – 2006)
Member, Continuing Legal Education Committee (2005 – 2006)

MANCHESTER BAR ASSOCIATION, Manchester, NH 2003 – 2006
Member, Executive Committee

ASSOCIATION OF CORPORATE COUNSEL, Northeast Division 2019
Member (2019)

INTERNATIONAL ASSOCIATION OF PRIVACY PROFESSIONALS, Portsmouth, NH 2020
Certified Information Privacy Professional – United States (CIPP/US) (2020)

VOLUNTEER ACTIVITIES

PATS PEAK EDUCATIONAL FOUNDATION, Henniker, NH 2009 – 2016
Board Member and USSA Alpine Official (2010 – 2016)
Chairman, Race Committee (2012 – 2016)

BOY SCOUTS OF AMERICA – TROOP 22, Amherst, NH 2014 – Present
Parent Volunteer and Merit Badge Counselor

MIT ENTERPRISE FORUM, Cambridge, MA 2019 – Present
Start-Up Mentor

MIT Enterprise Forum Cambridge (MITEF) is part of a global organization of dedicated professionals with local chapters, affiliated with the Massachusetts Institute of Technology (MIT) through MIT Technology Review. Open to all members of the entrepreneurial ecosystem.

Pace Ralli

(914) 844-0840 · pace@switchmaritime.com

PERSONAL MISSION

Climate-tech executive, entrepreneur and investor, focused on "hard-to-decarbonize" sectors of the economy and energy transition projects of transformational scope. Extensive experience building next-generation transportation assets and clean energy infrastructure, with a recent focus on the electrification of the maritime industry.

CAREER

2018 – Present **SWITCH Maritime LLC, Founder/CEO**

SWITCH Maritime is building the first fleet of battery and fuel cell electric maritime vessels, and launched the world's first ship powered 100% by hydrogen fuel cell.

2014 – Present **SWITCH Holdings LLC, Founder/Principal** Jackson, WY

SWITCH Holdings invests in and advises early-stage businesses and venture funds that are critical to and well positioned in the transition to a zero-carbon economy.

- *Advisory Board (since 2022) -* ***Vectr Carbon Fund I*** *(Early-stage energy transition VC)*
- *Seed Investment (since 2022) -* ***Climate Commodities Processing LLC*** *(EV battery raw materials supply chain)*
- *Advisory Board (since 2021) -* ***Clean Earth Acquisition Corp*** *(Energy transition-focused SPAC)*
- *Seed Investment (since 2018) -* ***Revel Transit Inc*** *(Shared electric vehicle/mobility service, EV charging infra)*
- *Seed Investment (since 2018) -* ***Circuit*** *(Electric shuttle ride share service)*
- *Board of Directors (since 2017) -* ***MidOcean Wind LLC*** *(Maritime vessels for US offshore wind farm construction)*
- *Board of Directors (since 2014) -* ***Northstar Terminals LLC/Polaris New Energy LLC*** *(Maritime clean fueling infra)*

2012 – Present **Clean Marine Energy LLC, Founder/CEO** Norwalk, CT

CME builds next-generation clean fuel supply & distribution infrastructure for maritime ships, including LNG/RNG, hydrogen, and electric charging terminals in the US.

2011 – 2013 **Scientific Conservation Inc, Corporate Development** San Francisco, CA

SCI (rebranded as FlyWheel Business Intelligence) offers a cloud-based SaaS platform for energy management, fault detection/diagnostics and analytics for C&I buildings.

2009 – 2011 **Pacific Gas & Electric (PG&E), MBA Leadership Development Program** San Francisco, CA

PG&E is a publicly-traded, investor-owned utility providing electricity and natural gas in northern California, with a leading renewable power and energy storage portfolio.

2008 **Kayak.com, Corporate Development (MBA Internship)** San Francisco, CA

Kayak is a software development company that developed a leading online travel agency and metasearch engine, currently available in over 18 languages and more than 30 countries.

2006 – 2007 **Teton Capital Advisors, Equity Research** Jackson, WY

2003 – 2006 **VNU Nielsen Media Research, Corporate Finance** New York, NY

EDUCATION

2007 - 2009 **TUCK SCHOOL OF BUSINESS AT DARTMOUTH COLLEGE** Hanover, NH

Masters of Business Administration; founded Dartmouth Energy Club

1999 - 2002 **MIDDLEBURY COLLEGE** Middlebury, VT

Bachelor of Arts; majored in International Studies / Environmental Economics

PERSONAL

- Passion for building teams and mobilizing talent around a visionary, mission-based objective
- Enjoy skiing, hiking, fishing, hockey, mountain biking, surfing, and traveling for work and play
- Member of Young Presidents Organization (YPO) since 2019

Matthew S. Campbell: Bio

Mr. Campbell is a technical manager for Pasha Hawaii. His responsibilities include LNG bunkering of vessels and technical/management support for PHH commercial and Government vessels. He was a member of the Pasha Construction Management team and oversaw the construction and commissioning of the George III and the Janet Marie at Keppel Amfels in Brownsville, TX. He was responsible for the development and implementation of Liquified Natural Gas (LNG) Fuel Gas System (FGS) operation and maintenance procedures. He provided training for the ship's crew in the operation of the Fuel Gas System and ISM compliance. He worked closely with KA engineering and West Coast Clean Fuels to create the LNG operations and emergency manuals for the initial storage tank cool down and normal ship's bunkering procedures.

He worked as a Chief Engineer on the following vessels: MV Cape Washington, EL Coqui and Taino, SS El Yunque, MV BBC Seattle, SS Cornhusker State, and USNS MV Shughart. He managed the operation, maintenance, and repair of the vessel's slow speed diesel engine, generators, cargo handling equipment, auxiliary machinery, and crew within the guidelines of the company's SQEMS system and customer requirements. He supervised all maintenance and repairs by crew and contractors onboard. He was responsible for maintaining the ship in a reliable condition. As a member of the Crowley operations team, he worked with Jensen Maritime and VTHM's test/trial department during construction and test/trial in preparation for delivery of the El Coqui and Taino, world's first LNG powered CONRO ship.

He works as an Adjunct Instructor in the STAR Center in FL and is responsible for the certified instruction of marine engineers and deck officers at the STAR Center for Maritime Training. Currently, he is an instructor for the Basic & Advanced Low Flash Point/IGF Code Fuel Course.

Mr. Campbell graduated from Massachusetts Maritime Academy and has a Bachelor of Science Degree in Marine Engineering. He has a Chief Engineer license for Steam, Motor, or Gas Turbine Vessel of any Horsepower.

Richard D. McMichael

Senior Vice President, Global Finance

Richard McMichael is Senior Vice President, Global Finance of World Kinect Corporation ("the Company"), a Fortune-500 public company headquartered in Miami, Florida. Richard joined World Kinect in 2008, initially as CFO for the Aviation segment. In his capacity at World Kinect, Richard has overall responsibility for the financial performance of the Marine, Aviation and Land business segments and he sits on the boards of fifty of the Company's international subsidiaries and joint ventures. World Kinect is a global provider of energy procurement advisory services, supply fulfillment, and transaction and payment management solutions to commercial, industrial and government customers, principally in the Aviation, Marine and Land transportation industries.

Prior to World Kinect, Richard served as Chief Financial Officer for RoadLink USA, a private equity (Fenway Partners) controlled provider of intermodal transportation and third-party logistics services. During his 3-year tenure at RoadLink, the company completed and integrated nine acquisitions over a 24-month period. Prior to joining RoadLink, Richard spent 16 years at RR Donnelley - a Fortune-500 global provider of printing and digital media products and services - as well as its predecessor companies, Moore Wallace and Moore Corporation Limited. Prior to its merger with RR Donnelley, Moore Corporation was a TSE- and NYSE-listed global provider of business forms, specialty labels and digital directory and invoice fulfillment services. During his career in the printing industry, Richard held positions in Corporate Treasury, Sales Management, Corporate Development and served as the CFO of Operations for the Americas and ultimately Executive Vice President, Latin America at RR Donnelley. He began his professional career with PriceWaterhouseCoopers in Toronto, Canada. Richard received his Honors Bachelor of Commerce degree from the University of Toronto and is a Chartered Professional Accountant.

Section B

1. Place a checkmark to describe the Applicant:
☐ Sole Proprietorship ☐ Corporation ☐ Partnership ☐ Joint Venture ☑ Limited Liability Company

2. Provide copies of the documents filed at the time the Applicant was formed, including Articles of Incorporation (if a corporation); Articles of Organization (if an LLC), or Certificate of Limited Partnership or Limited Liability Limited Partnership (if a partnership). If the Applicant was not formed in the State of Florida, provide a copy of the documents demonstrating that the Applicant is authorized to conduct business in the State of Florida.

Section C

1. Has there been any change in the ownership of the Applicant within the last five (5) years? (e.g., any transfer of interest to another party)
Yes ✓ No ___ If "Yes," please provide details in the space provided. Attach additional sheets if necessary. World Fuel Services, Inc. was added as a member. See first amendment to operating agreement.

2. Has there been any name change of the Applicant or has the Applicant operated under a different name within the last five (5) years?
Yes ✓ No ___ If "Yes," please provide details in the space provided, including Prior name(s) and Date of name change(s) filed with the State of Florida's Division of Corporations or other applicable state agency. Attach additional sheets if necessary.

3. Has there been any change in the officers, directors, executives, partners, shareholders, or members of the Applicant within the past five (5) years?
Yes ✓ No ___ If "Yes," please provide details in the space provided, including:
Prior officers, directors, executives, partners, shareholders, members
Name(s) Amy Manning, Secretary
New officers, directors, executives, partners, shareholders, members
Name(s) World Fuel Services, Inc. (member)
Also supply documentation evidencing the changes including resolution or minutes appointing new officers, list of new principals with titles and contact information, and effective date of changes. Attach additional sheets if necessary.

Michael Johnson , Secretary
Richard McMichael, World Fuel Services, Inc., Manager

Section D

Provide copies of all fictitious name registrations filed by the Applicant with the State of Florida's Division of Corporations or other State agencies. If none, indicate "None" See Attach.

Section B

Detail by Entity Name

Foreign Limited Liability Company
WEST COAST CLEAN FUELS, LLC

Filing Information

Document Number	M25000008989
FEI/EIN Number	85-1035672
Date Filed	06/18/2025
State	DE
Status	ACTIVE

Principal Address

8 THE GREEN, STE A
DOVER, DE 19901

Mailing Address

4040 CIVIC CENTER DRIVE, SUITE 350
SAN RAFAEL, CA 94903

Registered Agent Name & Address

CORPORATION SERVICE COMPANY
1201 HAYS STREET
TALLAHASSEE, FL 32301-2525

Authorized Person(s) Detail

Name & Address

Title MBR

PASHA HAWAII HOLDINGS LLC
745 FORT STREET, SUITE 315
HONOLULU, HI 96813

Title MBR

CLEAN MARINE ENERGY LLC
132 WATER STREET, STE 9 3RD FL
SOUTH NORWALK, CT 06854

Title MBR

WORLD FUELS SERVICES, LLC
1999 BRYAN STREET, SUITE 900
DALLAS, TX 75201

Annual Reports

No Annual Reports Filed

Document Images

06/18/2025 -- Foreign Limited View image in PDF format

COVER LETTER

TO: **Registration Section**
Division of Corporations

SUBJECT: West Coast Clean Fuels, LLC
Name of Limited Liability Company

The enclosed "Application by Foreign Limited Liability Company for Authorization to Transact Business in Florida," Certificate of Existence, and check are submitted to register the above referenced foreign limited liability company to transact business in Florida.

Please return all correspondence concerning this matter to the following:

Doreen Martin
Name of Person

West Coast Clean Fuels, LLC
Firm/Company

4040 Civic Center Drive, Suite 350
Address

San Rafael, CA 94903
City/State and Zip Code

Doreen_Martin@Pashanet.com
E-mail address: (to be used for future annual report notification)

For further information concerning this matter, please call:

Doreen Martin at (415) 927-6415
Name of Contact Person — Area Code — Daytime Telephone Number

Mailing Address:
Registration Section
Division of Corporations
P.O. Box 6327
Tallahassee, FL 32314

Street Address:
Registration Section
Division of Corporations
The Centre of Tallahassee
2415 N. Monroe Street, Suite 810
Tallahassee, FL 32303

Enclosed is a check for the following amount:
Please make check payable to: **FLORIDA DEPARTMENT OF STATE**

■ $125.00 Filing Fee ☐ $130.00 Filing Fee & Certificate of Status ☐ $155.00 Filing Fee & Certified Copy ☐ $160.00 Filing Fee, Certificate of Status & Certified Copy

APPLICATION BY FOREIGN LIMITED LIABILITY COMPANY FOR AUTHORIZATION TO TRANSACT BUSINESS IN FLORIDA

IN COMPLIANCE WITH SECTION 605.0902, FLORIDA STATUTES, THE FOLLOWING IS SUBMITTED TO REGISTER A FOREIGN LIMITED LIABILITY COMPANY TO TRANSACT BUSINESS IN THE STATE OF FLORIDA:

1. West Coast Clean Fuels, LLC
(Name of Foreign Limited Liability Company; must include "Limited Liability Company," "L.L.C.," or "LLC.")

(If name unavailable, enter alternate name adopted for the purpose of transacting business in Florida. The alternate name must include "Limited Liability Company," "L.L.C." or "LLC.")

2. Delaware
(Jurisdiction under the law of which foreign limited liability company is organized)

3. 85-1035672
(FEI number, if applicable)

4. 11/1/2025
(Date first transacted business in Florida, if prior to registration.)
(See sections 605.0904 & 605.0905, F.S. to determine penalty liability)

5. 8 The Green, Ste A
Dover, DE 19901
(Street Address of Principal Office)

6. 4040 Civic Center Drive, Suite 350
San Rafael, CA 94903
(Mailing Address)

7. Name and street address of Florida registered agent: (P.O. Box NOT acceptable)

Name: Corporate Service Company

Office Address: 1201 Hays Street

Tallahassee, Florida 32301-2525
(City) (Zip code)

2025 JUN 18 AM 11:39

Registered agent's acceptance:
Having been named as registered agent and to accept service of process for the above stated limited liability company at the place designated in this application, I hereby accept the appointment as registered agent and agree to act in this capacity. I further agree to comply with the provisions of all statutes relative to the proper and complete performance of my duties, and I am familiar with and accept the obligations of my position as registered agent.

Stephanie Schipper
(Registered agent's signature)

8. For initial indexing purposes, list names, title or capacity and addresses of the primary members/managers or persons authorized to manage [up to six (6) total]:

Title or Capacity:	Name and Address:	Title or Capacity:	Name and Address:
☐Manager	Name: Pasha Hawaii Holdings LLC	☐Manager	Name: Clean Marine Energy LLC
■Member	Address: 745 Fort Street, Suite 315	■Member	Address: 132 Water Street, Ste 9 3rd Fl
☐Authorized	Honolulu, HI 96813	☐Authorized	South Norwalk, CT 06854
Person		Person	
☐Other	☐Other	☐Other	☐Other
☐Manager	Name: World Fuels Services, LLC	☐Manager	Name:
■Member	Address: 1999 Bryan Street, Suite 900	☐Member	Address:
☐Authorized	Dallas, TX 752	☐Authorized	
Person		Person	
☐Other	☐Other	☐Other	☐Other
☐Manager	Name:	☐Manager	Name:
☐Member	Address:	☐Member	Address:
☐Authorized		☐Authorized	
Person		Person	
☐Other	☐Other	☐Other	☐Other

Important Notice: Use an attachment to report more than six (6). The attachment will be imaged for reporting purposes only. Non-indexed individuals may be added to the index when filing your Florida Department of State Annual Report form.

9. Attached is a certificate of existence, no more than 90 days old, duly authenticated by the official having custody of records in the jurisdiction under the law of which it is organized. (If the certificate is in a foreign language, a translation of the certificate under oath of the translator must be submitted)

10. This document is executed in accordance with section 605.0203 (1) (b), Florida Statutes. I am aware that any false information submitted in a document to the Department of State constitutes a third degree felony as provided for in s.817.155, F.S.

Signature of an authorized person

Michael R. Johnson

Typed or printed name of signee

Delaware

The First State

I, CHARUNI PATIBANDA-SANCHEZ, SECRETARY OF STATE OF THE STATE OF DELAWARE, DO HEREBY CERTIFY "WEST COAST CLEAN FUELS, LLC" IS DULY FORMED UNDER THE LAWS OF THE STATE OF DELAWARE AND IS IN GOOD STANDING AND HAS A LEGAL EXISTENCE SO FAR AS THE RECORDS OF THIS OFFICE SHOW, AS OF THE FIFTEENTH DAY OF MAY, A.D. 2025.

AND I DO HEREBY FURTHER CERTIFY THAT THE SAID "WEST COAST CLEAN FUELS, LLC" WAS FORMED ON THE TWENTY-SEVENTH DAY OF MAY, A.D. 2020.

AND I DO HEREBY FURTHER CERTIFY THAT THE ANNUAL TAXES HAVE BEEN PAID TO DATE.

C. P. Sanchez

Charuni Patibanda-Sanchez, Secretary of State

3010036 8300

SR# 20252320081

Authentication: 203709976

Date: 05-15-25

You may verify this certificate online at corp.delaware.gov/authver.shtml

STATE OF DELAWARE
CERTIFICATE OF FORMATION
OF LIMITED LIABILITY COMPANY

The undersigned authorized person, desiring to form a limited liability company pursuant to the Limited Liability Company Act of the State of Delaware, hereby certifies as follows:

1. The name of the limited liability company is West Coast Clean Fuels, LLC.

2. The Registered Office of the limited liability company in the State of Delaware is located at 8 The Green, Ste A (street), in the City of Dover, Zip Code 19901. The name of the Registered Agent at such address upon whom process against this limited liability company may be served is Delaware Corporate Headquarters LLC.

By: _____
Authorized Person

Name: Shan Kingston
Print or Type

Section C.1

FIRST AMENDMENT TO THE LIMITED LIABILITY COMPANY AGREEMENT OF WEST COAST CLEAN FUELS, LLC

THIS FIRST AMENDMENT (the "First Amendment') to the Limited Liability Company Agreement of West Coast Clean Fuels, LLC dated as of May 13, 2020 is entered into as of August 19, 2021 (the "Effective Date"), between and among Clean Marine Energy LLC ("CME"), Pasha Hawaii Holdings LLC ("PHH") and World Fuel Services, Inc. ("WFS").

RECITALS

A. Reference is made to that certain Limited Liability Company Agreement of West Coast Clean Fuels, LLC dated as of May 13, 2020 (the "Agreement") by CME and PHH as Members of West Coast Clean Fuels, LLC (the "Company"). All capitalized terms shall have the meaning given to them in the Agreement, unless otherwise defined or amended herein.

B. The Board has resolved, as of the Effective Date, that WFS will be admitted as an Additional Member to the Company, subject to WFS's performance of its obligations to achieve the status of an Additional Member as stated in the terms of the Agreement; and

C. CME, PHH and WFS desire to make certain amendments to the Agreement simultaneously with the admission of WFS as an Additional Member as set forth in this First Amendment.

NOW THEREFORE, in consideration of the mutual covenants contained herein and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Members, intending to be legally bound, agree as follows:

ARTICLE I

DEFINITIONS

The following definitions replace the definitions in the Agreement in their entirety or are added by this First Amendment as follows:

"Additional Capital Contribution" shall have the meaning set forth in Section 3.1(f).

"Agreement" shall mean the Limited Liability Company Agreement of West Coast Clean Fuels, LLC dated as of May 13, 2020, as amended by this First Amendment.

RCR

"LNG Business" shall mean the delivery of LNG to a maritime vessel, whether by truck and manifold system, barge/vessel or other means occurring anywhere on the continental U.S. West Coast. For the avoidance of doubt, "LNG Business" shall not include the sale or brokerage of LNG or any other fuel.

"Expansion Business" shall mean the delivery of other (non-LNG) low- and zero-carbon fuels to a maritime vessel, whether by truck and manifold system, barge/vessel or other means occurring anywhere on the continental U.S. West Coast. For the avoidance of doubt, "Expansion Business" shall not include the sale or brokerage of low- and zero-carbon fuels or any other fuels.

"LNG Business Opportunity" shall have the meaning set forth in Section 6.6(b).

"First Amendment" shall mean the First Amendment to the Agreement entered into as of August 19, 2021.

"Member Interest" shall mean the percentage ownership of a Member or Additional Member in the Company, the numerator of which will be the total amount of capital contributions such Member or Additional Member has made to the Company and the denominator of which shall be the total amount of capital contributions received by the Company from such Member or Additional Member.

"Purpose" shall have the meaning set forth in Section 2.4.

ARTICLE II

ORGANIZATIONAL MATTERS

Section 2.4 is deleted in its entirety and replaced with the following:

2.4. Purpose. The Purpose of the Company is to carry out the LNG Business and any Expansion Business.

ARTICLE III

CAPITAL CONTRIBUTIONS

Sections 3.1(e) through (h) are added to Article III as follows:

3.1. Members.

(e) Each Additional Member shall make an initial Capital Contribution to the Company in an amount mutually agreed by the Managers and the new Additional Member no later than the date of admission of the Additional Member to the Company. The Managers will promptly amend Schedule I to the Agreement to reflect the Units acquired by such Additional Member as a result of such Capital Contribution.

(f) The Members shall contribute additional capital to the Company in such amounts and at such times as approved by the Managers; provided however that any contribution must be in increments of $10,000 (each, an "Additional Capital Contribution"). The Members shall contribute such Additional Capital Contribution in proportion to their respective percentage share of Units at the time such Additional Capital Contribution is approved. Following such approval of an Additional Capital Contribution, the Managers shall give written notice to each Member. Each Member shall have fourteen (14) days from the date such notice is given to contribute its share of the Additional Capital Contribution to the Company. Each Member shall receive a credit to its Capital Account in the amount of any Additional Capital Contribution which it contributes to the Company.

(g) To the extent a Member does not timely contribute any or all of its Additional Capital Contribution when required as set forth in Section 3.1(f), the Members who timely made the required Additional Capital Contribution in full may elect to contribute the amount of such deficiency, first in proportion to their respective percentage of equity in the Company at that time and, if the full amount of the non-contributing Member's Additional Capital Contribution is not received through that procedure, any Member may choose to contribute additional capital until the Company has received the non-contributing Member's required Additional Capital Contribution in full. Immediately thereafter, the Company shall issue Units to the contributing Members to reflect the amount of each contributing Member's Additional Capital Contribution and the Membership Interest of each Member shall be adjusted to include such Additional Capital Contribution.

(h) Notwithstanding clause (f), the Members acknowledge that Pasha Hawaii Holdings LLC ("Pasha Hawaii") as of the date hereof has made and continues to make, on behalf of each of the other Members, Additional Capital Contributions to the Company in excess of the Initial Capital Contributions to pay further costs associated with the commencement of the Business of the Company. Within a reasonable time after the Company is able to commence conducting its Business without further Additional Capital Contributions by Pasha Hawaii, Pasha Hawaii will present the other Members with a statement of the total of all Additional Capital Contributions that Pasha Hawaii has advanced to the Company in excess of the Initial Capital Contributions (the "Total Advance"), with supporting documentation reasonably satisfactory to the Members; provided that Pasha Hawaii shall seek prior approval from the other Members for Total Advance amounts in excess of $150,000 in aggregate. Each Member (other than Pasha Hawaii) shall within thirty (30) days of the date of such statement reimburse Pasha Hawaii for such Additional Capital Contributions made on its behalf in the amount of its respective one-third share of the Total Advance. Should a Member choose to reimburse Pasha Hawaii such share of the Total Advance through refraining to collect from the Company the service fees otherwise due to the Member from the Company, which the Company will not collect in turn from Pasha Hawaii, then such Member's outstanding balance on its one-third share of the Total Advance shall bear interest at the rate of 12% per annum until reimbursed to Pasha Hawaii in full.

RM
PCR W

ARTICLE IV

DISTRIBUTIONS AND ALLOCATIONS

4.1 Distributions.

(a) The following phrase is added at the end of the final sentence of clause (a): "pro rata in accordance with the Members' respective percentage share of Units."

ARTICLE V

MANAGEMENT

Section 5.3(a) (b) and (c) are deleted in their entirety and replaced with the following:

5.3 Composition:

(a) The Board shall consist of three Managers. One member of the Board shall be appointed by each Member listed on Schedule I attached hereto, and such appointed person shall serve as a Manager of the Company. The number of Managers serving on or entitled to vote as a member of the Board may be modified from time to time by resolution of the Board. The following Managers have been duly appointed pursuant to this Section 5.3(a): Pace Ralli, as the CME Manager, Edward F. Washburn, as the PHH Manager, and Richard McMichael, as the WFS Manager.

(b) The removal from the Board (with or without cause) of any Manager designated under Section 5.3(a) above shall only be by the Member appointing such Manager, and under no other circumstances.

(c) In the event that any Manager designated under Section 5.3(a) above ceases for any reason to serve as a Manager, the resulting vacancy on the Board shall be filled by the appointment of a successor Manager by the Member who appointed the ceasing Manager.

Section 5.6 is deleted in its entirety and replaced with the following:

5.6 Matters Requiring Unanimous Board Consent. Notwithstanding any other provision of this Agreement, the unanimous approval of the Board shall be required for the following actions that are beyond the normal conduct of the business of Company:

(a) a dissolution, merger, or consolidation of the Company;

(b) the Company entering into any acquisition, joint ventures,

Rmd RCR

strategic alliances, or similar partnerships, or investments in any third party asset (other than a barge or vessel) or third party business;

(c) any decision to place the Company into bankruptcy;

(d) the Company issuing Units or other equity;

(e) the Company admitting any Additional Member pursuant to Section 10.2;

(f) the sale or disposition of all or substantially all of the assets of the Company;

(g) any amendment to this Agreement;

(h) the Company hiring any employees;

(i) the Company commencing litigation, arbitration or other formal dispute resolution process for any claim of Company (a "Formal Dispute");

(j) the Company entering into any agreement with a Member or Affiliate of a Member and any amendment to such agreement; and

(k) the Company incurring any indebtedness from a financial institution, or issuing any guaranty on behalf of a third party.

(l) The Company adjusting the LNG Business pricing to Pasha Hawaii vessels.

Section 5.14 and Section 5.15 are added to the Agreement as follows:

5.14 Litigation Management. Upon the commencement of a Formal Dispute, the Members will agree on one Member who will be the Member to manage the Formal Dispute. That Member will obtain from counsel representing the Company, and provide to all other Members, written quarterly status reports on the Formal Dispute. The Member managing the Formal Dispute will be required to advise the other Members in writing of any settlement offer received by Company in the Formal Dispute and the unanimous consent of the Members will be required to accept or counteroffer any such offer; however the Member managing the Formal Dispute will not be required to obtain the consent of any other Member when making a settlement offer that is equal to or less than twenty-five thousand dollars ($25,000.00).

Rmd PCR

5.15 Company Pricing of the LNG Business. For the LNG Business delivered to Pasha Hawaii vessels through the Delivery Services Agreement, the Company shall charge seventy-five cents ($0.75) per MMBTU bunkered to such vessels in addition to all other invoiced costs related to the Delivery Services Agreement, to be paid as Commercial Services Agreement fees. For all other LNG Business and Expansion Business, the Managers shall determine the additional charge based on the competitive landscape and economic nature of each new business opportunity, but will charge a minimum of fifteen cents ($0.15) per MMBTU bunkered to such vessels in addition to all other invoiced costs related to a Delivery Services agreement, to be divided equally and paid as fees under the Commercial Services Agreements of the Members. For clarity one MMBTU of LNG equals twelve point one (12.1) gallons of LNG.

ARTICLE VI

RIGHTS AND OBLIGATIONS OF THE MEMBERS

Section 6.6 is deleted in its entirety and replaced with the following:

Section 6.6 Conflicts of Interest.

(a) No Member, or any Affiliate of a Member, shall directly or indirectly (1) engage in the LNG Business, or (2) own any interest in, control, act as a consultant for, manage, operate, finance, refer to, profit from, promote, or otherwise participate in any entity or venture that engages in the LNG Business other than directly through the Company. For the avoidance of doubt, these restrictions do not apply for any Member' interests or activities related to any Expansion Business.

(b) Nothing in Section 6.6(a) shall be construed to prohibit any Member from engaging in activities relating to the sale or brokerage of LNG even to the extent those activities may include providing or sourcing delivery of LNG, provided that the Member agrees that, for each prospective transaction for the sale or brokerage of LNG in which (1) that Member intends to participate; (2) that Member will be responsible for providing or sourcing the delivery services; and (3) such delivery services are within the scope of the LNG Business and operational capacity or potential operational capacity (considering the requirements and timing of the opportunity) of the Company (each such opportunity being a "LNG Business Opportunity"), that Member will make commercially reasonable efforts to arrange that the applicable Business portion of the LNG Business Opportunity is first offered to the Company to undertake for the benefit of the Company. Promptly upon identifying such LNG Business Opportunity, that Member shall provide written notice of it to the Board. Unless the Board elects to pursue such LNG Business Opportunity (except for that Member's Board member who shall abstain from the vote) and notifies that Member in writing of such election within ten (10) business days after receiving that Member's written notice of the LNG Business Opportunity, that Member shall be free to pursue such LNG Business Opportunity as it shall determine in its sole discretion. Notwithstanding the foregoing, if the counterparty

RCR

to such LNG Business Opportunity declines to offer such Business portion of the LNG Business Opportunity or to contract with the Company for that business, that Member shall have no further obligations under this Section 6.6 with respect to such LNG Business Opportunity and shall be free to pursue such LNG Business Opportunity as it shall determine in its sole discretion.

ARTICLE VIII

TAX MATTERS

Section 8.1 is deleted in its entirety and replaced with the following:

8.1 Partnership for Tax Purposes. The Members intend that the Company shall be treated as an association taxable as a partnership for U.S. federal and, to the extent applicable, state and local income tax purposes, and that each Member and the Administrative Service Provider acting on behalf of the Company shall file all tax returns and shall otherwise take all tax and financial reporting positions in a manner consistent with such treatment.

ARTICLE IX

RESTRICTIONS ON TRANSFER OF UNITS

Sections 9.1 is deleted in its entirety and replaced with the following:

9.1 Transfers of Units.

(a) No holder of Units may sell, transfer, assign, pledge, encumber or otherwise dispose of (whether directly or indirectly, whether with or without consideration and whether voluntarily or involuntarily or by operation of law) any interest (legal or beneficial) in any Units (a "Transfer"), except Transfers pursuant to and in accordance with Sections 9.l(b) or (c). Notwithstanding the provisions of Section 9.1(a), any direct or indirect change in the ownership or control of any of the Members shall not constitute a Transfer.

(b) Right of First Offer.

(i) Each holder of Units may Transfer all of its Units at any time, and from time to time to any Person other than a direct competitor of the Company, after the date that is 30 months following the initial issuance of such Unit (the "Permitted Transfer Date"). In connection with any such Transfer pursuant to this Section 9.1(b), prior to entering into any agreement to Transfer all of its Units, any holder of Units desiring to make such transfer (the "Proposed ROFO Transferor") shall deliver a written notice (the "ROFO Notice") to the Company and the holders of all other Units, specifying that the Proposed ROFO Transferor wishes to transfer all of its Units (the "ROFO Units").

Rmd JCR

(ii) Within 45 days of the date of the ROFO Notice (or such other date and time as is agreed between the Proposed ROFO Transferor and the Company (the "ROFO Offer Closing Date"), the Company and the holders of Units (the "ROFO Offerors") may offer to acquire all of the ROFO Units by providing written notice to the Proposed ROFO Transferor (a "ROFO Offer") setting out the price per relevant ROFO Unit (the "ROFO Price") and any other terms on which the relevant ROFO Offeror offers to acquire the relevant ROFO Units. Once made, a ROFO Offer shall be irrevocable and binding and shall be accepted or rejected by the Proposed ROFO Transferor in accordance with Section 9.1(b)(iii). If any ROFO Offeror fails to submit a ROFO Offer by the ROFO Offer Closing Date, such ROFO Offeror shall be deemed to have declined to make a ROFO Offer and shall have no further rights under this Section 9.1(b) in relation to the ROFO Units. In the event each ROFO Offeror elects to purchase the ROFO Units, each ROFO Offeror will purchase its pro rata share of the ROFO Units. In the event only one of the ROFO Offeror elects to purchase the ROFO Units, such ROFO Offeror will purchase all of the ROFO Units.

(iii) Within 30 days of the ROFO Offer Closing Date, the Proposed ROFO Transferor must inform the Company, in writing whether it accepts or rejects any ROFO Offer. As soon as reasonably practicable thereafter, the Company shall:

(A) give notice in writing to the ROFO Offeror whose ROFO Offer has been rejected of that fact (a "Rejection Notice"); and

(B) give notice in writing (an "Acceptance Notice") to the ROFO Offeror whose ROFO Offer has been accepted (an "Accepted Offeror"); provided that no Rejection Notice or Acceptance Notice shall be required where the Company is the ROFO Offeror.

(iv) Each Acceptance Notice shall state a date, place and time (the "ROFO Completion Date") on which the sale and purchase of the relevant ROFO Units is to be completed which date will be no later than ten days following the ROFO Offer Closing Date. On or before the ROFO Completion Date, the Proposed ROFO Transferor shall transfer the legal and beneficial title to the relevant ROFO Units to the relevant Accepted Offeror (subject to the Accepted Offeror delivering the ROFO Price and executing a sale agreement in a form agreed by the Proposed ROFO Transferor).

(v) If by the ROFO Completion Date, the Accepted Offeror fails to pay (or procure the payment of) the aggregate ROFO Price in respect of the relevant ROFO Units (a "Defaulting Accepted Offerer"), the Proposed ROFO Transferor shall (without prejudice to any rights which it may have against the Defaulting Accepted Offeror) be entitled to Transfer the legal and beneficial title to such ROFO Units to any Person, as if the ROFO Offeror had failed to submit a ROFO Offer in relation to

RMD PCR EW

the relevant ROFO Units, and the Defaulting Accepted Offeror shall have no claim for damages or compensation (or otherwise) against the Proposed ROFO Transferor in respect of the ROFO Units.

(vi) The Proposed ROFO Transferor may, within six months following the ROFO Offer Closing Date, transfer the legal and beneficial title to:

(A) those ROFO Units for which ROFO Offers were not received by the ROFO Offer Closing Date;

(B) those ROFO Units for which ROFO Offers are deemed not to have been received under Section 9.1(b)(iii), in each case, to any Person and at a price not equal to or below that set forth in the ROFO Offer received, without following the procedure set out in this Section 9.1(b); and

(C) those ROFO Units to which any Rejection Notice delivered pursuant to Section 9.1(b)(iii)(A) relates. In each case, to any Person and at a price not equal to or below that set forth in the ROFO Offer received and rejected, without following the procedures set out in this Section 9.1(b).

If such Transfer is not completed within such six-month period, then the provisions of this Section 9.1(b) shall once again be applicable to any potential Transfer of the ROFO Units by the Proposed ROFO Transferor.

(c) The restrictions contained in Section 9 1(a) shall not apply to any Transfer of Units (i)) by any Member who is a natural person for bona fide estate planning purposes to a trust formed under the laws of the United States or any political subdivision thereof solely for the benefit of such Member and such Member's Family Group (or a re-Transfer of such Units by such trust back to such Member upon the revocation of any such trust) or pursuant to the applicable laws of descent or distribution among such Member's Family Group and (ii) by any Member that is a partnership, limited liability company or corporation to any of such holder's Affiliates (including any affiliated investment funds); provided that the restrictions contained in this Agreement will continue to apply to the Units after any Transfer pursuant to clauses (i) or (ii) above and each transferee of Units shall agree in writing, prior to and as a condition precedent to the effectiveness of such Transfer, to be bound by the provisions of this Agreement, without modification or condition, subject only to the consummation of such Transfer. Upon the Transfer of Units pursuant to clause (iii) or (iv) of the first sentence of this Section 9.1(c), the transferor will deliver written notice to the Company, which notice will disclose in reasonable detail the identity of such transferee(s) and shall include original counterparts of this Agreement in a form acceptable to the Company.

ARTICLE XIV

GENERAL PROVISIONS

Section 14.4 is modified to add the details of WFS as follows:

14.4 Addresses and Notices.

World Fuel Services, Inc.
9800 NW 41st Street
Doral, FL 33178

Attention: Richard McMichael
E-mail: rmcmichael@wfscorp.com

Schedule I

Schedule 1 is amended by deleting Schedule I in its entirety and replacing it with the Schedule I attached hereto.

Except as specifically amended by this First Amendment, the Agreement shall remain in full force and effect and is hereby ratified and confirmed.

This First Amendment may be executed in separate counterparts, each of which will be an original and all of which together shall constitute one and the same agreement binding on all the parties hereto.

Signature page to follow

IN WITNESS WHEREOF, the Members and the Additional Member, each through its authorized representative, have executed this First Amendment as of the Effective Date.

Clean Marine Energy LLC

By: _____ 8/19/21

Name: Pace Ralli

Title: Chief Executive Officer

Pasha Hawaii Holdings LLC

By: _____ 8/19/21

Name: Edward Washburn

Title: Senior Vice President

World Fuel Services, Inc.

By: _____

Name: Richard McMichael

Title: Senior Vice President

RM

PCR

SCHEDULE I

as of August 19, 2021

Member	Initial Capital Contributions	Units
Clean Marine Energy LLC	US$50,000.00	5 Initial Units
Pasha Hawaii Holdings LLC	US$50,000.00	5 Initial Units
World Fuel Services, Inc.	US$50,000.00	5 Initial Units
Total	US$150,000.00	15 Initial Units

Each Member shall be a 33.3% owner of the Company as of the date set forth above. WFS shall contribute the amount of Initial Capital Contribution shown above. A unit equals ten thousand ($10,000) dollars of equity.

Rmd

PCR

UNANIMOUS WRITTEN CONSENT
OF THE BOARD OF MANAGERS OF
WEST COAST CLEAN FUELS, LLC

THE UNDERSIGNED, being all of the mangers of the Board of Manager (the "Board") of West Coast Clean Fuels, LLC (the "Company"), do hereby approve and adopt the following action as if adopted at a meeting accordance with Article 5.7 of West Coast Clean Fuels, LLC Limited Liability Company Agreement:

The Board has unanimously approved the appointment of Michael R. Johnson as Secretary of the Company, to be effective as January 24, 2024.

Consented to as of January 24, 2024

MANAGERS:

Pace Ralli

Edward F. Washburn

Richard McMichael

RESIGNATION AS AN OFFICER
OF
WEST COAST CLEAN FUELS, LLC

The undersigned, Amy E. Manning, hereby resigns as the Secretary of West Coast Clean Fuels, LLC, a Hawaii limited liability company. The resignation is effective January 24, 2024.

Amy E. Manning

State of Florida

Department of State

I certify from the records of this office that EAST COAST CLEAN FUELS is a Fictitious Name registered with the Department of State on June 25, 2025.

The Registration Number of this Fictitious Name is G25000080789.

I further certify that said Fictitious Name Registration is active.

I further certify that this office began filing Fictitious Name Registrations on January 1, 1991, pursuant to Section 865.09, Florida Statutes.

Given under my hand and the Great Seal of Florida, at Tallahassee, the Capital, this the Twenty Sixth day of June, 2025

GREAT SEAL OF THE STATE OF FLORIDA
IN GOD WE TRUST

Secretary of State

Section E

1. Has the Applicant acquired another business entity within the last five (5) years?
   Yes___ No✓ If "Yes," please provide the full legal name of any business entity that the Applicant acquired during the last five (5) years which engaged in a similar business activity as the business activity which is the subject of this Port Everglades Franchise Application.
   If none, indicate "None" None.

2. Indicate in the space provided the date of the acquisition whether the acquisition was by a stock purchase or asset purchase, and whether the Applicant herein is relying on the background and history of the acquired firm's officers, managers, employees and/or the acquired firm's business reputation in the industry to describe the Applicant's experience or previous business history. Attach additional sheets if necessary.

3. Has the Applicant been acquired by another business entity within the last five (5) years? Yes___ No✓ If "Yes," provide the full legal name of any business entity which acquired the Applicant during the last five (5) years which engaged in a similar business activity as the business activity which is the subject of this Port Everglades Franchise Application.
   If none, indicate "None" None.

4. Indicate in the space provided the date of the acquisition and whether the acquisition was by a stock purchase or asset purchase and whether the Applicant herein is relying on the background and history of the parent firm's officers, managers, employees and/or the parent firm's business reputation in the industry to describe the Applicant's experience or previous business history. Attach additional sheets if necessary.

Section F

Provide the Applicant's previous business history, including length of time in the same or similar business activities as planned at Port Everglades.

Section G

1. Provide a list of the Applicant's current managerial employees, including supervisors, superintendents, and forepersons. Company is managed by members

2. List the previous work history/experience of the Applicant's current managerial employees, including their active involvement in seaports and length of time in the same or similar business activities as planned at Port Everglades. See resumes

Section F

APPLICATION FOR A VESSEL BUNKERING FRANCHISE AT PORT EVERGLADES, FLORIDA
WEST COAST CLEAN FUELS dba EAST COAST CLEAN FUELS

SECTION F: PREVIOUS BUSINESS HISTORY

The previous business history of West Coast Clean Fuels LLC dba East Coast Clean fuels is set forth below:

May 2020	West Coast Clean Fuels LLC was formed for the purpose of developing a business that delivered liquified natural gas and other low- and zero-carbon fuels to maritime vessels.
2022-current	Permitted and performing the first marine liquified natural gas (LNG) bunkering operation at the Port of Long Beach, CA for ocean carriers in liner trades; over 100 million gallons annually supplied to vessels
2022-current	Permitted and participated in the establishment of a clean trucking solution, delivery and storage of LNG at the Port of Long Beach, CA in conjunction with marine LNG bunkering operation
2022	Permitted and performed the first marine hydrogen bunkering operation at the Port of Bellingham, WA to the ferry SEA CHANGE for multiple sea trials
2023	Permitted and performed the first hydrogen fuel bunkering to a ferry serving the Port of San Francisco, CA
Current	Continue Hydrogen bunkering at the Port of San Francisco and continue LNG bunkering at the Port of Long Beach.

Section H

List all seaports, including Port Everglades (if application is for renewal), where the Applicant is currently performing the services/operation which is the subject of this Franchise application. **Use this form for each seaport listed. Photocopy additional pages as needed (one page for each seaport listed).**

If none, state "None" _____.

Seaport Port of Long Beach, CA Number of Years Operating at this Seaport 2021

List below all of the Applicant's Clients for which it provides services at the seaport listed above.

Client Name (Company)	Number of Years Applicant Has Provided Services to this Client
Pasha Hawaii Holdings, LLC	3 years (3 ships, each bunkering)
Matson Navigation Coimpany	2 years (intermittently)

Section I

1. Provide a description of all past (within the last five (5) years) and pending litigation and legal claims where the Applicant is a named party, whether in the State of Florida or in another jurisdiction, involving allegations that Applicant has violated or otherwise failed to comply with environmental laws, rules, or regulations or committed a public entity crime as defined by Chapter 287, Florida Statutes, or theft-related crime such as fraud, bribery, smuggling, embezzlement or misappropriation of funds or acts of moral turpitude, meaning conduct or acts that tend to degrade persons in society or ridicule public morals.

The description must include all of the following:
a) The case title and docket number
b) The name and location of the court before which it is pending or was heard
c) The identification of all parties to the litigation
d) General nature of all claims being made
If none, indicate "None" None.

2. Indicate whether in the last five (5) years the Applicant or an officer, director, executive, partner, or a shareholder, employee or agent who is or was (during the time period in which the illegal conduct or activity took place) active in the management of the Applicant was charged, indicted, found guilty or convicted of illegal conduct or activity (with or without an adjudication of guilt) as a result of a jury verdict, nonjury trial, entry of a plea of guilty or nolo contendere where the illegal conduct or activity (1) is considered to be a public entity crime as defined by Chapter 287, Florida Statutes, as amended from time to time, or (2) is customarily considered to be a white-collar crime or theft-related crime such as fraud, smuggling, bribery, embezzlement, or misappropriation of funds, etc. or (3) results in a felony conviction where the crime is directly related to the business activities for which the franchise is sought.

Yes___ No ✓

If you responded "Yes," please provide all of the following information for each indictment, charge, or conviction:
a) A description of the case style and docket number
b) The nature of the charge or indictment
c) Date of the charge or indictment
d) Location of the court before which the proceeding is pending or was heard
e) The disposition (e.g., convicted, acquitted, dismissed, etc.)
f) Any sentence imposed
g) Any evidence which the County (in its discretion) may determine that the Applicant and/or person found guilty or convicted of illegal conduct or activity has conducted itself, himself or herself in a manner as to warrant the granting or renewal of the franchise.

Section J

The Applicant must provide a current certificate(s) of insurance. Franchise insurance requirements are determined by Broward County's Risk Management Division and are contained in the Port Everglades Tariff No. 12 as amended, revised or reissued from time to time. The Port Everglades Tariff is contained in the Broward County Administrative Code, Chapter 42, and is available for inspection online at: http://www.porteverglades.net/development/tariff.

Section J: Current certificates of insurance

West Coast Clean Fuels LLC dba East Coast Clean Fuels submits the following certificates of insurance (COI):

1. West Coast Clean Fuels LLC COI showing general liability insurance;
2. Pasha Hawaii Holdings LLC COI showing general liability insurance; and
3. Pasha Hawaii Holdings LLC COI showing workers compensation insurance.

West Coast Clean Fuels LLC i(WCCF) is a Delaware limited liability company with three members who manage its affairs. It does not have any employees. Therefore, it does not carry workers compensation insurance. WCCF has provided a COI showing its general liability insurance policy.

One of its members is Pasha Hawaii Holdings LLC. Mr. Matt Campbell is the Technical Manager of Pasha Hawaii Holdings LLC. He will be acting as West Coast Clean Fuel's senior representative managing West Coast Clean Fuel's methanol vessel bunkering operation at Port Everglades. Therefore, we have provided both workers compensation and general liability policy COIs.

As indicated in his resume, which was submitted to Port Everglades as part of West Coast Clean Fuel's Application for a Vessel Bunkering Franchise, Matt has extensive experience with fueling with liquified natural gas, most recently with Pasha Hawaii's three containerships that are in a liner trade between the U.S. West Coast and Hawaii and fuel bi-weekly at West Coast Clean Fuel's bunkering skid at the Port of Long Beach.

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 8/20/2025

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME:	
Alliant Insurance Services, Inc. 909 Poydras St Ste 2650 New Orleans, LA 70112-4021	PHONE (A/C, No, Ext):	FAX (A/C, No):
	E-MAIL ADDRESS:	

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A : National Casualty Company	11991
INSURER B : Signal Mutual Indemnity Association Ltd	00000
INSURER C :	
INSURER D :	
INSURER E :	
INSURER F :	

INSURED
Pasha Hawaii Holdings LLC
4040 Civic Center Drive
Suite 350
San Rafael, CA 94903

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
	COMMERCIAL GENERAL LIABILITY						EACH OCCURRENCE	$
	☐ CLAIMS-MADE ☐ OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence)	$
							MED EXP (Any one person)	$
							PERSONAL & ADV INJURY	$
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$
	☐ POLICY ☐ PRO-JECT ☐ LOC						PRODUCTS - COMP/OP AGG	$
	☐ OTHER:							$
	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident)	$
	☐ ANY AUTO						BODILY INJURY (Per person)	$
	☐ OWNED AUTOS ONLY ☐ SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	☐ HIRED AUTOS ONLY ☐ NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	$
								$
	☐ UMBRELLA LIAB ☐ OCCUR						EACH OCCURRENCE	$
	☐ EXCESS LIAB ☐ CLAIMS-MADE						AGGREGATE	$
	☐ DED ☐ RETENTION $							$
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y / N: N If yes, describe under DESCRIPTION OF OPERATIONS below	N / A		WCSIG35008606	10/1/2024	10/1/2025	X PER STATUTE ☐ OTH-ER	
							E.L. EACH ACCIDENT	$ 1,000,000
							E.L. DISEASE - EA EMPLOYEE	$ 1,000,000
							E.L. DISEASE - POLICY LIMIT	$ 1,000,000
B	U.S.L.H			44000	10/1/2024	10/1/2025	Statutory	

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

CERTIFICATE HOLDER

*Evidence of Insurance

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
08/18/2025

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER MARSH USA, LLC. 1301 5th Avenue, Suite 1900 Seattle, WA 98101 CN142788441--CGLP-24-25	**CONTACT NAME:** **PHONE (A/C, No, Ext):** / **FAX (A/C, No):** **E-MAIL ADDRESS:**	
	INSURER(S) AFFORDING COVERAGE	**NAIC #**
	INSURER A : Crum & Forster Specialty Insurance Co	44520
INSURED West Coast Clean Fuels LLC 4040 Civic Center Dr. Suite 350 San Rafael, CA 94903	**INSURER B :**	
	INSURER C :	
	INSURER D :	
	INSURER E :	
	INSURER F :	

COVERAGES **CERTIFICATE NUMBER:** SEA-004145043-02 **REVISION NUMBER:** 6

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X **COMMERCIAL GENERAL LIABILITY** [ ] CLAIMS-MADE [X] OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: X POLICY [ ] PRO-JECT [ ] LOC X OTHER: Contractor's Pollution Liabili			EPK-150030	12/18/2024	11/01/2025	EACH OCCURRENCE	$ 10,000,000
							DAMAGE TO RENTED PREMISES (Ea occurrence)	$ 10,000,000
							MED EXP (Any one person)	$ 5,000
							PERSONAL & ADV INJURY	$ 10,000,000
							GENERAL AGGREGATE	$ 10,000,000
							PRODUCTS - COMP/OP AGG	$ 10,000,000
								$
	AUTOMOBILE LIABILITY [ ] ANY AUTO [ ] OWNED AUTOS ONLY [ ] SCHEDULED AUTOS [ ] HIRED AUTOS ONLY [ ] NON-OWNED AUTOS ONLY						COMBINED SINGLE LIMIT (Ea accident)	$
							BODILY INJURY (Per person)	$
							BODILY INJURY (Per accident)	$
							PROPERTY DAMAGE (Per accident)	$
								$
	[ ] **UMBRELLA LIAB** [ ] OCCUR [ ] **EXCESS LIAB** [ ] CLAIMS-MADE [ ] DED [ ] RETENTION $						EACH OCCURRENCE	$
							AGGREGATE	$
								$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANYPROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBEREXCLUDED? Y / N: N **(Mandatory in NH)** If yes, describe under DESCRIPTION OF OPERATIONS below	N / A					[ ] PER STATUTE [ ] OTH-ER	
							E.L. EACH ACCIDENT	$
							E.L. DISEASE - EA EMPLOYEE	$
							E.L. DISEASE - POLICY LIMIT	$
A	Contractors Pollution Liability			EPK-150030	12/18/2024	11/01/2025	Per Condition	25,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Broward County and its officers, agents, and employees are included as additional insured where required by written contract. This insurance is primary and non-contributory over any existing insurance and limited to liability arising out of the operations of the named insured subject to policy terms and conditions. When required by written contract, the insurer will provide 30 days' notice of cancellation to the certificate holder as respects General Liability policy(ies) for any reason other than non-payment of premium, subject to policy terms and conditions.

CERTIFICATE HOLDER

Broward County
1850 Eller Drive
Fort Lauderdale, FL 33316

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Marsh USA LLC

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
08/26/2025

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER MARSH USA, LLC. 1301 5th Avenue, Suite 1900 Seattle, WA 98101 CN102650199-Up-Cont-25-26	**CONTACT NAME:** **PHONE (A/C, No, Ext):** **FAX (A/C, No):** **E-MAIL ADDRESS:**
INSURED Pasha Hawaii Holdings LLC 4040 Civic Center Drive, Suite 350 San Rafael, CA 94903	**INSURER(S) AFFORDING COVERAGE** — **NAIC #** **INSURER A :** Imperium Insurance Company — 35408 **INSURER B :** The Travelers Indemnity Company of Connecticut — 25682 **INSURER C :** N/A — N/A **INSURER D :** **INSURER E :** **INSURER F :**

COVERAGES **CERTIFICATE NUMBER:** SEA-004147349-03 **REVISION NUMBER:** 8

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X **COMMERCIAL GENERAL LIABILITY** CLAIMS-MADE [X] OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: [X] POLICY [ ] PRO-JECT [ ] LOC [ ] OTHER:			MM-SEA-25-5269 'Imperium Insurance Company - 52.5%' 'Endurance American Ins Comp - 25%' 'NY Marine & General Ins Co. - 17.5%' 'Atain Insurance Company - 5%'	07/01/2025	07/01/2026	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 10,000,000 $ 2,000,000 $ 10,000 $ 10,000,000 $ 11,000,000 $ 11,000,000
B	**AUTOMOBILE LIABILITY** X ANY AUTO [ ] OWNED AUTOS ONLY [ ] SCHEDULED AUTOS [ ] HIRED AUTOS ONLY [ ] NON-OWNED AUTOS ONLY			8101Y3275232543G	07/01/2025	07/01/2026	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ 1,000,000 $ $ $
	[ ] **UMBRELLA LIAB** [ ] OCCUR [ ] **EXCESS LIAB** [ ] CLAIMS-MADE [ ] DED [ ] RETENTION $						EACH OCCURRENCE AGGREGATE	$ $
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y / N ANYPROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? [N] **(Mandatory in NH)** If yes, describe under DESCRIPTION OF OPERATIONS below	N / A					[ ] PER STATUTE [ ] OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	 $ $ $

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Broward County and its officers, agents, and employees are included as additional insured where required by written contract. This insurance is primary and non-contributory over any existing insurance and limited to liability arising out of the operations of the named insured subject to policy terms and conditions. When required by written contract, the insurer will provide 30 days' notice of cancellation to the certificate holder as respects General Liability policy(ies) for any reason other than non-payment of premium, subject to policy terms and conditions.

CERTIFICATE HOLDER

Broward County
1850 Eller Drive
Fort Lauderdale, FL 33316

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE
of Marsh USA LLC

Marsh USA LLC

AGENCY CUSTOMER ID: CN102650199
LOC #: Seattle

ADDITIONAL REMARKS SCHEDULE

AGENCY MARSH USA, LLC.	**NAMED INSURED** Pasha Hawaii Holdings LLC 4040 Civic Center Drive, Suite 350 San Rafael,CA 94903
POLICY NUMBER	
CARRIER / **NAIC CODE**	**EFFECTIVE DATE:**

ADDITIONAL REMARKS

THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,
FORM NUMBER: 25 **FORM TITLE:** Certificate of Liability Insurance

General Liability Continued:
Coverage includes Terminal Operator's Legal Liability, Stevedore's Legal Liability, Warehouseman's Legal Liability, Freight Forwarder Legal Liability, NVOCC Legal Liability, Fire Legal Liability, Errors & Omissions and Cargo Legal Liability. The policy may be cancelled by the Company by mailing to the Named Insured at the address shown in this policy, written notice stating when not less than ninety (90) days thereafter such cancellation shall be effective except for ten (10) days in the event of non payment of premium.

When required by written contract, the insurer will provide 30 days' notice of cancellation to the certificate holder as respects to general liability policy for any reason other than 10 days' notice of cancellation for non-payment of premium, subject to policy terms and conditions.

Pollution (Port of LA)
Carrier: Syndicate 2623/623 at Lloyd's
Policy #: W2CAC9230201
Effective: 09/29/2023
Expiration: 09/29/2026
Deductible Value: $50,000
Limit: $3,000,000

Section K

1. The Applicant must provide its most recent audited or reviewed financial statements prepared in accordance with generally accepted accounting principles, or other documents and information which demonstrate the Applicant's creditworthiness, financial responsibility, and resources, which the Port will consider in evaluating the Applicant's financial responsibility.

2. Has the Applicant or entity acquired by Applicant (discussed in Section E herein) sought relief under any provision of the Federal Bankruptcy Code or under any state insolvency law filed by or against it within the last five (5) year period?
   Yes___ No✓
   If "Yes," please provide the following information for each bankruptcy or insolvency proceeding:
   a) Date petition was filed or relief sought
   b) Title of case and docket number
   c) Name and address of court or agency
   d) Nature of judgment or relief
   e) Date entered

3. Has any receiver, fiscal agent, trustee, reorganization trustee, or similar officer been appointed in the last five (5) year period by a court for the business or property of the Applicant?
   Yes___ No✓
   If "Yes," please provide the following information for each appointment:
   a) Name of person appointed
   b) Date appointed
   c) Name and address of court
   d) Reason for appointment

4. Has any receiver, fiscal agent, trustee, reorganization trustee, or similar officer been appointed in the last five (5) year period by a court for any entity, business, or property acquired by the Applicant?
   Yes___ No✓
   If "Yes," please provide the following information for each appointment:
   a) Name of person appointed
   b) Date appointed
   c) Name and address of court
   d) Reason for appointment

Section L

List four (4) credit references for the Applicant, one of which must be a bank. Use this format:
Name of Reference Bank of America Nature of Business Banking
Contact Name Jose G. Mateos Title VP, Service Advisor
Legal Business Street Address 100 North Tyron Street
City, State, Zip Code Charlotte, North Carolina 28255
Phone Number 888-715-100 ext. 21623
(Provide on a separate sheet.)

Section K. 1

West Coast Clean Fuels, LLC
Financial Statements - Unaudited

December-24

Limited Distribution

West Coast Clean Fuels LLC
Management Discussion and Analysis
Month of December 2024
Private Distribution

December 2024 Management Discussion and Analysis

West Coast Clean Fuels (WCCF) Management Discussion and Analysis (MD&A) provides an overview of operations, financial activities and indicators that may impact the financial health of the Company.

The Company delivers LNG fuel by truck to the Port of Long Beach, CA. It provides scheduled bunkering services through the operation of its skid to the Pasha Hawaii LNG fueled vessels and Matson vessels.

All costs for LNG delivery incurred by WCCF, as well as fees under the administrative and commercial service agreements, are invoiced to World Fuels.

No net residual income is anticipated at the company for such services related to Pasha or Matson vessels and Hydrogen business.

Any monthly income or loss pertaining to these activities reflects timing differences; these activities will cumulatively not generate any income or loss over time.

The Company continues to develop opportunities to deliver LNG and other fuels to additional customers.

The Company's operations began in August, 2022 with the delivery of the M/V George III.

Results of Operations

A ***Business Highlights:***

During the month of December, WCCF completed the LNG bunkering of Pasha vessels only.
The third Pasha LNG fueled vessel, the George II, entered service in January, 2024.
Accrued marketing fees as of December 2024 totaled $1,195K.

B ***Month of December versus Budget***

For the month of December, sales of $1,247K were unfavorable $163K to budget.
Gross margin of $15K was $220K unfavorable to budget.
The budget assumed a Matson bunkering in December.

Net income of $0K was $220K unfavorable due to the budgeted Matson bunkering.

C ***Year to Date Period Ending December versus Budget***

YTD sales of $13,303K were favorable $131K.
Pasha vessel LNG consumption was 2,399K LNG gallons lower than plan.

Gross margin of $181K was unfavorable $1,115K due to the planned contribution of $1,100K from the Matson vessels.

Net income of $0K was unfavorable $1,098K to budget due to the budget assumptions for Matson vessel contribution.

West Coast Clean Fuels LLC
Management Discussion and Analysis
Month of December 2024
Private Distribution
Variances versus Prior Year:

D ***Month versus Prior Year***

For the month to date period ending December, sales of $1,247K were favorable $649K to prior year.
The increase reflects higher Pasha vessel revenues with the delivery of the Janet Marie in late July 2023 and the George II,
which entered service in January 2024.
LNG gallons consumed by Pasha vessels increased by 1,296K gallons YoY.

Gross margin of $15K was favorable $440K. An accrual of $438k commercial fees for the FY 2023 Matson bunkerings was made in December 2023.
In 2024 margin from all vessels was allocated to the partners through marketing and admin fees.
Total gallons delivered increased from 1,093K in 2023 to 2,341K in 2024.

E ***Year To Date versus Prior Year***

For the year to date period ending December, sales of $13,303K were favorable $6,463K to prior year.

The full year of sales for the George III in 2023 and the introduction of the Janet Marie in July 2023, resulted in

in increased Pasha vessel revenues. Also, the introduction of the George II in January 2024 further increased YoY revenues.

Matson vessel revenue represented $1,587K of the YoY increase.

Delivery of LNG for Pasha vessels increased by 12,351K gallons YoY.

Gross margin of $181K was $14K favorable to prior year.

Net income of $0K is consistent with the prior year.
Total gallons delivered increased from 10,154 in 2023 to 23,888K in 2024.

F ***Cash Flow and Liquidity***

As of December 28, 2024, the Company's cash balance totaled $710K compared to $178K at December, 2023.
For the month, cash increased $415K from AR collections, offset by settlement of amounts primarily due for the lease of the skid.
For the year, cash from operations was $774K compared to $16K in the prior year.

G ***Financing and Capital***

Net cash advances and chargebacks due to Pasha totaled $54K at December 2024, compared to $727K in December 2023.
These include cumulative amounts paid by Pasha on behalf of WCCF for leases and working capital.
A total of $927K in cumulative repayments to Pasha for skid lease and M&R costs were settled during the year.
Trade and accrued receivables totaled $2,527K at December 2024 compared to $1,904K at December 2023.
The Company has accrued $1,195K towards commercial and administrative fees earned by the partners through December 2024.

H ***Right of Use Assets - Operating Leases***

Effective March 2022, the Company has adopted new accounting treatment for operating leases in accordance with ASC 842.
Under this standard, operating leases with tenure greater than 12 months are reported as a right of use ("ROU") asset.
The carrying value of the ROU assets, which represent the discounted future cash payments under the skid leases,
totaled $1,045K in December 2024.

The corresponding total and current liabilities are reported separate from other forms of debt.

West Coast Clean Fuels, LLC
Consolidated Income Statement
As of December 28, 2024

2024 Unaudited	**Month Ended**			**Month Fav / (Unfav) Var.**	
(Amounts in thousands)	**Actual**	**Budget**	**Prior Year**	**vs Budget**	**vs Prior Year**
Trucking & Bunkering Revenue	$ 1,102.1	$ 1,254.9	$ 530.3	$ (152.8)	571.8
Admin Revenue	145.1	155.7	67.8	(10.5)	77.4
Total Revenue	**1,247.2**	**1,410.5**	**598.1**	**(163.3)**	**649.1**
Trucking Costs	527.3	569.7	212.7	42.4	(314.5)
Equipment and M&R costs	201.3	289.9	235.2	88.6	33.9
Bunkering & Other Operating Costs	340.9	141.1	69.5	(199.8)	(271.4)
Fuel Costs	14.1	49.2	-	35.1	(14.1)
Commission	-	-	-	-	-
Admin Costs	149.0	125.6	506.1	(23.4)	357.1
Total Costs	1,232.6	1,175.5	1,023.6	(57.1)	(209.0)
Gross Margin	**$ 14.6**	**$ 235.1**	**$ (425.5)**	**$ (220.4)**	**$ 440.1**
Gross Profit %	***1.2%***	***16.7%***	***-71.1%***	***-15.5%***	***72.3%***
Operating Expenses					
Professional Fees	-	7.2	-	7.2	-
Overhead and other G&A	14.4	7.9	12.7	(6.6)	(1.8)
Total General & Administrative Exp	14.4	15.1	12.7	0.6	(1.8)
Operating Margin	0.2	220.0	(438.2)	(219.8)	438.4
(Depreciation Expense)	(0.2)	(0.2)	(0.2)	-	-
TOTAL NET INCOME (LOSS)	**($0.0)**	**$219.8**	**($438.4)**	**($219.8)**	**$438.4**

2024 Unaudited	**YTD Period Ended**			**YTD Fav / (Unfav) Var.**	
(Amounts in thousands)	**Actual**	**Budget**	**Prior Year**	**vs Budget**	**vs Prior Year**
Trucking & Bunkering Revenue	$ 11,957.6	$ 11,147.8	$ 6,260.5	$ 809.7	5,697.0
Admin Revenue	1,345.3	2,023.6	579.3	(678.3)	766.0
Total Revenue	**13,302.9**	**13,171.5**	**6,839.8**	**131.4**	**6,463.0**
Trucking Costs	4,944.2	5,200.5	2,016.3	256.2	(2,927.9)
Equipment and M&R costs	2,727.6	3,172.7	2,405.2	445.1	(322.4)
Bunkering & Other Operating Costs	2,193.2	1,623.7	1,116.1	(569.4)	(1,077.0)
Fuel Costs	91.9	245.9	117.7	154.0	25.8
Commission	500.0	-	-	(500.0)	(500.0)
Admin Costs	2,664.8	1,633.0	1,017.7	(1,031.9)	(1,647.1)
Total Costs	13,121.7	11,875.8	6,673.1	(1,245.9)	(6,448.7)
Gross Margin	**$ 181.2**	**$ 1,295.7**	**$ 166.8**	**$ (1,114.5)**	**$ 14.4**
Gross Profit %	***1.4%***	***9.8%***	***2.4%***	***-8.5%***	***-1.1%***
Operating Expenses					
Professional Fees	6.7	93.6	38.7	86.9	32.1
Overhead and other G&A	172.5	102.1	126.1	(70.4)	(46.4)
Total General & Administrative Exp	179.2	195.7	164.8	16.5	(14.4)
Operating Margin	2.0	1,100.0	2.0	(1,098.0)	(0.0)
(Depreciation Expense)	(2.0)	(2.0)	(2.0)	0.0	-
TOTAL NET INCOME (LOSS)	**($0.0)**	**$1,098.0**	**$0.0**	**($1,098.0)**	**($0.0)**

West Coast Clean Fuels, LLC
Consolidating Income Statement
As of December 28, 2024

2024 Unaudited	***Current Month***			
(Amounts in thousands)	**Pasha Vessels**	**3rd Party LNG**	**Hydrogen**	**Total**
Trucking & Bunkering Revenue	$ 1,058.4	$ (1.1)	$ 44.7	$ 1,102.1
Admin Revenue	145.1	-	-	145.1
Total Revenue	**1,203.6**	**(1.1)**	**44.7**	**1,247.2**
Trucking Costs	512.9	1.4	13.0	527.3
Equipment and M&R costs	189.7	(6.1)	17.7	201.3
Bunkering & Other Operating Costs	341.2	(0.3)	-	340.9
Fuel Costs	-	-	14.1	14.1
Commission	-	-	-	-
Admin Costs	145.1	3.9	-	149.0
Total Costs	1,188.9	(1.1)	44.7	1,232.6
Gross Margin	**$ 14.6**	**$ -**	**$ -**	**$ 14.6**
Gross Profit %	***1.2%***	***0.0%***	***0.0%***	***1.2%***
Operating Expenses				
Professional Fees	-	-	-	-
Overhead and other G&A	14.4	-	-	14.4
Total General & Administrative Exp	14.4	-	-	14.4
Operating Margin	0.2	-	-	0.2
Other Income	-	-	-	-
(Depreciation Expense)	(0.2)	-	-	(0.2)
TOTAL NET INCOME (LOSS)	**($0.0)**	**$0.0**	**$0.0**	**($0.0)**

West Coast Clean Fuels, LLC
Consolidating Income Statement
As of December 28, 2024

2024 Unaudited	***YTD December 2024***			
(Amounts in thousands)	**Pasha Vessels**	**3rd Party LNG**	**Hydrogen**	**Total**
Trucking & Bunkering Revenue	$ 9,039.3	$ 2,668.8	$ 249.5	$ 11,957.6
Admin Revenue	1,345.3	-	-	1,345.3
Total Revenue	**10,384.6**	**2,668.8**	**249.5**	**13,302.9**
Trucking Costs	4,321.9	530.6	91.8	4,944.2
Equipment and M&R costs	2,514.7	148.0	64.9	2,727.6
Bunkering & Other Operating Costs	2,025.2	167.9	-	2,193.2
Fuel Costs	-	-	91.9	91.9
Commision	-	500.0	-	500.0
Admin Costs	1,345.3	1,319.5	-	2,664.8
Total Costs	10,207.1	2,666.0	248.6	13,121.7
Gross Margin	**$ 177.5**	**$ 2.8**	**$ 0.9**	**$ 181.2**
Gross Profit %	***1.7%***	***0.1%***	***0.4%***	***1.4%***
Operating Expenses				
Professional Fees	6.7	-	-	6.7
Overhead and other G&A	168.9	2.8	0.9	172.5
Total General & Administrative Exp	175.5	2.8	0.9	179.2
Operating Margin	2.0	(0.0)	(0.0)	2.0
(Depreciation Expense)	(2.0)	-	-	(2.0)
TOTAL NET INCOME (LOSS)	**$0.0**	**($0.0)**	**($0.0)**	**$0.0**

West Coast Clean Fuels, LLC
Consolidated Balance Sheet
Current Month vs. Prior Month, Prior Year End and Prior Year

2024 Unaudited	Balance as of			Change from prior	
(Amounts in thousands)	12/28/2024	11/23/2024	12/30/2023	month	prior year
ASSETS					
Current Assets:					
Cash and cash equivalents	$ 710.2	$ 295.6	$ 178.4	$ 414.6	$ 531.8
Accounts Receivable, net	2,526.7	3,369.9	1,903.9	(843.1)	622.8
Other receivables	(4.1)	14.1	14.1	(18.3)	(18.3)
Prepaid expenses and other assets	83.7	12.5	348.6	71.2	(264.8)
Total Current Assets	3,316.5	3,692.1	2,445.0	(375.6)	871.5
Property & Equipment:					
Property & Equipment - Net	13.9	14.1	15.9	(0.2)	(2.0)
Other Assets:					
Right of Use Assets	1,045.5	1,099.0	1,580.8	(53.5)	(535.3)
TOTAL ASSETS	**$4,375.9**	**$4,805.2**	**$4,041.6**	**($429.4)**	**$334.2**

Certain balances reclassified to conform to current year presentation

West Coast Clean Fuels, LLC
Consolidated Balance Sheet
Current Month vs. Prior Month, Prior Year End and Prior Year

2024 Unaudited	Balance as of			Change from prior	
(Amounts in thousands)	12/28/2024	11/23/2024	12/30/2023	month	prior year
LIABILITIES AND EQUITY					
Current Liabilities:					
Accounts payable:					
Trade	$ 938.6	$ 579.6	$ 549.1	$359.0	$389.5
Accrued expenses	2,446.7	2,344.4	1,293.8	102.3	1,153.0
Advances & Chargebacks Due Pasha	54.4	899.8	726.9	(845.4)	(672.5)
Current portion of funded debt	584.2	579.4	535.7	4.9	48.5
Total Current Liabilities	4,023.9	4,403.2	3,105.4	(379.3)	918.4
Non-Current Liabilities:					
Operating leases	1,056.9	1,102.1	1,592.5	(45.2)	(535.7)
Total Funded Debt	1,056.9	1,102.1	1,592.5	(45.2)	(535.7)
Less: Current portion	(584.2)	(579.4)	(535.7)	(4.9)	(48.5)
Long term portion of Funded Debt	472.7	522.7	1,056.9	(50.1)	(584.2)
Total Liabilities	**4,496.5**	**4,925.9**	**4,162.3**	**(429.4)**	**334.2**
Total Shareholders' Equity	**(120.7)**	**(120.7)**	**(120.7)**	**0.0**	**0.0**
TOTAL LIABILITIES & EQUITY	**$4,375.9**	**$4,805.2**	**$4,041.6**	**($429.4)**	**$334.2**

Certain balances reclassified to conform to current year presentation

West Coast Clean Fuels, LLC
Statement of Cash Flows
For the Period Ending December 28, 2024

Unaudited

(In $000's)	***Month Ended December 2024***	***Month Ended December 2023***	***YTD December 2024***	***YTD December 2023***
Net Income	$ (0.0)	$ (438.4)	$ (0.0)	$ 0.0
Add: Non-Cash Depreciation Expense	0.2	0.2	2.0	2.0
Add: Start Up Costs Moved to PHH	-	-	-	-
Change in working capital	(431.0)	107.3	772.2	14.5
Net Cash Provided (Used) by Operating Activities	**$ (430.8)**	**$ (330.9)**	**$ 774.2**	**$ 16.5**
Purchase of Fixed Assets	-	-	-	-
Cash Flows from Investing Activities	**$ -**	**$ -**	**$ -**	**$ -**
Advances (Repayments) From/To Pasha	845.4	(72.1)	(242.4)	(43.4)
Cash Flows from (used by) Financing Activities	**$ 845.4**	**$ (72.1)**	**$ (242.4)**	**$ (43.4)**
Net Increase (Decrease) in cash equivalents	414.6	(402.9)	531.8	(26.9)
Beginning Cash Balance	295.6	581.4	178.4	205.4
Ending Cash Balance	**$ 710.2**	**$ 178.5**	**$ 710.2**	**$ 178.5**

West Coast Clean Fuels, LLC
Statement of Shareholders' Equity
For the Period Ending December 28, 2024

2024 UNAUDITED	***PHH***	***Clean Marine Energy***	***World Fuels***	***Total Equity***
Capital Contribution	50,000	50,000		100,000
Allocation of Earnings	(51,693)	(51,693)		(103,385)
Allocation Share	*50.0%*	*50.0%*	*0.0%*	
Balance, YTD 2020 (audited)	**$ (1,693)**	**$ (1,693)**	**$ -**	**$ (3,385)**
Capital Contribution			50,000	50,000
Allocation of Earnings	(265,053)	(265,053)	(148,300)	(678,406)
Allocation Share	*39.1%*	*39.1%*	*21.9%*	
Balance, YTD 2021 (audited)	**$ (266,746)**	**$ (266,746)**	**$ (98,300)**	**$ (631,792)**
Capital Contribution			-	-
Allocation of Earnings	170,368	170,368	170,368	511,103
Allocation Share	*33.3%*	*33.3%*	*33.3%*	
Balance, YTD 2022 (audited)	**$ (96,378)**	**$ (96,378)**	**$ 72,068**	**$ (120,689)**
Capital Contribution			-	-
Allocation of Earnings	-	-	-	-
Allocation Share	*0.0%*	*0.0%*	*0.0%*	
Balance, YTD 2023 (audited)	**$ (96,378)**	**$ (96,378)**	**$ 72,068**	**$ (120,689)**
Allocation of Earnings	-	-	-	-
Allocation Share	*0.0%*	*0.0%*	*0.0%*	
Balance, YTD 2024 (unaudited)	**$ (96,378)**	**$ (96,378)**	**$ 72,068**	**$ (120,689)**

West Coast Clean Fuels, LLC
Schedule of Administrative and Marketing Fees
For the Period Ending December 28, 2024
Based on the # of LNG Gallons Delivered

	for Pasha Vessels Only	*PHH*	*Clean Marine Energy*	*World Fuels*	*Total*	*Cumulative Gallons Delivered (Pasha)*	*Cumulative Gallons Delivered (Non-Pasha)*
	Fee per LNG Gallon	***$ 0.020661***	***$ 0.020661***	***$ 0.020661***			
	FY 2022 # LNG Gallons Delivered for Pasha Vessels				***1,317,622***	**1,317,622**	
	Fee based on # LNG gallons	$ 27,223	$ 27,223	$ 27,223	$ 81,670		
	Payments to Partners	-	-		-		
	Balance, December 2022	**$ 27,223**	**$ 27,223**	**$ 27,223**	**$ 81,670**		
	YTD Sept 2023 # LNG Gallons Delivered for Pasha Vessels				***5,690,177***	**7,007,799**	
	YTD Fees based on # LNG gallons	117,565	117,565	117,565	352,694		
	Payments to Partners YTD Sept 2023	(105,960)	-	-	(105,960)		
	Balance, September 2023 **	**$ 38,829**	**$ 144,788**	**$ 144,788**	**$ 328,405**		
A	***Q4 2023 # LNG Gallons Delivered for Pasha Vessels***				***3,663,038***	**10,670,837**	
	Q4 2023 Fee based on # LNG gallons	75,682	75,682	75,682	227,046		
	Payments to Partners YTD Dec 2023		(144,788)	-	(144,788)		
B	***FY 2023 # LNG Gallons Delivered for Non-Pasha Vessels***	***$ 0.547377***	***$ 0.547377***	***$ 0.547377***	**800,823**		800,823
	YTD Fees based on # LNG gallons	146,117	146,117	146,117	438,352		
	Balance, December 2023	**$ 260,628**	**$ 221,800**	**$ 366,588**	**$ 849,015**		
	Q1 2024 # LNG Gallons Delivered for Pasha Vessels				***4,156,207***	**14,827,044**	
	Q1 2024 Fee based on # LNG gallons	85,871	85,871	85,871	257,614		
	Payments to Partners QTD 2024 re Pasha vessel	(113,664)	(73,990)	(144,788)	(332,442)		
	Payments to Partners QTD 2024 re non- Pasha vessel	(146,117)	(146,117)	(146,117)	(438,351)		
	Balance, Mar 2024	**$ 86,718**	**$ 87,564**	**$ 161,554**	**$ 335,836**		
A	***Q2 2024 # LNG Gallons Delivered for Pasha Vessels***				***6,292,332***	**21,119,376**	
	Q2 2024 Fee based on # LNG gallons	130,006	130,006	130,006	390,018		
	Payments to Partners YTD 2024 re Pasha vessel		(87,564)		(87,564)		
B	***Q2 2024 # LNG Gallons Delivered for Non-Pasha Vessels***	***$ 0.521477***	***$ 0.521477***	***$ 0.521477***	**783,472**		1,584,295
	Fees based on # LNG gallons	136,188	136,188	136,188	408,563		
	Fees based on partner share of Non-Pasha cost	5,183	5,183	5,183	15,549		
	Payments to Partners QTD 2024 re non- Pasha vessel				-		
	Balance, June 2024	**$ 358,095**	**$ 271,376**	**$ 432,930**	**$ 1,062,402**		
A	***Q3 2024 # LNG Gallons Delivered for Pasha Vessels***				***5,009,048***	**26,128,424**	
	Q3 2024 Fee based on # LNG gallons	103,492	103,492	103,492	310,476		
	Payments to Partners YTD 2024 re Pasha vessel	(215,877)	(130,006)	(291,559)	(637,442)		
B	***Q3 2024 # LNG Gallons Delivered for Non-Pasha Vessels***	***$ 0.569032***	***$ 0.569032***	***$ 0.569032***	**462,357**		2,046,652
	Fees based on # LNG gallons	87,699	87,699	87,699	263,096		
	Fees based on partner share of Non-Pasha cost	10,079	10,079	10,079	30,236		
	Payments to Partners QTD 2024 re non- Pasha vessel	(142,218)	(141,371)	(141,371)	(424,960)		
	Balance, September 2024	**$ 201,269**	**$ 201,269**	**$ 201,270**	**$ 603,807**		
A	***Q4 2024 # LNG Gallons Delivered for Pasha Vessels***				***6,247,004***	**32,375,428**	
	Q4 2024 Fee based on # LNG gallons	129,069	129,069	129,069	387,208		
	Payments to Partners YTD 2024 re Pasha vessel	(103,492)	(103,492)	-	(206,984)		
B	***Q4 2024 # LNG Gallons Delivered for Non-Pasha Vessels***	***$ 0.639248***	***$ 0.639248***	***$ 0.639248***	**937,829**		2,984,481
	Fees based on # LNG gallons	199,835	199,835	199,835	599,505		
	Payments to Partners QTD 2024 re non- Pasha vessel	(97,777)	(90,516)	-	(188,293)		
	Balance, December 2024	**$ 328,904**	**$ 336,165**	**$ 530,174**	**$ 1,195,244**		
	Total Fees Earned for Pasha Vessels: FY 2022 - 2024 *	*$ 668,909*	*$ 668,909*	*$ 668,909*			
	Total Fees Earned for Non-Pasha Vessels through 2024	*$ 569,839*	*$ 569,839*	*$ 569,839*			

**** Fee based on $0.25/MMBtu or $0.020661 / LNG Gallon for Pasha Vessels***
***** In 2024, all balances due as of September 2023 will be paid to PHH and World Fuels partners***

Section L: Credit References

Name: Clean Energy
Nature of business: LNG provider
Contact: Greg Roche - Vice President Sustainable Transportation
greg.roche@cleanenergyfuels.com
Address: 4675 MacArthur Court, Suite 800 Newport Beach, CA 92660
Phone: 949.437.1359

Name: Dockside Machine and Ship Repair
Nature of business: Marine Repair and Emergency Services
Contact: Jessica Kestle
Address: 211 North Marine Avenue
Wilmington CA 90744
Tel. (310) 549-8030

Name: World Fuel Services
Nature of business: Marine fuel provider
Contact: Bill Mergenthaler – Commercial Director
Address: 9800 N.W. 41st STREET SUITE 400
MIAMI, FL 33178
Phone: 908-618-6545

Name: First Element
Nature of business: Hydrogen Provider
Contact: Takayuki Nagase takayuki.nagase@firstelementfuel.com
Address: 5281 California Ave
Suite 260
Irvine, CA, 92617
Phone: (949) 246-0769

INDEMNITY AND PAYMENT BOND

BOND NO. LPM9472998

KNOW ALL BY THESE PRESENTS:

That we, West Coast Clean Fuels, LLC as INDEMNITOR and Fidelity and Deposit Company of Maryland as SURETY, a surety company authorized to do business in the State of Florida, are held and firmly bound unto BROWARD COUNTY, as OBLIGEE, a political subdivision of the State of Florida, in the full sum of Twenty Thousand & 00/100---------- DOLLARS ($ 20,000.00), for the payment of which we bind ourselves, our heirs, successors, assigns and personal representatives for the performance of the obligations hereinafter set forth:

NOW THEREFORE, the condition of this obligation is such that if INDEMNITOR, its heirs, executors, administrators, successors and assigns shall well and truly save harmless and keep indemnified BROWARD COUNTY, its successors and assigns, from and against all loss, costs, expenses, damages, injury, claims, actions, liabilities and demands of every kind (including but not limited to all reasonable attorney's fees to and through appellate, supplemental and bankruptcy proceedings) which arises from, is caused by, or results from or on account of:

(i) failure of INDEMNITOR to pay to BROWARD COUNTY, when due, any and all tariff or other charges that have accrued at Port Everglades (whether relating to the furnishing of services or materials to INDEMNITOR, its principals, agents, servants or employees at Port Everglades; or, due to injury to property of Port Everglades; or, stemming from the use of Port Everglades facilities by INDEMNITOR, its principals, agents, servants or employees; or, otherwise); or

(ii) non-compliance by INDEMNITOR, its principals, agents, servants or employees with applicable laws, ordinances, rules and regulations of the federal, state and local governmental units or agencies (including but not limited to the terms and provisions of the BROWARD COUNTY Code of Ordinances, Administrative Code, and all procedures and policies of the Port Everglades Department), as amended from time to time; or

(iii) any act, omission, negligence or misconduct of INDEMNITOR, its principals, agents, servants or employees in Port Everglades (whether causing injury to persons or otherwise;

then these obligations shall be null and void, otherwise to remain in full force and effect.

AS A FURTHER CONDITION of this obligation that it shall remain in full force and effect until and unless the Surety provides at least ninety (90) days prior written notice to BROWARD COUNTY of its intention to terminate this Bond.

Any notices required herein shall be given in writing and be delivered to: Broward County's Port Everglades Department, Attn: Director of Administration, 1850 Eller Drive, Fort Lauderdale, Florida 33316, with a copy to: Broward County Administrator, Governmental Center, 115 S. Andrews Avenue, Fort Lauderdale, Florida 33301.

IN WITNESS WHEREOF, INDEMNITOR has caused this Bond to be executed by Edward Washburn, on this 3rd day of September, 2025, and attested to by its Secretary and its corporate seal to be affixed, and the Surety has caused this Bond to be executed on this 29th day of August, 2025, in its name, by its Attorney-in-Fact, duly authorized to do so.

INDEMNITOR:

Company Name: West Coast Clean Fuels, LLC

ATTEST:

Corporate Secretary

Michael R. Johnson
(Print Name of Secretary)

(SEAL)

By: Edward Washburn

Edward Washburn
(Print Name of Pres./Vice Pres.)

Title: Co-President
(Print)

3rd day of September, 2025

SURETY:

Company Name: Fidelity and Deposit Company of Maryland

ATTEST:

See Power of Attorney

(SEAL)

Fidelity and Deposit Company of Maryland CORPORATE SEAL 1890

By: Sandra Stewart

Sandra Stewart
(Print Name of Pres./Vice Pres.)

Title: Attorney-In-Fact
(Print)

29th day of August, 2025

ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND
POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That the ZURICH AMERICAN INSURANCE COMPANY, a corporation of the State of New York, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, a corporation of the State of Illinois, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND a corporation of the State of Illinois (herein collectively called the "Companies"), by Christopher Nolan, Vice President, in pursuance of authority granted by Article V, Section 8, of the By-Laws of said Companies, which are set forth on the reverse side hereof and are hereby certified to be in full force and effect on the date hereof, do hereby nominate, constitute, and appoint **Sandra STEWART, Lori D. ANDREWS, David GALT, Eli I. BIONDINE of Portland, Oregon,** its true and lawful agent and Attorney-in-Fact, to make, execute, seal and deliver, for, and on its behalf as surety, and as its act and deed: any and all bonds and undertakings, and the execution of such bonds or undertakings in pursuance of these presents, shall be as binding upon said Companies, as fully and amply, to all intents and purposes, as if they had been duly executed and acknowledged by the regularly elected officers of the ZURICH AMERICAN INSURANCE COMPANY at its office in New York, New York., the regularly elected officers of the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at its office in Owings Mills, Maryland., and the regularly elected officers of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at its office in Owings Mills, Maryland., in their own proper persons.

The said Vice President does hereby certify that the extract set forth on the reverse side hereof is a true copy of Article V, Section 8, of the By-Laws of said Companies, and is now in force.

IN WITNESS WHEREOF, the said Vice-President has hereunto subscribed his/her names and affixed the Corporate Seals of the said **ZURICH AMERICAN INSURANCE COMPANY, COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and FIDELITY AND DEPOSIT COMPANY OF MARYLAND**, this 21st day of April, A.D. 2025.

ATTEST:
ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND

By: Christopher Nolan
Vice President

By: Dawn E. Brown
Secretary

State of Maryland
County of Baltimore

On this 21st day of April, A.D. 2025, before the subscriber, a Notary Public of the State of Maryland, duly commissioned and qualified, **Christopher Nolan, Vice President and Dawn E. Brown, Secretary** of the Companies, to me personally known to be the individuals and officers described in and who executed the preceding instrument, and acknowledged the execution of same, and being by me duly sworn, deposeth and saith, that he/she is the said officer of the Company aforesaid, and that the seals affixed to the preceding instrument are the Corporate Seals of said Companies, and that the said Corporate Seals and the signature as such officer were duly affixed and subscribed to the said instrument by the authority and direction of the said Corporations.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my Official Seal the day and year first above written.

Genevieve M. Maison
Notary Public
My Commission Expire January 27, 2029

EXTRACT FROM BY-LAWS OF THE COMPANIES

Authenticity of this bond can be confirmed at bondvalidator.zurichna.com or 410-559-8790

"Article V, Section 8, Attorneys-in-Fact. The Chief Executive Officer, the President, or any Executive Vice President or Vice President may, by written instrument under the attested corporate seal, appoint attorneys-in-fact with authority to execute bonds, policies, recognizances, stipulations, undertakings, or other like instruments on behalf of the Company, and may authorize any officer or any such attorney-in-fact to affix the corporate seal thereto; and may with or without cause modify of revoke any such appointment or authority at any time."

CERTIFICATE

I, the undersigned, Vice President of the ZURICH AMERICAN INSURANCE COMPANY, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, do hereby certify that the foregoing Power of Attorney is still in full force and effect on the date of this certificate; and I do further certify that Article V, Section 8, of the By-Laws of the Companies is still in force.

This Power of Attorney and Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of the ZURICH AMERICAN INSURANCE COMPANY at a meeting duly called and held on the 15th day of December 1998.

RESOLVED: "That the signature of the President or a Vice President and the attesting signature of a Secretary or an Assistant Secretary and the Seal of the Company may be affixed by facsimile on any Power of Attorney...Any such Power or any certificate thereof bearing such facsimile signature and seal shall be valid and binding on the Company."

This Power of Attorney and Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at a meeting duly called and held on the 5th day of May, 1994, and the following resolution of the Board of Directors of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at a meeting duly called and held on the 10th day of May, 1990.

RESOLVED: "That the facsimile or mechanically reproduced seal of the company and facsimile or mechanically reproduced signature of any Vice-President, Secretary, or Assistant Secretary of the Company, whether made heretofore or hereafter, wherever appearing upon a certified copy of any power of attorney issued by the Company, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed the corporate seals of the said Companies, this 29th day of August, 2025.

MJ Pethick

Mary Jean Pethick
Vice President

TO REPORT A CLAIM WITH REGARD TO A SURETY BOND, PLEASE SUBMIT A COMPLETE DESCRIPTION OF THE CLAIM INCLUDING THE PRINCIPAL ON THE BOND, THE BOND NUMBER, AND YOUR CONTACT INFORMATION TO:

Zurich Surety Claims
1299 Zurich Way
Schaumburg, IL 60196-1056
reportsfclaims@zurichna.com
800-626-4577

Authenticity of this bond can be confirmed at bondvalidator.zurichna.com or 410-559-8790

Section M

1. Security: Pursuant to Port Everglades Tariff 12, Item 960, all Franchisees are required to furnish an Indemnity and Payment Bond or Irrevocable Letter of Credit drawn on a U.S. bank in a format and an amount not less than $20,000 as required by Broward County Port Everglades Department.

2. Has the Applicant been denied a bond or letter of credit within the past five (5) years?
   Yes___ No ✓
   If "Yes," please provide a summary explanation in the space provided of why the Applicant was denied. Use additional sheets if necessary.

Section N

1. Provide a list and description of all equipment currently owned and/or leased by the Applicant and intended to be used by the Applicant for the type of service(s) intended to be performed at Port Everglades including the age, type of equipment and model number. See CBI methenol requirements 2025Aug07
2. Identify the type of fuel used for each piece of equipment. see above
3. Indicate which equipment, if any, is to be domiciled at Port Everglades. see number 1
4. Will all equipment operators be employees of the Applicant, on the payroll of the Applicant, with wages, taxes, benefits, and insurance paid by the Applicant?
   Yes___ No ✓
   If "No," please explain in the space provided who will operate the equipment and pay wages, taxes, benefits, and insurance, if the franchise is granted. Use additional sheets if necessary.

Section O

Provide a copy of the Applicant's current Broward County Business Tax Receipt (formerly Occupational License).

Section P

1. Provide a copy of Applicant's safety program.
2. Provide a copy of Applicant's substance abuse policy.
3. Provide a copy of Applicant's employee job training program/policy.
4. Provide information regarding frequency of training.
5. Include equipment operator certificates, if any.

General Overview of Operation

The Mobile Bunkering Facility (MBF) will receive Methanol (MeOH) from over-the-road transport in USDOT regulated tankers (HTs) suitable for MeOH service for the purposes of providing MeOH for use as bunker fuel on the Celebrity Cruise ships and potentially other vessels using MeOH as bunkers. There will be no permanent on-site MeOH storage at Pier 25. There will be no permanent or semi-permanent infrastructure located on Pier 25 for purposes of this operation.

Methanol will arrive via rail tank car and be positioned at the rail spur located at South Andrews Avenue and SE 28th Street Fort Lauderdale. The site is currently used to transload ethanol from rail cars onto HTs for transport to Port Everglades. The MBF equipment and loaded/empty HTs will be staged at the location awaiting the bunker transfer window. The distance from the transload site (rail to HT) is located approximately 2.5 miles from the Pier 25 bunker site. It will take approximately 10 – 20 minutes to transit from site to Pier 25 depending on traffic.

The MBF is comprised of a trailer mounted pump skid that can accept up to four MeOH HTs simultaneously. The pump skid will receive MeOH from each HT using a 4" hose suitable for MeOH service to span between the rear of the HT and the MBF. The hose will be outfitted with dry connect coupling (DCC). MeOH will be unloaded from each HT by a dedicated submerged-motor, skid-mounted, multi-stage centrifugal pump. The pump will deliver MeOH into the Discharge Header. The Discharge Header will transfer the MeOH to the fuel tank(s) onboard the cruise ship via a single 6" MeOH service hose outfitted with a 6" DCC. The system will be capable of handling a range of flows as HTs commence and complete unloading operations. The MBF is capable of transferring MeOH as bunker fuel to the receiving cruise ship at an aggregate rate of approximately 600 - 650 gpm. The Skid will be powered by a diesel prime mover. The target bunkering volume is dependent on receiving ship's needs averaging up to 40,000+ gallons per month. The MeOH bunkering operation takes about 30-45 minutes to complete.

Due to the requirements of RCCL, the ship will dock starboard side to Pier 25. It has a dedicated methanol access point which is located north of the current passenger bridges as moored. Due to the tight confines of the pier and current arrangement of infrastructure, access to the bunker site by the HTs will only be from the south requiring them to transit under the Passenger Bridges. There is no vehicular access to the north so the HTs will have to back out to the Eller Street access when emptied. Taking into consideration SIMOPS and pier space, it is currently anticipated that only two HTs will be able to transfer simultaneously. If SIMOPS are not allowed, four HTs could possibly be able to transfer via the skid simultaneously.

Equipment Required:

- Four USDOT-406 or equivalent Highway Tankers and dedicated tractors suitable for transport of high purity methanol for use as a bunker fuel.

- Long Arm Crane to assist in connecting the 6-inch hose to the ship methanol access point and to support (if necessary) the hose during the transfer operation.
- Pickup Truck and trailer mounted pump skid and prime mover.
- Trained and experienced drivers.

CBI Services Required:

- Emergency Response Services for clean-up of methanol spills on land and dispose as hazardous waste both at the rail transfer site and on Pier 25 Port Everglades as well as along the route from the rail yard to the Pier.
- Spill management support for a large multi-day, multi-agency incident requiring ICS staffing and support.

Section N.4

- **Optional additional CBI Services:** Decision on whether CBI is interested in providing up to four highway tankers and drivers to move methanol from the rail spur to the port and support the bunkering operation. Currently the requirement, which may increase, is to supply RCCL with 100 tons of methanol per month. Until a decision on SIMOPS is made the different options for bunkering include one Highway Tanker per week, two highway tankers every other week, or four tankers once a month.
- Future direction by RCCL may replicate this process in the Port of Miami and may require increased resources.

Timeline: Latest info subject to change; arriving NOV 8, 2025, Berth 19, shifting to Berth 25 NOV 9, 2025; potential bunkering morning 9 Nov 2025.

BROWARD COUNTY LOCAL BUSINESS TAX RECEIPT

115 S. Andrews Ave., Rm. A-100, Ft. Lauderdale, FL 33301-1895 – 954-357-4829

VALID OCTOBER 1, 2024 THROUGH SEPTEMBER 30, 2025

Receipt #: 409-353636

Business Name: WEST COAST CLEAN FUELS, LLC DBA EAST COAST CLEAN FUELS

Business Type: OTHER (SUPPLIER OF LNG FUEL AND OTHER CLEAN FUELS TO THE MARINE CUSTOMERS.)

Owner Name: WEST COAST CLEAN FUELS, LLC DBA EAST

Business Opened: 08/06/2025

Business Location: 4040 CIVIC CENTER DR STE 350 FT LAUDERDALE

State/County/Cert/Reg:

Exemption Code:

Business Phone: 415-927-6400

Rooms	Seats	Employees	Machines	Professionals

For Vending Business Only

Number of Machines: **Vending Type:**

Tax Amount	Transfer Fee	NSF Fee	Penalty	Prior Years	Collection Cost	Total Paid
75.00	0.00	0.00	0.00	0.00	0.00	75.00

Receipt Fee 75.00
Packing/Processing/Canning Employees 0.00

THIS RECEIPT MUST BE POSTED CONSPICUOUSLY IN YOUR PLACE OF BUSINESS

THIS BECOMES A TAX RECEIPT

WHEN VALIDATED

This tax is levied for the privilege of doing business within Broward County and is non-regulatory in nature. You must meet all County and/or Municipality planning and zoning requirements. This Business Tax Receipt must be transferred when the business is sold, business name has changed or you have moved the business location. This receipt does not indicate that the business is legal or that it is in compliance with State or local laws and regulations.

Mailing Address:

WEST COAST CLEAN FUELS, LLC DBA EA
4040 CIVIC CENTER DR STE 350
PMB 350
SAN RAFAEL, CA 94903-4187

Receipt #WWW-24-00291024
Paid 08/14/2025 75.00

2024 - 2025

BROWARD COUNTY LOCAL BUSINESS TAX RECEIPT

115 S. Andrews Ave., Rm. A-100, Ft. Lauderdale, FL 33301-1895 – 954-357-4829

VALID OCTOBER 1, 2024 THROUGH SEPTEMBER 30, 2025

Receipt #: 409-353636

Business Name: WEST COAST CLEAN FUELS, LLC DBA EAST COAST CLEAN FUELS

Business Type: OTHER (SUPPLIER OF LNG FUEL AND OTHER CLEAN FUELS TO THE MARINE CUSTOMERS.)

Owner Name: WEST COAST CLEAN FUELS, LLC DBA EAST

Business Opened: 08/06/2025

Business Location: 4040 CIVIC CENTER DR STE 350 FT LAUDERDALE

State/County/Cert/Reg:

Exemption Code:

Business Phone: 415-927-6400

Rooms	Seats	Employees	Machines	Professionals

Signature

For Vending Business Only

Number of Machines: **Vending Type:**

Tax Amount	Transfer Fee	NSF Fee	Penalty	Prior Years	Collection Cost	Total Paid
75.00	0.00	0.00	0.00	0.00	0.00	75.00

Receipt #WWW-24-00291024
Paid 08/14/2025 75.00

BROWARD COUNTY LOCAL BUSINESS TAX RECEIPT

115 S. Andrews Ave., Rm. A-100, Ft. Lauderdale, FL 33301-1895 – 954-357-4829

VALID OCTOBER 1, 2025 THROUGH SEPTEMBER 30, 2026

Receipt #: 409-353636

Business Name: WEST COAST CLEAN FUELS, LLC DBA EAST COAST CLEAN FUELS

Business Type: OTHER (SUPPLIER OF LNG FUEL AND OTHER CLEAN FUELS TO THE MARINE CUSTOMERS.)

Owner Name: WEST COAST CLEAN FUELS, LLC DBA EAST

Business Opened: 08/06/2025

Business Location: 4040 CIVIC CENTER DR STE 350 FT LAUDERDALE

State/County/Cert/Reg:

Exemption Code:

Business Phone: 415-927-6400

Rooms	Seats	Employees	Machines	Professionals

For Vending Business Only

Number of Machines: **Vending Type:**

Tax Amount	Transfer Fee	NSF Fee	Penalty	Prior Years	Collection Cost	Total Paid
150.00	0.00	0.00	0.00	0.00	0.00	150.00

Receipt Fee 150.00
Packing/Processing/Canning Employees 0.00

THIS RECEIPT MUST BE POSTED CONSPICUOUSLY IN YOUR PLACE OF BUSINESS

THIS BECOMES A TAX RECEIPT

WHEN VALIDATED

This tax is levied for the privilege of doing business within Broward County and is non-regulatory in nature. You must meet all County and/or Municipality planning and zoning requirements. This Business Tax Receipt must be transferred when the business is sold, business name has changed or you have moved the business location. This receipt does not indicate that the business is legal or that it is in compliance with State or local laws and regulations.

Mailing Address:

WEST COAST CLEAN FUELS, LLC DBA EA
4040 CIVIC CENTER DR STE 350
PMB 350
SAN RAFAEL, CA 94903-4187

Receipt #WWW-24-00291024
Paid 08/14/2025 150.00

2025 - 2026

BROWARD COUNTY LOCAL BUSINESS TAX RECEIPT

115 S. Andrews Ave., Rm. A-100, Ft. Lauderdale, FL 33301-1895 – 954-357-4829

VALID OCTOBER 1, 2025 THROUGH SEPTEMBER 30, 2026

Receipt #: 409-353636

Business Name: WEST COAST CLEAN FUELS, LLC DBA EAST COAST CLEAN FUELS

Business Type: OTHER (SUPPLIER OF LNG FUEL AND OTHER CLEAN FUELS TO THE MARINE CUSTOMERS.)

Owner Name: WEST COAST CLEAN FUELS, LLC DBA EAST

Business Opened: 08/06/2025

Business Location: 4040 CIVIC CENTER DR STE 350 FT LAUDERDALE

State/County/Cert/Reg:

Exemption Code:

Business Phone: 415-927-6400

Rooms	Seats	Employees	Machines	Professionals

Signature

For Vending Business Only

Number of Machines: **Vending Type:**

Tax Amount	Transfer Fee	NSF Fee	Penalty	Prior Years	Collection Cost	Total Paid
150.00	0.00	0.00	0.00	0.00	0.00	150.00

Receipt #WWW-24-00291024
Paid 08/14/2025 150.00

Section P: Policies

West Coast Clean Fuels LLC dba East Coast Clean Fuels submits the following documents:

1. Methanol Bunkering Safety & Training Policies
2. Substance Abuse Control Policy
3. See Methanol Bunkering Safety & Training Policies
4. See Methanol Bunkering Safety & Training Policies
5. No equipment operator certificate is required

WEST COAST CLEAN FUELS LLC
SUBSTANCE ABUSE CONTROL POLICY & PROCEDURE

POLICY STATEMENT

It is the intent of West Coast Clean Fuels LLC ("WCCF") to promote a safe, healthy and productive work environment for all workers and to protect the general public. WCCF recognizes that the illegal and/or excessive use of drugs, alcohol, or the inappropriate use of prescribed drugs is not conducive to safe working conditions. It is the objective of WCCF to have a work force that is free from the influence of controlled substances (illegal drugs) and alcohol during work hours and at all times while performing work for WCCF.

POLICY

WCCF adopts the following policy concerning drug and alcohol abuse, effective immediately for all workers.

(1) The unlawful purchase, possession, transfer, manufacturing, distribution, dispensation or use of any illegal drug is inconsistent with WCCF's objective of operating in a safe and efficient manner, is strictly prohibited and is contrary to WCCF's mission. No worker shall engage in such unlawful conduct during working hours or at any time while performing work for WCCF. No worker shall report to work or continue to work while under the influence of any drug whose purchase, transfer, manufacture, sale, dispensation, distribution, use or possession is unlawful; nor shall any worker have such illegal drugs in his or her system. No worker shall use or have in his or her possession while working for WCCF any prescription medication other than medications currently prescribed by a physician for the worker.

(2) Workers taking physician-prescribed medications, which impair or may impair, job performance, should advise their supervisors prior to commencing work. Workers taking physician-prescribed medication which will not impair their job performance should present a statement from the prescribing physician to the Worker's supervisor indicating the duration of the prescription and stating that the use of the prescription will not impair the worker's ability to perform his or her specific job duties. The prescribing physician or the Worker should not identify any prescription drug or the medical condition for which it is prescribed.

(3) No worker shall report to work or continue to work under the influence of alcoholic beverages.

(4) Lockers, desks, storage areas and WCCF vehicles are WCCF property and must be maintained according to WCCF standards. All such areas must be kept clean and are to be used only for work-related purposes. WCCF reserves the right, at all times and without further notice, to have WCCF representatives conduct searches and inspections of any or all worker lockers and other WCCF property for the purpose of determining if this Policy has been violated.

(5) All vehicles and containers, including bags, backpacks, boxes, purses, lunch pails, brought onto WCCF premises are subject to inspection at any time an authorized WCCF representative has reasonable suspicion that this policy or regulation has been violated and such

an inspection is reasonably necessary in the investigation. Such inspections will be conducted, to the extent reasonably possible, in a manner designed to preserve the dignity of the worker. Inspections will be done in a private area, and will be conducted by a member of the same sex.

(6) As a condition of continued employment with WCCF, any worker who is convicted of a violation of any criminal drug statute related to the unlawful manufacture, distribution, dispensation, possession or use of controlled substances in the workplace must inform WCCF no later than five (5) days after such conviction of the fact of the conviction. Any worker who is so convicted shall be subject to disciplinary action, up to and including, termination from employment. WCCF in its sole discretion may require an worker who is convicted of any offense set forth above to satisfactorily participate and complete a drug use/abuse assistance or rehabilitation program as a condition of continued employment with WCCF.

REASONABLE SUSPICION SUBSTANCE ABUSE TESTING FOR ALL WORKERS, EXCEPT DOT DRIVERS, IN NON-SAFETY SENSITIVE POSITIONS or SUBSTANCE ABUSE TESTING FOR ALL WORKERS EXCEPT DOT DRIVERS

If WCCF has reasonable cause to believe that a worker is (1) intoxicated or under the influence of drugs or alcohol or (2) has used drugs on WCCF premises or during working time, the worker may be directed to undergo an immediate drug and/or alcohol test at an independent licensed laboratory, to determine his/her fitness for duty. A reasonable cause may be based upon the worker's appearance or behavior or upon other factors constituting reasonable cause. Testing may also be directed when an worker is involved in any accident which occurs on WCCF premises or during working hours when the incident results in personal injury or property damage and there is no reasonable explanation brought to the attention of WCCF for the incident.

Drug/alcohol testing will be administered at a laboratory selected by WCCF that is certified by the state wherein testing is conducted or by the Federal Department of Health & Human Services. When a worker is directed to undergo drug/alcohol testing because WCCF possesses reasonable suspicion that the worker has used or is under the influence of drugs or alcohol, the worker shall be transported to the laboratory by a designated WCCF representative.

A worker has the right to refuse to submit to drug and alcohol testing. However, refusal to cooperate fully in drug and/or alcohol testing procedures under the circumstances described may result in disciplinary action up to and including termination.

If WCCF directs a worker to undergo drug or alcohol testing based on a reasonable suspicion, the worker will be placed on unpaid leave from the time of the initial testing until test results are received and reviewed by WCCF. In the event drug and alcohol screen results are negative, WCCF may convert the unpaid leave to a paid leave.

A worker who submits to drug/alcohol testing will be subject to urinalysis and breathe test and will be tested for the following substances:

Initial test analyte	Initial test cutoff[1]	Confirmatory test analyte	Confirmatory test cutoff concentration
Marijuana metabolites (THCA)[2]	50 ng/mL[3]	THCA	15 ng/mL.
Cocaine metabolite (Benzoylecgonine)	150 ng/mL[3]	Benzoylecgonine	100 ng/mL.
Codeine/ Morphine	2000 ng/mL	Codeine Morphine	2000 ng/mL. 2000 ng/mL.
Hydrocodone/ Hydromorphone	300 ng/mL	Hydrocodone Hydromorphone	100 ng/mL. 100 ng/mL.
Oxycodone/ Oxymorphone	100 ng/mL	Oxycodone Oxymorphone	100 ng/mL. 100 ng/mL.
6-Acetylmorphine	10 ng/mL	6-Acetylmorphine	10 ng/mL.
Phencyclidine	25 ng/mL	Phencyclidine	25 ng/mL.
Amphetamine/ Methamphetamine	500 ng/mL	Amphetamine Methamphetamine	250 ng/mL. 250 ng/mL.
MDMA[4]/MDA[5]	500 ng/mL	MDMA MDA	250 ng/mL. 250 ng/mL.

Positive test results for the above-listed substances at or above the levels indicated will be considered unacceptable and may result in disciplinary action up to and including termination.

If the confirmatory test results are positive, the worker may, within 10 days, designate a different certified testing laboratory to test the original bodily fluid sample independently and at the worker's expense, unless the results are negative. WCCF will arrange delivery of the sample to the laboratory. All positive results shall be reviewed by the testing laboratory's Medical Review Officer (MRO) prior to reporting to WCCF.

Any worker whose test results are positive for the presence of any of the specified substances may, within -5- days of the positive test results, request an opportunity to explain or present exculpatory evidence in writing before any disciplinary action is taken. This opportunity will be provided within -5- days of the worker's written request.

A worker whose test results are positive for the presence of any of the specified substances shall, in the case of a first violation of this Policy, be offered the opportunity to participate in a rehabilitation program. The worker shall be given unpaid time off to participate in the program. Full cooperation, participation in and completion of any rehabilitation program begun by the worker will be required as a condition of continued employment. No worker involved in a rehabilitation program will be permitted to return to work until substance abuse tests arranged by WCCF are found negative for the presence of the specified substances. Any worker returning to work after successful completion of a rehabilitation program shall, for two years, be required as a condition of continued employment

to agree to submit to random bodily fluid testing at the request of WCCF. This condition will be set out in a Return-to-Work/Last Chance Agreement signed by the worker. Any subsequent positive test may result in immediate termination of employment.

WCCF will make every effort to maintain the confidentiality of individual test results and an worker's participation in any rehabilitation program. Information shall only be released in accordance with applicable state law.

Worker Assistance:

Any inquiry regarding assistance with alcohol or drug use or abuse problems will be kept in confidence by WCCF. Jobs and opportunities for workers who seek professional counseling, treatment or rehabilitation will not be adversely influenced by their acknowledgement of a problem. WCCF will make a reasonable accommodation for applicable leave or unpaid time off for a worker to participate in therapy or rehabilitation programs for substance abuse, providing the worker provides acceptable documentation that he/she is attending any such program on a regular basis. Participation in therapy or rehabilitation shall not excuse any violation of this policy.

A worker may use accrued personal time for the purpose of entering and participating in an alcohol or drug rehabilitation program. If off more than -30- days in unpaid status, a leave of absence must be processed and no personal time will accrue during the leave. One's review date will also be delayed by the length of the leave. For full-time workers, group health insurance may be continued if the worker pays the amount that is usually deducted for health benefits from his/her paycheck during the leave of absence.

WCCF will attempt to reasonably accommodate an worker returning from a leave of absence granted pursuant to this policy by placing the worker in the same position or in a similar position to that previously occupied by the worker at the same or similar rate of pay, provided that such accommodation does not impose undue hardship on WCCF and provided that such accommodation does not, in the opinion of WCCF, subject the Worker, co-workers or the general public to risk of injury or harm. If no current openings are available when the worker is able to return to work, the worker will be placed on a list for future positions.

Any worker who believes he or she has a drug or alcohol dependency problem is also urged to contact, in confidence, any drug or alcohol abuse hotline.

Substance Abuse Testing Consent

CONSENT TO SUBMIT TO DRUG AND/OR ALCOHOL TESTING

I acknowledge that I have received a copy of West Coast Clean Fuels LLC's ("WCCF") Substance Abuse Control Policy and Procedure , and have reviewed it.. I hereby consent and agree to abide by that Policy and its Procedures.

I understand that information regarding the test results will be released to WCCF and that such information may be used as grounds for adverse employment action, including a withdrawal of any conditional offer of employment, or termination of my employment with WCCF.

I further understand and acknowledge that:

1. WCCF will pay the cost of all drug and/or alcohol tests required or requested by WCCF;

2. I will be provided with a copy of the results of any such test; and

3. I have the right to refuse to submit to such testing; however, refusal by me to submit to or to cooperate at any stage in such testing shall be considered insubordination and, if I am an applicant, a voluntary withdrawal of my employment application.

With full knowledge of the foregoing, I hereby agree to submit to drug and/or alcohol testing conducted by the clinics and/or laboratories selected by WCCF. I have read the above consent to submit to drug and/or alcohol testing and certify that I have signed this document of my own free will and accord, fully understand the contents of this document, and stipulate that my consent is knowing and voluntary.

First Name: _____

Last Name: _____

Signature: _____

Date: _____

2025

WEST COAST
CLEAN FUELS

WCCF Methanol Bunkering Safety & Training Policies

DISCLAIMER

This document provides the minimum fundamentals of WCCF's Safety and Training Policies for Methanol Bunkering Operations. Although it provides standards and policies, it is not all encompassing of a person's obligation to safe operations. Ultimately, safety is everyone's responsibility and actions to a scenario not covered in this document should be addressed with the prioritization of legal and safe actions with the goal of effective resolution.

TABLE OF CONTENTS

WCCF SAFETY PHILOSOPHY

WCCF prioritizes safety in all of its operations. WCCF is committed to providing a safe and healthy work environment and adhere to all relevant laws and regulations. This includes addressing and reporting all potential safety hazards to mitigate unsafe conditions.

WCCF enforces a zero-tolerance policy for drugs and violence in the workplace. The WCCF code of conduct explicitly states a commitment to safety and outlines the expectation for personnel to be vigilant in identifying and reporting unsafe conditions or practices.

Concurrently, WCCF also holds its suppliers and third party contractors to the same high safety standards, including training on health and safety policies and emergency procedures. Safety training is provided for management, staff and suppliers/third party contractors to meet and surpass federal and state OSHA requirements.

WCCF is also dedicated to environmental improvements, protection and stewardship.

METHANOL TRAINING

Methanol, a versatile and environmentally friendly alternative to traditional marine fuels, has gained increasing attention in recent years. It offers significant benefits in terms of reducing emissions and complying with stricter regulations. However, to ensure safety and efficacy, comprehensive training is essential for personnel involved in the handling, storage, and usage of methanol as a marine fuel.

1. BASIC TRAINING REQUIREMENTS

1.1. UNDERSTANDING METHANOL PROPERTIES

Personnel must be well-versed in the chemical and physical properties of methanol, including:

- Flammability
- Toxicity
- Storage requirements
- Environmental impact

1.2. SAFETY PROTOCOLS

Training should cover essential safety protocols such as:

- Contents of the Safety Data Sheet (SDS)
- Proper handling techniques
- Personal protective equipment (PPE) usage
- Emergency response protocols and procedures (Emergency Manual)
- Spill containment and cleanup
- Coordination with Ship PIC
- Contents of the Emergency Response Guidebook (ERG) 2024 as it pertains to Methanol

1.3. REGULATORY COMPLIANCE

Personnel must be educated on global and regional regulations, including:

- International Maritime Organization (IMO) standards
- Local environmental regulations (CERCLA & SARA)
- NIOSH Certification requirements PPE

2. TECHNICAL TRAINING REQUIREMENTS

2.1. BUNKERING SYSTEM OPERATION & MANAGEMENT

Training should include detailed instructions on managing methanol bunker transfer systems:

- Highway tankers and transfer system
- Ship methanol transfer system and interface
- Skid operation and technical issues
- Basic understanding of Ship Methanol transfer System
- On shore Hose and transfer systems
- Familiarity with Operations Manual

2.2. MONITORING AND DETECTION SYSTEMS

Training must encompass the proper usage of monitoring and detection systems, including:

- Leak detection protocols and procedures
- Fire detection protocols and procedures
- Process monitoring equipment
- Alarm and notification protocols
- Maintenance and calibration of detection equipment
- Maintenance and care of PPE

3. ADVANCED TRAINING REQUIREMENTS – OPTIONAL

3.1. RISK ASSESSMENT AND MANAGEMENT

Personnel should be adept at conducting risk assessments and managing potential hazards, involving:

- Identifying risk factors
- Implementing mitigation strategies
- Safety audits
- Regular feedback loops
- Adapting to technological advancements
- Ongoing professional development

4. SECURITY TRAINING

As per 33 CFR 105.215, all other facility personnel, including contractors, whether part-time, full-time, temporary, or permanent, must have knowledge of, through training or equivalent job experience, in the following, as appropriate:

- Relevant provisions of the Facility Security Plan;
- The meaning and the consequential requirements of the different MARSEC Levels as they apply to them, including emergency procedures and contingency plans;
- Recognition and detection of dangerous substances and devices;
- Recognition of characteristics and behavioral patterns of persons who are likely to threaten security;
- Techniques used to circumvent security measures; and
- Familiar with all relevant aspects of the TWIC program and how to carry them out.

5. MOTOR TRANSPORTATION OF METHANOL

Methanol is classified as a hazardous material; accordingly, the operators of tank trucks delivering methanol must meet the applicable state and/or federal requirements for proper marking, labeling and placarding of methanol for over the road transport as well as other requirements as found in 49 CFR 177 (Subchapter C). As stated in the regulations "In addition to the training requirements of § 177.800, no carrier may transport, or cause to be transported, a hazardous material unless each hazmat person who will operate a motor vehicle has been trained in the applicable requirements of 49 CFR parts 390 through 397 and the procedures necessary for the safe operation of that motor vehicle."

Initial and recurring requirements from these regulations include training in the following areas:

- General awareness/familiarization training.
- Function-specific training.
- Safety training.
- Security awareness training.
- Designated OSHA, EPA, and other training
- Initial phases of the Emergency Response Guide (ERG) and MSDS

WCCF will require compliance with the above requirements as part of a contract with a transportation provider for methanol transport services to this project.

PERSONAL PROTECTIVE EQUIPMENT

Working in atmospheres containing methanol requires careful attention to respiratory protection due to its toxicity through inhalation and potential for blindness or even death in case of high exposures.

The following PPE and safety equipment as required by OSHA shall be available and used by persons as appropriate who are directly involved in the methanol transfer operation.

1. PERSONAL PROTECTIVE EQUIPMENT

- Hard Hat
- Eye Protection/Face Protection
- Methanol Resistant Gloves
- Antistatic Safety Shoes

- Flame retardant, non-static accumulating outer wear and visible vest
- Tyvek or methanol resistant chemical protection suit.
- Life Jacket when working close to the water

2. DETECTION EQUIPMENT

- Gas Detector; LEL, O_2, Methanol for exposure limit of 200 ppm.
- Flame Detector; Infra-red

3. OTHER SAFETY EQUIPMENT

- Emergency Eye and Safety Shower in close proximity;
- Emergency Escape Breathing Apparatus (EEBD) mask in close vicinity in case of spill for evacuation to safe distance;
- SCBA and/or Full Face Respirator with Organic Vapor (OV) Cartridge for safely mitigating a leak or evacuating the area.

4. RESPIRATOR FACTS AND SAFETY CONSIDERATIONS

A Full Face Respirator with an Organic Vapor Cartridge should only be used in an open environment and when there is an adequate concentration of O_2 to sustain life. An SCBA should be used in confined spaces and in O_2 deficient atmospheres or in high concentration areas. A full-face respirator with organic vapor cartridges has a protection factor of 50, meaning it can be used in situations where the concentration of organic vapors is up to 50 times the PEL. For example, if the PEL for a specific organic vapor is 10 ppm, the respirator can be used up to 500 ppm (50 x 10 ppm). It is recommended for use to quickly mitigate the situation if prudent and escape the area.

4.1. AIR PURIFYING VS SUPPLIED AIR RESPIRATORS

Supplied Air Respirators (SAR) or Self-Contained Breathing Apparatus (SCBA) are the generally recommended choices. They provide a constant supply of clean air, minimizing the risk of overexposure, especially for high concentrations of methanol vapors.

Air-purifying respirators with organic vapor (OV) cartridges have limitations:

- They have a very short service life when used against methanol vapors.
- The odor threshold of methanol varies significantly (100 to 1500 ppm), potentially leading to inadequate warning of cartridge breakthrough and loss of protection.
- Therefore, their use should be limited to very short durations and lower concentrations of methanol.

4.2. Organic Vapor Cartridge Selection

If using an air-purifying full-face respirator only use NIOSH-approved organic vapor (OV) cartridge for protection against methanol vapors. A full facepiece is essential if there's any risk of eye irritation from methanol exposure. Only a full face respirator is recommended for use with methanol.

4.1. Fit Testing And Medical Evaluations

A medical evaluation is mandatory before personnel can be fit tested and use any respirator. This ensures that the individual is medically capable of wearing a respirator without creating a safety hazard. Fit testing is crucial to ensure a proper and comfortable seal between the respirator and the wearer's face, preventing leaks and maximizing protection. Fit testing should be done for the specific make, model, style, and size of respirator that will be used. Annual fit testing is required by OSHA.

Under OSHA regulations, a fit test for respirators is required before initial use and at least annually thereafter, and also whenever a different respirator facepiece is used or if changes in the person's physical condition could affect respirator fit. This applies to any person who wears a tight-fitting respirator.

The OSHA Major requirement of OSHA's Respiratory Protection Standard[1] is found in 29 CFR 1910.134.

4.2. Methanol Exposure Limits

The following are the methanol exposure limits set by different agencies:

[1] Standard applies to General Industry (Part 1910), Shipyards (Part 1915), Marine Terminals (Part 1917), Longshoring (Part 1918), and Construction (Part 1926)

- OSHA Permissible Exposure Limit (PEL) for methanol is 200 ppm as an 8-hour Time-Weighted Average (TWA).
- NIOSH Recommended Exposure Limit (REL) is also 200 ppm as a 10-hour TWA and a 250 ppm Short-Term Exposure Limit (STEL).
- ACGIH Threshold Limit Value (TLV) is 200 ppm as an 8-hour TWA and 250 ppm as a STEL.

4.3. ADDITIONAL PRECAUTIONS

- In case of an incident such as a leak or release of methanol, always use a respirator in conjunction with other appropriate Personal Protective Equipment (PPE), such as chemical-resistant gloves and clothing, to minimize all routes of exposure (inhalation, skin absorption, eye contact, and ingestion).
- Ensure adequate ventilation in the work area to help control methanol vapor concentrations.
- Do not eat, drink, or smoke when handling methanol.
- Follow safe handling and disposal procedures for methanol as outlined in the Safety Data Sheet (SDS) and relevant regulations.
- Be aware of the flammability hazard of methanol and take precautions against static discharge.

5. EMERGENCY & OPERATIONS MANUAL

An Operations and Emergency Manual in accordance with USCG guidance has been drafted specific to this operation. The manuals outline the operation of the MBF, safety parameters for operation, inspection and detection procedures in place and emergency protocols to follow if an incident were to occur.

Refer to the Emergency Manual drafted for the Methanol Bunker Operation for additional safety information regarding methanol.

TRAINING AND ADMINISTRATION

1. FACILITY OPERATOR RESPONSIBILITIES

WCCF, as operator, is responsible for ensuring each person involved in transfer operations has initial and refresher training in accordance with the regulatory requirements and for

documentation of that training. A record or written documentation of all required training must be maintained for a period of five years. Training records must be made available for audit by the U.S. Coast Guard upon request.

2. QUALIFICATIONS OF THE PIC

WCCF will certify in writing the qualification of the Person In Charge to conduct transfer operations involving methanol due to training and experience. A copy of the current certification will be available through WCCF.

Section Q

1. Has the Applicant received within the past five (5) years or does the Applicant have pending any citations, notices of violations, warning notices, or fines from any federal, state, or local environmental regulatory agencies?
   Yes___ No✓

2. Has the Applicant received within the past five (5) years or does the Applicant have pending any citations, notices of violations, warning notices, or civil penalties from the U.S. Coast Guard?
   Yes___ No✓

3. Has the Applicant received within the past five (5) years or does the Applicant have pending any citations, notices of violations, warning notices, or fines from the Occupational Safety and Health Administration?
   Yes___ No✓

If you responded "Yes" to any of this section's questions 1, 2, or 3 above, please provide a detailed summary for each question containing the following information:
a) Name and address of the agency issuing the citation or notice
b) Date of the notice
c) Nature of the violation
d) Copies of the infraction notice(s) from the agency
e) Disposition of case
f) Amount of fines, if any
g) Corrective action taken
Attach copies of all citations, notices of violations, warning notices, civil penalties and fines issued by local, state, and federal regulatory agencies, all related correspondence, and proof of payment of fines.

4. Provide a statement (and/or documentation) which describes the Applicant's commitment to environmental protection, environmental maintenance, and environmental enhancement in the Port.

Section R

Provide written evidence of Applicant's ability to promote and develop growth in the business activities, projects or facilities of Port Everglades through its provision of the services (i.e., stevedore, cargo handler or steamship agent) it seeks to perform at Port Everglades. For first-time applicants (stevedore, cargo handler, and steamship agent), the written evidence must demonstrate the Applicant's ability to attract and retain new business such that Broward County may determine in its discretion that the franchise is in the best interests of the operation and promotion of the port and harbor facilities. The term "new business" is defined in Chapter 32, Part II of the Broward County Administrative Code as may be amended from time to time.

Establishment Search

Reflects inspection data through 08/07/2025

Use our establishment search to locate OSHA enforcement inspections by establishment name. You can also search by a specific inspection number or inspections within a specific industry using NAICS or SIC.

You can now find citation information for violations that Federal OSHA has cited.
For violation and citation results:

- Enter the establishment name in the "Establishment" box and select the "Search" button at the bottom;
- Select the Activity Number (inspection) in the search results;
- If a citation was issued, it will appear under "Violation Items"; and
- Select the "Citation ID" to view the details for that specific citation.

Continue to check back for updates, as citations or violations may be modified during the investigation process.

⚠ **Note**: Before using our establishment search, please read important information below on how to interpret the results.

Search By:

Your search did not return any results.

Enter an Establishment name, select an OSHA Office, or enter a Site Zip Code.

Establishment: EAST COAST CLEAN FUELS
(This field can also be used to search for a State Activity Number for the following states: NC, SC, KY, OR, WA, IN (before April 2022) and AZ (after June 2021))

State: All States | Fed & State

OSHA Office: All Offices

Site Zip Code:

Case Status: ◉ All ○ Closed ○ Open

Violation Status ◉ All ○ With Violations ○ Without Violations

Inspection Date

Start Date August 10 2020

End Date August 10 2025

Search Reset

Can't find it?

For Wildcard search, use %

Establishment Search Help

Search Basics and Search Syntax Examples

NOTE TO USERS

The Integrated Management Information System (IMIS) was designed as an information resource for in-house use by OSHA staff and management, and by state agencies which carry out federally-approved OSHA programs. Access to this OSHA work product is being afforded via the Internet for the use of members of the public who wish to track OSHA interventions at particular work sites or to perform statistical analyses of OSHA enforcement activity. It is critical that users of the data understand several aspects of the system in order to accurately use the information.

The source of the information in the IMIS is the local federal or state office in the geographical area where the activity occurred. Information is entered as events occur in the course of agency activities. Until cases are closed, IMIS entries concerning specific OSHA inspections are subject to continuing correction and updating, particularly with regard to citation items, which are subject to modification by amended citations, settlement agreements, or as a result of contest proceedings. THE USER SHOULD ALSO BE AWARE THAT DIFFERENT COMPANIES MAY HAVE SIMILAR NAMES AND CLOSE ATTENTION TO THE ADDRESS MAY BE NECESSARY TO AVOID MISINTERPRETATION.

The Integrated Management Information System (IMIS) is designed and administered as a management tool for OSHA to help it direct its resources. When IMIS is put to new or different uses, the data should be verified by reference to the case file and confirmed by the appropriate federal or state office. Employers or employees who believe a particular IMIS entry to be inaccurate, incomplete or out-of-date are encouraged to contact the OSHA field office or state plan agency which originated the entry.

Occupational Safety and Health
Administration
200 Constitution Ave NW
Washington, DC 20210
1-800-321-OSHA
1-800-321-6742
www.osha.gov

FEDERAL GOVERNMENT

White House

Benefits.gov

Coronavirus Resources

Disaster Recovery Assistance

DisasterAssistance.gov

USA.gov

Notification of EEO Violations

No Fear Act Data

U.S. Office of Special Counsel

OCCUPATIONAL SAFETY & HEALTH

Frequently Asked Questions

A - Z Index

Freedom of Information Act - OSHA

Read the OSHA Newsletter

Subscribe to the OSHA Newsletter

OSHA Publications

Office of Inspector General

ABOUT THE SITE

Freedom of Information Act

Disclaimers

Plug-Ins Used on DOL.gov

Accessibility Statement

Connect With DOL

Establishment Search

Reflects inspection data through 08/07/2025

Use our establishment search to locate OSHA enforcement inspections by establishment name. You can also search by a specific inspection number or inspections within a specific industry using NAICS or SIC.

You can now find citation information for violations that Federal OSHA has cited.

For violation and citation results:

- Enter the establishment name in the "Establishment" box and select the "Search" button at the bottom;
- Select the Activity Number (inspection) in the search results;
- If a citation was issued, it will appear under "Violation Items"; and
- Select the "Citation ID" to view the details for that specific citation.

Continue to check back for updates, as citations or violations may be modified during the investigation process.

⚠ **Note**: Before using our establishment search, please read important information below on how to interpret the results.

Search By:

Your search did not return any results.

Enter an Establishment name, select an OSHA Office, or enter a Site Zip Code.

Establishment: WEST COAST CLEAN FUELS, LLC

(This field can also be used to search for a State Activity Number for the following states: NC, SC, KY, OR, WA, IN (before April 2022) and AZ (after June 2021))

State: All States | Fed & State

OSHA Office: All Offices

Site Zip Code:

Case Status: (●) All ( ) Closed ( ) Open

Violation Status ◉ All ○ With Violations ○ Without Violations

Inspection Date

Start Date August 10 2020

End Date August 10 2025

Search Reset

Can't find it?

For Wildcard search, use %

Establishment Search Help

Search Basics and Search Syntax Examples

NOTE TO USERS

The Integrated Management Information System (IMIS) was designed as an information resource for in-house use by OSHA staff and management, and by state agencies which carry out federally-approved OSHA programs. Access to this OSHA work product is being afforded via the Internet for the use of members of the public who wish to track OSHA interventions at particular work sites or to perform statistical analyses of OSHA enforcement activity. It is critical that users of the data understand several aspects of the system in order to accurately use the information.

The source of the information in the IMIS is the local federal or state office in the geographical area where the activity occurred. Information is entered as events occur in the course of agency activities. Until cases are closed, IMIS entries concerning specific OSHA inspections are subject to continuing correction and updating, particularly with regard to citation items, which are subject to modification by amended citations, settlement agreements, or as a result of contest proceedings. THE USER SHOULD ALSO BE AWARE THAT DIFFERENT COMPANIES MAY HAVE SIMILAR NAMES AND CLOSE ATTENTION TO THE ADDRESS MAY BE NECESSARY TO AVOID MISINTERPRETATION.

The Integrated Management Information System (IMIS) is designed and administered as a management tool for OSHA to help it direct its resources. When IMIS is put to new or different uses, the data should be verified by reference to the case file and confirmed by the appropriate federal or state office. Employers or employees who believe a particular IMIS entry to be inaccurate, incomplete or out-of-date are encouraged to contact the OSHA field office or state plan agency which originated the entry.

Occupational Safety and Health
Administration
200 Constitution Ave NW
Washington, DC 20210
1-800-321-OSHA
1-800-321-6742
www.osha.gov

FEDERAL GOVERNMENT

White House

Benefits.gov

Coronavirus Resources

Disaster Recovery Assistance

DisasterAssistance.gov

USA.gov

Notification of EEO Violations

No Fear Act Data

U.S. Office of Special Counsel

OCCUPATIONAL SAFETY & HEALTH

Frequently Asked Questions

A - Z Index

Freedom of Information Act - OSHA

Read the OSHA Newsletter

Subscribe to the OSHA Newsletter

OSHA Publications

Office of Inspector General

ABOUT THE SITE

Freedom of Information Act

Disclaimers

Plug-Ins Used on DOL.gov

Accessibility Statement

Connect With DOL

Skip Navigation

Information Portal
Nexus
Enterprise Solutions

Search Home » Facilities Search Results

Facilities Search Results

Criteria selected:

Facility Name = WEST COAST CLEAN FUELS, LLC

Searching For = Search all facilities

For additional information, select the hyperlinks under "Data Links" where available.

D - Provides a list of electronic documents associated with the facility.

F - Provides a facility summary report.

P - Provides facility-related permit information.

M - Provides a GIS map focused on the facility.

Q - Provides a contact for user questions and quality control.

Records on this page = 0 of 0

There are no facilities that meet your criteria.

Skip Navigation

Information Portal
Nexus
Enterprise Solutions

Search Home » Facilities Search Results

Facilities Search Results

Criteria selected:

Facility Name = EAST COAST CLEAN FUELS

Searching For = Search all facilities

For additional information, select the hyperlinks under "Data Links" where available.

D - Provides a list of electronic documents associated with the facility.

F - Provides a facility summary report.

P - Provides facility-related permit information.

M - Provides a GIS map focused on the facility.

Q - Provides a contact for user questions and quality control.

Records on this page = 0 of 0

There are no facilities that meet your criteria.

ENVIROS

Enforcement Action Advanced Search

Search | Reset

No information was found matching your selection criteria. Please try again.

Enforcement Action Number:

House Number: To:

Street: (All) (All)

Direction Street Name Street Type Suite

City: (All) Zip: (All)

Section: (All) Township: (All) Range: (All)

Respondent: WEST COAST CLEAN FUELS, LLC

ENVIROS

Enforcement Action Advanced Search

Search Reset

No information was found matching your selection criteria. Please try again.

Enforcement Action Number:

House Number: To:

Street: (All) (All)

Direction Street Name Street Type Suite

City: (All) Zip: (All)

Section: (All) Township: (All) Range: (All)

Respondent: EAST COAST CLEAN FUELS

APPLICATION FOR A VESSEL BUNKERING FRANCHISE AT PORT EVERGLADES, FLORIDA
WEST COAST CLEAN FUELS dba EAST COAST CLEAN FUELS

SECTION R: DEVELOPMENT AND GROWTH OF BUSINESS OPPORTUNITY AT PORT EVERGLADES

West Coast Clean Fuels LLC dba East Coast Clean Fuels respectfully submits the following narrative of its ability to promote and develop growth in the business activities of Port Everglades through its provision of a methanol mobile bunkering operation for vessels at Pier 25 in Port Everglades:

In our experience, there is a significant amount of interest on the part of vessel owners and operators in transitioning from traditional marine diesel and heavy oil fuels to alternative, low- or zero-carbon fuels as a means of powering their vessels. The International Maritime Organization has already implemented regulations to reduce vessel emissions with a goal to decarbonize shipping by 2050 with intermediate targets for 2030 and 2040. New regulations, including a greenhouse gas fuel intensity metric, are set to be adopted this year and enter into force in 2027.

By bringing the first alternative fueling operation to Port Everglades, we will provide the Port and ourselves with a demonstrable ability to bunker ships with low and zero carbon fuels. As demand for alternative fuels for vessels grows, Port Everglades will already have an operator with experience in permitting and performing vessel bunkering operations for LNG, hydrogen and now methanol. With the direction of regulation moving inexorably further to requiring the use of these fuels, our presence at the Port will allow the Port, working with West Coast Clean Fuels, to confidently offer to provide facilities where vessels can bunker their ships with fuel complying with those regulations.

West Coast Clean Fuels also has experience in contracting with inland alternative fuel source providers, and working with transportation companies to achieve efficient and reliable clean transportation of those fuels from the inland source to the vessels bunkering at the Port. We have experience working with various types of the bunkering equipment to perform vessel bunkering in a reliable, time-efficient and safe manner. When demand merits the investment, through our member Pasha Hawaii Holdings, we are capable of managing the development of a barge bunkering operation that could work within the Port to bunker vessels from the waterside.

If you have checked an Applicant box for VESSEL BUNKERING, VESSEL OILY WASTE REMOVAL, VESSEL SANITARY WASTEWATER REMOVAL, OR MARINE TERMINAL SECURITY, the following additional information is required:

☑ **VESSEL BUNKERING**

Section S - Certificate of Adequacy in Compliance with MARPOL 73/78 directives.
Section T- Operations Manual with stamped coversheet from the U.S. Coast Guard
Section V-Facility Response Plan with FRP approval letter from the U.S. Coast Guard
Section W- Discharge Prevention and Response Certificate from the Florida Dept. of Environmental Protection.
Section Z- An approved Discharge Cleanup Organization Certificate from the Florida Dept. of Environmental Protection, which has been issued to the applicant or to its cleanup contractor with a copy of the cleanup contract showing the expiration date.

☐ **VESSEL OILY WASTE REMOVAL**

Section S - Certificate of Adequacy in Compliance with MARPOL 73/78 directives.
Section T- Operations Manual with stamped coversheet from the U.S. Coast Guard
Section U- A Waste Transporter License from Broward County Resilient Environment Dept
Section V- Facility Response Plan with FRP approval letter from the U.S. Coast Guard
Section W- Discharge Prevention and Response Certificate from the Florida Dept. of Environmental Protection.
Section X- Used Oil Handler Registration Certificate from the Florida Dept. of Environmental Protection.
Section Y- Identification Number from the U.S. Environmental Protection Agency.
Section Z- An approved Discharge Cleanup Organization Certificate from the Florida Dept. of Environmental Protection, which has been issued to the Applicant or to its cleanup contractor with a copy of the cleanup contract showing the expiration date.

☐ **VESSEL SANITARY WASTEWATER REMOVAL**

Section S - Certificate of Adequacy in Compliance with MARPOL 73/78 directives.
Section U- Waste Transporter License from Broward County Resilient Environment Dept
Section Z1- A copy of the Applicant's operations manual.
Section Z2- A Septage Receiving Facility Waste Hauler Discharge Permit from the Broward County Water and Wastewater Services Operations Division.

☐ **MARINE TERMINAL SECURITY**

Section N1- A list of all metal detection devices, walk-through and hand-held, as well as all luggage and carry-on x-ray machines owned or leased, to be used or domiciled at Port Everglades. The listing must include the brand name and model.
Section N2- A copy of all manufacturers' recommended service intervals and name of company contracted to provide such services on all aforementioned equipment.
Section N3- A description of current method employed to assure all equipment is properly calibrated and functioning.
Section N4- current training requirements and training syllabus for employees operating x-ray equipment. Highlight emphasis on weapon and contraband identification. Include equipment operator certificates, if any.
Section O1- Provide copies of all local, state and federal licenses, including:
a. A copy of the Applicant's State of Florida Business License.
b. A copy of security agency's Manager's "M" or "MB" License and a copy of the security agency's "B" or "BB" License issued by the Florida Department of Agriculture and Consumer Services.

APPLICATION FOR A VESSEL BUNKERING FRANCHISE AT PORT EVERGLADES, FLORIDA
WEST COAST CLEAN FUELS dba EAST COAST CLEAN FUELS

SECTION S: Certificate of Adequacy in Compliance with MARPOL 73/78 directives

As discussed with Jerzy Kichner, PE of KSeas, West Coast Clean Fuels dba East Coast Clean Fuels is not required to have this certificate.

APPLICATION FOR A VESSEL BUNKERING FRANCHISE AT PORT EVERGLADES, FLORIDA
WEST COAST CLEAN FUELS dba EAST COAST CLEAN FUELS

SECTION T: Operations Manual with stamped coversheet from the U.S. Coast Guard

As discussed with Jerzy Kichner, PE of KSeas, this document will be provided by West Coast Clean Fuels dba East Coast Clean Fuels.

APPLICATION FOR A VESSEL BUNKERING FRANCHISE AT PORT EVERGLADES, FLORIDA
WEST COAST CLEAN FUELS dba EAST COAST CLEAN FUELS

SECTION V: Facility Response Plan with FRP approval letter from the U.S. Coast Guard

As discussed with Jerzy Kichner, PE of KSeas, this document will be provided by West Coast Clean Fuels dba East Coast Clean Fuels.

PORT EVERGLADES, FLORIDA

METHANOL BUNKERING EMERGENCY & RESPONSE MANUAL

CG-5P Policy Letter 01-24

WEST COAST CLEAN FUELS

Prepared by:
Kseas
2711 SW 43rd. Terrace, Cape Coral, FL 33914

Project	Date	Status
01-24 Policy Letter Emergency Manual	**24 August 2025**	**Final**

THIS PAGE INTENTIONALLY LEFT BLANK

Disclaimer

KSEAS LLC made every reasonable effort to perform the work contained herein in a manner consistent with the highest of professional standards.

This work is based on information provided to Kseas LLC. Kseas LLC and its representatives make no warranty or representation regarding the accuracy, completeness, or usefulness of this information. The observations, conclusions, and recommendations herein are specific to this project and should not be applied to other facilities or operations.

Third-party use of this report is at the user's risk. By using it, the user agrees to release, defend, and indemnify KSEAS LLC from all liability, including special, indirect, incidental, or consequential damages.

KSEAS LLC considers its work advisory. The client is responsible for the application and implementation of the conclusions and recommendations provided.

This document is for West Coast Clean Fuels (WCCF) to obtain a permit for operating a mobile methanol bunkering facility at Port Everglades, FL, Pier 25. It provides the necessary information to comply with USCG CG-5P Policy Letter 01-24 dated 30 December 2024 and relevant industry and international standards for safe methanol bunkering operations. It is focused on the safety and security of the facility involving Highway Tankers and transfer equipment for methanol to RCCL cruise ships.

This document is the intellectual property of KSEAS LLC and may not be duplicated without permission. Permission is granted for WCCF and World Fuels to use this product in the regulatory process with the USCG to obtain approval for the operation of their facility in Port Everglades, FL.

TABLE OF CONTENTS

LIST OF ACRONYMS

ACGIH	American Conference of Government Industrial Hygienists
AED	Automatic External Defibrillator
AHJ	Agencies Having Jurisdiction
API	American Petroleum Institute
BCFD	Broward County Fire Department
BCPD	Broward County Police Department
CFR	Code of Federal Regulations
COTP	U.S. Coast Guard Captain of the Port
CPR	Cardiopulmonary Resuscitation
DCC	Dry Disconnect Coupling
DOI	Declaration of Inspection
DOS	Declaration of Security
EOC	Emergency Operations Center
ESD	Emergency Shutdown Device/Emergency Shutdown System
Facility	MBF site for MeOH Bunkering Operations
FPIC	Facility Person in Charge of MBF Transfer Operations
FSO	Facility Security Officer
FSP	Facility Security Plan
GPM	Gallons Per Minute
HAZMAT	Hazardous Material as defined.
HDS	Hazard Detection System
IC	Incident Commander (NIIMS ICS Command Structure)
IDLH	Immediately Danger to Life or Health
IR	Infrared
ISO	ISO stands for "International Organization for Standardization." When shipping containers are called "ISO shipping containers," that simply means that this organization has regulated their dimensions.
FL	Flammable Liquid
m	meters: measure of length

m^3	Cubic meters; measure of volume
MBF	Mobile Bunkering Facility
MeOH	Methanol, Methyl Alcohol UN1230
MTA	Marine Transfer Area as defined in 33 CFR 127.005
MAWP	Maximum Allowable Working Pressure
MRVS	Maximum Relief Valve Setting
MTSA	Marine Transportation Security Act
NFPA	National Fire Protection Agency
NIOSH	National Institute for Occupational Safety and Health
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit (OSHA)
PIC	Person-in-Charge of transfer operations
Ppm	Parts Per Million (concentration measurement)
QI	Qualified Individual
RCCL	Royal Caribbean Cruise Lines (Celebrity Xcel)
REL	Recommended Exposure Limit (NIOSH)
SAR	Supplied Air Respirator
SCBA	Self-Contained Breathing Apparatus
SME	Subject Matter Expert
STEL	Short Term Exposure Limit (NIOSH)
Terminal	SSA Terminal 25 (Pier 25) (Berth 25) on site where MeOH Bunkers take place
TLV	Threshold Limit Value (ACGIH)
TWA	Time Weighted Average (ACGIH)
TWIC	Transportation Worker Identification Credential
USCG	U.S. Coast Guard
UV	Ultraviolet
VPIC	Vessel Person In Charge of Ship Bunker Operations
WCCF	West Coast Clean Fuels
WFS	World Fuel Services

I. INTRODUCTION & EXECUTIVE SUMMARY

1. Purpose and Preparation

This Emergency Manual (Manual) is intended to satisfy the requirements of CG-5P Policy Letter 01-24 dtd December 30, 2024, GUIDELINES FOR FACILITY DESIGN REVIEW AND COMPLIANCE OVERSIGHT OF WATERFRONT FACILITIES HANDLING ALTERNATIVE MARINE FUELS for the transfer of Methanol (MeOH) from a Mobile Bunkering Facility (MBF) to Celebrity Cruise Ships and potentially other vessels for use as bunker fuel. This transfer is to be done at Pier 25/Berth 25 in Port Everglades, Fl. The Manual provides the information necessary to meet the requirements contained in the Policy Letter 01-24 to transfer MeOH as a bunker fuel. This Manual does not address other operations.

This Manual is organized following the requirements as outlined in the Policy Letter 01-24 for an Emergency Manual as detailed in paragraph 9.c.(3). A cross reference is not necessary.

CG-OES Policy Letter 01-25 dtd 24 July 2025 GUIDELINES FOR BUNKERING OF VESSELS USING LIQUEFIED NATURAL GAS (LNG) AND OTHER ALTERNATIVE FUELS was also reviewed for applicability to this project.

The Marine Transfer Area (MTA) is part of Pier 25 that is subject to the provisions of Policy Letter 01-24 and under the jurisdiction of the USCG. The infrastructure located in the Marine Transfer Area subject to and under the jurisdiction of this Emergency Manual includes the Mobile Bunkering Facility (MBF), the Highway Tankers (HTs) supplying the MeOH when connected to the MBF and the transfer hose connecting the MBF to the header system of the cruise ship. Content included in this manual fulfills the requirements of Policy Letter 01-24 and incorporates additional guidance as provided through industry and international standards.

2. Requirements of Policy Letter 01-24

Per the requirements contained in 01-24, this Emergency Manual incorporates the following:

- MeOH release response procedures, including contacting local response organizations.
- Emergency shutdown procedures.
- A description of the fire equipment and systems and their operating procedures.
- A description of the emergency lighting and emergency power systems.
- The telephone numbers of local Coast Guard units, hospitals, fire departments, police departments, and other emergency response organizations.
- The waterfront facility handling MeOH has personnel shelters, the location of and provisions in each shelter.
- Emergency personal protective equipment for workers in case of a discharge/release.
- First aid procedures and if there are first aid stations, the locations of each station.
- Emergency procedures for mooring and unmooring a vessel if appropriate.

3. General Facility Description

The Mobile Bunkering Facility (MBF) will receive Methanol (MeOH) from over-the-road transport in USDOT regulated tankers (HTs) suitable for MeOH service for the purposes of providing MeOH for use as bunker fuel on the Celebrity Cruise ships and potentially other vessels using MeOH as bunkers. There will be no permanent on-site MeOH storage at Pier 25. There will be no permanent or semi-permanent infrastructure located on Pier 25 for purposes of this operation.

Methanol will arrive via rail tank car and be positioned at the rail spur located at South Andrews Avenue and SE 28th Street Fort Lauderdale. The site is currently used to transload ethanol from rail cars onto HTs for transport to Port Everglades. The route taken by the Highway Tankers to Port Everglades and Pier 25 is shown in Appendix A – Highway Tanker Route to and From MBF Transfer Area. The MBF equipment and loaded/empty HTs will be staged at the location awaiting the bunker transfer window. The distance from the transload site (rail to HT) is located approximately 2.5 miles from the Pier 25 bunker site. It will take approximately 10 – 20 minutes to transit from site to Pier 25 depending on traffic.

The MBF is comprised of a trailer mounted pump skid that can accept up to four MeOH HTs simultaneously. The pump skid will receive MeOH from each HT using a 4" hose suitable for MeOH service to span between the tank connection of the HT and the MBF. The hose will be outfitted with dry connect coupling (DCC). MeOH will be unloaded from each HT by a dedicated electric motor, skid-mounted, multi-stage centrifugal pump. The pump will deliver MeOH into the Discharge Header. The Discharge Header will transfer the MeOH to the fuel tank(s) onboard the cruise ship via a single 6" MeOH service hose outfitted with 6" DCCs. The system will be capable of handling a range of flows as HTs commence and complete unloading operations. The MBF is capable of transferring MeOH as bunker fuel to the receiving cruise ship at an aggregate rate of approximately 600 - 650 gpm. The Skid will be powered by a diesel prime mover. The target bunkering volume is dependent on receiving ship's needs averaging up to 40,000+ gallons per month. The MeOH bunkering operation takes about 30-45 minutes to complete.

Due to the requirements of RCCL, the ship will dock starboard side to Pier 25. It has a dedicated methanol access point (bunker station) which, as moored, is located north of the current passenger bridges. Due to the tight confines of the pier and current arrangement of port infrastructure at Terminal 25, access to the bunker site by the HTs will only be from the south requiring them to transit under the Passenger Bridges. There is no vehicular access or egress to the north. Given the confines of the Pier, the HTs when empty will have to back out to the Eller Street access. Taking into consideration SIMOPS and pier space, it is currently anticipated that only two HTs will be able to transfer simultaneously through the pump skid. If SIMOPS are not allowed, four HTs could possibly be able to transfer via the skid simultaneously.

4. Bunker Operations Frequency

The MeOH demand is approximately 100 tons per month which equates to four HTs at full capacity of about 10,000 gallons each. Given the space constraints on the pier, the bunkering operation may be staggered to allow for SIMOPS according to the following potential bunkering scenarios:

- One HT per week on the ship's port call itinerary delivering 10,000 gallons.
- Two HT's every other week on the ship's port call itinerary delivering 20,000 gallons.
- Four HT's once a month on the ship's port call itinerary delivering 40,000 gallons.

A layout of the facility when in operation is provided in APPENDIX B – .

II. METHANOL RELEASE RESPONSE PROCEDURES; INCLUDING CONTACTING LOCAL RESPONSE ORGANIZATIONS

1. Normal Operating Organization

The following personnel shall participate in each normal MeOH bunkering operation:

- WCCF FPIC – MBF Personnel
- WCCF Operations Support – MBF Personnel
- Truck Drivers – Delivering MeOH
- Ship VPIC – Ship Person in Charge
- Ship Support Personnel – Ship's crew
- Crane Support – Shoreside; connecting and supporting transfer hose to ship (if needed)
- Security Personnel – Providing Security iaw the Facility Security Plan (FSP)
- Mobilization/demobilization MBF Personnel

Other personnel (management, maintenance technicians/craft personnel, inspectors, port officials, USCG personnel, etc.) may also at times be in attendance during MeOH bunkering operations.

Pier personnel, vendors and other commercial entities, moving luggage, delivering supplies and reprovisioning the ship may be present during bunkering operations but not directly involved in the transfer operation.

During MeOH bunkering, the Facility (shoreside) Person In Charge (FPIC) will be responsible for initiating this emergency plan when warranted. The FPIC will coordinate with the Ship Person in Charge (VPIC) to ensure appropriate emergency protocols are enacted when appropriate.

2. Emergency Response Organization

Certain emergency situations will require emergency response from off-site emergency response organizations. Effective emergency response planning and response actions are therefore dependent on close, ongoing coordination between WCCF and the owners/operators of the other vessels being bunkered with those off-site emergency organizations.

The execution of this Emergency Response Manual will be coordinated with the United States Coast Guard (USCG), SSA (Pier 25 Operations), Port Everglades, the Broward County Police and Fire Departments.

To ensure effective coordination is maintained, there may be periodic meetings, drills and familiarization tours conducted for these organizations as appropriate. In addition, the off-site emergency organizations will be encouraged to send new members to the MBF for familiarization tours.

2.1. WCCF Emergency Response Organization and Functions

WCCF operates the MBF and is responsible for the safe transfer of MeOH from the HTs to the cruise ship and other vessels contracting for MeOH bunkering services on an as needed reoccurring basis at the designated Terminal. WCCF personnel will provide necessary resources and personnel to adequately respond to any incident and to staff a joint response organization along with other State and Federal jurisdictional authorities should an MeOH bunkering incident occur that would require short and/or long-term response and mitigation activities.

In the event of an emergency, WCCF has the primary responsibility for coordinating efforts and providing resources in responding to and mitigating the emergency condition.

When the Emergency Response Plan is put into effect, MBF operations and ship personnel will assume designated positions, each with specific duties as depicted in APPENDIX D - WCCF RESPONSE MANAGEMENT AND PERSONNEL.

2.2. Off-Site Emergency Response Organizations

A significant element of this Emergency Response Manual is the organization and staffing by third party contractors providing services to WCCF, and of state and local emergency response, including police, fire and other emergency response resources and personnel specific to the needs and scope of an incident.

2.3. State and Local Emergency Response Organizations

The following describes the key elements of emergency response planning that are to be identified and reviewed with the USCG and other state and local resources.

2.3.1. USCG Captain of the Port

The Captain of the Port (COTP) Sector Miami or his/her designee will be contacted as soon as possible by WCCF to ensure he/she is kept abreast of any emergency operations.

The COTP is authorized to direct emergency operations where the situation poses a threat to the port or nearby vessels. The COTP may also assume coordination efforts when the situation is not being properly handled by the WCCF personnel. Once an emergency incident has been reported, normal operations may be resumed only after confirmation by the COTP.

2.3.2. Broward County Fire & Sheriff's Department

The mission of the BCFD is to protect lives, property and the environment and would be one of the primary responders for both a fire and/or HAZMAT response to an MeOH incident at Pier 25 involving the MeOH bunkering operation. They are also responsible for fire prevention and code

enforcement. In case of a fire and or release with a potential of fire, the BCFD Chief will most likely assume the role of Incident Commander.

The Broward County Sheriff's Department is responsible for investigating and prosecuting crimes on Port property. Should a security incident or criminal act occur with regards to this project, the Sheriff along with the Port Facility Security Officer (FSO) will lead the investigation.

2.3.3. Port Everglades

Port Everglades staffs a 24/7 Emergency Operations Center (EOC). The EOC monitors the port 24/7. The Emergency Operations Center telephone number is (954) 765-4511. For any emergency on Port Everglades, the first call should be placed to 911. Security Incidents should also be reported to the Facility Security Officer at (954) 468-0119. Police and Fire Department resources are under the jurisdiction of Broward County and can be reached via 911.

2.3.4. WCCF MeOH Subject Matter Expert

The MeOH Subject Matter Expert is a person who is either knowledgeable of the hazardous material being shipped and has comprehensive emergency response and incident mitigation information for that material or has immediate access to a person who possesses such knowledge and information [49 CFR 172.604].

2.3.5. MeOH Carrier (Over the Road)

Each carrier who transports or accepts for transportation a hazardous material for which a shipping paper is required shall instruct the operator of a motor vehicle, train, aircraft, or vessel to contact the carrier (e.g., by telephone or mobile radio) in the event of an incident involving the hazardous material [49 CFR 172.606].

2.3.6. Emergency Response Contractor

CBI has been contracted by WCCF to be the Emergency Response Contractor with capabilities to respond to any incident involving the transport and transfer of MeOH by WCCF. This includes coverage of the rail yard, the route to and from Pier 25 and any incident involving the release of MeOH or other pollution from the transport vehicles requiring clean up services and disposal as a Hazardous Waste. CBI will also provide when requested augmentation of WCCF's Spill Management Organization under NIIMS ICS if an incident so dictates.

3. HAZMAT Emergency Categories[1]

Hazardous materials incidents are categorized as Level I, II, or III depending on the severity of the incident. The criteria used to determine the level of an incident include:

- The characteristics of the hazardous material.
- The nature of its release.
- The area affected by the hazardous materials incident (e.g., populations, sensitive ecosystems, waterways, transportation routes, etc.).
- The extent of multi-agency and multi-jurisdictional involvement.
- Evacuations, injuries or fatalities.
- The technical expertise and equipment needed to safely mitigate the incident.
- Duration.

The determination of incident levels shall be a collective decision between the FPIC, the Incident Commander and any responding emergency response team.

[1] https://www.safeopedia.com/what-are-the-levels-of-hazmat-and-what-are-they-used-for/2/7097#:~:text=The%20classification%20system%20is%20also,Hazard%20Classes

At the point terrorist activities are suspected in a hazardous materials incident, the incident will be classified as a Level III. Unlike standard Level III response activities, federal involvement and additional activities will be required.

3.1. Level I Incident (Minor)

A minor situation within the capabilities of first responders trained at the "operational" level. A Level I incident involves a release, or possible release, of a small amount of gas, liquid or solid of a known (identified) hazardous material. In addition, the agency on-scene has the expertise and proper equipment to safely mitigate the incident. As a minimum, a command post and an exclusion zone should be established with all incidents. The Emergency Response Guide should be referenced for initial isolation and protective action distances. The Incident Commander should restrict movement of personnel into the exclusion zone. Only personnel entering for a specific reason and in the proper level of protective equipment should be allowed. An incident should be immediately upgraded to Level II for a release or potential release of an unknown hazardous material or suspected hazardous material.

Examples of a Level I Emergency that may occur at the MBF include:

- MeOH spills that are contained within the MeOH spill retention system and do not result in fire.
- MeOH spills that are contained within the MeOH spill retention system and result in a fire within the retained area,
- Overpressure of piping.
- Collapse or failure of structures, systems or equipment that does not result in or does not have the potential to result in the loss of containment of MeOH or flammable vapors.
- Building fires that do not involve flammable vapors.
- Electrical fires that do not involve flammable vapors.
- Loss of electrical power.
- Emergency ship departure / unexpected ship disconnect.
- Vehicle accidents.
- Severe weather conditions.

- Breaches of site security that do not result in or have the potential to result in substantial damage to the MBF.

3.2. Level II Incident (Moderate)

These are incidents that are beyond the capabilities of on-site resources and require mitigation by a fire department/brigade and/or hazardous materials team. This can be from a small incident involving any amount of an unknown substance to a large incident involving multiple agencies and jurisdictions.

A Level II incident shall be declared by the Incident Commander and the Initial Response Team when the situation involves a significant quantity of vapor or liquid from a known hazardous substance, or any amount of an unidentified material that has been released or poses a potential release risk.

A Level II incident is declared when any amount of known toxic solids or liquids are released in a critical public area, or when any amount of unknown or suspected toxic material—solid, liquid, or gas (excluding natural gas)—is released or may be released.

Level II incidents demand heightened coordination and a swift escalation in response protocols, given the complexities and potential hazards associated with hazardous materials. Unlike Level I situations, these events often require specialized equipment, expertise, and collaboration with external agencies to ensure the safety of personnel and the protection of assets. The transition to Level II is marked by the recognition that the incident exceeds routine capabilities, necessitating structured leadership, clear communication, and rigorous containment strategies. Proper documentation and real-time assessment become critical, as responders work to identify the nature and scope of the threat, deploy countermeasures, and minimize the risk of escalation.

During a Level II incident, an official Command Post is usually set up with a separate staging area, appointment of a Safety Officer, and assignment of a Hazardous Materials Sector. Control zones

are usually established with monitoring throughout. Local evacuation and involvement of outside agencies may be required.

Examples of Level II incidents that may occur at the MBF include:

- Significant MeOH spills that are not contained by the MeOH spill retention system and do not result in fire.
- MeOH spills that result in an unconfined fire.
- Flammable vapor leaks from significant failure of piping or equipment.
- Building or equipment fires that contain or have the potential to contain flammable vapors.
- Structural failure of an HT.
- Major fire aboard the ship receiving the MeOH bunkers.
- Bomb threats or other external security threats.
- Severe weather or other environmental conditions (lightning) that cause wide-scale damage to equipment and systems that result in or have the potential to result in a loss of containment of MeOH or flammable vapors.
- In addition, a security incident that results in a high probability of substantial damage to the Facility will be considered a Level III, even if no damage has yet occurred. An example of this situation would be the discovery of an explosive device in close proximity to the MBF.

3.3. Level III Incidents (Severe)

A Level III incident refers to a situation that exceeds the capacity of the hazardous materials team and local resources. Such incidents may require extended response times and large-scale evacuations. A Level III incident typically involves coordination among multiple agencies and jurisdictions, as well as support from private sector organizations (including chemical manufacturers) and voluntary groups.

The following are examples of MBF Specific Uncontrollable Emergencies.

- An incident that threatens MBF, Port, SSA and ship personnel, commercial vendors and or equipment with acute exposure to MeOH (contact and inhalation) and/or involves a fire or explosion of a magnitude that affects a large portion of the Facility, ship, passengers and loading/unloading operations on Eller Street as well as other operations at adjacent Piers and Terminals or the Port.
- A security incident that results in a high probability of substantial damage to the MBF and could be classified as a sabotage or terrorist action.

At the direction of the Ship Qualified Individual (QI) or WCCF Responsible Person, emergency help will be requested from off-site emergency organizations during Level II or Level III incident.

3.4. Trucking Emergencies

Highway tanker operations (such as will be undertaken at the MBF) are required to comply with the provisions contained in 49 CFR Part 172, Subpart G (172.600 - 172.606), Emergency Response Information. These regulations require the following:

- Conforming emergency response information must be immediately available for use at all times the hazardous material is present.
- Emergency response information, including the emergency response telephone number, must be immediately available to any person who, as a representative of a Federal, State, or local government agency, responds to an incident involving a hazardous material, or is conducting an investigation which involves a hazardous material.
- Emergency response information (including basic descriptions and properties of hazardous materials).
- Emergency contact information for person(s) knowledgeable of the hazardous material and for the carrier.

4. Emergency Evacuation

4.1. Evacuation of Adjacent Areas and Nearby Vessels

The initiating event for evacuation of areas adjacent to the MBF and nearby vessels will be a Level II or III event that has been categorized as a general emergency by the FPIC/VPIC or because personnel or property off-site are or may be affected.

The authority to order an off-site evacuation rests solely the BCFD, Port Everglades, and Royal Caribbean Cruise Lines.

WCCF provides the recommendation that an off-site evacuation be ordered and the potential area affected.

4.2. Evacuation of MBF Personnel

An emergency situation may require termination of MeOH bunkering operations and evacuation of the MBF area. See APPENDIX C – MBF EVACUATION AND RALLY POINTS for evacuation areas and rally points if evacuation of the MBF area is required for WCCF Personnel. Evacuation routes and warning signals should be discussed during the pre-transfer meeting between the VPIC and FPIC and during the safety brief between WCCF personnel prior to any transfer taking place.

5. Emergency Notifications

Emergency notifications are made by WCCF to request off-site assistance as well as provide off-site organizations with the information needed to perform their emergency functions. Reponses to specific emergency situations will require specific emergency notifications and are included in the procedures for responding to the emergency situations.

The following is a summary of the notifications that will be made in response to classifications of emergency situations:

- *Level I*: In a controllable emergency event that may be perceived by the public as a potential risk, the Emergency 911 system will be activated for notification purposes only. Additional notifications to the Port EOC and the USCG shall be made.
- *Level II* – MBF Site Emergency: **Contact Emergency 911**. The Emergency 911 system will implement notifications to emergency organizations as well as to the Port, USCG and BCFD and or BCPD as appropriate.
- *Level III* – General Emergency: **Contact Emergency 911**. The Emergency 911 System will implement notifications to emergency organizations as well as to the Port, USCG and BCFD and or BCPD as appropriate.

5.1. Agency/Stakeholder Reports and Notifications

Incidents will be reported as required by the following two sections of 49 CFR Subtitle B, Chapter I, Subchapter C:

- § 171.15 Immediate notice of certain hazardous materials incidents.
- § 171.16 Detailed hazardous materials incident reports

In the event of an emergency situation at the MBF, at a minimum the following federal, state, and local agencies will be notified:

- United States Coast Guard Sector Miami
- National Response Center
- Port Everglades EOC
- Port Everglades FSO (as appropriate)
- Broward County Fire Department
- Broward County Police Department

See APPENDIX H - EMERGENCY CONTACT NUMBERS for telephone and contact numbers.

III. EMERGENCY SHUTDOWN PROCEDURES

The MBF and receiving ship are equipped with Emergency Shutdown Devices (ESD). The MBF and transfer area are monitored with sensors for gas and fire detection.

1. Emergency Shutdown System (ESD)

An Emergency Shutdown System (ESD) is installed at the MBF to initiate closure of valves and the shutdown during emergency situations. The ESD is initiated by personnel at the MBF by press of a ESD pushbutton. ESD may also be initiated by personnel aboard the ship receiving the MeOH, either by communication with MBF personnel or by activation of a ship ESD pushbutton with direct link to the Pump Skid on the dock. Activation of the pushbutton on the ship will immediately shut down the pumps on the Pump Skid.

See APPENDIX B – MBF PLOT PLAN AND EQUIPMENT LAYOUT for ESD locations.

2. Hazard Detection System (HDS)

The purpose of the HDS is to detect physical situations that have the potential to result in injury to personnel and/or damage to property or the environment. The system accomplishes this by detecting and alerting operating personnel to the presence of hazardous conditions. The HDS will consist of handheld UV/IR detectors as well as portable gas detectors. The system when the MBF is active will also have a fixed IR camera positioned with a field of view of the entire transfer area where the potential for MeOH leakage exists. This IR camera will alert and initiate shutdown of the transfer pumps should an anomaly be detected.

2.1. Vapor Detectors

The marine transfer area for MeOH shall have at least two portable gas detectors capable of measuring 0-100% of the lower flammable limit of methanol as well as a handheld UV/IR camera to detect any fires.

2.2. Flame Detectors

An IR flame detector is provided on a tripod in the vicinity of the MBF skid assembly and monitors the entire transfer operation area. The IR camera will be mounted on a tripod and positioned to overlook the transfer equipment to detect leaks or flame. An alarm will sound should the IR detect any abnormal temperature readings that may indicate a potential fire and initiate shutdown of the transfer system.

The fixed IR camera will be supplemented by the WCCF transfer personnel actively monitoring the hoses and transfer equipment for leaks and or fires. Any anomaly indicating a fire will result in the suspension of transfer operations until such time as the situation is analyzed and remedied.

2.3. Alarms

Local alarms in the MBF deployment area are audible and visual fire and vapor release hazards. The sound of the ship's alarm indicating an issue with the transfer will be identified during the pre-transfer meeting.

3. Weather Related Bunker Operations Shutdown

Central Florida is known for its thunderstorms with over 100 days of activity per year. Coastal areas average 80-190 days, while the east coast sees about 70 days annually. These are among the deadliest weather hazards in the state. The following conditions shall require the suspension of MeOH transfer operations:

- Wind gusts in excess of 20 knots
- Sustained wins in excess of 30 knots
- Thunderstorm cells as per NOAA radar 10 miles distance from bunker site and forecast to transit over or in the vicinity of the transfer site.
- Sudden weather changes that may require a pause and evaluation of conditions between the FPIC and the VPIC.

During such conditions, the equipment shall be shut down and persons involved in the outdoor transfer seek immediate shelter until such time as the situation is declared safe by the SSA terminal supervisor and/or VPIC. Equipment shall be checked for visible leaks and a survey of the equipment conducted by the UV/IR and Flammable vapor detectors prior to resuming transfer operations.

Weather conditions and operational parameters will be a point of discussion between PICs during the initiation of transfer operations and as conditions of the Declaration of Inspection.

IV. DESCRIPTION OF FIRE EQUIPMENT AND SYSTEMS AND THEIR OPERATING PROCEDURES

The following fire protection equipment is provided with the MBF:

1. Dry Chemical Extinguishers

A wheeled 150# Dry Chemical and numerous 20# hand-held Dry Chemical fire extinguishers placed around the MBF skid in the vicinity of the ESD switch. Each HT delivering MeOH shall have a 20# fire extinguisher in accordance with USDOT regulations.

Persons involved in the transfer operation are trained and proficient in the use of the fire extinguishing equipment provided.

See APPENDIX B – MBF PLOT PLAN AND EQUIPMENT LAYOUT for a plot plan illustrating the location and arrangement of fire protection equipment.

See APPENDIX G - FIRE EXTINGUISHERS SPECIFICATIONS AND USE for information on the type and use of Fire Extinguishers that are available at the MBF.

V. DESCRIPTION OF EMERGENCY LIGHT, POWER AND WARNING SYSTEMS

1. Emergency Lighting

Lighting systems at the MBF shall comply with the requirements of 33 CFR 154.570:

(*a) Except as provided in paragraph (c) of this section, for operations between sunset and sunrise, a facility must have fixed lighting that adequately illuminates:*
(1) Each transfer connection point on the facility;
(2) Each transfer connection point in use on any barge moored at the facility to or from which oil or hazardous material is being transferred;
(3) Each transfer operations work area on the facility; and
(4) Each transfer operation work area on any barge moored at the facility to or from which oil or hazardous material is being transferred.
(b) *Where the illumination is apparently inadequate, the COTP may require verification by instrument of the levels of illumination. On a horizontal plane 3 feet above the barge deck or walking surface, illumination must measure at least:*
(1) 5.0 foot candles at transfer connection points; and
(2) 1.0 foot candle in transfer operations work areas.
(c) For small or remote facilities, the COTP may authorize operations with an adequate level of illumination provided by the vessel or by portable means.
(d) Lighting must be located or shielded so as not to mislead or otherwise interfere with navigation on the adjacent waterways.

Levels of illumination will be checked by instrument and those areas not meeting the requirements stated in the regulation shall be augmented by portable lighting set up for the MeOH Bunker Operation at the MBF and ship.

2. Warning Signs

Warning signs 18" by 24" as shown will be posted on the perimeter of the transfer site in full view of the pier and other personnel while there is methanol present and/or a transfer is occurring. This sign complies with the requirements of ANSI Z535/OSHA, NFPA and OSHA 1910.1200 (c). This is in addition to the diamond shaped placards required on the HTs in accordance with Department of Transportation (DOT) regulations outlined in 49 CFR Part 172. These include the UN1230 Placard indicating the UN identification number. Flammable Liquid (Class 3) Placard; Methanol is a flammable liquid, and the placard will feature the symbol for Hazard Class 3, a red diamond with a flame symbol.[2]

3. Warning Alarm

In case of incident involving methanol, the HT tractor horns shall sound an alarm. The tractor horn shall sound one prolonged blast for more than 5 sec followed by 5 short blasts and repeated. As backup, an air powered horn shall also be available to the FPIC. The same signal will be sounded by the FPIC.

The warning alarms will be discussed with the VPIC during the initial Declaration of Inspection meeting on initiation of the transfer operation.

4. Emergency Power

The Pump Skid will be powered by an external diesel prime mover. Upon loss of the normal power source, all MeOH bunkering operations will automatically stop. There is no provision in the design to allow MeOH bunkering to continue with an emergency power source.

[2] Toxic (Class 6.1) Placard; Methanol is toxic if swallowed, inhaled, or comes into contact with the skin. While the US Department of Transportation (DOT) doesn't typically list this as a primary risk for domestic transport, it's considered a significant subsidiary risk internationally, meaning a placard for Class 6.1 (toxic substances) might be required for international shipments

VI. TELEPHONE NUMBERS OF RESPONSE AGENCIES & ORGANIZATIONS

See APPENDIX H - EMERGENCY CONTACT NUMBERS.

VII. PERSONNEL SHELTERS LOCATION AND PROVISION

As this is a Mobile Facility that is decommissioned and stored when ships needing MeOH bunkers are not present and commissioned in anticipation of the arrival of the ship desiring MeOH bunkers. There are no permanent designated shelters available or provided. Portable tent/awning type enclosures can be utilized providing relief to transfer personnel in proximity of the MBF from rain or sun and other weather-related elements.

Terminal 25 is accessible in the immediate vicinity of the transfer site and can be used as a shelter should the needs arise. Shelter can also most likely be obtained on the ship being bunkered.

VIII. METHANOL HAZARDS

Methanol, also known as wood alcohol, is a toxic chemical found in various industrial and household products like antifreeze, solvents, and windshield washer fluid. While ingestion is the most common route of severe methanol poisoning, inhaling methanol vapors can also be dangerous and lead to serious health issues.

The purpose of this section is to establish guidelines and basic first aid procedures for persons that may be exposed to MeOH or encounter other situations that may require immediate medical attention to preserve and mitigate life threatening incidents that include exposure to MeOH. WCCF has primary responsibility for providing for the safety and security of personnel working at the MBF. Personnel are properly trained to deal with the products being handled and be aware of the hazards associated with the handling of MeOH.

WCCF follows industry and regulatory standards with regards to operation of the MBF and has installed adequate safety systems to prevent, detect and respond to potential incidents. It has a

robust safety program and evaluates reported incidents and accidents involving safety and health and implements programs to alleviate future occurrences.

1. Methanol Exposure

Methanol is toxic following ingestion, inhalation, or dermal exposure. Exposure may initially result in Central Nervous System (CNS) depression, followed by an asymptomatic latent period. Metabolic acidosis and ocular toxicity, which may result in blindness, are subsequent manifestations of toxicity. Coma and death may occur following substantial exposures. Long-term effects may include blindness and, following more substantial exposures, permanent damage to the CNS.

1.1. Toxicity Routes

- **Inhalation -** Breathing in methanol vapors, particularly in poorly ventilated areas or from products with high concentrations, is a common route of exposure in occupational settings. *NIOSH: The recommended airborne exposure limit (REL) is 200 ppm averaged over a 10-hour work shift and 250 ppm, not to be exceeded during any 15-minute work period.*
- **Absorption -** Skin contact with methanol can also lead to systemic toxicity as it gets absorbed through the skin. Methanol is readily absorbed by inhalation, ingestion, and dermal exposure. Following ingestion, methanol is absorbed within 30 to 60 minutes depending upon the presence or absence of food in the GI tract. Around 60 to 80% of inhaled methanol is absorbed in the lung of humans.[3]
- **Ingestion -** Accidental or intentional ingestion of methanol is a major cause of poisoning outbreaks. The liver is the primary site of metabolism for methanol. Through a series of oxidative steps methanol is oxidized to methanal (HCHO, formaldehyde), methanoic acid (H•COOH, formic acid) and finally detoxified to carbon dioxide (CO_2). The majority of an ingested dose of methanol (96.9%) is converted to carbon dioxide by this route.[4]

[3] www.gov.uk
[4] www.gov.uk

1.2. MeOH Ingestion[5]

Ingestion is the most common route of severe methanol poisoning. Methanol has a moderate to high toxicity in humans. Blindness can occur after ingesting as little as 10 ml and death in as little as 15 ml.

- **Initial Symptoms –** Exposure can initially cause symptoms similar to ethanol intoxication, such as dizziness, headache, nausea, and vomiting.
- **Latency Period -** Following the initial phase, there may be a latent period where the individual feels relatively normal.
- **Severe Symptoms -** As methanol is metabolized into toxic formic acid, severe symptoms can develop, including metabolic acidosis, vision problems (blurred vision, photophobia, blindness), central nervous system depression, seizures, and in extreme cases, coma and death.
- **Delayed Effects -** The effects of methanol poisoning can be delayed for 12-24 hours or even longer after exposure, making it difficult to diagnose and highlighting the need for prompt medical attention,
- **Long-Term Effects -** Survivors of methanol poisoning may experience permanent damage, including blindness and neurological deficits like Parkinsonian-like conditions.

If ingested, take the following actions:

- Immediately remove the patient/victim from the source of exposure.
- Ensure that the patient/victim has an unobstructed airway.
- Do not induce vomiting (emesis).
- Seek medical attention immediately (At the Hospital or by an MD: Antidotes fomepizole or ethanol should be administered intravenously as soon as possible to block the conversion of methanol to formic acid and prevent acidosis. Folinic acid (leucovorin) should also be

[5] https://www.cdc.gov/niosh/ershdb/emergencyresponsecard_29750029.html

administered intravenously to increase the rate at which formate is metabolized into less toxic chemicals).

Antidotes fomepizole or ethanol should be administered intravenously as soon as possible to block the conversion of methanol to formic acid and prevent acidosis.

1.3. MeOH Skin Contact

Skin contact with methanol can also lead to systemic toxicity as it gets absorbed through the skin. MeOH contact and splashes on the skin require immediate attention. It can also cause irritation and dryness upon skin contact. Absorption rates can vary, but studies have shown that methanol can enter the bloodstream and cause effects similar to those from ingestion, though potentially delayed.

- **Direct contact:** Methanol can be absorbed through the skin upon direct contact with the liquid or vapor.
- **Rate of absorption:** Studies suggest that methanol absorption through the skin can be rapid, with peak absorption occurring within 20-30 minutes of exposure.
- **Systemic effects:** Once absorbed, methanol can be distributed throughout the body and metabolized into toxic byproducts like formaldehyde and formic acid, which can cause damage to the nervous system and other organs.
- **Potential Health Effects:** Irritation and Dermatitis: Methanol can cause skin irritation, dryness, and cracking upon contact.
- **Systemic Toxicity:** Absorption through the skin can lead to symptoms similar to those of methanol ingestion, including vision problems, nausea, headaches, and in severe cases, coma and death.
- **Metabolic Acidosis:** The body's metabolism of methanol can lead to metabolic acidosis, a condition where the blood becomes too acidic, potentially causing organ damage.

Wearing appropriate protective clothing**,** including gloves, eye protection, and respirators, is crucial when working with or around methanol as is adequate ventilation to dilute/minimize the concentration of MeOH vapors.

If in contact with MeOH, follow these steps:

- Go to the emergency shower or sink.
- Remove any contaminated clothing.
- Wash the affected area with water thoroughly for 15+ minutes.
- Seek immediate medical attention (911).

1.4. MeOH Inhalation

Breathing in methanol vapors, particularly in poorly ventilated areas or from products with high concentrations, is a common route of exposure in occupational settings. Initial symptoms of methanol inhalation can be misleading, mimicking those of ethanol (drinking alcohol) intoxication, such as dizziness, nausea, headache, and confusion. However, a dangerous latent period follows, usually lasting 10-30 hours, where the methanol is metabolized into formaldehyde and formic acid – the true culprits behind the severe health problems associated with methanol poisoning.
During this stage, symptoms can escalate to:

- **Severe Vision Problems:** Blurred vision, sensitivity to light, and in severe cases, permanent blindness can occur due to damage to the optic nerve.
- **Metabolic Acidosis:** The accumulation of formic acid leads to a dangerously low pH in the blood, causing difficulty breathing (Kussmaul breathing), abdominal pain, and potential damage to vital organs like the kidneys and pancreas.
- **Neurological Dysfunction**: This can manifest as agitation, delirium, seizures, coma, and even permanent brain damage, according to the National Institutes of Health (NIH).
- **Long Term Consequences**: Include permanent visual deficits, Parkinson-like disease, cognitive decline and organ damage.

Wearing appropriate protective clothing including gloves, eye protection, and respirators, is crucial when working with or around methanol as is adequate ventilation to dilute/minimize the concentration of MeOH vapors.

The following actions should be taken:

- Immediately remove the patient/victim from the source of exposure.
- Evaluate respiratory function and pulse.
- Ensure that the patient/victim has an unobstructed airway.
- If shortness of breath occurs or breathing is difficult (dyspnea), administer oxygen.
- Assist ventilation as required. Always use a barrier or bag-valve-mask device.
- If breathing has ceased (apnea), provide artificial respiration.
- Seek medical attention immediately.

1.5. Summary MeOH First Aid and Treatment

Any Exposure To Methanol Requires An Immediate Call To 911 For Medical Attention

- **Immediate Action -** If someone is suspected of inhaling methanol, immediately move them to fresh air and seek medical attention by calling emergency services **911** or the Poison Help hotline (1-800-222-1222).
- **Medical Treatment -** Treatment may involve administering antidotes like fomepizole or ethanol to block methanol metabolism, correcting metabolic acidosis with sodium bicarbonate, and hemodialysis to remove toxins from the blood.
- **Supportive Care -** Supportive care measures like monitoring vital signs and providing respiratory and cardiovascular support are also crucial.

2. Methanol Flammability

Methanol is considered a highly flammable liquid. It poses significant fire hazards and requires careful handling and storage. Methanol reacts violently with strong oxidants, causing a fire and explosion hazard.

2.1. MeOH Flammability Characteristics[6]

- **Low flash point:** Methanol's flash point is 11-12°C (52-54°F), meaning it can ignite easily at relatively low temperatures.
- **Wide flammable range:** Methanol has a broad flammable range in air, with a lower explosive limit (LEL) of 6% and an upper explosive limit (UEL) of 36-36.5%. This large range increases the risk of ignition compared to many other flammable liquids.
- **Invisible flame:** Pure methanol burns with a light blue flame that can be difficult to see in daylight. This poses a particular hazard as a fire may not be immediately obvious. It should be noted however, that an additive is introduced into the methanol to allow a visible flame.
- **Vapor travels easily:** Methanol vapor is initially heavier than air and can travel along the ground to a distant ignition source and flash back.
- **Vapor explosion hazard:** The vapor mixing well with air creates explosive mixtures, especially in confined spaces. Containers can also explode when exposed to fire or excessive heat.
- **Fires are not easily cooled by water alone:** While water spray can be used to cool fire-exposed containers and reduce the intensity of flames, it may not be efficient for extinguishing methanol fires alone because methanol is completely soluble in water. This means the flame may persist even in diluted mixtures. For effective fire suppression, dry chemicals, alcohol-resistant foam, or carbon dioxide are recommended.
- **Static electricity hazard:** Methanol can become electrostatically charged during handling, and sparks may ignite the liquid and vapor, causing a flash fire or explosion. Proper grounding and bonding of equipment are essential when handling methanol.

[6] https://www.cdc.gov/niosh/ershdb/emergencyresponsecard_29750029.html

2.2. MeOH Leak and Fire Protocols

APPENDIX E – MeOH FIRE RESPONSE FLOW CHART and APPENDIX F – MeOH LEAK RESPONSE FLOW CHART layout a decision process to follow to determine appropriate actions for a potential fire and/or leak.

These Appendices are advisory in nature and nothing should preclude taking appropriate action to protect the safety of human life.

The Broward County FD Chief responding shall assume the duties of Incident Commander (IC) once on scene. MBF personnel shall assist as directed by the IC.

3. Methanol Environmental Hazards, Prevention and Response

3.1. MeOH Aquatic Hazards

Methanol is completely soluble/miscible in water. Its effects on aquatic environments depend heavily on concentration and duration of exposure. Methanol has a high vapor pressure and volatilizes readily, especially from surface water. This contributes significantly to its removal from the aquatic environment. It has low acute toxicity to most aquatic organisms but can cause sublethal effects and impact aquatic ecosystems at higher concentrations. While it is readily biodegradable in water, potential risks exist for some species, particularly during spills.

Note the following specificities:

- **Low Acute Toxicity**: Methanol generally has low acute toxicity to fish, crustaceans, and other aquatic invertebrates.
- **Sublethal Effects**: While not always lethal, exposure to methanol can cause sublethal effects like impaired swimming ability in fish.
- **Ecosystem Impact**: Methanol can reduce primary productivity, affect phytoplankton populations, and potentially impact alkalinity in aquatic ecosystems.

- **Biodegradation:** Methanol is readily biodegraded in aquatic environments by microorganisms, leading to its relatively short half-life.
- **Spills and Dispersal**: Methanol spills can cause localized toxicity, but dispersal and biodegradation usually lead to a rapid reduction in concentration.
- **Bioaccumulation:** Methanol has a low potential for bioaccumulation in aquatic organisms.
- **Specific Toxicity Values:** A study on juvenile Florida pompano showed a 24-hour LC50 (lethal concentration for 50% of the population) of 1.28% (v/v) at 30 practical salinity units and 25°C, according to Wiley. In another study, the 96-hour LC50 for bluegill sunfish was 15,400 mg/L, and for carp it was 36,000 mg/L.

3.2. MeOH Aquatic Prevention and Response

MeOH will not be recoverable if spilled into the waterway. WCCF will take mitigation strategies to prohibit MeOH from entering the waterway by:

- Using Dry Disconnect Couplings to minimize releases.
- Catch buckets under the couplings to catch any liquid between valves.
- Plugging any scuppers, openings, water catchment grates on the pier.
- Actively monitoring for leaks during the transfer and taking proactive measures should a leak be detected.

4. Methanol Hazardous Waste

Methanol is classified as a Flammable Liquid Hazard Class 3 and subsidiary risk of Toxicity 6.1 under International Regulations. It is placarded as UN1230. The international standards dealing with methanol as a bunker fuel on marine vessels include the recently published ISO 6583.2024 and the IMO IGF Code. International shipping of methanol in bulk is also regulated by MARPOL Annex II and SOLAS Chapter VII.[7]

[7] https://ww2.eagle.org/content/dam/eagle/advisories-and-debriefs/methanol-bunkering-advisory.pdf#:~:text=Methyl%20alcohol%20is%20classified%20as%20toxic%20by,Carrying%20Dangerous%20Chemicals%20in%20Bulk%20(IBC%20Code).&text=For%20international%20shipping%2C%20the%20carriage%20of%20chemicals,Pollution%20by%20Noxious%20Liquid%20Substance%20in%20Bulk.

Methanol is considered a pollutant although with less impact than other conventional hydrocarbon fuels. It is considered a Volatile Organic Compound (VOC) with vapors that can cause ozone and smog and therefore contribute to Air Pollution. Being miscible in water it will mix with water and potentially contaminate drinking sources and other groundwater. Methanol is IMO Type Y pollutant.

4.1. Methanol Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)

Methanol is designated a hazardous substance under the Comprehensive Environmental Response, Compensation and Liability Act better known as CERCLA. Release of methanol that equals or exceeds the Reportable Quantity must be reported to the National Response Center (NRC). Methanol is also considered a hazardous waste under Resource Conservation and Recovery Act (RCRA).[8] The reportable quantity (RQ) is 5,000 lbs., 2,270 kg., or approximately 760 gallons.

4.2. MeOH Spills on Land

A methanol spill on land requires immediate action due to its flammability and potential toxicity. If safe, stop or reduce the leak, isolate the spill area, eliminate ignition sources, and stay upwind. Absorb small spills with non-combustible materials, and for large spills, contain the liquid and follow local emergency protocols.

Methanol can be harmful to humans and the environment, so prompt and proper handling is crucial.

The following immediate actions should be taken:

- **If safe Stop/Slow the leak**: If possible, stop or reduce the flow of methanol without creating further risk.

[8] https://www.scemd.org/media/1100/consolidated-list-of-chemicals-pdf.pdf

- **Isolate the spill area:** Create a perimeter as per Guide 131 of the ERG. BCFD will initiate perimeter on arrival.
- **Review for any potential ignition sources:** Remove any potential sources of fire, such as open flames, sparks, or hot surfaces.
- **Stay upwind:** Methanol vapors are heavier than air and can travel, so stay upwind to avoid inhalation. Use appropriate PPE if safe
- **Do not touch or walk through spilled methanol**: It could be on fire and not be visible.
- **Containment and Cleanup:** Contact CBI for clean-up.
    - **Small spills:** Absorb the spilled methanol with materials like sand, earth, or vermiculite, and then transfer it to a container for disposal.
    - **Large spills**: Dike the area to prevent further spread and follow local emergency response procedures for handling large spills.
- **Vapor suppression**: BCFD will bring a vapor-suppressing foam to reduce the release of methanol vapors.
- **Ventilation**: Alert other PIC to initiate spill incident protocols; close all doors and ventilation intakes in the immediate vicinity of the spill both on the ship and to the Terminal.
- **Disposal**: Contact CBI for proper disposal
- **Local regulations:** Follow all local and national regulations for disposal of hazardous materials.
- **Environmental and Health Concerns**: Methanol can contaminate soil and water sources and can be toxic to wildlife.
- **Reporting:** Depending on the quantity spilled (RQ) and the location, reporting the spill to the relevant authorities may be required.

5. Methanol Safety Data Sheet (SDS)

A comprehensive Methanol SDS is provided to prescribe the hazards associated with MeOH and its handling. Personnel involved with this transfer and in danger of exposure to MeOH should be thoroughly familiar with its salient provisions and should review this document before each

transfer operation and on a regular basis. Its contents, as applicable, should be discussed at each safety meeting prior to transfer operations and ensure each person involved is familiar with the properties and hazards associated with the product.

A Safety Data Sheet (SDS) for MeOH is provided in APPENDIX I – MeOH SAFETY .

6. USDOT Emergency Response Guide 2024 – Methanol

In case of an incident, the BCFD has stated that it uses the USDOT Emergency Response Guide (ERG) 2024 for an initial response posture. A copy of Guide 131 specific to Methanol of the ERG is provided with this plan to ensure that personnel involved in the transfer operation are familiar with the initial response actions to take in case of an incident involving MeOH.

The 2024 ERG Guide 131 for MeOH is provided in APPENDIX I – MeOH SAFETY .

IX. GENERAL FIRST AID

1. Evaluation

Personnel who are first to arrive on the scene of a medical emergency should follow these guidelines:

- **Assess the situation**. Can you safely approach the victim? If not, what can you do to help without threatening your own safety? Determine what is wrong with the victim.
- **Set priorities and call for emergency assistance**. Ascertain if the victim is conscious and the seriousness of the victim's condition. Questions asked should include: Should you call for help immediately or do you need to attend to the victim? Can someone else call emergency medical services so the victim is not left alone? If no one else is available, decide if it is more important to administer first aid immediately or to call emergency medical services and leave the victim unattended. Never leave a victim in a life-threatening situation without trying to first stabilize the victim's condition.
- **Check the "ABCs" (unconscious victims only).**

"*A"--Airway*. Make sure the victim has a clear airway. Place the victim on his/her back. Place one hand on the victim's forehead and one hand under the chin and tilt the head back. Open the victim's mouth and check for obstructions. If the victim is unconscious and an obstruction is visible, remove it with your fingers. NOTE: If you suspect back or neck injury, do not move the victim or adjust the victim's neck. Simply open the victim's mouth to check for obstructions.

"*B"--Breathing*. Place your ear above the victim's mouth and look at the chest. Listen for breathing and look for the rise and fall of the chest. If the victim is not breathing, someone trained in mouth-to-mouth breathing should begin resuscitation.
"*C"--Circulation.* Using two fingers, gently feel for the carotid artery in the neck to check for a pulse. To find the artery, place your fingers on the victim's Adam's apple and then slide them down the side of the neck until you feel the groove between the windpipe and neck muscles. If there is no pulse, someone trained in CPR should begin cardiopulmonary resuscitation.

- **Stay with the victim until emergency medical personnel arrive**.

2. Bleeding (External)

Most cuts are minor. However, heavy external bleeding can cause death in three to five minutes. In addition to the procedures for initial first aid, follow these steps to control external bleeding:

- Using a sterile dressing, clean cloths, or other material, apply pressure directly over the wound. (IMPORTANT: Direct contact with a victim's blood may expose you to various communicable diseases. Always wear latex gloves when assisting a bleeding victim.)
- If possible, elevate the bleeding area. Otherwise, lay the victim flat, and elevate the legs.

- Keep the victims lying down.
- Treat the victim for shock, if necessary.
- Do not release pressure or lift the bandage until you are sure the bleeding has stopped.
- Have someone call emergency medical services, if necessary.
- Do not use a tourniquet unless an arm or leg has been amputated.
- For deep chest wounds, use a heavy dressing to keep air from passing through the wound. For gaping stomach wounds, use a damp dressing; do not touch any protruding organs.

3. Choking

Choking victims cannot speak, breathe, or cough forcefully. Follow these steps for conscious choking victims:

- Ask the victim if he is choking. If the victim indicates yes, begin the Heimlich maneuver, as outlined below.
- Get behind the victim and make a fist with one hand. Grasp your fist with the other hand and place your hands slightly above the victim's navel.
- Give quick, upward thrusts backwards until the object is expelled.

IMPORTANT: For pregnant or obese victims, use a chest thrust. Place your fist on the sternum and thrust backwards repeatedly.

Follow these steps for unconscious choking victims:

- Call emergency personnel.
- Place the victim on his/her back. Open the victim's airway by placing one hand on the forehead and one hand under the chin and tilting the head back. Check for any obstructions in the mouth or throat.
- Attempt mouth-to-mouth rescue breathing.

- If the airway remains blocked, place the heel of your hand slightly below the victim's ribs. Give six to ten abdominal thrusts. For pregnant or obese victims, use a chest thrust. Place your fist on the sternum and thrust backwards repeatedly.
- Sweep the mouth to remove any dislodged objects and attempt mouth-to-mouth rescue breathing again.
- Continue this procedure until the object is dislodged or the victim starts breathing.

4. Eye Injury

If hazardous liquids, particles, or gases irritate a person's eye, have the victim flush the eye with water for at least 15 minutes. Use an eyewash station, sink, or water fountain. Seek assistance from a physician, as necessary.

If a foreign object (e.g., glass, pencil lead, etc.) is embedded in the eye, place a plastic cup or gauze over the affected eye. This will keep the eye from moving and inflicting further damage. Seek assistance from a physician immediately.

5. Cardiopulmonary Resuscitation

Cardiopulmonary resuscitation (CPR) is a lifesaving technique useful in many emergencies, including heart attack or near drowning, in which someone's breathing or heartbeat has stopped. The American Heart Association recommends that everyone — untrained bystanders and medical personnel alike — begin CPR with chest compressions.

It is far better to do something than to do nothing at all if you are fearful that your knowledge or abilities are not 100 percent complete. Remember, the difference between you doing something and doing nothing could be someone's life.

5.1. American Heart Association Guidelines CPR:

Untrained: If you are not trained in CPR, then provide hands-only CPR. That means uninterrupted chest compressions of about 100 a minute until paramedics arrive (described in more detail below). You do not need to try rescue breathing.

Trained, and ready to go: If you are well trained and confident in your ability, begin with chest compressions instead of first checking the airway and doing rescue breathing. Start CPR with 30 chest compressions before checking the airway and giving rescue breaths.

Trained, but rusty: If you have previously received CPR training but you are not confident in your abilities, then just do chest compressions at a rate of about 100 a minute. (Details described below.)

CPR can keep oxygenated blood flowing to the brain and other vital organs until more definitive medical treatment can restore a normal heart rhythm.

When the heart stops, the lack of oxygenated blood can cause brain damage in only a few minutes. A person may die within eight to ten minutes.

5.1.1. Before starting CPR, check:

- Is the person conscious or unconscious?
- If the person appears unconscious, tap, or shake his or her shoulder and ask loudly, "Are you OK?"
- If the person does not respond and two people are available, one should call 911 or the local emergency number and one should begin CPR. If you are alone and have immediate access to a telephone, call 911 before beginning CPR — unless you think the person has become unresponsive because of suffocation (such as from drowning). In this special case, begin CPR for one minute and then call 911 or the local emergency number.

- If an AED is immediately available, deliver one shock if instructed by the device, then begin CPR.

The American Heart Association uses the acronym of *CAB — Circulation, Airway, Breathing* to help people remember the order to perform the steps of CPR.

Circulation: Restore blood circulation with chest compressions

- Put the person on his or her back on a firm surface.
- Kneel next to the person's neck and shoulders.
- Place the heel of one hand over the center of the person's chest, between the nipples. Place your other hand on top of the first hand. Keep your elbows straight and position your shoulders directly above your hands.
- Use your upper body weight (not just your arms) as you push straight down on (compress) the chest at least 2 inches (approximately 5 centimeters). Push hard at a rate of about 100 compressions a minute.

If you have not been trained in CPR, continue chest compressions until there are signs of movement or until emergency medical personnel take over. If you have been trained in CPR, go on to checking the airway and rescue breathing.

Airway: Clear the airway. If you are trained in CPR and you have performed 30 chest compressions, open the person's airway using the head-tilt, chin-lift maneuver. Put your palm on the person's forehead and gently tilt the head back. Then with the other hand, gently lift the chin forward to open the airway.

Check for normal breathing, taking no more than five or ten seconds. Look for chest motion, listen for normal breath sounds, and feel for the person's breath on your cheek and ear. Gasping is not considered to be normal breathing. If the person isn't breathing normally and you are trained in CPR, begin mouth-to-mouth breathing. If you believe the person is unconscious from a heart attack

and you haven't been trained in emergency procedures, skip mouth-to-mouth rescue breathing, and continue chest compressions.

Breathing: Breathe for the person**.** Rescue breathing can be mouth-to-mouth breathing or mouth-to-nose breathing if the mouth is seriously injured or cannot be opened.

With the airway open (using the head-tilt, chin-lift maneuver), pinch the nostrils shut for mouth-to-mouth breathing and cover the person's mouth with yours, making a seal.

- Prepare to give two rescue breaths. Give the first rescue breath — lasting one second — and watch to see if the chest rises. If it does rise, give the second breath. If the chest does not rise, repeat the head-tilt, chin-lift maneuver and then give the second breath. Thirty chest compressions followed by two rescue breaths is considered one cycle.
- Resume chest compressions to restore circulation.
- If the person has not begun moving after five cycles (about two minutes) and an Automatic External Defibrillator (AED) is available, apply it and follow the prompts. Administer one shock and then resume CPR — starting with chest compressions — for two more minutes before administering a second shock. If you are not trained to use an AED, a 911 or other emergency medical operator may be able to guide you in its use.
- Continue CPR until there are signs of movement or emergency medical personnel take over.

6. Poisoning

There are many types of poisons. Each requires a specific type of treatment. The remedy for one type of poison may worsen the condition of an employee affected by a different poison. If you suspect a victim has been poisoned through ingestion, inhalation, or skin exposure, try to determine what the poisoning agent is. Contact emergency personnel or the Poison Control Center for specific first aid instructions.

7. Seizures

Do not try to restrain seizure victims. Move any furniture or objects that could harm the victim and wait for the seizure to end. Contact emergency medical services. Do not place anything in a seizure victim's mouth.

8. Shock

Shock commonly accompanies injuries or severe emotional distress. Symptoms of shock include the following:

- cold, clammy skin;
- pale skin tone;
- shallow breathing; and
- chills.

Follow these steps to assist shock victims:

- Call emergency personnel;
- Keep the victims lying down;
- Maintain an open airway. If the victim vomits, turn the head sideways and the chin downward;
- Elevate the victim's legs;
- Keep the victim warm;
- Reassure the victim.

9. Burns

The MeOH is carried/stored at ambient temperatures under normal or slightly higher atmospheric pressure which can vary depending on the ambient temperatures for the time of year in Florida.

MeOH is a toxic product for both contact and inhalation. The greatest risks of exposure to MeOH is liquid contact and vapor inhalation due to large volumes of MeOH evaporating in a release. Methanol is a highly flammable product and when ignited human exposure to thermal radiation exposure to MeOH flames can result in burns. First aid procedures should be aimed at treating persons with first, second- and third-degree burns.

The following first aid procedures for burn victims are recommended[9].

9.1. Burn Classification

To distinguish a minor burn from a serious burn, the first step is to determine the extent of damage to body tissues. The three burn classifications of first-degree burn, second-degree burn and third-degree burn will help you determine emergency care.

9.1.1. 1st-Degree Burn

The least serious burns are those in which only the outer layer of skin is burned, but not all the way through.

- The skin is usually red.
- Often there is swelling.
- Pain sometimes is present.

Treat a first-degree burn as a minor burn unless it involves substantial portions of the hands, feet, face, groin or buttocks, or a major joint, which requires emergency medical attention.

[9] http://www.mayoclinic.com/health/first-aid-burns/FA00022

9.1.2. 2nd-Degree Burn

When the first layer of skin has been burned through and the second layer of skin (dermis) is burned, the injury is called a second-degree burn.

- Blisters develop;
- Skin takes on an intensely reddened, splotchy appearance;
- There is severe pain and swelling.

If the second-degree burn is no larger than 3 inches (7.6 centimeters) in diameter, treat it as a minor burn. If the burned area is larger or if the burn is on the hands, feet, face, groin, or buttocks, or over a major joint, treat it as a major burn and get medical help immediately.

For minor burns, including first-degree burns and second-degree burns limited to an area no larger than 3 inches (7.6 centimeters) in diameter, take the following action:

- Cool the burn. Hold the burned area under cool (not cold) running water for 10 or 15 minutes or until the pain subsides. If this is impractical, immerse the burn in cool water or cool it with cold compresses. Cooling the burn reduces swelling by conducting heat away from the skin. Do not put ice on the burn.
- Cover the burn with a sterile gauze bandage. Do not use fluffy cotton, or other material that may get lint in the wound. Wrap the gauze loosely to avoid putting pressure on burned skin. Bandaging keeps air off the burn reduces pain and protects blistered skin.
- Offer an over-the-counter pain reliever. These include aspirin, ibuprofen (Advil, Motrin, others), naproxen (Aleve) or acetaminophen (Tylenol, others). Minor burns usually heal without further treatment. They may heal with pigment changes, meaning the healed area may be a different color from the surrounding skin. Watch for signs of infection, such as increased pain, redness, fever, swelling or oozing. If infection develops, seek medical help. Avoid re-injuring or tanning if the burns are less than a

year old — doing so may cause more extensive pigmentation changes. Use sunscreen on the area for at least a year.

9.1.3. Cautions:

- Do not use ice. Putting ice directly on a burn can cause a person's body to become too cold and cause further damage to the wound.
- Do not apply egg whites, butter, or ointments to the burn. This could cause infection.
- Do not break blisters. Broken blisters are more vulnerable to infection.

9.1.4. 3rd-Degree Burn

The most serious burns involve all layers of the skin and cause permanent tissue damage. Fat, muscle and even bone may be affected. Areas may be charred black or appear dry and white. Difficulty inhaling and exhaling, carbon monoxide poisoning, or other toxic effects may occur if smoke inhalation accompanies the burn.

9.2. Actions for Major Burns

CALL 911 or emergency medical help.

Until an emergency unit arrives, follow these steps:

- **Do not remove burned clothing.** However, do make sure the victim is no longer in contact with smoldering materials or exposed to smoke or heat.
- **Do not immerse large severe burns in cold water.** Doing so could cause a drop in body temperature (hypothermia) and deterioration of blood pressure and circulation (shock).
- **Check for signs of circulation (breathing, coughing or movement).** If there is no breathing or other sign of circulation, begin CPR.
- **Elevate the burned body part or parts.** Raise above heart level, when possible.

- **Cover the area of the burn.** Use a cool, moist, sterile bandage; clean, moist cloth; or moist cloth towels.

Tetanus shot. Burns are susceptible to tetanus. Doctors recommend a tetanus shot every 10 years.

X. EMERGENCY PERSONAL PROTECTIVE EQUIPMENT FOR WORKERS IN CASE OF A DISCHARGE/RELEASE

Working in atmospheres containing methanol requires careful attention to respiratory protection due to its toxicity through inhalation and potential for blindness or even death in case of high exposures.

1. Safety Equipment

The following PPE and safety equipment as required by OSHA shall available and used by persons as appropriate who are directly involved in the methanol transfer operation

1.1. Personal Protective Equipment

- Hard Hat
- Eye Protection/Face Protection
- Methanol Resistant Gloves
- Antistatic Safety Shoes
- Flame retardant, non-static accumulating outer wear and visible vest
- Tyvek or methanol resistant chemical protection suit.
- Life Jacket when working close to the water

1.2. Detection Equipment

- Gas Detector; LEL, O_2, Methanol for exposure limit of 200 ppm.

- Flame Detector; Infra-red

1.3. Other Equipment

- Emergency Eye and Safety Shower in close proximity;
- Emergency Escape Breathing Apparatus (EEBD) mask in close vicinity in case of spill for evacuation to safe distance;
- SCBA and/or Full Face Respirator with Organic Vapor (OV) Cartridge for safely mitigating a leak.

2. Respirator Facts and Safety Considerations

A Full Face Respirator with an Organic Vapor Cartridge should only be used in an open environment and when there is an adequate concentration of O_2 to sustain life. An SCBA should be used in confined spaces and in O_2 deficient atmospheres or in high concentration areas. A full-face respirator with organic vapor cartridges has a protection factor of 50, meaning it can be used in situations where the concentration of organic vapors is up to 50 times the PEL. For example, if the PEL for a specific organic vapor is 10 ppm, the respirator can be used up to 500 ppm (50 x 10 ppm).[10] It is recommended for use to quickly mitigate the situation if prudent and escape the area.

2.1. Air-Purifying Vs. Supplied Air Respirators

Supplied Air Respirators (SAR) or Self-Contained Breathing Apparatus (SCBA) are the generally recommended choices. They provide a constant supply of clean air, minimizing the risk of overexposure, especially for high concentrations of methanol vapors.

Air-purifying respirators with organic vapor (OV) cartridges have limitations:

- They have a very short service life when used against methanol vapors.

[10] https://www.osha.gov/sites/default/files/publications/3352-APF-respirators.pdf

- The odor threshold of methanol varies significantly (100 to 1500 ppm), potentially leading to inadequate warning of cartridge breakthrough and loss of protection.
- Therefore, their use should be limited to very short durations and lower concentrations of methanol.

2.2. Organic Vapor Cartridge Selection

If using an air-purifying full-face respirator only use NIOSH-approved organic vapor (OV) cartridge for protection against methanol vapors. A full facepiece is essential if there's any risk of eye irritation from methanol exposure. Only a full face respirator is recommended for use with methanol.

2.3. Fit Testing And Medical Evaluations

A medical evaluation is mandatory before employees can be fit tested and use any respirator. This ensures that the individual is medically capable of wearing a respirator without creating a safety hazard. Fit testing is crucial to ensure a proper and comfortable seal between the respirator and the wearer's face, preventing leaks and maximizing protection. Fit testing should be done for the specific make, model, style, and size of respirator that will be used. Annual fit testing is required by OSHA.

Under OSHA regulations, a fit test for respirators is required before initial use and at least annually thereafter, and also whenever a different respirator facepiece is used or if changes in the employee's physical condition could affect respirator fit. This applies to any employee who wears a tight-fitting respirator. Fit testing ensures that the respirator creates a tight seal against the user's face, minimizing leakage of contaminants. This is crucial for providing the intended level of protection. The OSHA Major requirement of OSHA's Respiratory Protection Standard is found in 29 CFR 1910.134.

2.4. Additional Precautions

- Always use a respirator in conjunction with other appropriate Personal Protective Equipment (PPE), such as chemical-resistant gloves and clothing, to minimize all routes of exposure (inhalation, skin absorption, eye contact, and ingestion).
- Ensure adequate ventilation in the work area to help control methanol vapor concentrations.
- Do not eat, drink, or smoke when handling methanol.
- Follow safe handling and disposal procedures for methanol as outlined in the Safety Data Sheet (SDS) and relevant regulations.
- Be aware of the flammability hazard of methanol and take precautions against static discharge.

3. Understanding Methanol Exposure Limits

The following are the methanol exposure limits set by different agencies:

- OSHA Permissible Exposure Limit (PEL) for methanol is 200 ppm as an 8-hour Time-Weighted Average (TWA).
- NIOSH Recommended Exposure Limit (REL) is also 200 ppm as a 10-hour TWA and a 250 ppm Short-Term Exposure Limit (STEL).
- ACGIH Threshold Limit Value (TLV) is 200 ppm as an 8-hour TWA and 250 ppm as a STEL.
- The Immediately Dangerous to Life or Health (IDLH) concentration for methanol is 6,000 ppm. In IDLH atmospheres, only the highest level of respiratory protection (e.g., full-facepiece pressure demand SCBA or SAR with auxiliary SCBA) should be used.

XI. EMERGENCY PROCEDURES FOR MOORING AND UNMOORING A VESSEL

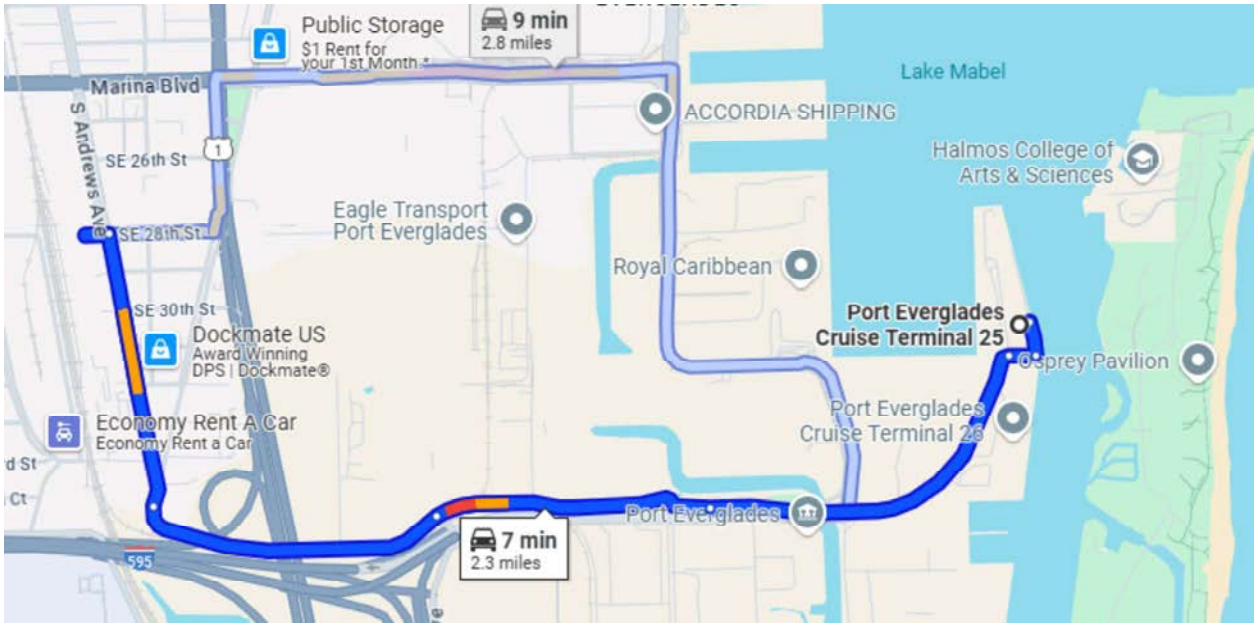
RCCL and Celebrity Cruise Lines is intimately familiar with all Port Plans and follows the direction of Port Everglades and the US Coast Guard with regards to ship dispersal and evacuation

plans with as a result of Severe Weather, Earthquakes, Tsunamis, and other Port Emergencies. There are adequate resources (Port Harbor Master) and pilot services to move ships in an orderly manner in response to an emergency and declaration of the Captain of the Port. The ship remains fully manned and is capable of getting underway upon termination of replenishment operations and if applicable, the termination and disconnection of the MeOH bunker hose. It should be noted that the coupling between the transfer hose and ships MeOH bunker manifold is by a quick disconnect dry coupling rather than the traditional bolt and flange set up greatly shortening the safe disconnect process.

Given the physical makeup of the Port, for other than ordered departures by the USCG, it is anticipated that all emergencies regarding the ship will be best handled alongside the pier with ready access to appropriate resources and that Ship Centric emergencies requiring an emergency departure are a highly improbable.

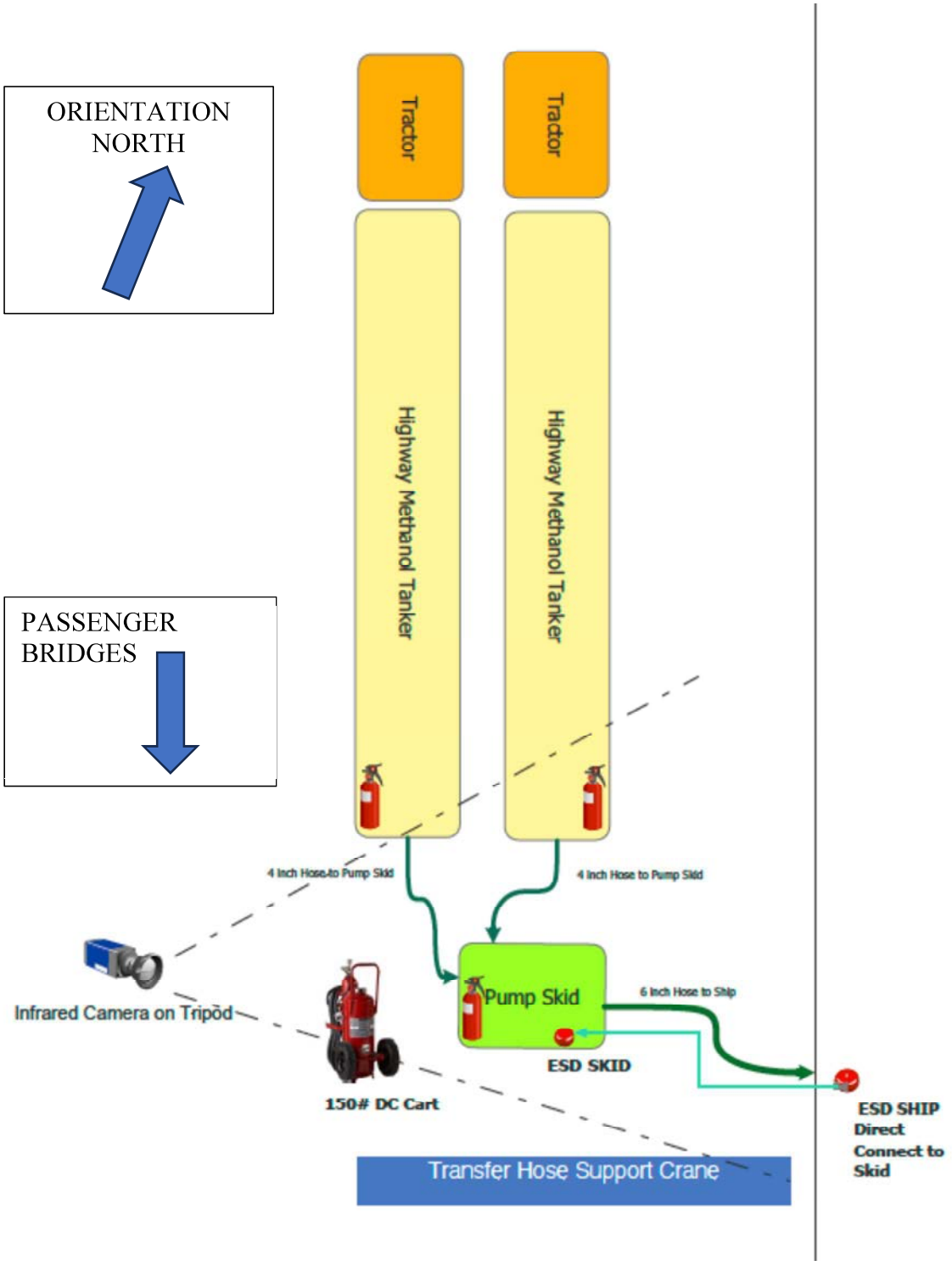
XII. APPENDICES

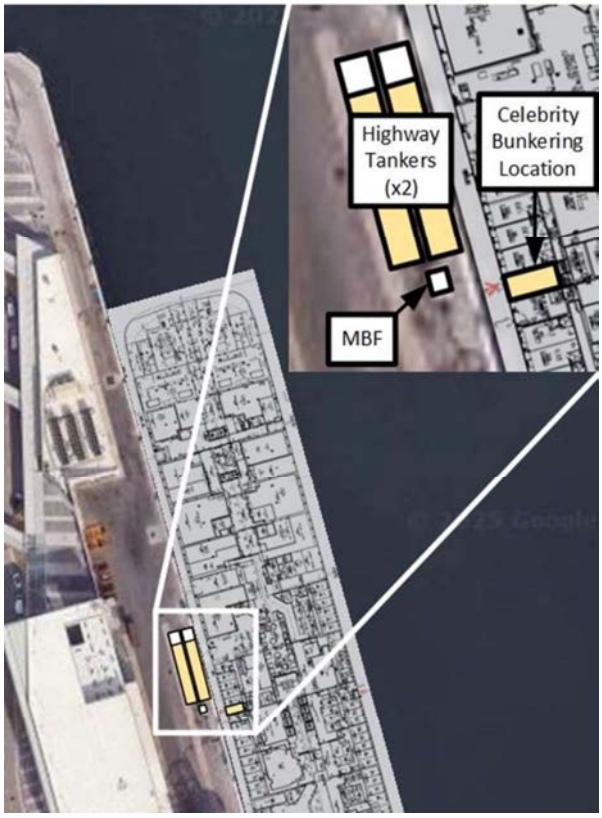
APPENDIX A – HIGHWAY TANKER ROUTE TO AND FROM MBF TRANSFER AREA



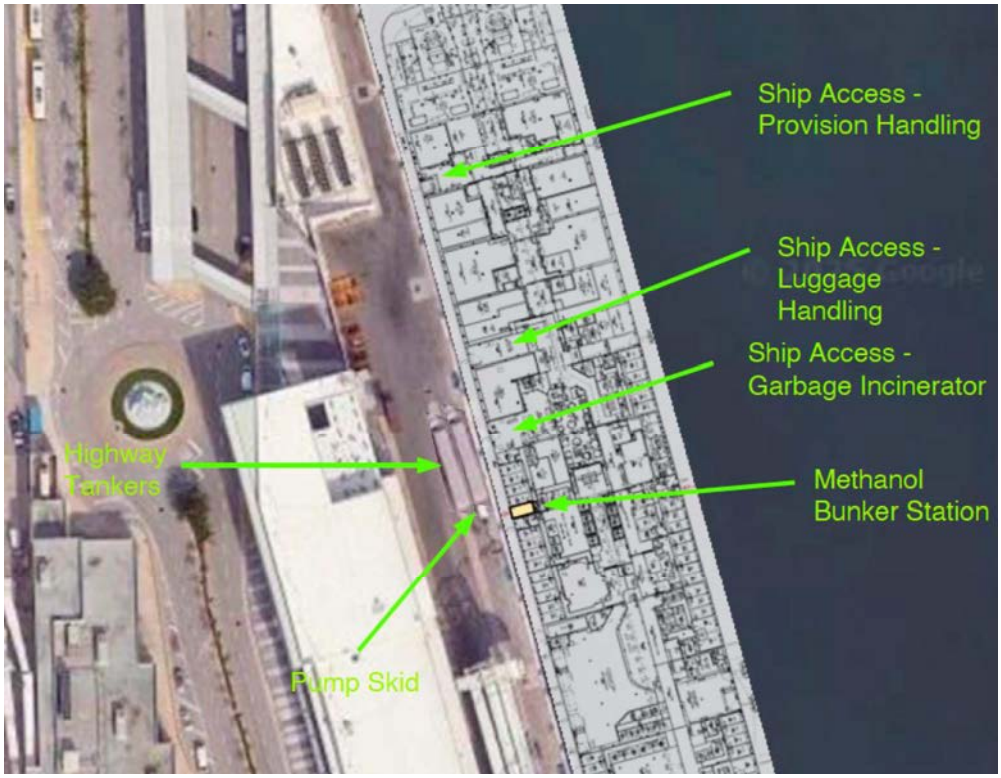
Total Distance from Rail Yard to Pier 25 is approximately 2.5 – 3.0 miles. Time for transit will vary depending on time of day and traffic. It is anticipated that the entire transit will take approximately 15 – 30 minutes.

APPENDIX B – MBF PLOT PLAN AND EQUIPMENT LAYOUT

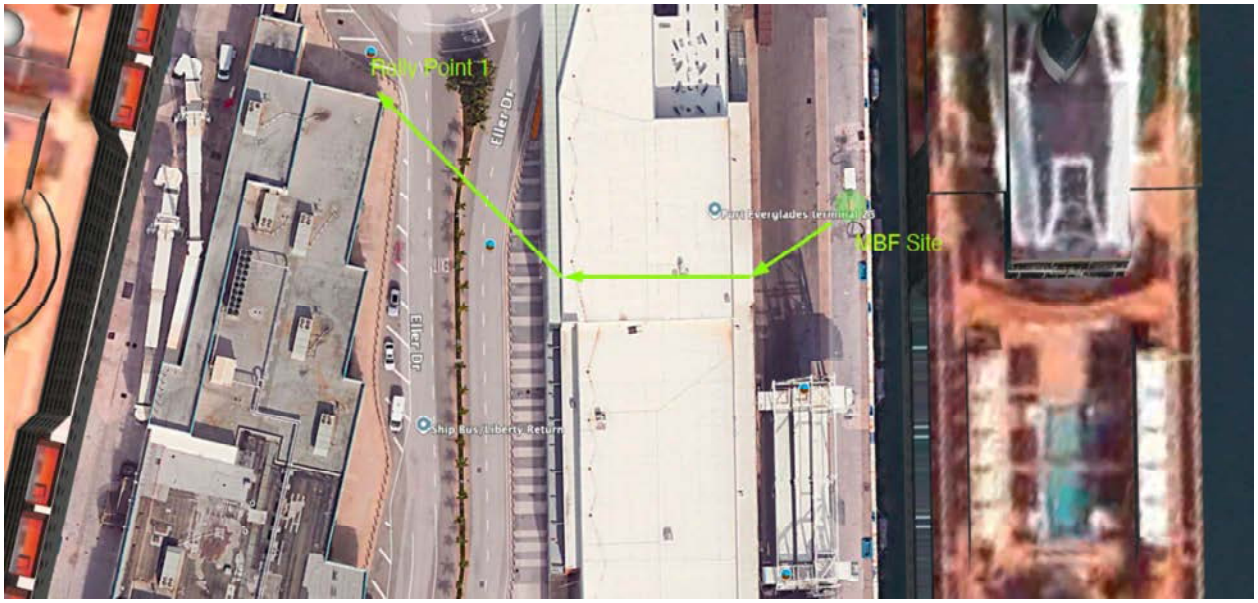




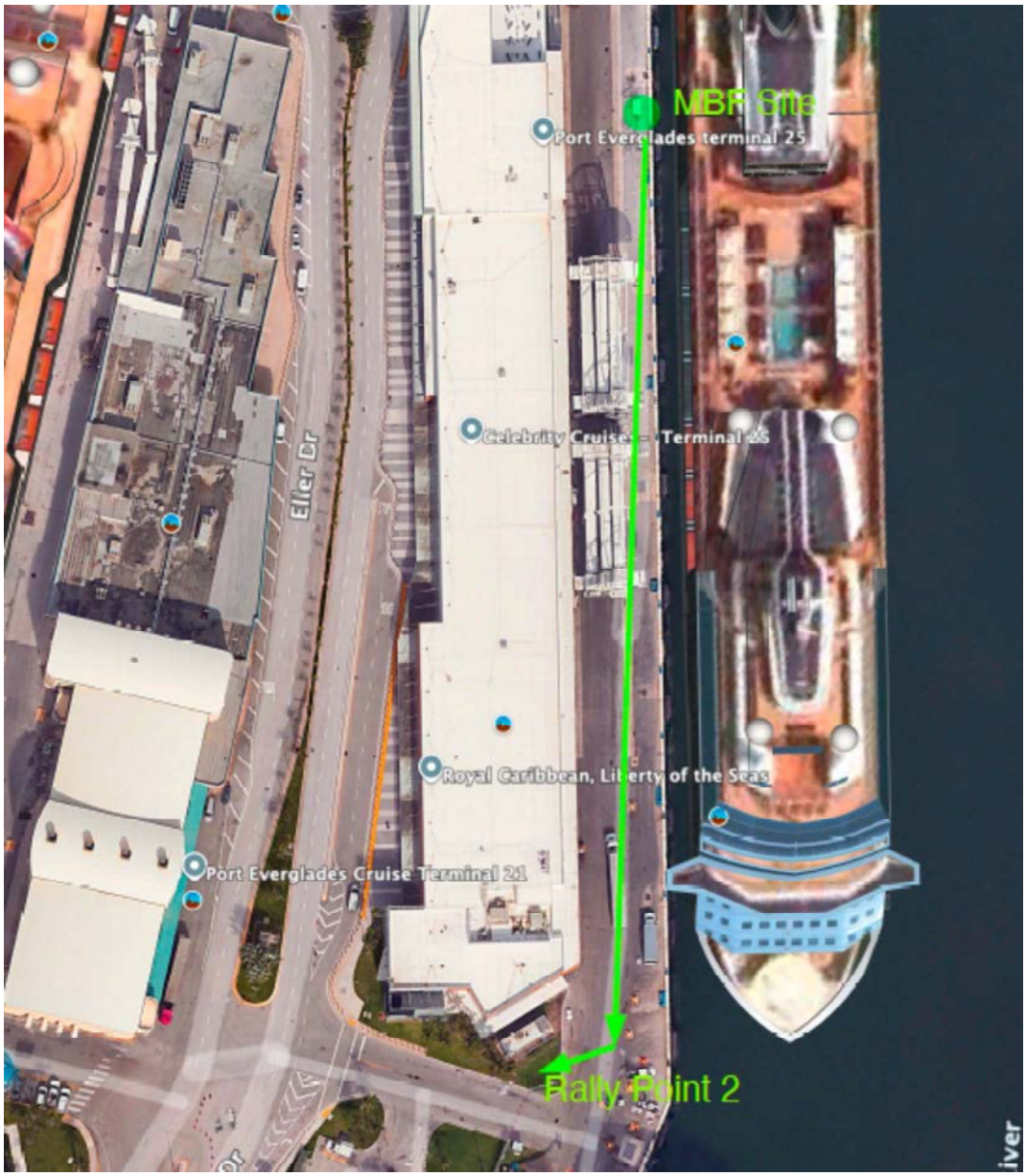
These graphics shows the ship alignment of its methanol bunker station with the anticipated layout of the MBF with two HTs connected. It also illustrates the access points on the ship used in SIMOPS. The distance from the northern point of the passenger bridges to the bunker site is approximately 105 ft. The approximately length of the HT and tractor is about 60 ft.



APPENDIX C – MBF EVACUATION AND RALLY POINTS



Total Distance from MBF to Rally Point 1 is approximately 360 ft. Doors through building may be locked not allowing entry. Check Evacuation Routes before transfer operations and ensure WCCF personnel are informed of the Rally Point and backup plans.



If Building doors are not open then Evacuation Route 2 is to be used. Distance from MBF to Rally Point 2 is approximately 740 ft. Check Evacuation Routes before transfer operations and ensure WCCF personnel are informed of the Rally Point and backup.

APPENDIX D - WCCF RESPONSE MANAGEMENT AND PERSONNEL

Response Management Structure

WCCF subscribes to a three tier emergency crisis management response. The following are levels comprise the Crisis Management System for WCCF.

WCCF uses the NIIMS Incident Management System for response management.

Local Response Team

The Local Response Management (LMT) Team consists of personnel assigned to the transfer process at Pier 25, Port Everglades . Their names and positions can be found in the USCG approved Operations and Emergency Manuals. These personnel can handle the following situations:

- Small leaks that can be handled locally with provided PPE and On-site equipment;
- Small fires that do not threaten other infrastructure or personnel working at the Port.;
- Minor injuries that do not require hospitalization or extensive medical care
- Situations that do not garner Public interest and potentially affect company interests;
- Incidents that do not affect the operation of the vessel receiving MeOH bunkers
- Incidents that do not affect the operation of the Port, neighboring ships and tenants;
- Incidents that do not require additional resources including response by local Fire Department or Emergency Management Services.

Incident Management Team

The Incident Management Team (IMT) consist of personnel assigned to the MeOH transfer process and additional resources and equipment necessary to mitigate a situation or incident. These include:

- Incidents that require additional outside resources to respond to mitigate the situation. These include calling the Broward County Fire Department, Police Department and other contracted resources as necessary;

- Leaks that might require transloading to other equipment to mitigate the situation or a significant release of liquid causing pooling and vaporization and have spilled into the harbor waters. (i.e. loss of the entire contents of an HT);
- Fires that are beyond the control of normal transfer personnel including subject matter experts in MeOH;
- Incidents that may affect the operation of the Port, neighboring ships and tenants;
- Incidents that may affect the safety of the local population or impact transportation arteries in the area;
- Serious medical injuries that affect a number of personnel and require hospitalization or significant medical intervention;
- Incidents that affect the integrity of the bunkering equipment or the vessel being bunkered;
- Significant local media interest and reporting.

Crisis Management Team

The Crisis Management Team (CMT) is stood up if there is an MeOH Emergency at the Port or on the vessel using MeOH as bunkers and has the potential for a catastrophic event. The Crisis Management Team is staffed by senior executives of WCCF and resources necessary to mitigate the situation. The main purpose of the CMT is to ensure adequate and appropriate resources are provided to the IMT managing the situation, to handle the media and to ensure accurate and timely information is provided in its handling of the Emergency. Situations that might require the standup of the CMT:

- Terrorist or Sabotage actions that cause extensive damage to the vessel or the port using the properties of MeOH to cause a VCE or Fire;
- An equipment malfunction that cause extensive damage to the vessel or the port using the properties of MeOH to cause a VCE or Fire;
- Emergencies seriously affecting the operation of the Port, neighboring vessels and other operations;
- Emergencies affecting the local population's safety;
- Emergencies that cause the closure of major transportation arteries in the area;

- Significant and long term local, regional and national media interest;
- Potential significant damage to the company reputation and its operations;
- Significant disruption of cruise ship voyages and operations.

Name	Responsibility	Contact
Matt Campbell	Project Manager Incident Commander Qualified Individual	(781) 771-8739 matt_campbell@pashanet.com
Captain Gregory Johnson	Pasha Hawaii Fleet Superintendent Response Coordinator	(619) 791-5427 (cell) (619) 419-1130 (office) Gregory_Johnson@pashanet.com
John Converse	World Fuel Services	(203) 824-2884 (Cell) jconverse@wfscorp.com
Mat Spencer	World Fuel Services	+44 73 4299 0953 (Cell)

Updated: 2025AUG24

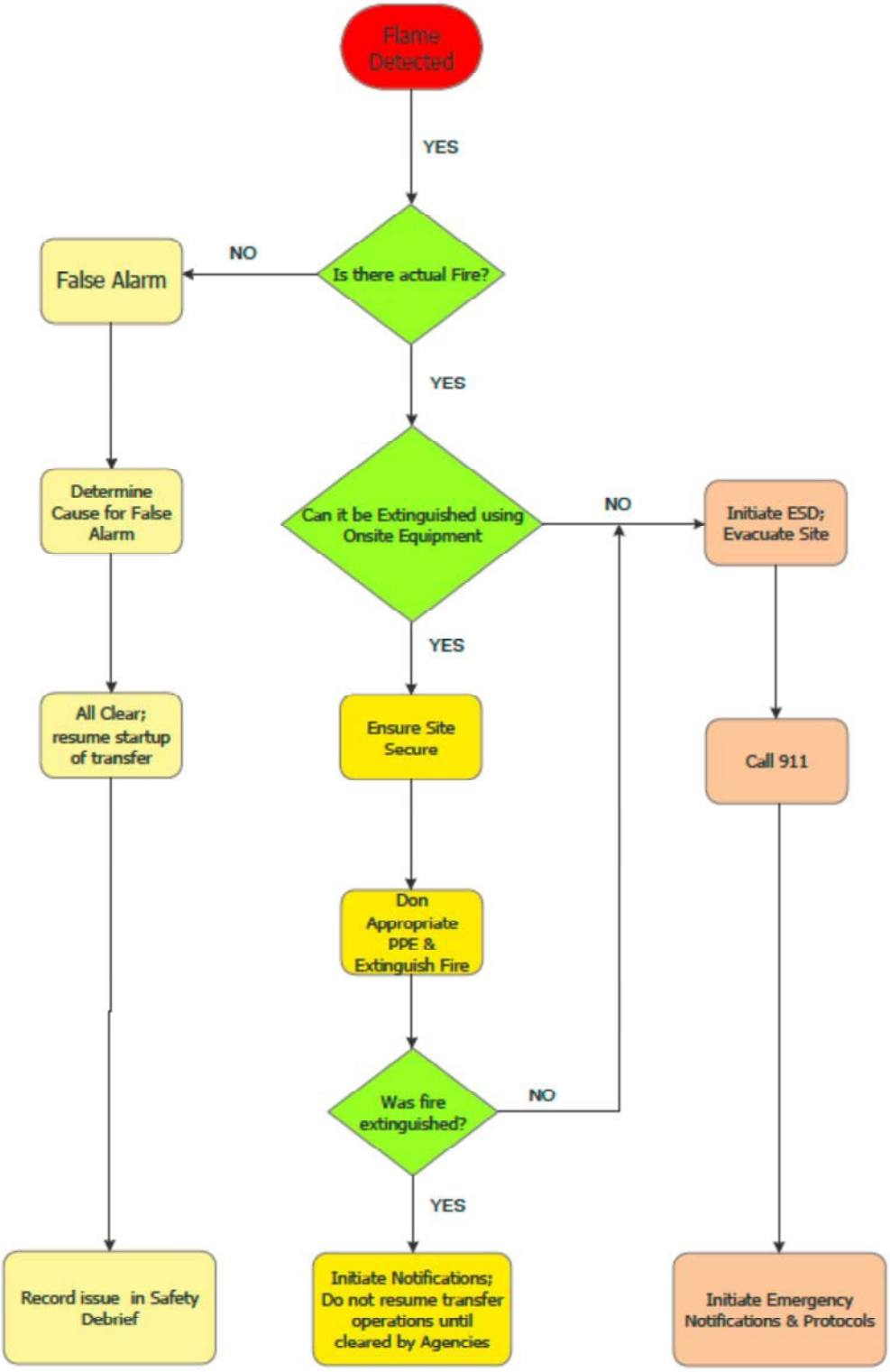
Additional personnel will be brought on to support response operations as necessary should the boundaries and severity of an incident require. The Incident Commander/Deputy Incident Commander as named above is empowered to obligate company resources and contract outside assets to facilitate adequate response capabilities and personnel. The Incident Commander will participate in Unified Command should the management structure be stood up during an incident.

Response personnel are familiar with the Incident Command System and have had training in NIIMS ICS.

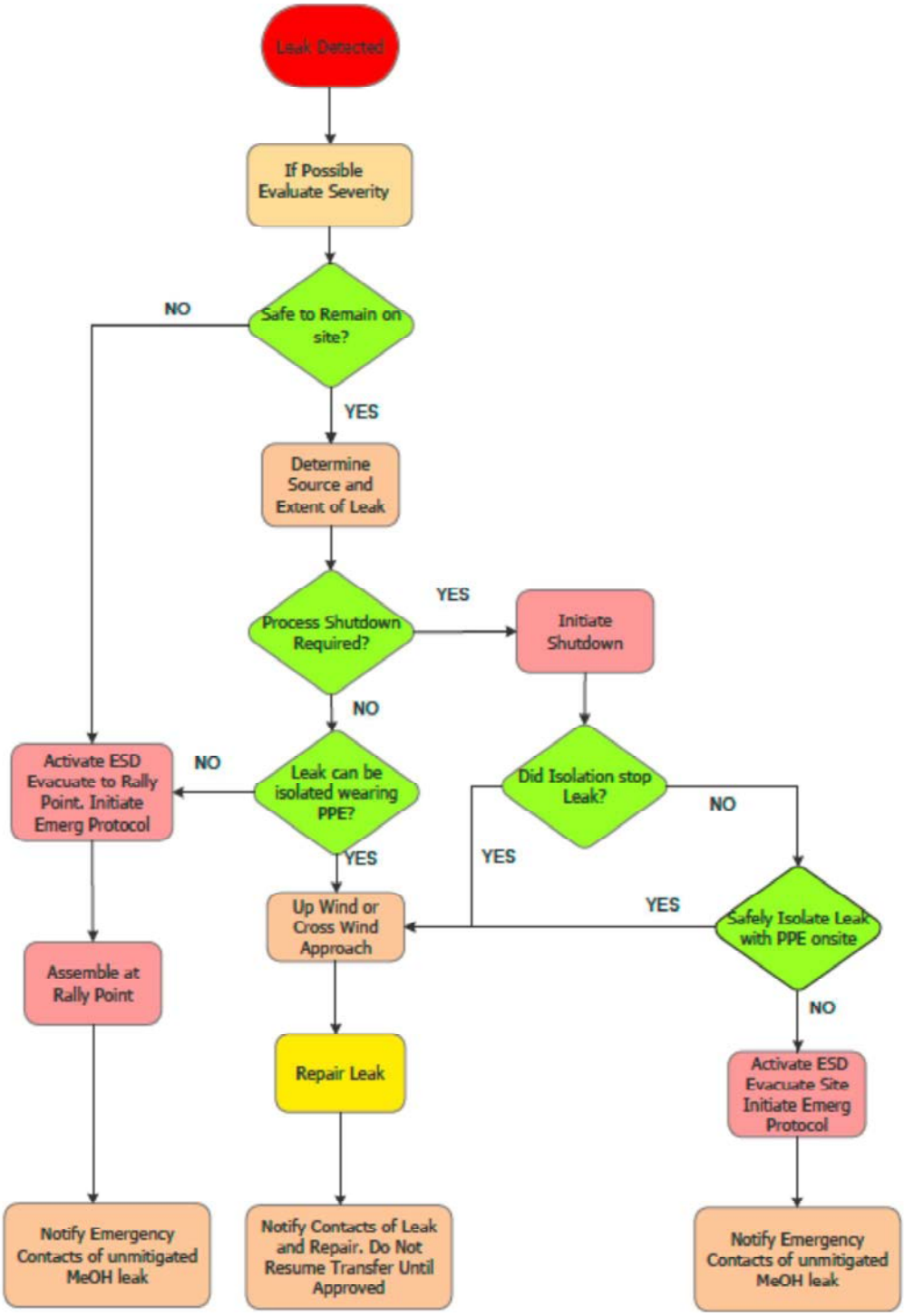
Local Response Contractor

WCCF has contracted with a local Emergency Response Contractor for services in response to a Methanol incident. The Response Contractor is CBI headquartered in Miami, FL and certified by the State of FL. Their emergency 24/7 contact number is found in APPENDIX H - EMERGENCY CONTACT NUMBERS.

APPENDIX E – MEOH FIRE RESPONSE FLOW CHART



APPENDIX F – MEOH LEAK RESPONSE FLOW CHART



APPENDIX G - FIRE EXTINGUISHERS SPECIFICATIONS AND USE

20# DRY CHEMICAL FIRE EXTINGUISHER[11]

A 20 lb. dry chemical (DC) fire extinguisher is designed for use on Class B (flammable liquids and gases) and Class C (electrical) fires. These extinguishers are not suitable for Class A (ordinary combustibles) or Class K (cooking fires).

Key features and considerations:

- **Class B and C Fires:** Primarily designed for flammable liquids like gasoline, oil, and grease, and energized electrical equipment fires.
- **Dry Chemical Agent**: Uses a siliconized sodium bicarbonate powder that smothers the fire.
- **Versatile Use**: Can be used in various settings like commercial kitchens, chemical storage areas, and mechanical rooms.
- P.A.S.S. Method: Remember to use the "P.A.S.S." method:
  - **P**ull the pin,
  - **A**im at the base of the fire,
  - **S**queeze the handle, and
  - **S**weep from side to side.
- **Weight and Handling:** A 20 lb. extinguisher can weigh around 33 lbs., so consider its weight and the user's ability to handle it effectively during an emergency.
- **Effectiveness:** Not effective on Class A (wood, paper, etc.) or Class K (cooking oil) fires.

[11] Courtesy Buckeye Fire Extinguishers

150# WHEELED DRY CHEMICAL FIRE EXTINGUISHER[12]

A 150 lb. wheeled dry chemical fire extinguisher is used to fight large fires involving flammable liquids, gases, and energized electrical equipment. It's designed for one-person operation and provides a large volume of extinguishing agent with a decent discharge range. Proper training in firefighting techniques and extinguisher operation is crucial before use.

Key features and considerations:

- **Position the extinguisher:** Move the wheeled extinguisher to within approximately 50 feet of the fire.
- **Secure the extinguisher:** Set it upright and ensure it is stable.
- **Prepare for discharge:** Remove the safety pin and break the tamper seal.
- **Open the valve:** Rotate and pull the handle to open the cylinder discharge valve.
- Remove the nozzle: Detach the nozzle from its mount.
- **Aim at the base of the fire:** Position yourself 30 feet from the fire and aim the nozzle at the base of the flames nearest to you.
- **Discharge the agent:** Open the nozzle by pulling the handle towards you and sweep the nozzle from side to side across the base of the fire, moving closer as the fire is extinguished.
- **Close the valve:** To stop the discharge, close the nozzle valve.
- **Secure the extinguisher:** Once the fire is out, close the cylinder valve, and move the extinguisher to a safe location.

[12] Courtesy Buckeye Fire Extinguishers

- **Depressurize the hose:** To clear the hose of any remaining pressure and agent, open the cylinder discharge valve and the hose valve, and then close them again once clear.
- **Store the extinguisher:** Ensure the extinguisher is depressurized, then coil the hose and place the nozzle in its mount for transport to a recharge location.
- Important Considerations:
- **Trained Personnel**: Only trained personnel should operate wheeled fire extinguishers.
- **Discharge Time:** Be aware of the approximate discharge time (usually around 48-60 seconds) and the effective range (30-40 feet).
- **Recoil:** Be prepared for a recoil when opening the nozzle.
- **Sweep Technique:** Ensure you sweep the nozzle across the base of the fire and not just point it in one spot.
- **Flashbacks:** Be aware of the potential for flashbacks and adjust your approach accordingly.
- **Securing:** Always close the valve to stop the discharge.

APPENDIX H - EMERGENCY CONTACT NUMBERS

AFFILIATION	Phone Number	Name of Person Contacted	Time Contacted
A. COMPANY PERSONNEL			
WCCF/Pasha Emergency Response Coordinator: Matt Campbell	(781) 771-8739 (cell)		
Pasha Hawaii Representative: Captain Greg Johnson	(619) 791-5427 (cell) (619) 419-1130 (office)		
World Fuel Services Representative: John Converse	(203) 824-2884 (Cell)		
World Fuel Services Representative: Mat Spencer	+44 73 4299 0953 (Cell)		
B. MANDATORY NOTIFICATIONS			
Broward County Emergency	911	(24 hours)	
National Response Center (NRC)	(800) 424-8802	(24 hours)	
USCG Sector Miami	(786) 777-0775	(24 hours)	
FL DEP	(850) 245-2010 Ext 1	(24 hours)	
Port Everglades OPCEN	(954) 765-4511	(24 hours)	
C. NOTIFICATIONS AS APPROPRIATE			
Federal Agencies			
EPA Region 4 Atlanta, GA	(800) 241-1754		
U.S. Fish and Wildlife Service	(800) 424-9300	(24 hours)	
State Agencies			
Florida Division of Emergency Management	(850) 815-4000		
Florida Department of Environmental Protection	(850) 245-2118		
FL OSHA (Fort Lauderdale)	(954) 424-0242		
Broward County Emergency Management Division	(954) 831-3900		
FL FWC (South Region)	(561) 357-4200	(24 hours)	
Local Agencies			
BC Department of Fire Rescue	911	(24 hours)	
Broward CO Sheriff's Office	911	(24 hours)	
Port Everglades Seaport Security	(964) 468-0116	(24 hours)	

D. EMERGENCY SERVICES - Emergency Medical/Hospitals (10 miles of Port Everglades)			
Broward Health Medical Center	(954) 355-4400		
HCA East Florida Division	(866) 442-2362		
Kindred Hospital South Florida – Ft. Lauderdale	(954) 764-8900		
Plantation General Hospital	(954) 587-5010		
Memorial Regional Hospital	(954) 987-2000		
E. RESPONSE CONTRACTORS Contracted			
Cliff Berry Inc. (CBI)	(800) 899-7745		
F. PORTS			
Port Everglades	(954) 523-3404		
Port Everglades Facility Security Officer/Assistant FSO	(954) 468-0119 (954) 468-0115		
H. WEATHER			
NOAA Weather Service Miami	(305) 229-4522	https://www.weather.gov/mfl	
I. TECHNICAL SERVICES			
Chemtrec	(800) 424-9300	(24 hours)	

Updated: 2025AUG20

APPENDIX I – MEOH SAFETY DATA SHEET (SDS)

SEE INCLUDED DOCUMENT – METHANEX METHANOL SDS

Supercedes date	Issuing Date	Revision Date	Revision Number
15-May-2023	12-Sep-2016	17-Oct-2023	3.3

(Due to size provided as separate document)

APPENDIX J - MEOH ERG 2024 GUIDE 131

ERG 2024
Guide 131 Flammable Liquids Toxic

POTENTIAL HAZARDS

HEALTH

- **TOXIC; may be fatal if inhaled, ingested or absorbed through skin.**
- Inhalation or contact with some of these materials will irritate or burn skin and eyes.
- Methyl chloroacetate (UN2295) is an eye irritant/lachrymator (causes flow of tears).
- Fire will produce irritating, corrosive and/or toxic gases.
- Vapors may cause dizziness or asphyxiation, especially when in closed or confined areas.
- Runoff from fire control or dilution water may cause environmental contamination.

FIRE OR EXPLOSION

- **HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames.**

CAUTION: Methanol (UN1230) will burn with an invisible flame. Use an alternate method of detection (thermal camera, broom handle, etc.)

- Vapors may form explosive mixtures with air.
- Vapors may travel to source of ignition and flash back.
- Most vapors are heavier than air. They will spread along the ground and collect in low or confined areas (sewers, basements, tanks, etc.).
- Vapor explosion and poison hazard indoors, outdoors or in sewers.
- Those substances designated with a **(P)** may polymerize explosively when heated or involved in a fire.
- Runoff to sewer may create fire or explosion hazard.
- Containers may explode when heated.
- Many liquids will float on water.

PUBLIC SAFETY

CALL 911. Then call emergency response telephone number on shipping paper. If shipping paper not available or no answer, refer to appropriate telephone number.

- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate closed spaces before entering, but only if properly trained and equipped.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer **when there is NO RISK OF FIRE.**
- Structural firefighters' protective clothing provides thermal protection **but only limited chemical protection.**

EVACUATION

Immediate precautionary measure

- Isolate spill or leak area for at least 50 meters (150 feet) in all directions.

Spill

- For highlighted materials: see Protective Distance tab - Initial Isolation and Protective Action Distances.
- For non-highlighted materials: increase the immediate precautionary measure distance, in the downwind direction, as necessary.

ERG 2024
Guide 131 Flammable Liquids Toxic

Fire

- If tank, rail tank car or highway tank is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

CAUTION: The majority of these products have a very low flash point. Use of water spray when fighting fire may be inefficient.
CAUTION: Methanol (UN1230) will burn with an invisible flame. Use an alternate method of detection (thermal camera, broom handle, etc.)

Small Fire

- Dry chemical, CO_2, water spray or alcohol-resistant foam.

Large Fire

- Water spray, fog or alcohol-resistant foam.
- If it can be done safely, move undamaged containers away from the area around the fire.
- Dike runoff from fire control for later disposal.
- Avoid aiming straight or solid streams directly onto the product.

Fire Involving Tanks, Rail Tank Cars or Highway Tanks

- Fight fire from maximum distance or use unmanned master stream devices or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks in direct contact with flames.
- For massive fire, use unmanned master stream devices or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames) from immediate area.
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- A vapor-suppressing foam may be used to reduce vapors.

Small Spill

- Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.
- Use clean, non-sparking tools to collect absorbed material.

Large Spill

- Dike far ahead of liquid spill for later disposal.
- Water spray may reduce vapor, but may not prevent ignition in closed spaces.

FIRST AID

ERG 2024
Guide 131 Flammable Liquids Toxic

Refer to the "General First Aid" section.

Specific First Aid:
- Wash skin with soap and water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.

XIII. RECORD OF CHANGES

Date	Change

SAFETY DATA SHEET

This safety data sheet was created pursuant to the requirements of:
Regulation (EC) No. 1907/2006 as amended by Commission Regulation (EU) 2020/878
and Regulation (EC) No. 1272/2008

Supercedes date 15-May-2023 **Issuing Date** 12-Sep-2016 **Revision Date** 17-Oct-2023 **Revision Number** 3.3

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product Name	Methanol
REACH registration number	01-2119433307-44-0031
EC No (EU Index No)	200-659-6
CAS No	67-56-1
Synonyms	Methyl alcohol, wood alcohol, methyl hydroxide
Pure substance/mixture	Substance
Molecular weight	32.04
Other information	Chemical Family - Alcohols

1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended use	Industrial use, Professional use, Consumer use: Solvent Fuels Raw material Cleaning agent Laboratory reagent Use in oil and gas field drilling and production operations Water treatment chemicals, wastewater Consumer use of cleaning agents and de-icers
Uses advised against	None known

1.3. Details of the supplier of the safety data sheet

Supplier
Methanex Europe SA/NV
Waterloo Office Park - Building C
Drève Richelle 161 - C
B-1410 Waterloo
Belgium
Phone: +(32) 2 352 06 70

For further information, please contact
E-mail address reach@methanex.com

1.4. Emergency telephone number

Emergency telephone Carechem 24 International: +44 (0) 1235 239 670 (24h/7d)

Emergency telephone - §45 - (EC)1272/2008	
Europe	**112**

Belgium	Belgian Poison Centre: 070 245 245 (French and Dutch)
Croatia	Croatian Institute of Public Health, Division for Toxicology: +38514686910 (Monday-Friday, 8:00 - 15:00 local time)
France	ORFILA – Poison Control Centers : +33 (0)1 45 42 59 59 Carechem 24 International: +33 1 72 11 00 03
Germany	Carechem 24 International: +49 89 220 61012, 0800 000 7801 (toll-free, access from Germany only)
Greece	(0030) 2107793777 (24 hours per day, 7 days per week) Carechem 24 International: +30 21 1198 3182
Hungary	Health Toxicological Information Service in Hungary (ETTSZ): +36 80 20 11 99
Italy	National Toxicology Information Center: +39 0382/26261 Carechem 24 International: 800 699 792
Netherlands	Nationaal Vergiftigingen Informatie Centrum (NVIC): +31 (0)30 2748888 – Only for the purpose of informing medical personnel in cases of acute intoxications Carechem 24 International: +31 10 713 8195
Poland	Carechem 24 International: +48 22 307 3690
Portugal	Portuguese Poison Center (CIAV): 808 250 143 (24 hours/365 days) Carechem 24 International: +351 30880 4750
Romania	International Health Regulations and Toxicological Information Office: 021.318.36.06 (direct) (Monday to Friday, between 8:00 and 15:00, local time)
Spain	National Toxicology Information Centre (SIT): +34 (0)91 562 04 20 (24 hours/365 days) Carechem 24 International: +34 91 114 2520
Sweden	112 – ask for Poisons Information Carechem 24 International: +46 8 566 42573
Switzerland	145

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Flammable liquids	Category 2 - (H225)
Acute toxicity - Oral	Category 3 - (H301)
Acute toxicity - Dermal	Category 3 - (H311)
Acute toxicity - Inhalation (Vapours)	Category 3 - (H331)
Specific target organ toxicity — single exposure	Category 1 - (H370)

2.2. Label elements

Contains Methanol

Signal word
Danger

Hazard statements
H301 - Toxic if swallowed.
H311 - Toxic in contact with skin.
H331 - Toxic if inhaled.
H370 - Causes damage to organs.
H225 - Highly flammable liquid and vapour.

Precautionary Statements - EU (§28, 1272/2008)
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P260 - Do not breathe dust/fume/gas/mist/vapours/spray.

P301 + P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor.
P321 - Specific treatment (see supplemental first aid instructions on this label).
P370 + P378 - In case of fire: Use dry chemical, CO2, water spray or alcohol-resistant foam to extinguish.
P403 + P233 - Store in a well-ventilated place. Keep container tightly closed.

Additional information
This product requires tactile warnings if supplied to the general public. This product requires child resistant fastenings if supplied to the general public.

2.3. Other hazards
Harmful to aquatic life. Risk of blindness after swallowing the product.
This substance does not meet the PBT/vPvB criteria of REACH, annex XIII.

Endocrine Disruptor Information This product does not contain any known or suspected endocrine disruptors.

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical name	Weight-%	REACH registration number	EC No (EU Index No)	Classification according to Regulation (EC) No. 1272/2008 [CLP]	Specific concentration limit (SCL)	M-Factor	M-Factor (long-term)
Methanol 67-56-1	100	01-2119433307-44-0031	200-659-6	Acute Tox. 3 (H301) Acute Tox. 3 (H311) Acute Tox. 3 (H331) STOT SE 1 (H370) Flam. Liq. 2 (H225)	STOT SE 1 :: C>=10% STOT SE 2 :: 3%<=C<10%	-	-

Full text of H- and EUH-phrases: see section 16

Acute Toxicity Estimate
If LD50/LC50 data is not available or does not correspond to the classification category, then the appropriate conversion value from CLP Annex I, Table 3.1.2, is used to calculate the acute toxicity estimate (ATEmix) for classifying a mixture based on its components

Chemical name	Oral LD50 mg/kg	Dermal LD50 mg/kg	Inhalation LC50 - 4 hour - dust/mist - mg/L	Inhalation LC50 - 4 hour - vapour - mg/L	Inhalation LC50 - 4 hour - gas - ppm
Methanol 67-56-1	100	300	No data available	3	No data available

This product does not contain candidate substances of very high concern at a concentration >=0.1% (Regulation (EC) No. 1907/2006 (REACH), Article 59)

SECTION 4: First aid measures

4.1. Description of first aid measures

General advice Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

Inhalation Remove to fresh air. IF exposed or concerned: Get medical advice/attention. If breathing is irregular or stopped, administer artificial respiration. Immediate medical attention is required. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If breathing is difficult, (trained personnel should) give oxygen.

Eye contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area. Get immediate medical attention.

Skin contact Wash off immediately with soap and plenty of water for at least 15 minutes. Remove/Take off immediately all contaminated clothing. Get immediate medical attention.

Ingestion Do NOT induce vomiting. Rinse mouth. Never give anything by mouth to an unconscious person. Get immediate medical attention.

Self-protection of the first aider Remove all sources of ignition. Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Use personal protective equipment as required. See section 8 for more information. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Do not breathe vapour or mist.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms Exposure may cause nausea, weakness and central nervous system effects, headache, vomiting, dizziness, symptoms of drunkenness. Coma and death due to respiratory failure may follow severe exposures: Medical treatment necessary. A latent period of several hours may occur between exposure and the onset of symptoms. May cause blindness.

Effects of Exposure Causes damage to organs: Eyes.

4.3. Indication of any immediate medical attention and special treatment needed

Note to doctors The severity of outcome following methanol ingestion may be more related to the time between ingestion and treatment, rather than the amount ingested; therefore, there is a need for rapid treatment of any ingestion exposure. Call a Poison Center. Antidote: Fomepizole enhances elimination of metabolic formic acid. Antidote should be administered by qualified medical personnel.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable Extinguishing Media Use water spray to cool fire-exposed containers. Water will not cool methanol below its flash point. Dry chemical. Carbon dioxide (CO2). Water spray. Alcohol resistant foam. Dry sand.

Unsuitable extinguishing media Do not use straight streams. Do not scatter spilled material with high pressure water streams.

5.2. Special hazards arising from the substance or mixture

Specific hazards arising from the chemical

Mixtures >20% methanol with water: flammable. Highly flammable liquid and vapour. Risk of ignition. Keep product and empty container away from heat and sources of ignition. Vapours are heavier than air and may spread along floors. In the event of fire, cool tanks with water spray. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Hazardous combustion products

Toxic gases or vapours. Carbon monoxide. Carbon dioxide (CO2). Formaldehyde.

5.3. Advice for firefighters

Special protective equipment and precautions for fire-fighters

Methanol: Burns with invisible flame. Flame may not be visible in daylight. Cool containers with flooding quantities of water until well after fire is out. Fires need to be assessed to determine appropriate protocols and safety measures for firefighting, including establishing safe zones, extinguishing media to be used, firefighter protection, and actions to control or extinguish the fire. Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions

Evacuate personnel to safe areas. Use personal protective equipment as required. See section 8 for more information. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Keep people away from and upwind of spill/leak. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Pay attention to flashback. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Do not breathe vapour or mist.

Other information

Ventilate the area. Refer to protective measures listed in Sections 7 and 8.

For emergency responders

Use personal protection recommended in Section 8.

6.2. Environmental precautions

Environmental precautions

Avoid release to the environment. Dispose of contents/containers in accordance with local regulations. Biodegradable at low concentrations. Soluble in water. When released, this product is expected to evaporate. Contact authorities in the event of pollution of soil and aquatic environment or discharge into drains. Refer to protective measures listed in Sections 7 and 8. Prevent further leakage or spillage if safe to do so. Prevent product from entering drains.

6.3. Methods and material for containment and cleaning up

Methods for containment

Stop leak if you can do it without risk. Do not touch or walk through spilled material. A vapour suppressing foam may be used to reduce vapours. Dyke far ahead of spill to collect run-off water. Keep out of drains, sewers, ditches and waterways. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.

Methods for cleaning up

Take precautionary measures against static discharges. Dyke far ahead of liquid spill for later disposal. Soak up with inert absorbent material. Pick up and transfer to properly labelled containers. Small spill: Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Use non-sparking tools. Collect spillage. Place in appropriate chemical waste container. Clean contaminated surface thoroughly. Large spill: Dyke far ahead of spill; use dry sand to contain the flow of material. Use clean non-sparking tools to collect absorbed material.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

6.4. Reference to other sections

Reference to other sections Safe handling: see Section 7. Personal protection equipment (PPE): see Section 8. Disposal: see Section 13

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling Use according to package label instructions. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use grounding and bonding connection when transferring this material to prevent static discharge, fire or explosion. Use spark-proof tools and explosion-proof equipment. Keep in an area equipped with sprinklers. Do not eat, drink or smoke when using this product. Handle product only in closed system or provide appropriate exhaust ventilation. Use personal protection equipment. Avoid contact with skin, eyes or clothing. Take off contaminated clothing and wash it before reuse. Do not breathe vapour or mist. In case of insufficient ventilation, wear suitable respiratory equipment. Do not enter confined area unless adequately ventilated.

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product. Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Do not breathe vapour or mist. Do not eat, drink or smoke when using this product.

7.2. Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity). Keep in properly labelled containers. Do not store near combustible materials. Keep in an area equipped with sprinklers. Store in accordance with local regulations. Keep unauthorised personnel away. Store locked up.

Storage class (TRGS 510) LGK 3.

7.3. Specific end use(s)

Specific use(s) Manufacture of substance. Formulation & (re)packing of substances and mixtures Distribution of formulations. Use as an intermediate. Use as a Process chemical Distribution of substance. Use as a Fuel (use in industrial settings). Use in Cleaning Agents (use in industrial settings). Use as laboratory reagent/agent (use in industrial settings). Use as wastewater treatment chemical (use in industrial settings). Use in Oilfield drilling and production operations (use in industrial settings). Use as a Fuel (use in professional settings). Use in Cleaning Agents (use in professional settings). Use as laboratory reagent/agent (use in professional settings). Use in Cleaning Agents Use in De-icing and Anti-icing agents (consumer use) (spray products). Use in Cleaning Agents Use in De-icing and Anti-icing agents (consumer use) (liquid products). Use as Fuel additive (consumer use) (outdoor use).

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure Limits

Chemical name	European Union	Austria	Belgium	Bulgaria	Croatia
Methanol 67-56-1	TWA: 200 ppm TWA: 260 mg/m^3 *	TWA: 200 ppm TWA: 260 mg/m^3 STEL 800 ppm STEL 1040 mg/m^3 H*	TWA: 200 ppm TWA: 266 mg/m^3 STEL: 250 ppm STEL: 333 mg/m^3 D*	TWA: 200 ppm TWA: 260.0 mg/m^3 K*	TWA: 200 ppm TWA: 260 mg/m^3 *
Chemical name	Cyprus	Czech Republic	Denmark	Estonia	Finland
Methanol 67-56-1	* TWA: 200 ppm TWA: 260 mg/m^3	TWA: 250 mg/m^3 Ceiling: 1000 mg/m^3 D*	TWA: 200 ppm TWA: 260 mg/m^3 H* STEL: 400 ppm STEL: 520 mg/m^3	TWA: 200 ppm TWA: 250 mg/m^3 STEL: 250 ppm STEL: 350 mg/m^3 A*	TWA: 200 ppm TWA: 270 mg/m^3 STEL: 250 ppm STEL: 330 mg/m^3 iho*
Chemical name	France	Germany TRGS	Germany DFG	Greece	Hungary
Methanol 67-56-1	TWA: 200 ppm TWA: 260 mg/m^3 STEL: 1000 ppm STEL: 1300 mg/m^3 *	TWA: 100 ppm TWA: 130 mg/m^3 H*	TWA: 100 ppm TWA: 130 mg/m^3 Peak: 200 ppm Peak: 260 mg/m^3 *	TWA: 200 ppm TWA: 260 mg/m^3 STEL: 250 ppm STEL: 325 mg/m^3 *	TWA: 260 mg/m^3 TWA: 200 ppm b*
Chemical name	Ireland	Italy MDLPS	Italy AIDII	Latvia	Lithuania
Methanol 67-56-1	TWA: 200 ppm TWA: 260 mg/m^3 STEL: 600 ppm STEL: 780 mg/m^3 Sk*	TWA: 200 ppm TWA: 260 mg/m^3 cute*	TWA: 200 ppm TWA: 262 mg/m^3 STEL: 250 ppm STEL: 328 mg/m^3 cute*	TWA: 200 ppm TWA: 260 mg/m^3 Ada*	O* TWA: 200 ppm TWA: 260 mg/m^3
Chemical name	Luxembourg	Malta	Netherlands	Norway	Poland
Methanol 67-56-1	Peau* TWA: 200 ppm TWA: 260 mg/m^3	skin* TWA: 200 ppm TWA: 260 mg/m^3	TWA: 100 ppm TWA: 133 mg/m^3 H*	TWA: 100 ppm TWA: 130 mg/m^3 STEL: 150 ppm STEL: 162.5 mg/m^3 H*	STEL: 300 mg/m^3 TWA: 100 mg/m^3 Prohibited - substances or mixtures containing Methanol in weight concentration >3%;except fuels used in the model building, powerboating, fuel cells and biofuels skóra*
Chemical name	Portugal	Romania	Slovakia	Slovenia	Spain
Methanol 67-56-1	TWA: 200 ppm TWA: 260 mg/m^3 STEL: 250 ppm Cutânea*	TWA: 200 ppm TWA: 260 mg/m^3 P*	TWA: 200 ppm TWA: 260 mg/m^3 K*	TWA: 200 ppm TWA: 260 mg/m^3 STEL: 800 ppm STEL: 1040 mg/m^3 K*	TWA: 200 ppm TWA: 266 mg/m^3 vía dérmica*

Chemical name	Sweden	Switzerland	United Kingdom
Methanol 67-56-1	NGV: 200 ppm NGV: 250 mg/m^3 Vägledande KGV: 250 ppm Vägledande KGV: 350 mg/m^3 H*	TWA: 200 ppm TWA: 260 mg/m^3 STEL: 400 ppm STEL: 520 mg/m^3 H*	TWA: 200 ppm TWA: 266 mg/m^3 STEL: 250 ppm STEL: 333 mg/m^3 Sk*

Other information on limit values OEL values in accordance with Commission Directive 2000/39/EC of 8 June 2003, as amended, establishing a first list of indicative occupational exposure limit values in the implementation of Council Directive 98/24/EC

Biological occupational exposure limits

Chemical name	European Union	Austria	Bulgaria	Croatia	Czech Republic
Methanol	-	-	-	7.0 mg/g Creatinine	0.47 mmol/L (urine -

67-56-1				- urine (Methanol) - at the end of the work shift	Methanol end of shift) 15 mg/L (urine - Methanol end of shift)

Chemical name	Denmark	Finland	France	Germany DFG	Germany TRGS
Methanol 67-56-1	-	-	- urine (Methanol) - end of shift	15 mg/L (urine - Methanol end of shift) 15 mg/L (urine - Methanol for long-term exposures: at the end of the shift after several shifts) 15 mg/L - BAT (for long-term exposures: at the end of the shift after several shifts) urine 15 mg/L - BAT (end of exposure or end of shift) urine	15 mg/L (urine - Methanol end of shift) 15 mg/L (urine - Methanol for long-term exposures: at the end of the shift after several shifts)

Chemical name	Hungary	Ireland	Italy MDLPS	Italy AIDII
Methanol 67-56-1	30 mg/L (urine - Methanol end of shift) 940 µmol/L (urine - Methanol end of shift)	15 mg/L (urine - Methanol end of shift)	-	15 mg/L - urine (Methanol) - end of shift

Chemical name	Latvia	Luxembourg	Romania	Slovakia
Methanol 67-56-1	-	-	6 mg/L - urine (Methanol) - end of shift	30 mg/L (urine - Methanol end of exposure or work shift) 30 mg/L (urine - Methanol after all work shifts)

Chemical name	Slovenia	Spain	Switzerland	United Kingdom
Methanol 67-56-1	15 mg/L - urine (Methanol) - at the end of the work shift; for long-term exposure: at the end of the work shift after several consecutive workdays	15 mg/L (urine - Methanol end of shift)	30 mg/L (urine - Methanol end of shift, and after several shifts (for long-term exposures)) 936 µmol/L (urine - Methanol end of shift, and after several shifts (for long-term exposures))	-

Derived No Effect Level (DNEL) - Workers

Chemical name	Oral	Dermal	Inhalation
Methanol 67-56-1	-	20 mg/kg bw/day [4] [6] 20 mg/kg bw/day [4] [7]	130 mg/m^3 [4] [6] 130 mg/m^3 [4] [7] 130 mg/m^3 [5] [6] 130 mg/m^3 [5] [7]

Notes

[4]	Systemic health effects.
[5]	Local health effects.
[6]	Long term.
[7]	Short term.

Derived No Effect Level (DNEL) - General Public

Chemical name	Oral	Dermal	Inhalation
Methanol 67-56-1	4 mg/kg bw/day [4] [6] 4 mg/kg bw/day [4] [7]	4 mg/kg bw/day [4] [6] 4 mg/kg bw/day [4] [7]	26 mg/m^3 [4] [6] 26 mg/m^3 [4] [7] 26 mg/m^3 [5] [6] 26 mg/m^3 [5] [7]

Notes

[4]	Systemic health effects.
[5]	Local health effects.
[6]	Long term.
[7]	Short term.

Predicted No Effect Concentration (PNEC) No hazard identified. With high probability the substance is not hazardous to aquatic life. No environmental risk assessment is necessary.

Chemical name	Freshwater	Freshwater (intermittent release)	Marine water	Marine water (intermittent release)	Air
Methanol 67-56-1	20.8 mg/L	1540 mg/L	2.08 mg/L	-	-

Chemical name	Freshwater sediment	Marine sediment	Sewage treatment	Soil	Food chain
Methanol 67-56-1	77 mg/kg sediment dw	7.7 mg/kg sediment dw	100 mg/L	100 mg/kg soil dw	-

8.2. Exposure controls

Engineering controls Provide local exhaust ventilation. Handle product only in closed system or provide appropriate exhaust ventilation. Use explosion-proof ventilating equipment. All equipment used when handling the product must be grounded. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protective equipment

Eye/face protection Tight sealing safety goggles. Eye protection must conform to standard EN 166.

Hand protection Wear suitable gloves. Impervious gloves. Butyl rubber. Gloves must conform to standard EN 374.

Skin and body protection Wear suitable protective clothing (EN ISO 6529).

Respiratory protection Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode. Use a properly fitted, air-purifying or supplied air respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator (EN 137).

General advice PPE assigned in accordance with Council Directive 89/656/EEC of 30 November 1989, as amended, concerning the minimum safety and health requirements for the use by workers of personal protective equipment at the workplace.

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work

area and clothing is recommended. Wash hands before breaks and immediately after handling the product. Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Do not breathe vapour or mist. Do not eat, drink or smoke when using this product.

Environmental exposure controls Avoid release to the environment. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	Clear liquid
Physical state	Liquid
Colour	Clear
Odour	Alcohol
Odour threshold	4.2 - 5960 ppm

Property	Values	Remarks • Method
Melting point / freezing point	-97.8 °C	No data available
Initial boiling point and boiling range	64.7 °C	No data available
Flammability		No data available
Flammability Limit in Air		
Upper flammability or explosive limits	36.5%	No data available
Lower flammability or explosive limits	5.5%	No data available
Flash point	11 °C	No data available
Autoignition temperature	464 °C	No data available
Decomposition temperature		No data available
pH		No data available
pH (as aqueous solution)		No data available
Kinematic viscosity		No data available
Dynamic viscosity	0.8 cP	@ 20 °C
Water solubility	Miscible in water	No data available
Solubility(ies)		No data available
Partition coefficient	-0.77	log Pow
Vapour pressure	12.8 kPa	@ 20 °C
Relative density	0.791 - 0.793	@20°C
Bulk density		No data available
Liquid Density		No data available
Relative vapour density	1.1	@ 20 °C (air = 1)
Particle characteristics		
Particle Size		No data available
Particle Size Distribution		No data available

9.2. Other information

Molecular weight	32.04
VOC content	100%

9.2.1. Information with regards to physical hazard classes

Explosive properties	Vapours may form explosive mixtures with air

9.2.2. Other safety characteristics

Evaporation rate	4.1 Butyl acetate = 1

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity Containers may rupture or explode if exposed to heat.

10.2. Chemical stability

Stability Stable under normal conditions. May form flammable/explosive vapour-air mixture. Hygroscopic.

Explosion data

Sensitivity to mechanical impact None.

Sensitivity to static discharge Yes.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions None under normal processing.

10.4. Conditions to avoid

Conditions to avoid Heat, flames and sparks. Excessive heat. Containers may rupture or explode if exposed to heat.

10.5. Incompatible materials

Incompatible materials Lead. Aluminium. Zinc. Oxidising agent. Strong acids. Strong bases. Polyethylene. Polyvinyl chloride (PVC). Nitriles.

10.6. Hazardous decomposition products

Hazardous decomposition products Carbon monoxide. Carbon dioxide (CO2). Formaldehyde.

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Information on likely routes of exposure

Product Information

Inhalation Toxic by inhalation.

Eye contact May cause irritation.

Skin contact Toxic in contact with skin.

Ingestion Toxic if swallowed. MAY BE FATAL OR CAUSE BLINDNESS IF SWALLOWED.

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms Ingestion causes nausea, weakness and central nervous system effects, headache, vomiting, dizziness, symptoms of drunkenness. Coma and death due to respiratory failure may follow severe exposures: Medical treatment necessary. A latent period of several hours may occur between exposure and the onset of symptoms.

Acute toxicity

Numerical measures of toxicity

Acute Toxicity Estimate (ATE) values provided as a reflection of the hazard classification.

The following values are calculated based on chapter 3.1 of the GHS document:

ATEmix (oral)	100 mg/kg
ATEmix (dermal)	300 mg/kg
ATEmix (inhalation-vapour)	3 mg/l

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Methanol	= 6200 mg/kg (Rat)	= 15840 mg/kg (Rabbit)	= 22500 ppm (Rat) 8 h = 64000 ppm (Rat) 4 h

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation May cause skin irritation. Based on available data, the classification criteria are not met.

Serious eye damage/eye irritation May cause mild to moderate irritation.

Respiratory or skin sensitisation Based on available data, the classification criteria are not met.

Germ cell mutagenicity Based on available data, the classification criteria are not met.

Carcinogenicity Contains no ingredient listed as a carcinogen.

Reproductive toxicity Based on available data, the classification criteria are not met.

STOT - single exposure Causes damage to organs.

STOT - repeated exposure Based on available data, the classification criteria are not met.

Target organ effects Central nervous system. Optic nerve.

Aspiration hazard Based on available data, the classification criteria are not met.

11.2. Information on other hazards

11.2.1. Endocrine disrupting properties

Endocrine disrupting properties This product does not contain any known or suspected endocrine disruptors.

11.2.2. Other information

Other adverse effects No information available.

SECTION 12: Ecological information

12.1. Toxicity

Ecotoxicity Avoid release to the environment.

Chemical name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea

Methanol 67-56-1	-	LC50: =28200mg/L (96h, Pimephales promelas) LC50: >100mg/L (96h, Pimephales promelas) LC50: 19500 - 20700mg/L (96h, Oncorhynchus mykiss) LC50: 18 - 20mL/L (96h, Oncorhynchus mykiss) LC50: 13500 - 17600mg/L (96h, Lepomis macrochirus)	-	-

12.2. Persistence and degradability

Persistence and degradability Readily biodegradable.

12.3. Bioaccumulative potential

Bioaccumulation Not expected to bioaccumulate.

Bioconcentration factor (BCF) <10

Component Information

Chemical name	Partition coefficient
Methanol	-0.77

12.4. Mobility in soil

Mobility in soil Adsorbs on soil.

12.5. Results of PBT and vPvB assessment

PBT and vPvB assessment

Chemical name	PBT and vPvB assessment
Methanol 67-56-1	The substance is not PBT / vPvB. PBT assessment does not apply. Further information relevant for the PBT assessment is necessary.

12.6. Endocrine disrupting properties

Endocrine disrupting properties This product does not contain any known or suspected endocrine disruptors.

12.7. Other adverse effects

Other adverse effects No information available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste from residues/unused products Do not allow into any sewer, on the ground or into any body of water. Should not be released into the environment. Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

Contaminated packaging	Recover or recycle if possible. Empty containers pose a potential fire and explosion hazard. Do not cut, puncture or weld containers.
Waste codes / waste designations according to EWC / AVV	Commission Decision of 18 December 2014 amending Decision 2000/532/EC on the list of waste pursuant to Directive 2008/98/EC. According to the European Waste Catalogue, Waste Codes are not product specific, but application specific. 07 01 04*.
Other information	Waste disposal according to directive 2008/98/EC, as amended, covering waste and dangerous waste.

SECTION 14: Transport information

IMDG

14.1 UN number or ID number	UN1230
14.2 UN proper shipping name	METHANOL
14.3 Transport hazard class(es)	3
Subsidiary hazard class	6.1
14.4 Packing group	II
Description	UN1230, METHANOL, 3 (6.1), II, (11°C C.C.)
14.5 Environmental hazards	Not applicable
14.6 Special Precautions for Users	
Special Provisions	279
EmS-No.	F-E, S-D
14.7 Maritime transport in bulk according to IMO instruments	No information available

RID

14.1 UN number	UN1230
14.2 UN proper shipping name	METHANOL
14.3 Transport hazard class(es)	3
Subsidiary hazard class	6.1
14.4 Packing group	II
Description	UN1230, METHANOL, 3 (6.1), II
14.5 Environmental hazards	Not applicable
14.6 Special Precautions for Users	
Special Provisions	None
Classification code	FT1

ADR

14.1 UN number or ID number	UN1230
14.2 UN proper shipping name	METHANOL
14.3 Transport hazard class(es)	3
Subsidiary hazard class	6.1
14.4 Packing group	II
Description	UN1230, METHANOL, 3 (6.1), II
14.5 Environmental hazards	Not applicable
14.6 Special Precautions for Users	
Special Provisions	279
Classification code	FT1
Tunnel restriction code	(D/E)

IATA

14.1 UN number or ID number	UN1230
14.2 UN proper shipping name	Methanol
14.3 Transport hazard class(es)	3
Subsidiary hazard class	6.1
14.4 Packing group	II

Description UN1230, Methanol, 3 (6.1), II
14.5 Environmental hazards Not applicable
14.6 Special Precautions for Users
Special Provisions A113
ERG Code 3L
Note: None

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

National regulations

Denmark List of Undesirable Substances (LOUS): Solvents (used in a wide range of products)
France
Occupational Illnesses (R-463-3, France)

Chemical name	French RG number
Methanol 67-56-1	RG 84

Germany
Water hazard class (WGK) obviously hazardous to water (WGK 2)
TA Luft (German Air Pollution Control Regulation)
Class NK (Nicht Kassifiziert-Not Classified) **Technical Share of Air (%)** No information available

Netherlands
Water contaminating class (Netherlands)

Carcinogenic, mutagenic and reproductive toxic effects

Chemical name	Netherlands - List of Carcinogens	Netherlands - List of Mutagens	Netherlands - List of Reproductive Toxins
Methanol	-	-	-

European Union

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work.

Take note of Directive 94/33/EC on the protection of young people at work Take note of Directive 89/391/EEC of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work

Take note of Directive 92/85/EC on the protection of pregnant and breastfeeding women at work

Authorisations and/or restrictions on use:
This product contains one or more substance(s) subject to restriction (Regulation (EC) No. 1907/2006 (REACH), Annex XVII)

Chemical name	Restricted substance per REACH Annex XVII	Substance subject to authorisation per REACH Annex XIV
Methanol - 67-56-1	Item 69 Item 75	-

Persistent Organic Pollutants
Not applicable

Export Notification requirements
Not applicable

Dangerous substance category per Seveso Directive (2012/18/EU)
H2 - ACUTE TOXIC
H3 - STOT SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE
P5a - FLAMMABLE LIQUIDS
P5b - FLAMMABLE LIQUIDS
P5c - FLAMMABLE LIQUIDS

Named dangerous substances per Seveso Directive (2012/18/EU)

Chemical name	Lower-tier requirements (tons)	Upper-tier requirements (tons)
Methanol - 67-56-1	500	5000

Ozone-depleting substances (ODS) regulation (EC) 1005/2009
Not applicable

EU - Plant Protection Products (1107/2009/EC)

Chemical name	EU - Plant Protection Products (1107/2009/EC)
Methanol - 67-56-1	-

Biocidal Products Regulation (EU) No 528/2012 (BPR)

EU - Water Framework Directive (2000/60/EC)

Chemical name	EU - Water Framework Directive (2000/60/EC)
Methanol - 67-56-1	-

EU - Environmental Quality Standards (2008/105/EC)

Chemical name	EU - Environmental Quality Standards (2008/105/EC)
Methanol - 67-56-1	-

International Inventories

TSCA	Listed
DSL/NDSL	Listed.
EINECS/ELINCS	Listed.
ENCS	Listed.
IECSC	Listed.
KECL	Listed.
PICCS	Listed.
AICS	Listed.

Legend:
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AIIC - Australian Inventory of Industrial Chemicals

15.2. Chemical safety assessment

Chemical Safety Report A Chemical Safety Assessment has been carried out for this substance. Date of most recent Chemical Safety Report: 27/04/2021.

SECTION 16: Other information

Key or legend to abbreviations and acronyms used in the safety data sheet

Full text of H-Statements referred to under section 3
H225 - Highly flammable liquid and vapour
H301 - Toxic if swallowed
H311 - Toxic in contact with skin
H331 - Toxic if inhaled
H370 - Causes damage to organs

Legend
ATE: Acute Toxicity Estimate
SVHC: Substances of Very High Concern for Authorisation:
PBT: Persistent, Bioaccumulative, and Toxic (PBT) Substances
vPvB: Very Persistent and very Bioaccumulative (vPvB) Substances

Legend Section 8: Exposure controls/personal protection

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	*	Skin designation
SCBA	Self-contained breathing apparatus	H*, K*, A*, iho*, Sk*	Skin Notation

Classification procedure	
Classification according to Regulation (EC) No. 1272/2008 [CLP]	Method Used
Acute oral toxicity	Calculation method
Acute dermal toxicity	Calculation method
Acute inhalation toxicity - gas	Calculation method
Acute inhalation toxicity - vapour	Calculation method
Acute inhalation toxicity - dust/mist	Calculation method
Skin corrosion/irritation	Calculation method
Serious eye damage/eye irritation	Calculation method
Respiratory sensitisation	Calculation method
Skin sensitisation	Calculation method
Mutagenicity	Calculation method
Carcinogenicity	Calculation method
Reproductive toxicity	Calculation method
STOT - repeated exposure	Calculation method
Acute aquatic toxicity	Calculation method
Chronic aquatic toxicity	Calculation method
Aspiration hazard	Calculation method
Ozone	Calculation method

Key literature references and sources for data used to compile the SDS
Agency for Toxic Substances and Disease Registry (ATSDR)
U.S. Environmental Protection Agency ChemView Database
European Food Safety Authority (EFSA)
European Chemicals Agency (ECHA) Committee for Risk Assessment (ECHA_RAC)
European Chemicals Agency (ECHA) (ECHA_API)
EPA (Environmental Protection Agency)
Acute Exposure Guideline Level(s) (AEGL(s))
U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act
U.S. Environmental Protection Agency High Production Volume Chemicals
Food Research Journal
Hazardous Substance Database
International Uniform Chemical Information Database (IUCLID)
Japan GHS Classification
Australian National Industrial Chemicals Notification and Assessment Scheme (NICNAS)
NIOSH (National Institute for Occupational Safety and Health)
National Library of Medicine's ChemID Plus (NLM CIP)
National Library of Medicine’s PubMed database (NLM PUBMED)
National Toxicology Program (NTP)
New Zealand's Chemical Classification and Information Database (CCID)

Organisation for Economic Co-operation and Development Environment, Health, and Safety Publications
Organisation for Economic Co-operation and Development High Production Volume Chemicals Programme
Organisation for Economic Co-operation and Development Screening Information Data Set
World Health Organization

Issuing Date	12-Sep-2016
Supercedes date	15-May-2023
Revision Date	17-Oct-2023
Revision Note	SDS sections updated: 1.4, 4.2, 5.3, 8.1, 15.1.

This safety data sheet complies with the requirements of Commission Regulation (EU) 2020/878 of 18 June 2020 amending Regulation (EC) No. 1907/2006

Disclaimer
The information above is believed to be accurate and represents the best information currently available to us. Users should make their own investigations to determine the suitability of the information for their particular purposes. This document is intended as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Methanex Corporation and its subsidiaries make no representations or warranties, either express or implied, including without limitation any warranties of merchantability, fitness for a particular purpose with respect to the information set forth herein or the product to which the information refers. Accordingly, Methanex Corp. will not be responsible for damages resulting from use of or reliance upon this information.

End of Safety Data Sheet

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Product Name Methanol
Pure substance/mixture Substance
REACH registration number 01-2119433307-44-0031
EC No (EU Index No) 200-659-6
CAS No 67-56-1

Chemical name Methanol

Identified uses

Exposure scenario	Product categories [PC]	Sector of uses [SU]	Process categories [PROC]	Article categories [AC]	Environmental release categories [ERC]
ES01: Manufacture of substance	-	-	PROC1 PROC2 PROC3 PROC4 PROC8a PROC8b PROC15	-	ERC1
ES02: Formulation & (re)packing of substances and mixtures Distribution of formulations	-	-	PROC1 PROC2 PROC3 PROC4 PROC5 PROC8a PROC8b PROC9 PROC15	-	ERC2
ES03: Use as an intermediate. End use: Industrial	-	-	PROC1 PROC2 PROC3 PROC4 PROC8a PROC8b PROC15	-	ERC6a
ES04: Use as a Process chemical Distribution of substance. End use: Industrial	-	-	PROC1 PROC2 PROC3 PROC4 PROC8a PROC8b PROC9 PROC15	-	ERC4
ES05: Use as a Fuel (use in industrial settings). End use: Industrial	-	-	PROC1 PROC2 PROC3 PROC8a PROC8b PROC16 PROC19	-	ERC7
ES06: Use in Cleaning Agents (use in industrial settings). End use: Industrial	-	-	PROC1 PROC2 PROC3 PROC4 PROC7 PROC8a PROC8b PROC10	-	ERC4

			PROC13		
ES07: Use as laboratory reagent/agent (use in industrial settings). End use: Industrial	-	-	PROC10 PROC15	-	ERC4
ES08: Use as wastewater treatment chemical (use in industrial settings). End use: Industrial	-	-	PROC2	-	ERC7
ES09: Use in Oilfield drilling and production operations (use in industrial settings). End use: Industrial	-	-	PROC4 PROC5 PROC8a PROC8b	-	ERC7
ES10: Use as a Fuel (use in professional settings). End use: Professional	-	-	PROC1 PROC2 PROC3 PROC8a PROC8b PROC16 PROC19	-	ERC8b ERC8e
ES11: Use in Cleaning Agents (use in professional settings). End use: Professional	-	-	PROC1 PROC2 PROC3 PROC4 PROC8a PROC8b PROC10 PROC11 PROC13	-	ERC8a ERC8d
ES12: Use as laboratory reagent/agent (use in professional settings). End use: Professional	-	-	PROC10 PROC15	-	ERC8a
ES13: Use in Cleaning Agents Use in De-icing and Anti-icing agents (consumer use) (spray products). End use: Consumer	PC4 PC35	-	-	-	ERC8a ERC8d
ES14: Use in Cleaning Agents Use in De-icing and Anti-icing agents (consumer use) (liquid products). End use: Consumer	PC4 PC35	-	-	-	ERC8a ERC8d
ES15: Use as Fuel additive (consumer use) (outdoor use). End use: Consumer	PC13	-	-	-	ERC8e

Exposure scenario

ES01 - Manufacture of substance

Section 1 - Title

Title	ES01 - Manufacture of substance
Environmental release category(ies)	- ERC1 - Manufacture of substances
Process category(ies)	- PROC1 - Use in closed process, no likelihood of exposure - PROC2 - Use in closed, continuous process with occasional controlled exposure - PROC3 - Use in closed batch process (synthesis or formulation) - PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises - PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities - PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities - PROC15 - Use as laboratory reagent

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC1 - Manufacture of substances

Product characteristics	
Physical form of product	Liquid
Vapour pressure	12.8 kPa
Temperature vapour pressure	20°C
Level of dustiness	High
Volatility	High
Remarks	As no environmental hazard was identified no environmental-related exposure assessment and risk characterisation was performed

Section 2.2 - Control of worker exposure

Control of worker exposure	
Process category(ies)	**PROC1 - Use in closed process, no likelihood of exposure** **PROC2 - Use in closed, continuous process with occasional controlled exposure** **PROC3 - Use in closed batch process (synthesis or formulation)** **PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises** **PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities** **PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities** **PROC15 - Use as laboratory reagent**

Exposure route	Dermal: Long-term systemic, Short-term systemic Inhalation: Long-term systemic, Short-term systemic
Covers concentrations up to	100%
Physical form of product	Liquid
Vapour pressure	12.8 kPa
Temperature vapour pressure	20°C
Level of dustiness	High
Volatility	High
Exposure duration	> 4 hours / day
Use frequency	Covers frequency up to 5 days per week
Human factors not influenced by risk management	Exposed skin surface assumed PROC1, PROC3, PROC15: 240 cm^2 PROC2, PROC4: 480 cm^2 PROC8a, PROC8b: 960 cm^2
Technical conditions and measures to control dispersion from source towards the worker	PROC1: No specific measures identified PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15: Local exhaust ventilation - efficiency of at least 90%
Conditions and measures related to personal protection, hygiene and health evaluation	PROC1: Respiratory protection not applicable Hand protection not applicable PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15: Respiratory protection not applicable Gloves: APF5 80%
Organisational measures to prevent /limit releases, dispersion and exposure	None
Indoor/Outdoor use	Indoor
Operational conditions	Industrial

Section 3 - Exposure estimation

Environmental release category(ies) - ERC1 - Manufacture of substances

Predicted No Effect Concentration (PNEC) No hazard identified. With high probability the substance is not hazardous to aquatic life. No environmental risk assessment is necessary.

Remarks As no environmental hazard was identified no environmental-related exposure assessment and risk characterisation was performed

Derived No Effect Level (DNEL) Long term
Dermal 20 mg/kg bw/d
Inhalation 130 mg/m^3
Derived No Effect Level (DNEL) **Short term**
Dermal 20 mg/kg bw/d
Inhalation 130 mg/m^3

Calculation method EasyTRA

Exposure estimation

Process category(ies)	Exposure route	Derived No Effect Level (DNEL)	Exposure estimation	Risk characterisation ratio (RCR)
PROC1	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.034286 mg/kg bw/d	0.001714
PROC1	Worker - inhalative, long-term - systemic	130 mg/m^3	0.013351 mg/m^3	0.000103

PROC1	Worker - combined, long-term - systemic	-	0.036193 mg/kg bw/d	0.001817
PROC1	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.034286 mg/kg bw/d	0.001714
PROC1	Worker - inhalative, short-term - systemic	130 mg/m³	0.053403 mg/m³	0.000411
PROC1	Worker - combined, short-term - systemic	-	0.041915 mg/kg bw/d	0.002125
PROC2	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.274286 mg/kg bw/d	0.013714
PROC2	Worker - inhalative, long-term - systemic	130 mg/m³	3.338 mg/m³	0.025675
PROC2	Worker - combined, long-term - systemic	-	0.7511 mg/kg bw/d	0.039389
PROC2	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.274286 mg/kg bw/d	0.013714
PROC2	Worker - inhalative, short-term - systemic	130 mg/m³	13.351 mg/m³	0.102698
PROC2	Worker - combined, short-term - systemic	-	2.182 mg/kg bw/d	0.116413
PROC3	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.137143 mg/kg bw/d	0.006857
PROC3	Worker - inhalative, long-term - systemic	130 mg/m³	6.675 mg/m³	0.051349
PROC3	Worker - combined, long-term - systemic	-	1.091 mg/kg bw/d	0.058206
PROC3	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.137143 mg/kg bw/d	0.006857
PROC3	Worker - inhalative, short-term - systemic	130 mg/m³	26.702 mg/m³	0.205397
PROC3	Worker - combined, short-term - systemic	-	3.952 mg/kg bw/d	0.212254
PROC4	Worker - dermal, long-term - systemic	20 mg/kg bw/d	1.371 mg/kg bw/d	0.068571
PROC4	Worker - inhalative, long-term - systemic	130 mg/m³	13.351 mg/m³	0.102698
PROC4	Worker - combined, long-term - systemic	-	3.279 mg/kg bw/d	0.17127
PROC4	Worker - dermal, short-term - systemic	20 mg/kg bw/d	1.371 mg/kg bw/d	0.068571
PROC4	Worker - inhalative, short-term - systemic	130 mg/m³	53.403 mg/m³	0.410794
PROC4	Worker - combined, short-term - systemic	-	9 mg/kg bw/d	0.479365
PROC8a	Worker - dermal, long-term - systemic	20 mg/kg bw/d	2.743 mg/kg bw/d	0.137143
PROC8a	Worker - inhalative, long-term - systemic	130 mg/m³	33.377 mg/m³	0.256746
PROC8a	Worker - combined, long-term - systemic	-	7.511 mg/kg bw/d	0.393889
PROC8a	Worker - dermal, short-term - systemic	20 mg/kg bw/d	2.743 mg/kg bw/d	0.137143
PROC8a	Worker - inhalative, short-term - systemic	130 mg/m³	66.754 mg/m³	0.513492
PROC8a	Worker - combined, short-term - systemic	-	12.279 mg/kg bw/d	0.650635
PROC8b	Worker - dermal, long-term - systemic	20 mg/kg bw/d	2.743 mg/kg bw/d	0.137143
PROC8b	Worker - inhalative,	130 mg/m³	10.013 mg/m³	0.077024

	long-term - systemic			
PROC8b	Worker - combined, long-term - systemic	-	4.173 mg/kg bw/d	0.214167
PROC8b	Worker - dermal, short-term - systemic	20 mg/kg bw/d	2.743 mg/kg bw/d	0.137143
PROC8b	Worker - inhalative, short-term - systemic	130 mg/m³	20.026 mg/m³	0.154048
PROC8b	Worker - combined, short-term - systemic	-	5.604 mg/kg bw/d	0.29119
PROC15	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.068571 mg/kg bw/d	0.003429
PROC15	Worker - inhalative, long-term - systemic	130 mg/m³	6.675 mg/m³	0.051349
PROC15	Worker - combined, long-term - systemic	-	1.022 mg/kg bw/d	0.054778
PROC15	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.068571 mg/kg bw/d	0.003429
PROC15	Worker - inhalative, short-term - systemic	130 mg/m³	13.351 mg/m³	0.102698
PROC15	Worker - combined, short-term - systemic	-	1.976 mg/kg bw/d	0.106127

Section 4 - Guidance to check compliance with the exposure scenario

ECHA guidance for downstream users

Scaling method	The quantitative risk characterization for this worker exposure has been calculated by EasyTRA
Scalable parameters	Exposure duration and maximum concentration All other parameters have to be taken directly from the exposure scenario provided
Boundaries of scaling	RCR combined is calculated following the recommendation in the ECHA guidance document “Guidance on information requirements and chemical safety assessment – Part E: Risk characterization”

Exposure scenario

ES02 - Formulation & (re)packing of substances and mixtures Distribution of formulations

Section 1 - Title

Title	ES02 - Formulation & (re)packing of substances and mixtures Distribution of formulations
Environmental release category(ies)	- ERC2 - Formulation of preparations (mixtures)
Process category(ies)	- PROC1 - Use in closed process, no likelihood of exposure - PROC2 - Use in closed, continuous process with occasional controlled exposure - PROC3 - Use in closed batch process (synthesis or formulation) - PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises - PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) - PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities - PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities - PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) - PROC15 - Use as laboratory reagent

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC2 - Formulation of preparations (mixtures)

Product characteristics	
Physical form of product	Liquid
Vapour pressure	12.8 kPa
Temperature vapour pressure	20°C
Level of dustiness	High
Volatility	High
Remarks	As no environmental hazard was identified no environmental-related exposure assessment and risk characterisation was performed

Section 2.2 - Control of worker exposure

Control of worker exposure	
Process category(ies)	**PROC1 - Use in closed process, no likelihood of exposure** **PROC2 - Use in closed, continuous process with occasional controlled exposure** **PROC3 - Use in closed batch process (synthesis or formulation)** **PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises** **PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)**

	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities **PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities** **PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)** **PROC15 - Use as laboratory reagent**
Exposure route	Dermal: Long-term systemic, Short-term systemic Inhalation: Long-term systemic, Short-term systemic
Covers concentrations up to	100%
Physical form of product	Liquid
Vapour pressure	12.8 kPa
Temperature vapour pressure	20°C
Level of dustiness	High
Volatility	High
Exposure duration	> 4 hours / day
Use frequency	Covers frequency up to 5 days per week
Human factors not influenced by risk management	Exposed skin surface assumed PROC1, PROC3, PROC15: 240 cm² PROC2, PROC4, PROC5, PROC9: 480 cm² PROC8a, PROC8b: 960 cm²
Technical conditions and measures to control dispersion from source towards the worker	PROC1: No specific measures identified PROC2, PROC3, PROC4, PROC5, PROC8a, PROC9, PROC15: Local exhaust ventilation - efficiency of at least 90% PROC8b: Local exhaust ventilation - efficiency of at least 95%
Conditions and measures related to personal protection, hygiene and health evaluation	PROC1: Respiratory protection not applicable Hand protection not applicable PROC2, PROC3, PROC4, PROC5 (long-term), PROC8a, PROC8b, PROC9, PROC15: Respiratory protection not applicable Gloves: APF5 80% PROC 5 (short-term): Wear a respirator providing a minimum efficiency of 90% Gloves: APF5 80%
Organisational measures to prevent /limit releases, dispersion and exposure	None
Indoor/Outdoor use	Indoor
Operational conditions	Industrial

Section 3 - Exposure estimation

Environmental release category(ies) - ERC2 - Formulation of preparations (mixtures)

Predicted No Effect Concentration (PNEC) No hazard identified. With high probability the substance is not hazardous to aquatic life. No environmental risk assessment is necessary.

Remarks As no environmental hazard was identified no environmental-related exposure assessment and risk characterisation was performed

Derived No Effect Level (DNEL) Long term

Inhalation 130 mg/m³
Derived No Effect Level (DNEL) **Short term**
Inhalation 130 mg/m³

Calculation method EasyTRA

Exposure estimation

Process category(ies)	Exposure route	Derived No Effect Level (DNEL)	Exposure estimation	Risk characterisation ratio (RCR)
PROC1	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.034286 mg/kg bw/d	0.001714
PROC1	Worker - inhalative, long-term - systemic	130 mg/m³	0.013351 mg/m³	0.000103
PROC1	Worker - combined, long-term - systemic	-	0.036193 mg/kg bw/d	0.001817
PROC1	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.034286 mg/kg bw/d	0.001714
PROC1	Worker - inhalative, short-term - systemic	130 mg/m³	0.053403 mg/m³	0.000411
PROC1	Worker - combined, short-term - systemic	-	0.041915 mg/kg bw/d	0.002125
PROC2	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.274286 mg/kg bw/d	0.013714
PROC2	Worker - inhalative, long-term - systemic	130 mg/m³	3.338 mg/m³	0.025675
PROC2	Worker - combined, long-term - systemic	-	0.7511 mg/kg bw/d	0.039389
PROC2	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.274286 mg/kg bw/d	0.013714
PROC2	Worker - inhalative, short-term - systemic	130 mg/m³	13.351 mg/m³	0.102698
PROC2	Worker - combined, short-term - systemic	-	2.182 mg/kg bw/d	0.116413
PROC3	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.137143 mg/kg bw/d	0.006857
PROC3	Worker - inhalative, long-term - systemic	130 mg/m³	6.675 mg/m³	0.051349
PROC3	Worker - combined, long-term - systemic	-	1.091 mg/kg bw/d	0.058206
PROC3	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.137143 mg/kg bw/d	0.006857
PROC3	Worker - inhalative, short-term - systemic	130 mg/m³	26.702 mg/m³	0.205397
PROC3	Worker - combined, short-term - systemic	-	3.952 mg/kg bw/d	0.212254
PROC4	Worker - dermal, long-term - systemic	20 mg/kg bw/d	1.371 mg/kg bw/d	0.068571
PROC4	Worker - inhalative, long-term - systemic	130 mg/m³	13.351 mg/m³	0.102698
PROC4	Worker - combined, long-term - systemic	-	3.279 mg/kg bw/d	0.17127
PROC4	Worker - dermal, short-term - systemic	20 mg/kg bw/d	1.371 mg/kg bw/d	0.068571
PROC4	Worker - inhalative, short-term - systemic	130 mg/m³	53.403 mg/m³	0.410794
PROC4	Worker - combined, short-term - systemic	-	9 mg/kg bw/d	0.479365
PROC5	Worker - dermal, long-term - systemic	20 mg/kg bw/d	2.743 mg/kg bw/d	0.137143

PROC5	Worker - inhalative, long-term - systemic	130 mg/m³	33.377 mg/m³	0.256746
PROC5	Worker - combined, long-term - systemic	-	7.511 mg/kg bw/d	0.393889
PROC5	Worker - dermal, short-term - systemic	20 mg/kg bw/d	2.743 mg/kg bw/d	0.137143
PROC5	Worker - inhalative, short-term - systemic	130 mg/m³	13.351 mg/m³	0.102698
PROC5	Worker - combined, short-term - systemic	-	4.65 mg/kg bw/d	0.239841
PROC8a	Worker - dermal, long-term - systemic	20 mg/kg bw/d	2.743 mg/kg bw/d	0.137143
PROC8a	Worker - inhalative, long-term - systemic	130 mg/m³	33.377 mg/m³	0.256746
PROC8a	Worker - combined, long-term - systemic	-	7.511 mg/kg bw/d	0.393889
PROC8a	Worker - dermal, short-term - systemic	20 mg/kg bw/d	2.743 mg/kg bw/d	0.137143
PROC8a	Worker - inhalative, short-term - systemic	130 mg/m³	66.754 mg/m³	0.513492
PROC8a	Worker - combined, short-term - systemic	-	12.279 mg/kg bw/d	0.650635
PROC8b	Worker - dermal, long-term - systemic	20 mg/kg bw/d	2.743 mg/kg bw/d	0.137143
PROC8b	Worker - inhalative, long-term - systemic	130 mg/m³	10.013 mg/m³	0.077024
PROC8b	Worker - combined, long-term - systemic	-	4.173 mg/kg bw/d	0.214167
PROC8b	Worker - dermal, short-term - systemic	20 mg/kg bw/d	2.743 mg/kg bw/d	0.137143
PROC8b	Worker - inhalative, short-term - systemic	130 mg/m³	20.026 mg/m³	0.154048
PROC8b	Worker - combined, short-term - systemic	-	5.604 mg/kg bw/d	0.29119
PROC9	Worker - dermal, long-term - systemic	20 mg/kg bw/d	1.371 mg/kg bw/d	0.068571
PROC9	Worker - inhalative, long-term - systemic	130 mg/m³	26.702 mg/m³	0.205397
PROC9	Worker - combined, long-term - systemic	-	5.186 mg/kg bw/d	0.273968
PROC9	Worker - dermal, short-term - systemic	20 mg/kg bw/d	1.371 mg/kg bw/d	0.068571
PROC9	Worker - inhalative, short-term - systemic	130 mg/m³	53.403 mg/m³	0.410794
PROC9	Worker - combined, short-term - systemic	-	9 mg/kg bw/d	0.479365
PROC15	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.068571 mg/kg bw/d	0.003429
PROC15	Worker - inhalative, long-term - systemic	130 mg/m³	6.675 mg/m³	0.51349
PROC15	Worker - combined, long-term - systemic	-	1.022 mg/kg bw/d	0.054778
PROC15	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.068571 mg/kg bw/d	0.003429
PROC15	Worker - inhalative, short-term - systemic	130 mg/m³	13.351 mg/m³	0.102698
PROC15	Worker - combined, short-term - systemic	-	1.976 mg/kg bw/d	0.106127

Section 4 - Guidance to check compliance with the exposure scenario

ECHA guidance for downstream users

Scaling method	The quantitative risk characterization for this worker exposure has been calculated by EasyTRA
Scalable parameters	Exposure duration and maximum concentration All other parameters have to be taken directly from the exposure scenario provided
Boundaries of scaling	RCR combined is calculated following the recommendation in the ECHA guidance document “Guidance on information requirements and chemical safety assessment – Part E: Risk characterization”

Exposure scenario

ES03 - Use as an intermediate - Industrial

Section 1 - Title

Title	ES03 - Use as an intermediate - Industrial
Environmental release category(ies)	- ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)
Process category(ies)	- PROC1 - Use in closed process, no likelihood of exposure - PROC2 - Use in closed, continuous process with occasional controlled exposure - PROC3 - Use in closed batch process (synthesis or formulation) - PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises - PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities - PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities - PROC15 - Use as laboratory reagent

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

Product characteristics	
Physical form of product	Liquid
Vapour pressure	12.8 kPa
Temperature vapour pressure	20°C
Level of dustiness	High
Volatility	High
Remarks	As no environmental hazard was identified no environmental-related exposure assessment and risk characterisation was performed

Section 2.2 - Control of worker exposure

Control of worker exposure	
Process category(ies)	**PROC1 - Use in closed process, no likelihood of exposure** **PROC2 - Use in closed, continuous process with occasional controlled exposure** **PROC3 - Use in closed batch process (synthesis or formulation)** **PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises** **PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities** **PROC8b - Transfer of substance or preparation**

	(charging/discharging) from/to vessels/large containers at dedicated facilities PROC15 - Use as laboratory reagent
Exposure route	Dermal: Long-term systemic, Short-term systemic Inhalation: Long-term systemic, Short-term systemic
Covers concentrations up to	100%
Physical form of product	Liquid
Vapour pressure	12.8 kPa
Temperature vapour pressure	20°C
Level of dustiness	High
Volatility	High
Exposure duration	> 4 hours / day
Use frequency	Covers frequency up to 5 days per week
Human factors not influenced by risk management	Exposed skin surface assumed: PROC1, PROC3, PROC15: 240 cm² PROC2, PROC4: 480 cm² PROC8a, PROC8b: 960 cm²
Technical conditions and measures to control dispersion from source towards the worker	PROC1: No specific measures identified. PROC2, PROC3, PROC4, PROC8a, PROC15: Local exhaust ventilation - efficiency of at least 90%. PROC8b: Local exhaust ventilation - efficiency of at least 95%
Conditions and measures related to personal protection, hygiene and health evaluation	PROC1: Respiratory protection not applicable Hand protection not applicable PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15: Respiratory protection not applicable Gloves: APF5 80%
Organisational measures to prevent /limit releases, dispersion and exposure	None
Indoor/Outdoor use	Indoor
Operational conditions	Industrial

Section 3 - Exposure estimation

Environmental release category(ies) - ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

Predicted No Effect Concentration (PNEC) No hazard identified. With high probability the substance is not hazardous to aquatic life. No environmental risk assessment is necessary.

Remarks As no environmental hazard was identified no environmental-related exposure assessment and risk characterisation was performed

Derived No Effect Level (DNEL) Long term
Inhalation 130 mg/m³
Derived No Effect Level (DNEL) **Short term**
Inhalation 130 mg/m³

Calculation method EasyTRA

Exposure estimation				
Process category(ies)	**Exposure route**	**Derived No Effect Level (DNEL)**	**Exposure estimation**	**Risk characterisation ratio (RCR)**
PROC1	Worker - dermal,	20 mg/kg bw/d	0.034286 mg/kg bw/d	0.001714

	long-term - systemic			
PROC1	Worker - inhalative, long-term - systemic	130 mg/m³	0.013351 mg/m³	0.000103
PROC1	Worker - combined, long-term - systemic	-	0.036193 mg/kg bw/d	0.001817
PROC1	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.034286 mg/kg bw/d	0.001714
PROC1	Worker - inhalative, short-term - systemic	130 mg/m³	0.053403 mg/m³	0.000411
PROC1	Worker - combined, short-term - systemic	-	0.041915 mg/kg bw/d	0.002125
PROC2	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.274286 mg/kg bw/d	0.013714
PROC2	Worker - inhalative, long-term - systemic	130 mg/m³	3.338 mg/m³	0.025675
PROC2	Worker - combined, long-term - systemic	-	0.7511 mg/kg bw/d	0.039389
PROC2	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.274286 mg/kg bw/d	0.013714
PROC2	Worker - inhalative, short-term - systemic	130 mg/m³	13.351 mg/m³	0.102698
PROC2	Worker - combined, short-term - systemic	-	2.182 mg/kg bw/d	0.116413
PROC3	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.137143 mg/kg bw/d	0.006857
PROC3	Worker - inhalative, long-term - systemic	130 mg/m³	6.675 mg/m³	0.051349
PROC3	Worker - combined, long-term - systemic	-	1.091 mg/kg bw/d	0.058206
PROC3	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.137143 mg/kg bw/d	0.006857
PROC3	Worker - inhalative, short-term - systemic	130 mg/m³	26.702 mg/m³	0.205397
PROC3	Worker - combined, short-term - systemic	-	3.952 mg/kg bw/d	0.212254
PROC4	Worker - dermal, long-term - systemic	20 mg/kg bw/d	1.371 mg/kg bw/d	0.068571
PROC4	Worker - inhalative, long-term - systemic	130 mg/m³	13.351 mg/m³	0.102698
PROC4	Worker - combined, long-term - systemic	-	3.279 mg/kg bw/d	0.17127
PROC4	Worker - dermal, short-term - systemic	20 mg/kg bw/d	1.371 mg/kg bw/d	0.068571
PROC4	Worker - inhalative, short-term - systemic	130 mg/m³	53.403 mg/m³	0.410794
PROC4	Worker - combined, short-term - systemic	-	9 mg/kg bw/d	0.479365
PROC8a	Worker - dermal, long-term - systemic	20 mg/kg bw/d	2.743 mg/kg bw/d	0.137143
PROC8a	Worker - inhalative, long-term - systemic	130 mg/m³	33.377 mg/m³	0.256746
PROC8a	Worker - combined, long-term - systemic	-	7.511 mg/kg bw/d	0.393889
PROC8a	Worker - dermal, short-term - systemic	20 mg/kg bw/d	2.743 mg/kg bw/d	0.137143
PROC8a	Worker - inhalative, short-term - systemic	130 mg/m³	66.754 mg/m³	0.513492
PROC8a	Worker - combined, short-term - systemic	-	12.279 mg/kg bw/d	0.650635

PROC8b	Worker - dermal, long-term - systemic	20 mg/kg bw/d	2.743 mg/kg bw/d	0.137143
PROC8b	Worker - inhalative, long-term - systemic	130 mg/m³	10.013 mg/m³	0.077024
PROC8b	Worker - combined, long-term - systemic	-	4.173 mg/kg bw/d	0.214167
PROC8b	Worker - dermal, short-term - systemic	20 mg/kg bw/d	2.743 mg/kg bw/d	0.137143
PROC8b	Worker - inhalative, short-term - systemic	130 mg/m³	20.026 mg/m³	0.154048
PROC8b	Worker - combined, short-term - systemic	-	5.604 mg/kg bw/d	0.29119
PROC15	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.068571 mg/kg bw/d	0.003429
PROC15	Worker - inhalative, long-term - systemic	130 mg/m³	6.675 mg/m³	0.051349
PROC15	Worker - combined, long-term - systemic	-	1.022 mg/kg bw/d	0.054778
PROC15	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.068571 mg/kg bw/d	0.003429
PROC15	Worker - inhalative, short-term - systemic	130 mg/m³	13.351 mg/m³	0.102698
PROC15	Worker - combined, short-term - systemic	-	1.976 mg/kg bw/d	0.106127

Section 4 - Guidance to check compliance with the exposure scenario

ECHA guidance for downstream users

Scaling method	The quantitative risk characterization for this worker exposure has been calculated by EasyTRA
Scalable parameters	Exposure duration and maximum concentration All other parameters have to be taken directly from the exposure scenario provided
Boundaries of scaling	RCR combined is calculated following the recommendation in the ECHA guidance document “Guidance on information requirements and chemical safety assessment – Part E: Risk characterization”

Exposure scenario

ES04 - Use as a Process chemical Distribution of substance - Industrial

Section 1 - Title

Title	ES04 - Use as a Process chemical Distribution of substance - Industrial
Environmental release category(ies)	- ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles
Process category(ies)	- PROC1 - Use in closed process, no likelihood of exposure - PROC2 - Use in closed, continuous process with occasional controlled exposure - PROC3 - Use in closed batch process (synthesis or formulation) - PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises - PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities - PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities - PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) - PROC15 - Use as laboratory reagent

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

Product characteristics	
Physical form of product	Liquid
Vapour pressure	12.8 kPa
Temperature vapour pressure	20°C
Level of dustiness	High
Volatility	High
Remarks	As no environmental hazard was identified no environmental-related exposure assessment and risk characterisation was performed

Section 2.2 - Control of worker exposure

Control of worker exposure	
Process category(ies)	**PROC1 - Use in closed process, no likelihood of exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC3 - Use in closed batch process (synthesis or formulation) PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non**

	dedicated facilities **PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities** **PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)** **PROC15 - Use as laboratory reagent**
Exposure route	Dermal: Long-term systemic, Short-term systemic Inhalation: Long-term systemic, Short-term systemic
Covers concentrations up to	100%
Physical form of product	Liquid
Vapour pressure	12.8 kPa
Temperature vapour pressure	20°C
Level of dustiness	High
Volatility	High
Exposure duration	> 4 hours / day
Use frequency	Covers frequency up to 5 days per week
Human factors not influenced by risk management	Exposed skin surface assumed PROC1, PROC3, PROC15: 240 cm^2 PROC2, PROC4, PROC9: 480 cm^2 PROC8a, PROC8b: 960 cm^2
Technical conditions and measures to control dispersion from source towards the worker	PROC1: No specific measures identified PROC2, PROC3, PROC4, PROC8a, PROC9, PROC15: Local exhaust ventilation - efficiency of at least 90% PROC8b: Local exhaust ventilation - efficiency of at least 95%
Conditions and measures related to personal protection, hygiene and health evaluation	PROC1: Respiratory protection not applicable Hand protection not applicable PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15: Respiratory protection not applicable Gloves: APF5 80%
Organisational measures to prevent /limit releases, dispersion and exposure	None
Indoor/Outdoor use	Indoor
Operational conditions	Industrial

Section 3 - Exposure estimation

Environmental release category(ies) - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

Predicted No Effect Concentration (PNEC) No hazard identified. With high probability the substance is not hazardous to aquatic life. No environmental risk assessment is necessary.

Remarks As no environmental hazard was identified no environmental-related exposure assessment and risk characterisation was performed

Derived No Effect Level (DNEL) Long term
Inhalation 130 mg/m^3
Derived No Effect Level (DNEL) **Short term**
Inhalation 130 mg/m^3

Calculation method EasyTRA

Exposure estimation				
Process category(ies)	**Exposure route**	**Derived No Effect Level (DNEL)**	**Exposure estimation**	**Risk characterisation ratio (RCR)**
PROC1	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.034286 mg/kg bw/d	0.001714
PROC1	Worker - inhalative, long-term - systemic	130 mg/m³	0.013351 mg/m³	0.000103
PROC1	Worker - combined, long-term - systemic	-	0.036193 mg/kg bw/d	0.001817
PROC1	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.034286 mg/kg bw/d	0.001714
PROC1	Worker - inhalative, short-term - systemic	130 mg/m³	0.053403 mg/m³	0.000411
PROC1	Worker - combined, short-term - systemic	-	0.041915 mg/kg bw/d	0.002125
PROC2	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.274286 mg/kg bw/d	0.013714
PROC2	Worker - inhalative, long-term - systemic	130 mg/m³	3.338 mg/m³	0.025675
PROC2	Worker - combined, long-term - systemic	-	0.7511 mg/kg bw/d	0.039389
PROC2	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.274286 mg/kg bw/d	0.013714
PROC2	Worker - inhalative, short-term - systemic	130 mg/m³	13.351 mg/m³	0.102698
PROC2	Worker - combined, short-term - systemic	-	2.182 mg/kg bw/d	0.116413
PROC3	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.137143 mg/kg bw/d	0.006857
PROC3	Worker - inhalative, long-term - systemic	130 mg/m³	6.675 mg/m³	0.051349
PROC3	Worker - combined, long-term - systemic	-	1.091 mg/kg bw/d	0.058206
PROC3	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.137143 mg/kg bw/d	0.006857
PROC3	Worker - inhalative, short-term - systemic	130 mg/m³	26.702 mg/m³	0.205397
PROC3	Worker - combined, short-term - systemic	-	3.952 mg/kg bw/d	0.212254
PROC4	Worker - dermal, long-term - systemic	20 mg/kg bw/d	1.371 mg/kg bw/d	0.068571
PROC4	Worker - inhalative, long-term - systemic	130 mg/m³	13.351 mg/m³	0.102698
PROC4	Worker - combined, long-term - systemic	-	3.279 mg/kg bw/d	0.17127
PROC4	Worker - dermal, short-term - systemic	20 mg/kg bw/d	1.371 mg/kg bw/d	0.068571
PROC4	Worker - inhalative, short-term - systemic	130 mg/m³	53.403 mg/m³	0.410794
PROC4	Worker - combined, short-term - systemic	-	9 mg/kg bw/d	0.479365
PROC8a	Worker - dermal, long-term - systemic	20 mg/kg bw/d	2.743 mg/kg bw/d	0.137143
PROC8a	Worker - inhalative, long-term - systemic	130 mg/m³	33.377 mg/m³	0.256746
PROC8a	Worker - combined, long-term - systemic	-	7.511 mg/kg bw/d	0.393889
PROC8a	Worker - dermal,	20 mg/kg bw/d	2.743 mg/kg bw/d	0.137143

	short-term - systemic			
PROC8a	Worker - inhalative, short-term - systemic	130 mg/m³	66.754 mg/m³	0.513492
PROC8a	Worker - combined, short-term - systemic	-	12.279 mg/kg bw/d	0.650635
PROC8b	Worker - dermal, long-term - systemic	20 mg/kg bw/d	2.743 mg/kg bw/d	0.137143
PROC8b	Worker - inhalative, long-term - systemic	130 mg/m³	10.013 mg/m³	0.077024
PROC8b	Worker - combined, long-term - systemic	-	4.173 mg/kg bw/d	0.214167
PROC8b	Worker - dermal, short-term - systemic	20 mg/kg bw/d	2.743 mg/kg bw/d	0.137143
PROC8b	Worker - inhalative, short-term - systemic	130 mg/m³	20.026 mg/m³	0.154048
PROC8b	Worker - combined, short-term - systemic	-	5.604 mg/kg bw/d	0.29119
PROC9	Worker - dermal, long-term - systemic	20 mg/kg bw/d	1.371 mg/kg bw/d	0.068571
PROC9	Worker - inhalative, long-term - systemic	130 mg/m³	26.702 mg/m³	0.205397
PROC9	Worker - combined, long-term - systemic	-	5.186 mg/kg bw/d	0.273968
PROC9	Worker - dermal, short-term - systemic	20 mg/kg bw/d	1.371 mg/kg bw/d	0.068571
PROC9	Worker - inhalative, short-term - systemic	130 mg/m³	53.403 mg/m³	0.410794
PROC9	Worker - combined, short-term - systemic	-	9 mg/kg bw/d	0.479365
PROC15	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.068571 mg/kg bw/d	0.003429
PROC15	Worker - inhalative, long-term - systemic	130 mg/m³	6.675 mg/m³	0.051349
PROC15	Worker - combined, long-term - systemic	-	1.022 mg/kg bw/d	0.054778
PROC15	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.068571 mg/kg bw/d	0.003429
PROC15	Worker - inhalative, short-term - systemic	130 mg/m³	13.351 mg/m³	0.102698
PROC15	Worker - combined, short-term - systemic	-	1.976 mg/kg bw/d	0.106127

Section 4 - Guidance to check compliance with the exposure scenario

ECHA guidance for downstream users

Scaling method	The quantitative risk characterization for this worker exposure has been calculated by EasyTRA
Scalable parameters	Exposure duration and maximum concentration All other parameters have to be taken directly from the exposure scenario provided
Boundaries of scaling	RCR combined is calculated following the recommendation in the ECHA guidance document “Guidance on information requirements and chemical safety assessment – Part E: Risk characterization”

Exposure scenario

ES05 - Use as a Fuel (use in industrial settings)

Section 1 - Title

Title	ES05 - Use as a Fuel (use in industrial settings)
Environmental release category(ies)	- ERC7 - Industrial use of substances in closed systems
Process category(ies)	- PROC1 - Use in closed process, no likelihood of exposure - PROC2 - Use in closed, continuous process with occasional controlled exposure - PROC3 - Use in closed batch process (synthesis or formulation) - PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities - PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities - PROC16 - Using material as fuel sources, limited exposure to unburned product to be expected - PROC19 - Hand-mixing with intimate contact and only PPE available

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC7 - Industrial use of substances in closed systems

Product characteristics	
Physical form of product	Liquid
Vapour pressure	12.8 kPa
Temperature vapour pressure	20°C
Level of dustiness	High
Volatility	High
Remarks	As no environmental hazard was identified no environmental-related exposure assessment and risk characterisation was performed

Section 2.2 - Control of worker exposure

Control of worker exposure	
Process category(ies)	**PROC1 - Use in closed process, no likelihood of exposure** **PROC2 - Use in closed, continuous process with occasional controlled exposure** **PROC3 - Use in closed batch process (synthesis or formulation)** **PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities** **PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities**
Exposure route	Dermal: Long-term systemic, Short-term systemic Inhalation: Long-term systemic, Short-term systemic
Covers concentrations up to	100%
Physical form of product	Liquid

Vapour pressure	12.8 kPa
Temperature vapour pressure	20°C
Level of dustiness	High
Volatility	High
Exposure duration	> 4 hours / day
Use frequency	Covers frequency up to 5 days per week
Human factors not influenced by risk management	Exposed skin surface assumed PROC1, PROC3: 240 cm² PROC2: 480 cm² PROC8a, PROC8b: 960 cm²
Technical conditions and measures to control dispersion from source towards the worker	PROC1: No specific measures identified PROC2, PROC3, PROC8a: Local exhaust ventilation - efficiency of at least 90% PROC8b: Local exhaust ventilation - efficiency of at least 95%
Conditions and measures related to personal protection, hygiene and health evaluation	PROC1: Respiratory protection not applicable Hand protection not applicable PROC2, PROC3, PROC8a, PROC8b: Respiratory protection not applicable Gloves: APF5 80%
Organisational measures to prevent /limit releases, dispersion and exposure	None
Indoor/Outdoor use	Indoor
Operational conditions	Industrial

Process category(ies)	**PROC16 - Using material as fuel sources, limited exposure to unburned product to be expected** **PROC19 - Hand-mixing with intimate contact and only PPE available**
Exposure route	Dermal: Long-term systemic, Short-term systemic Inhalation: Long-term systemic, Short-term systemic
Covers concentrations up to	PROC16 (long-term): 100% PROC16 (short-term): 5-25% PROC19: 10%
Physical form of product	Liquid
Vapour pressure	12.8 kPa
Temperature vapour pressure	20°C
Level of dustiness	High
Volatility	High
Exposure duration	PROC 16: > 4 hours / day PROC19: 1-4 hours
Use frequency	Covers frequency up to 5 days per week
Human factors not influenced by risk management	Exposed skin surface assumed: PROC16: 240 cm² PROC19: 1980 cm²
Technical conditions and measures to control dispersion from source towards the worker	PROC16, PROC19: No specific measures identified
Conditions and measures related to personal protection, hygiene and health evaluation	PROC16, PROC19: Respiratory protection not applicable Gloves: APF5 80%
Organisational measures to prevent /limit releases, dispersion and exposure	None
Indoor/Outdoor use	Indoor
Operational conditions	Industrial

Section 3 - Exposure estimation

Environmental release category(ies) - ERC7 - Industrial use of substances in closed systems

Predicted No Effect Concentration (PNEC) No hazard identified. With high probability the substance is not hazardous to aquatic life. No environmental risk assessment is necessary.

Remarks As no environmental hazard was identified no environmental-related exposure assessment and risk characterisation was performed

Derived No Effect Level (DNEL) Long term
Inhalation 130 mg/m³
Derived No Effect Level (DNEL) **Short term**
Inhalation 130 mg/m³

Calculation method EasyTRA

Exposure estimation

Process category(ies)	Exposure route	Derived No Effect Level (DNEL)	Exposure estimation	Risk characterisation ratio (RCR)
PROC1	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.034286 mg/kg bw/d	0.001714
PROC1	Worker - inhalative, long-term - systemic	130 mg/m³	0.013351 mg/m³	0.000103
PROC1	Worker - combined, long-term - systemic	-	0.036193 mg/kg bw/d	0.001817
PROC1	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.034286 mg/kg bw/d	0.001714
PROC1	Worker - inhalative, short-term - systemic	130 mg/m³	0.053403 mg/m³	0.000411
PROC1	Worker - combined, short-term - systemic	-	0.041915 mg/kg bw/d	0.002125
PROC2	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.274286 mg/kg bw/d	0.013714
PROC2	Worker - inhalative, long-term - systemic	130 mg/m³	3.338 mg/m³	0.025675
PROC2	Worker - combined, long-term - systemic	-	0.7511 mg/kg bw/d	0.039389
PROC2	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.274286 mg/kg bw/d	0.013714
PROC2	Worker - inhalative, short-term - systemic	130 mg/m³	13.351 mg/m³	0.102698
PROC2	Worker - combined, short-term - systemic	-	2.182 mg/kg bw/d	0.116413
PROC3	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.137143 mg/kg bw/d	0.006857
PROC3	Worker - inhalative, long-term - systemic	130 mg/m³	6.675 mg/m³	0.051349
PROC3	Worker - combined, long-term - systemic	-	1.091 mg/kg bw/d	0.058206
PROC3	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.137143 mg/kg bw/d	0.006857
PROC3	Worker - inhalative, short-term - systemic	130 mg/m³	26.702 mg/m³	0.205397
PROC3	Worker - combined, short-term - systemic	-	3.952 mg/kg bw/d	0.212254

PROC8a	Worker - dermal, long-term - systemic	20 mg/kg bw/d	2.743 mg/kg bw/d	0.137143
PROC8a	Worker - inhalative, long-term - systemic	130 mg/m³	33.377 mg/m³	0.256746
PROC8a	Worker - combined, long-term - systemic	-	7.511 mg/kg bw/d	0.393889
PROC8a	Worker - dermal, short-term - systemic	20 mg/kg bw/d	2.743 mg/kg bw/d	0.137143
PROC8a	Worker - inhalative, short-term - systemic	130 mg/m³	66.754 mg/m³	0.513492
PROC8a	Worker - combined, short-term - systemic	-	12.279 mg/kg bw/d	0.650635
PROC8b	Worker - dermal, long-term - systemic	20 mg/kg bw/d	2.743 mg/kg bw/d	0.137143
PROC8b	Worker - inhalative, long-term - systemic	130 mg/m³	10.013 mg/m³	0.077024
PROC8b	Worker - combined, long-term - systemic	-	4.173 mg/kg bw/d	0.214167
PROC8b	Worker - dermal, short-term - systemic	20 mg/kg bw/d	2.743 mg/kg bw/d	0.137143
PROC8b	Worker - inhalative, short-term - systemic	130 mg/m³	20.026 mg/m³	0.154048
PROC8b	Worker - combined, short-term - systemic	-	5.604 mg/kg bw/d	0.29119
PROC16	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.68571 mg/kg bw/d	0.003429
PROC16	Worker - inhalative, long-term - systemic	130 mg/m³	33.377 mg/m³	0.256746
PROC16	Worker - combined, long-term - systemic	-	4.837 mg/kg bw/d	0.260175
PROC16	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.041143 mg/kg bw/d	0.002057
PROC16	Worker - inhalative, short-term - systemic	130 mg/m³	80.105 mg/m³	0.61619
PROC16	Worker - combined, short-term - systemic	-	11.485 mg/kg bw/d	0.618248
PROC19	Worker - dermal, long-term - systemic	20 mg/kg bw/d	1.697 mg/kg bw/d	0.084857
PROC19	Worker - inhalative, long-term - systemic	130 mg/m³	20.026 mg/m³	0.154048
PROC19	Worker - combined, long-term - systemic	-	4.558 mg/kg bw/d	0.238905
PROC19	Worker - dermal, short-term - systemic	20 mg/kg bw/d	1.697 mg/kg bw/d	0.084857
PROC19	Worker - inhalative, short-term - systemic	130 mg/m³	66.754 mg/m³	0.513492
PROC19	Worker - combined, short-term - systemic	-	11.233 mg/kg bw/d	0.598349

Section 4 - Guidance to check compliance with the exposure scenario

ECHA guidance for downstream users

Scaling method	The quantitative risk characterization for this worker exposure has been calculated by EasyTRA
Scalable parameters	Exposure duration and maximum concentration All other parameters have to be taken directly from the exposure scenario provided

Boundaries of scaling	RCR combined is calculated following the recommendation in the ECHA guidance document “Guidance on information requirements and chemical safety assessment – Part E: Risk characterization”

Exposure scenario

ES06 - Use in Cleaning Agents (use in industrial settings)

Section 1 - Title

Title	ES06 - Use in Cleaning Agents (use in industrial settings)
Environmental release category(ies)	- ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles
Process category(ies)	- PROC1 - Use in closed process, no likelihood of exposure - PROC2 - Use in closed, continuous process with occasional controlled exposure - PROC3 - Use in closed batch process (synthesis or formulation) - PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises - PROC7 - Industrial spraying - PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities - PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities - PROC10 - Roller application or brushing - PROC13 - Treatment of articles by dipping and pouring

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

Product characteristics	
Physical form of product	Liquid
Vapour pressure	12.8 kPa
Temperature vapour pressure	20°C
Level of dustiness	High
Volatility	High
Remarks	As no environmental hazard was identified no environmental-related exposure assessment and risk characterisation was performed

Section 2.2 - Control of worker exposure

Control of worker exposure	
Process category(ies)	**PROC1 - Use in closed process, no likelihood of exposure** **PROC2 - Use in closed, continuous process with occasional controlled exposure** **PROC3 - Use in closed batch process (synthesis or formulation)** **PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises** **PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities** **PROC8b - Transfer of substance or preparation**

	(charging/discharging) from/to vessels/large containers at dedicated facilities PROC10 - Roller application or brushing PROC13 - Treatment of articles by dipping and pouring
Exposure route	Dermal: Long-term systemic, Short-term systemic Inhalation: Long-term systemic, Short-term systemic
Covers concentrations up to	PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b: 100% PROC10: 80%
Physical form of product	Liquid
Vapour pressure	12.8 kPa
Temperature vapour pressure	20°C
Level of dustiness	High
Volatility	High
Exposure duration	> 4 hours / day
Use frequency	Covers frequency up to 5 days per week
Human factors not influenced by risk management	Exposed skin surface assumed PROC1, PROC3: 240 cm² PROC2, PROC4, PROC13: 480 cm² PROC8a, PROC8b, PROC10: 960 cm²
Technical conditions and measures to control dispersion from source towards the worker	PROC1: No specific measures identified PROC2, PROC3, PROC4, PROC8a, PROC10, PROC13: Local exhaust ventilation - efficiency of at least 90% PROC8b: Local exhaust ventilation - efficiency of at least 95%
Conditions and measures related to personal protection, hygiene and health evaluation	PROC1: Respiratory protection not applicable Hand protection not applicable PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC10, PROC13: Respiratory protection not applicable Gloves: APF5 80%
Organisational measures to prevent /limit releases, dispersion and exposure	None
Indoor/Outdoor use	Indoor
Operational conditions	Industrial

Process category(ies)	**PROC7 - Industrial spraying**
Exposure route	Dermal: Long-term systemic, Short-term systemic Inhalation: Long-term systemic, Short-term systemic
Covers concentrations up to	25%
Physical form of product	Liquid
Vapour pressure	12.8 kPa
Temperature vapour pressure	20°C
Level of dustiness	High
Volatility	High
Exposure duration	> 4 hours / day
Use frequency	Covers frequency up to 5 days per week
Human factors not influenced by risk management	Exposed skin surface assumed: 1500 cm²
Technical conditions and measures to control dispersion from source towards the worker	General ventilation, Mechanical ventilation giving at least 30%
Conditions and measures related to personal protection, hygiene and health evaluation	Half-face mask (DIN EN 140): with filter for vapours/gases Wear a respirator providing a minimum efficiency of 90% Gloves: APF5 80%
Indoor/Outdoor use	Indoor
Use in room with a volume of minimum	> 1000 m3
Minimum room ventilation rate for handling/application (air changes per	30%

hour)	
Operational conditions	Industrial

Section 3 - Exposure estimation

Environmental release category(ies) - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

Predicted No Effect Concentration (PNEC) No hazard identified. With high probability the substance is not hazardous to aquatic life. No environmental risk assessment is necessary.

Remarks As no environmental hazard was identified no environmental-related exposure assessment and risk characterisation was performed

Derived No Effect Level (DNEL) Long term
Inhalation 130 mg/m³
Derived No Effect Level (DNEL) **Short term**
Inhalation 130 mg/m³

Calculation method EasyTRA

Exposure estimation

Process category(ies)	Exposure route	Derived No Effect Level (DNEL)	Exposure estimation	Risk characterisation ratio (RCR)
PROC1	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.034286 mg/kg bw/d	0.001714
PROC1	Worker - inhalative, long-term - systemic	130 mg/m³	0.013351 mg/m³	0.000103
PROC1	Worker - combined, long-term - systemic	-	0.036193 mg/kg bw/d	0.001817
PROC1	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.034286 mg/kg bw/d	0.001714
PROC1	Worker - inhalative, short-term - systemic	130 mg/m³	0.053403 mg/m³	0.000411
PROC1	Worker - combined, short-term - systemic	-	0.041915 mg/kg bw/d	0.002125
PROC2	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.274286 mg/kg bw/d	0.013714
PROC2	Worker - inhalative, long-term - systemic	130 mg/m³	3.338 mg/m³	0.025675
PROC2	Worker - combined, long-term - systemic	-	0.7511 mg/kg bw/d	0.039389
PROC2	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.274286 mg/kg bw/d	0.013714
PROC2	Worker - inhalative, short-term - systemic	130 mg/m³	13.351 mg/m³	0.102698
PROC2	Worker - combined, short-term - systemic	-	2.182 mg/kg bw/d	0.116413
PROC3	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.137143 mg/kg bw/d	0.006857
PROC3	Worker - inhalative, long-term - systemic	130 mg/m³	6.675 mg/m³	0.051349
PROC3	Worker - combined, long-term - systemic	-	1.091 mg/kg bw/d	0.058206
PROC3	Worker - dermal,	20 mg/kg bw/d	0.137143 mg/kg bw/d	0.006857

	short-term - systemic			
PROC3	Worker - inhalative, short-term - systemic	130 mg/m³	26.702 mg/m³	0.205397
PROC3	Worker - combined, short-term - systemic	-	3.952 mg/kg bw/d	0.212254
PROC4	Worker - dermal, long-term - systemic	20 mg/kg bw/d	1.371 mg/kg bw/d	0.068571
PROC4	Worker - inhalative, long-term - systemic	130 mg/m³	13.351 mg/m³	0.102698
PROC4	Worker - combined, long-term - systemic	-	3.279 mg/kg bw/d	0.17127
PROC4	Worker - dermal, short-term - systemic	20 mg/kg bw/d	1.371 mg/kg bw/d	0.068571
PROC4	Worker - inhalative, short-term - systemic	130 mg/m³	53.403 mg/m³	0.410794
PROC4	Worker - combined, short-term - systemic	-	9 mg/kg bw/d	0.479365
PROC7	Worker - dermal, long-term - systemic	20 mg/kg bw/d	2.143 mg/kg bw/d	0.107143
PROC7	Worker - inhalative, long-term - systemic	130 mg/m³	19.14 mg/m³	0.147231
PROC7	Worker - combined, long-term - systemic	-	4.877 mg/kg bw/d	0.254374
PROC7	Worker - dermal, short-term - systemic	20 mg/kg bw/d	2.143 mg/kg bw/d	0.107143
PROC7	Worker - inhalative, short-term - systemic	130 mg/m³	19.14 mg/m³	0.147231
PROC7	Worker - combined, short-term - systemic	-	4.877 mg/kg bw/d	0.254374
PROC8a	Worker - dermal, long-term - systemic	20 mg/kg bw/d	2.743 mg/kg bw/d	0.137143
PROC8a	Worker - inhalative, long-term - systemic	130 mg/m³	33.377 mg/m³	0.256746
PROC8a	Worker - combined, long-term - systemic	-	7.511 mg/kg bw/d	0.393889
PROC8a	Worker - dermal, short-term - systemic	20 mg/kg bw/d	2.743 mg/kg bw/d	0.137143
PROC8a	Worker - inhalative, short-term - systemic	130 mg/m³	66.754 mg/m³	0.513492
PROC8a	Worker - combined, short-term - systemic	-	12.279 mg/kg bw/d	0.650635
PROC8b	Worker - dermal, long-term - systemic	20 mg/kg bw/d	2.743 mg/kg bw/d	0.137143
PROC8b	Worker - inhalative, long-term - systemic	130 mg/m³	10.013 mg/m³	0.077024
PROC8b	Worker - combined, long-term - systemic	-	4.173 mg/kg bw/d	0.214167
PROC8b	Worker - dermal, short-term - systemic	20 mg/kg bw/d	2.743 mg/kg bw/d	0.137143
PROC8b	Worker - inhalative, short-term - systemic	130 mg/m³	20.026 mg/m³	0.154048
PROC8b	Worker - combined, short-term - systemic	-	5.604 mg/kg bw/d	0.29119
PROC10	Worker - dermal, long-term - systemic	20 mg/kg bw/d	4.389 mg/kg bw/d	0.219429
PROC10	Worker - inhalative, long-term - systemic	130 mg/m³	26.702 mg/m³	0.205397
PROC10	Worker - combined, long-term - systemic	-	8.203 mg/kg bw/d	0.424825

PROC10	Worker - dermal, short-term - systemic	20 mg/kg bw/d	4.389 mg/kg bw/d	0.219429
PROC10	Worker - inhalative, short-term - systemic	130 mg/m³	53.403 mg/m³	0.410794
PROC10	Worker - combined, short-term - systemic	-	12.018 mg/kg bw/d	0.630222
PROC13	Worker - dermal, long-term - systemic	20 mg/kg bw/d	2.743 mg/kg bw/d	0.137143
PROC13	Worker - inhalative, long-term - systemic	130 mg/m³	33.377 mg/m³	0.256746
PROC13	Worker - combined, long-term - systemic	-	7.511 mg/kg bw/d	0.393889
PROC13	Worker - dermal, short-term - systemic	20 mg/kg bw/d	2.743 mg/kg bw/d	0.137143
PROC13	Worker - inhalative, short-term - systemic	130 mg/m³	66.754 mg/m³	0.513492
PROC13	Worker - combined, short-term - systemic	-	12.279 mg/kg bw/d	0.650635

Section 4 - Guidance to check compliance with the exposure scenario

ECHA guidance for downstream users

Scaling method	The quantitative risk characterization for this worker exposure has been calculated by EasyTRA
Scalable parameters	Exposure duration and maximum concentration All other parameters have to be taken directly from the exposure scenario provided
Boundaries of scaling	RCR combined is calculated following the recommendation in the ECHA guidance document “Guidance on information requirements and chemical safety assessment – Part E: Risk characterization”

Exposure scenario

ES07 - Use as laboratory reagent/agent (use in industrial settings)

Section 1 - Title

Title	ES07 - Use as laboratory reagent/agent (use in industrial settings)
Environmental release category(ies)	- ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles
Process category(ies)	- PROC10 - Roller application or brushing - PROC15 - Use as laboratory reagent

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

Product characteristics	
Physical form of product	Liquid
Vapour pressure	12.8 kPa
Temperature vapour pressure	20°C
Level of dustiness	High
Volatility	High
Remarks	As no environmental hazard was identified no environmental-related exposure assessment and risk characterisation was performed

Section 2.2 - Control of worker exposure

Control of worker exposure	
Process category(ies)	**PROC10 - Roller application or brushing** **PROC15 - Use as laboratory reagent**
Exposure route	Dermal: Long-term systemic, Short-term systemic Inhalation: Long-term systemic, Short-term systemic
Covers concentrations up to	PROC10: 80% PROC15: 100%
Physical form of product	Liquid
Vapour pressure	12.8 kPa
Temperature vapour pressure	20°C
Level of dustiness	High
Volatility	High
Exposure duration	> 4 hours / day
Use frequency	Covers frequency up to 5 days per week
Human factors not influenced by risk management	Exposed skin surface assumed: PROC10: 960 cm² PROC15: 240 cm²
Technical conditions and measures to control dispersion from source towards the worker	PROC10, PROC15: Local exhaust ventilation - efficiency of at least 90%
Conditions and measures related to personal protection, hygiene and health evaluation	PROC10, PROC15: Respiratory protection not applicable Gloves: APF5 80%
Organisational measures to prevent /limit releases, dispersion and	None

exposure	
Indoor/Outdoor use	Indoor
Operational conditions	Industrial

Section 3 - Exposure estimation

Environmental release category(ies) - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

Predicted No Effect Concentration (PNEC) No hazard identified. With high probability the substance is not hazardous to aquatic life. No environmental risk assessment is necessary.

Remarks As no environmental hazard was identified no environmental-related exposure assessment and risk characterisation was performed

Derived No Effect Level (DNEL) Long term
Inhalation 130 mg/m³
Derived No Effect Level (DNEL) **Short term**
Inhalation 130 mg/m³

Calculation method EasyTRA

Exposure estimation

Process category(ies)	Exposure route	Derived No Effect Level (DNEL)	Exposure estimation	Risk characterisation ratio (RCR)
PROC10	Worker - dermal, long-term - systemic	20 mg/kg bw/d	4.389 mg/kg bw/d	0.219429
PROC1	Worker - inhalative, long-term - systemic	130 mg/m³	26.702 mg/m³	0.205397
PROC1	Worker - combined, long-term - systemic	-	8.203 mg/kg bw/d	0.424825
PROC1	Worker - dermal, short-term - systemic	20 mg/kg bw/d	4.389 mg/kg bw/d	0.219429
PROC1	Worker - inhalative, short-term - systemic	130 mg/m³	53.403 mg/m³	0.410794
PROC1	Worker - combined, short-term - systemic	-	12.018 mg/kg bw/d	0.630222
PROC15	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.068571 mg/kg bw/d	0.003429
PROC15	Worker - inhalative, long-term - systemic	130 mg/m³	6.675 mg/m³	0.051349
PROC15	Worker - combined, long-term - systemic	-	1.022 mg/kg bw/d	0.054778
PROC15	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.068571 mg/kg bw/d	0.003429
PROC15	Worker - inhalative, short-term - systemic	130 mg/m³	13.351 mg/m³	0.102698
PROC15	Worker - combined, short-term - systemic	-	1.976 mg/kg bw/d	0.106127

Section 4 - Guidance to check compliance with the exposure scenario

ECHA guidance for downstream users

Scaling method	The quantitative risk characterization for this worker exposure has been calculated by EasyTRA
Scalable parameters	Exposure duration and maximum concentration All other parameters have to be taken directly from the exposure scenario provided
Boundaries of scaling	RCR combined is calculated following the recommendation in the ECHA guidance document “Guidance on information requirements and chemical safety assessment – Part E: Risk characterization”

Exposure scenario

ES08 - Use as wastewater treatment chemical (use in industrial settings)

Section 1 - Title

Title	ES08 - Use as wastewater treatment chemical (use in industrial settings)
Environmental release category(ies)	- ERC7 - Industrial use of substances in closed systems
Process category(ies)	- PROC2 - Use in closed, continuous process with occasional controlled exposure

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC7 - Industrial use of substances in closed systems

Product characteristics	
Physical form of product	Liquid
Vapour pressure	12.8 kPa
Temperature vapour pressure	20°C
Level of dustiness	High
Volatility	High
Remarks	As no environmental hazard was identified no environmental-related exposure assessment and risk characterisation was performed

Section 2.2 - Control of worker exposure

Control of worker exposure

Process category(ies)	**PROC2 - Use in closed, continuous process with occasional controlled exposure**
Exposure route	Dermal: Long-term systemic, Short-term systemic Inhalation: Long-term systemic, Short-term systemic
Covers concentrations up to	100%
Physical form of product	Liquid
Vapour pressure	12.8 kPa
Temperature vapour pressure	20°C
Level of dustiness	High
Volatility	High
Exposure duration	> 4 hours / day
Use frequency	Covers frequency up to 5 days per week
Human factors not influenced by risk management	Exposed skin surface assumed: PROC2: 480 cm^2
Technical conditions and measures to control dispersion from source towards the worker	PROC2: Local exhaust ventilation - efficiency of at least 90%
Conditions and measures related to personal protection, hygiene and health evaluation	PROC2: Respiratory protection not applicable Gloves: APF5 80%
Organisational measures to prevent /limit releases, dispersion and exposure	None
Indoor/Outdoor use	Indoor
Operational conditions	Industrial

Section 3 - Exposure estimation

Environmental release category(ies) - ERC7 - Industrial use of substances in closed systems

Predicted No Effect Concentration (PNEC) No hazard identified. With high probability the substance is not hazardous to aquatic life. No environmental risk assessment is necessary.

Remarks As no environmental hazard was identified no environmental-related exposure assessment and risk characterisation was performed

Derived No Effect Level (DNEL) Long term
Inhalation 130 mg/m³
Derived No Effect Level (DNEL) **Short term**
Inhalation 130 mg/m³

Calculation method EasyTRA

Exposure estimation

Process category(ies)	Exposure route	Derived No Effect Level (DNEL)	Exposure estimation	Risk characterisation ratio (RCR)
PROC2	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.274286 mg/kg bw/d	0.013714
PROC2	Worker - inhalative, long-term - systemic	130 mg/m³	3.338 mg/m³	0.025675
PROC2	Worker - combined, long-term - systemic	-	0.7511 mg/kg bw/d	0.039389
PROC2	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.274286 mg/kg bw/d	0.013714
PROC2	Worker - inhalative, short-term - systemic	130 mg/m³	13.351 mg/m³	0.102698
PROC2	Worker - combined, short-term - systemic	-	2.182 mg/kg bw/d	0.116413

Section 4 - Guidance to check compliance with the exposure scenario

ECHA guidance for downstream users

Scaling method	The quantitative risk characterization for this worker exposure has been calculated by EasyTRA
Scalable parameters	Exposure duration and maximum concentration All other parameters have to be taken directly from the exposure scenario provided
Boundaries of scaling	RCR combined is calculated following the recommendation in the ECHA guidance document “Guidance on information requirements and chemical safety assessment – Part E: Risk characterization”

Exposure scenario

ES09 - Use in Oilfield drilling and production operations (use in industrial settings)

Section 1 - Title

Title	ES09 - Use in Oilfield drilling and production operations (use in industrial settings)
Environmental release category(ies)	- ERC7 - Industrial use of substances in closed systems
Process category(ies)	- PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises - PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) - PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities - PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC7 - Industrial use of substances in closed systems

Product characteristics	
Physical form of product	Liquid
Vapour pressure	12.8 kPa
Temperature vapour pressure	20°C
Level of dustiness	High
Volatility	High
Remarks	As no environmental hazard was identified no environmental-related exposure assessment and risk characterisation was performed

Section 2.2 - Control of worker exposure

Control of worker exposure	
Process category(ies)	**PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises** **PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)** **PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities** **PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities**
Exposure route	Dermal: Long-term systemic, Short-term systemic Inhalation: Long-term systemic, Short-term systemic
Covers concentrations up to	PROC4: 100% PROC5, PROC8a, PROC8b: 5%
Physical form of product	Liquid

Vapour pressure	12.8 kPa
Temperature vapour pressure	20°C
Level of dustiness	High
Volatility	High
Exposure duration	PROC4: 1-4 hours / day PROC5, PROC8a, PROC8b: > 4 hours / day
Use frequency	Covers frequency up to 5 days per week
Human factors not influenced by risk management	Exposed skin surface assumed: PROC4, PROC5: 480 cm² PROC8a, PROC8b: 960 cm²
Technical conditions and measures to control dispersion from source towards the worker	PROC4: Local exhaust ventilation - efficiency of at least 90% PROC5, PROC8a, PROC8b: No specific measures identified
Conditions and measures related to personal protection, hygiene and health evaluation	PROC4, PROC5, PROC8a, PROC8b: Respiratory protection not applicable Gloves: APF5 80%
Organisational measures to prevent /limit releases, dispersion and exposure	None
Indoor/Outdoor use	Indoor
Operational conditions	Industrial

Section 3 - Exposure estimation

Environmental release category(ies) - ERC7 - Industrial use of substances in closed systems

Predicted No Effect Concentration (PNEC) No hazard identified. With high probability the substance is not hazardous to aquatic life. No environmental risk assessment is necessary.

Remarks As no environmental hazard was identified no environmental-related exposure assessment and risk characterisation was performed

Derived No Effect Level (DNEL) Long term
Inhalation 130 mg/m³
Derived No Effect Level (DNEL) **Short term**
Inhalation 130 mg/m³

Calculation method EasyTRA

Exposure estimation

Process category(ies)	Exposure route	Derived No Effect Level (DNEL)	Exposure estimation	Risk characterisation ratio (RCR)
PROC4	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.822857 mg/kg bw/d	0.041143
PROC4	Worker - inhalative, long-term - systemic	130 mg/m³	8.01 mg/m³	0.061619
PROC4	Worker - combined, long-term - systemic	-	1.967 mg/kg bw/d	0.102762
PROC4	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.822857 mg/kg bw/d	0.041143
PROC4	Worker - inhalative, short-term - systemic	130 mg/m³	53.403 mg/m³	0.410794
PROC4	Worker - combined, short-term - systemic	-	8.452 mg/kg bw/d	0.451936
PROC5	Worker - dermal,	20 mg/kg bw/d	0.137143 mg/kg bw/d	0.006857

	long-term - systemic			
PROC5	Worker - inhalative, long-term - systemic	130 mg/m³	16.688 mg/m³	0.128373
PROC5	Worker - combined, long-term - systemic	-	2.521 mg/kg bw/d	0.13523
PROC5	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.137143 mg/kg bw/d	0.006857
PROC5	Worker - inhalative, short-term - systemic	130 mg/m³	33.377 mg/m³	0.256746
PROC5	Worker - combined, short-term - systemic	-	4.905 mg/kg bw/d	0.263603
PROC8a	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.137143 mg/kg bw/d	0.006857
PROC8a	Worker - inhalative, long-term - systemic	130 mg/m³	16.688 mg/m³	0.128373
PROC8a	Worker - combined, long-term - systemic	-	2.521 mg/kg bw/d	0.13523
PROC8a	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.137143 mg/kg bw/d	0.006857
PROC8a	Worker - inhalative, short-term - systemic	130 mg/m³	33.377 mg/m³	0.256746
PROC8a	Worker - combined, short-term - systemic	-	4.905 mg/kg bw/d	0.263603
PROC8b	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.137143 mg/kg bw/d	0.006857
PROC8b	Worker - inhalative, long-term - systemic	130 mg/m³	10.013 mg/m³	0.077024
PROC8b	Worker - combined, long-term - systemic	-	1.568 mg/kg bw/d	0.083881
PROC8b	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.137143 mg/kg bw/d	0.006857
PROC8b	Worker - inhalative, short-term - systemic	130 mg/m³	20.026 mg/m³	0.154048
PROC8b	Worker - combined, short-term - systemic	-	2.998 mg/kg bw/d	0.160905

Section 4 - Guidance to check compliance with the exposure scenario

ECHA guidance for downstream users

Scaling method	The quantitative risk characterization for this worker exposure has been calculated by EasyTRA
Scalable parameters	Exposure duration and maximum concentration All other parameters have to be taken directly from the exposure scenario provided
Boundaries of scaling	RCR combined is calculated following the recommendation in the ECHA guidance document “Guidance on information requirements and chemical safety assessment – Part E: Risk characterization”

Exposure scenario

ES10 - Use as a Fuel (use in professional settings)

Section 1 - Title

Title	ES10 - Use as a Fuel (use in professional settings)
Environmental release category(ies)	- ERC8b - Wide dispersive indoor use of reactive substances in open systems - ERC8e - Wide dispersive outdoor use of reactive substances in open systems
Process category(ies)	- PROC1 - Use in closed process, no likelihood of exposure - PROC2 - Use in closed, continuous process with occasional controlled exposure - PROC3 - Use in closed batch process (synthesis or formulation) - PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities - PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities - PROC16 - Using material as fuel sources, limited exposure to unburned product to be expected - PROC19 - Hand-mixing with intimate contact and only PPE available

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC8b - Wide dispersive indoor use of reactive substances in open systems
- ERC8e - Wide dispersive outdoor use of reactive substances in open systems

Product characteristics	
Physical form of product	Liquid
Vapour pressure	12.8 kPa
Temperature vapour pressure	20°C
Level of dustiness	High
Volatility	High
Remarks	As no environmental hazard was identified no environmental-related exposure assessment and risk characterisation was performed

Section 2.2 - Control of worker exposure

Control of worker exposure	
Process category(ies)	**PROC1 - Use in closed process, no likelihood of exposure** **PROC2 - Use in closed, continuous process with occasional controlled exposure** **PROC3 - Use in closed batch process (synthesis or formulation)** **PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities** **PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities** **PROC16 - Using material as fuel sources, limited exposure to unburned product to be expected**

	PROC19 - Hand-mixing with intimate contact and only PPE available
Exposure route	Dermal: Long-term systemic, Short-term systemic Inhalation: Long-term systemic, Short-term systemic
Covers concentrations up to	PROC1, PROC2, PROC3, PROC16 (long-term): 100% PROC8a, PROC8b: 5% PROC 16 (short-term): 5-25% PROC 19: 10%
Physical form of product	Liquid
Vapour pressure	12.8 kPa
Temperature vapour pressure	20°C
Level of dustiness	High
Volatility	High
Exposure duration	PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16: > 4 hours / day PROC19: 1-4 hours / day
Use frequency	Covers frequency up to 5 days per week
Human factors not influenced by risk management	Exposed skin surface assumed: PROC1, PROC3, PROC16: 240 cm² PROC2: 480 cm² PROC8a, PROC8b: 960 cm² PROC19: 1980 cm²
Technical conditions and measures to control dispersion from source towards the worker	PROC1, PROC8a, PROC8b, PROC16, PROC19: No specific measures identified PROC2, PROC3: Local exhaust ventilation - efficiency of at least 80%
Conditions and measures related to personal protection, hygiene and health evaluation	PROC1: Respiratory protection not applicable Hand protection not applicable PROC2, PROC3, PROC8a, PROC8b, PROC16, PROC19: Respiratory protection not applicable Gloves: APF5 80%
Organisational measures to prevent /limit releases, dispersion and exposure	None
Indoor/Outdoor use	Indoor
Minimum room ventilation rate for handling/application (air changes per hour)	30%
Remarks	Room ventilation required for PROC16 (short-term)
Operational conditions	Professional

Section 3 - Exposure estimation

Environmental release category(ies) - ERC8b - Wide dispersive indoor use of reactive substances in open systems
- ERC8e - Wide dispersive outdoor use of reactive substances in open systems

Predicted No Effect Concentration (PNEC) No hazard identified. With high probability the substance is not hazardous to aquatic life. No environmental risk assessment is necessary.

Remarks As no environmental hazard was identified no environmental-related exposure assessment and risk characterisation was performed

Derived No Effect Level (DNEL) Long term
Dermal 20 mg/kg bw/d
Inhalation 130 mg/m³

Derived No Effect Level (DNEL)	**Short term**
Dermal	20 mg/kg bw/d
Inhalation	130 mg/m³

Calculation method EasyTRA

Exposure estimation

Process category(ies)	Exposure route	Derived No Effect Level (DNEL)	Exposure estimation	Risk characterisation ratio (RCR)
PROC1	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.034286 mg/kg bw/d	0.001714
PROC1	Worker - inhalative, long-term - systemic	130 mg/m³	0.133508 mg/m³	0.001027
PROC1	Worker - combined, long-term - systemic	-	0.053358 mg/kg bw/d	0.002741
PROC1	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.034286 mg/kg bw/d	0.001714
PROC1	Worker - inhalative, short-term - systemic	130 mg/m³	0.534032 mg/m³	0.004108
PROC1	Worker - combined, short-term - systemic	-	0.110576 mg/kg bw/d	0.005822
PROC2	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.274286 mg/kg bw/d	0.013714
PROC2	Worker - inhalative, long-term - systemic	130 mg/m³	13.351 mg/m³	0.102698
PROC2	Worker - combined, long-term - systemic	-	2.182 mg/kg bw/d	0.116413
PROC2	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.274286 mg/kg bw/d	0.013714
PROC2	Worker - inhalative, short-term - systemic	130 mg/m³	53.403 mg/m³	0.410794
PROC2	Worker - combined, short-term - systemic	-	7.903 mg/kg bw/d	0.424508
PROC3	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.137143 mg/kg bw/d	0.006857
PROC3	Worker - inhalative, long-term - systemic	130 mg/m³	26.702 mg/m³	0.205397
PROC3	Worker - combined, long-term - systemic	-	3.952 mg/kg bw/d	0.212254
PROC3	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.137143 mg/kg bw/d	0.006857
PROC3	Worker - inhalative, short-term - systemic	130 mg/m³	106.806 mg/m³	0.821587
PROC3	Worker - combined, short-term - systemic	-	15.395 mg/kg bw/d	0.828444
PROC8a	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.137143 mg/kg bw/d	0.006857
PROC8a	Worker - inhalative, long-term - systemic	130 mg/m³	33.377 mg/m³	0.256746
PROC8a	Worker - combined, long-term - systemic	-	4.905 mg/kg bw/d	0.263603
PROC8a	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.137143 mg/kg bw/d	0.006857
PROC8a	Worker - inhalative, short-term - systemic	130 mg/m³	66.754 mg/m³	0.513492
PROC8a	Worker - combined, short-term - systemic	-	9.673 mg/kg bw/d	0.520349
PROC8b	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.137143 mg/kg bw/d	0.006857

PROC8b	Worker - inhalative, long-term - systemic	130 mg/m³	16.688 mg/m³	0.128373
PROC8b	Worker - combined, long-term - systemic	-	2.521 mg/kg bw/d	0.13523
PROC8b	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.137143 mg/kg bw/d	0.006857
PROC8b	Worker - inhalative, short-term - systemic	130 mg/m³	33.377 mg/m³	0.253746
PROC8b	Worker - combined, short-term - systemic	-	4.905 mg/kg bw/d	0.263603
PROC16	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.068571 mg/kg bw/d	0.003429
PROC15	Worker - inhalative, long-term - systemic	130 mg/m³	66.754 mg/m³	0.513492
PROC16	Worker - combined, long-term - systemic	-	9.605 mg/kg bw/d	0.516921
PROC16	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.041143 mg/kg bw/d	0.002057
PROC16	Worker - inhalative, short-term - systemic	130 mg/m³	112.147 mg/m³	0.862667
PROC16	Worker - combined, short-term - systemic	-	16.062 mg/kg bw/d	0.864724
PROC19	Worker - dermal, long-term - systemic	20 mg/kg bw/d	1.697 mg/kg bw/d	0.084857
PROC19	Worker - inhalative, long-term - systemic	130 mg/m³	40.052 mg/m³	0.308095
PROC19	Worker - combined, long-term - systemic	-	7.419 mg/kg bw/d	0.392952
PROC19	Worker - dermal, short-term - systemic	20 mg/kg bw/d	1.697 mg/kg bw/d	0.084857
PROC19	Worker - inhalative, short-term - systemic	130 mg/m³	13.351 mg/m³	0.102698
PROC19	Worker - combined, short-term - systemic	-	3.604 mg/kg bw/d	0.187556

Section 4 - Guidance to check compliance with the exposure scenario

ECHA guidance for downstream users

Scaling method	The quantitative risk characterization for this worker exposure has been calculated by EasyTRA
Scalable parameters	Exposure duration and maximum concentration All other parameters have to be taken directly from the exposure scenario provided
Boundaries of scaling	RCR combined is calculated following the recommendation in the ECHA guidance document “Guidance on information requirements and chemical safety assessment – Part E: Risk characterization”

Exposure scenario

ES11 - Use in Cleaning Agents (use in professional settings)

Section 1 - Title

Title	ES11 - Use in Cleaning Agents (use in professional settings)
Environmental release category(ies)	- ERC8a - Wide dispersive indoor use of processing aids in open systems - ERC8d - Wide dispersive outdoor use of processing aids in open systems
Process category(ies)	- PROC1 - Use in closed process, no likelihood of exposure - PROC2 - Use in closed, continuous process with occasional controlled exposure - PROC3 - Use in closed batch process (synthesis or formulation) - PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises - PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities - PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities - PROC10 - Roller application or brushing - PROC11 - Non industrial spraying - PROC13 - Treatment of articles by dipping and pouring

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems
- ERC8d - Wide dispersive outdoor use of processing aids in open systems

Product characteristics	
Physical form of product	Liquid
Vapour pressure	12.8 kPa
Temperature vapour pressure	20°C
Level of dustiness	High
Volatility	High
Remarks	As no environmental hazard was identified no environmental-related exposure assessment and risk characterisation was performed

Section 2.2 - Control of worker exposure

Control of worker exposure	
Process category(ies)	**PROC1 - Use in closed process, no likelihood of exposure** **PROC2 - Use in closed, continuous process with occasional controlled exposure** **PROC3 - Use in closed batch process (synthesis or formulation)** **PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises** **PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities** **PROC8b - Transfer of substance or preparation**

	(charging/discharging) from/to vessels/large containers at dedicated facilities
Exposure route	Dermal: Long-term systemic, Short-term systemic Inhalation: Long-term systemic, Short-term systemic
Covers concentrations up to	PROC1, PROC2, PROC3, PROC4: 100% PROC8a: 5% PROC8b: 10%
Physical form of product	Liquid
Vapour pressure	12.8 kPa
Temperature vapour pressure	20°C
Level of dustiness	High
Volatility	High
Exposure duration	PROC1, PROC2, PROC3, PROC8A, PROC8B: > 4 hours / day PROC4: 1-4 hours / day
Use frequency	Covers frequency up to 5 days per week
Human factors not influenced by risk management	Exposed skin surface assumed: PROC1, PROC3: 240 cm² PROC2, PROC4: 480 cm² PROC8a, PROC8b: 960 cm²
Technical conditions and measures to control dispersion from source towards the worker	PROC1, PROC8a, PROC8b: No specific measures identified PROC2, PROC3, PROC4: Local exhaust ventilation - efficiency of at least 80%
Conditions and measures related to personal protection, hygiene and health evaluation	PROC1: Respiratory protection not applicable Hand protection not applicable PROC2, PROC3, PROC4, PROC8a, PROC8b: Respiratory protection not applicable Gloves: APF5 80%
Organisational measures to prevent /limit releases, dispersion and exposure	None
Indoor/Outdoor use	Indoor
Minimum room ventilation rate for handling/application (air changes per hour)	30%
Remarks	Room ventilation required for PROC4 (short-term)
Operational conditions	Professional

Process category(ies)	**PROC10 - Roller application or brushing** **PROC11 - Non industrial spraying** **PROC13 - Treatment of articles by dipping and pouring**
Exposure route	Dermal: Long-term systemic, Short-term systemic Inhalation: Long-term systemic, Short-term systemic
Covers concentrations up to	PROC10: 5% PROC11: 3% PROC13: 100%
Physical form of product	Liquid
Vapour pressure	12.8 kPa
Temperature vapour pressure	20°C
Level of dustiness	High
Volatility	High
Exposure duration	>4 hours / day
Use frequency	Covers frequency up to 5 days per week
Human factors not influenced by risk management	Exposed skin surface assumed: PROC10: 960 cm² PROC11: 1500 cm² PROC13: 480 cm²
Technical conditions and measures to control dispersion from source towards	PROC10, PROC11: No specific measures identified PROC13: Local exhaust ventilation - efficiency of at least 80%

the worker	
Conditions and measures related to personal protection, hygiene and health evaluation	PROC10, PROC13 (long-term): Respiratory protection not applicable Gloves: APF5 80% PROC11: Wear a half-mask respirator, selected in accordance with EN 529 Efficiency of at least 90% Gloves: APF5 90% PROC 13 (short-term): Wear a respirator providing a minimum efficiency of 90% Wear suitable gloves tested to EN 374, 80%
Organisational measures to prevent /limit releases, dispersion and exposure	None
Indoor/Outdoor use	Indoor
Use in room with a volume of minimum	PROC11: 100-1000m3
Operational conditions	Professional

Section 3 - Exposure estimation

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems
- ERC8d - Wide dispersive outdoor use of processing aids in open systems

Predicted No Effect Concentration (PNEC) No hazard identified. With high probability the substance is not hazardous to aquatic life. No environmental risk assessment is necessary.

Remarks As no environmental hazard was identified no environmental-related exposure assessment and risk characterisation was performed

Derived No Effect Level (DNEL) Long term
Dermal 20 mg/kg bw/d
Inhalation 130 mg/m³
Derived No Effect Level (DNEL) **Short term**
Dermal 20 mg/kg bw/d
Inhalation 130 mg/m³

Calculation method EasyTRA

Exposure estimation

Process category(ies)	Exposure route	Derived No Effect Level (DNEL)	Exposure estimation	Risk characterisation ratio (RCR)
PROC1	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.034286 mg/kg bw/d	0.001714
PROC1	Worker - inhalative, long-term - systemic	130 mg/m³	0.133508 mg/m³	0.001027
PROC1	Worker - combined, long-term - systemic	-	0.053358 mg/kg bw/d	0.002741
PROC1	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.034286 mg/kg bw/d	0.001714
PROC1	Worker - inhalative, short-term - systemic	130 mg/m³	0.534032 mg/m³	0.004108
PROC1	Worker - combined, short-term - systemic	-	0.110576 mg/kg bw/d	0.005822
PROC2	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.274286 mg/kg bw/d	0.013714
PROC2	Worker - inhalative, long-term - systemic	130 mg/m³	13.351 mg/m³	0.102698
PROC2	Worker - combined,	-	2.182 mg/kg bw/d	0.116413

	long-term - systemic			
PROC2	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.274286 mg/kg bw/d	0.013714
PROC2	Worker - inhalative, short-term - systemic	130 mg/m³	53.403 mg/m³	0.410794
PROC2	Worker - combined, short-term - systemic	-	7.903 mg/kg bw/d	0.424508
PROC3	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.137143 mg/kg bw/d	0.006857
PROC3	Worker - inhalative, long-term - systemic	130 mg/m³	26.702 mg/m³	0.205397
PROC3	Worker - combined, long-term - systemic	-	3.952 mg/kg bw/d	0.212254
PROC3	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.137143 mg/kg bw/d	0.006857
PROC3	Worker - inhalative, short-term - systemic	130 mg/m³	106.806 mg/m³	0.821587
PROC3	Worker - combined, short-term - systemic	-	15.395 mg/kg bw/d	0.828444
PROC4	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.822857 mg/kg bw/d	0.041143
PROC4	Worker - inhalative, long-term - systemic	130 mg/m³	40.052 mg/m³	0.308095
PROC4	Worker - combined, long-term - systemic	-	6.545 mg/kg bw/d	0.349238
PROC4	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.822857 mg/kg bw/d	0.041143
PROC4	Worker - inhalative, short-term - systemic	130 mg/m³	18.691 mg/m³	0.143778
PROC4	Worker - combined, short-term - systemic	-	3.493 mg/kg bw/d	0.184921
PROC8a	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.137143 mg/kg bw/d	0.006857
PROC8a	Worker - inhalative, long-term - systemic	130 mg/m³	33.377 mg/m³	0.256746
PROC8a	Worker - combined, long-term - systemic	-	4.905 mg/kg bw/d	0.263603
PROC8a	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.137143 mg/kg bw/d	0.006857
PROC8a	Worker - inhalative, short-term - systemic	130 mg/m³	66.754 mg/m³	0.513492
PROC8a	Worker - combined, short-term - systemic	-	9.673 mg/kg bw/d	0.520349
PROC8b	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.137143 mg/kg bw/d	0.006857
PROC8b	Worker - inhalative, long-term - systemic	130 mg/m³	16.688 mg/m³	0.128373
PROC8b	Worker - combined, long-term - systemic	-	2.521 mg/kg bw/d	0.13523
PROC8b	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.137143 mg/kg bw/d	0.006857
PROC8b	Worker - inhalative, short-term - systemic	130 mg/m³	33.377 mg/m³	0.256746
PROC8b	Worker - combined, short-term - systemic	-	4.905 mg/kg bw/d	0.263603
PROC10	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.274286 mg/kg bw/d	0.013714
PROC10	Worker - inhalative, long-term - systemic	130 mg/m³	33.377 mg/m³	0.256746

PROC10	Worker - combined, long-term - systemic	-	5.042 mg/kg bw/d	0.27046
PROC10	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.274286 mg/kg bw/d	0.013714
PROC10	Worker - inhalative, short-term - systemic	130 mg/m³	66.754 mg/m³	0.513492
PROC10	Worker - combined, short-term - systemic	-	9.811 mg/kg bw/d	0.527206
PROC11	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.321429 mg/kg bw/d	0.016071
PROC11	Worker - inhalative, long-term - systemic	130 mg/m³	71.54 mg/m³	0.550308
PROC11	Worker - combined, long-term - systemic	-	10.541 mg/kg bw/d	0.566379
PROC11	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.321429 mg/kg bw/d	0.016071
PROC11	Worker - inhalative, short-term - systemic	130 mg/m³	71.54 mg/m³	0.550308
PROC11	Worker - combined, short-term - systemic	-	10.541 mg/kg bw/d	0.566379
PROC13	Worker - dermal, long-term - systemic	20 mg/kg bw/d	2.743 mg/kg bw/d	0.137143
PROC13	Worker - inhalative, long-term - systemic	130 mg/m³	66.754 mg/m³	0.513492
PROC13	Worker - combined, long-term - systemic	-	12.279 mg/kg bw/d	0.650635
PROC13	Worker - dermal, short-term - systemic	20 mg/kg bw/d	2.743 mg/kg bw/d	0.137143
PROC13	Worker - inhalative, short-term - systemic	130 mg/m³	13.351 mg/m³	0.102698
PROC13	Worker - combined, short-term - systemic	-	4.65 mg/kg bw/d	0.239841

Section 4 - Guidance to check compliance with the exposure scenario

ECHA guidance for downstream users

Scaling method	The quantitative risk characterization for this worker exposure has been calculated by EasyTRA
Scalable parameters	Exposure duration and maximum concentration All other parameters have to be taken directly from the exposure scenario provided
Boundaries of scaling	RCR combined is calculated following the recommendation in the ECHA guidance document “Guidance on information requirements and chemical safety assessment – Part E: Risk characterization”

Exposure scenario

ES12 - Use as laboratory reagent/agent (use in professional settings)

Section 1 - Title

Title	ES12 - Use as laboratory reagent/agent (use in professional settings)
Environmental release category(ies)	- ERC8a - Wide dispersive indoor use of processing aids in open systems
Process category(ies)	- PROC10 - Roller application or brushing - PROC15 - Use as laboratory reagent

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems

Product characteristics	
Physical form of product	Liquid
Vapour pressure	12.8 kPa
Temperature vapour pressure	20°C
Level of dustiness	High
Volatility	High
Remarks	As no environmental hazard was identified no environmental-related exposure assessment and risk characterisation was performed

Section 2.2 - Control of worker exposure

Control of worker exposure	
Process category(ies)	**PROC10 - Roller application or brushing** **PROC15 - Use as laboratory reagent**
Exposure route	Dermal: Long-term systemic, Short-term systemic Inhalation: Long-term systemic, Short-term systemic
Covers concentrations up to	PROC10: 5% PROC15: 100%
Physical form of product	Liquid
Vapour pressure	12.8 kPa
Temperature vapour pressure	20°C
Level of dustiness	High
Volatility	High
Exposure duration	> 4 hours / day
Use frequency	Covers frequency up to 5 days per week
Human factors not influenced by risk management	Exposed skin surface assumed: PROC10: 960 cm² PROC15: 240 cm²
Technical conditions and measures to control dispersion from source towards the worker	PROC10: No specific measures identified PROC15: Local exhaust ventilation - efficiency of at least 80%
Conditions and measures related to personal protection, hygiene and health evaluation	PROC10, PROC15: Respiratory protection not applicable Gloves: APF5 80%
Organisational measures to prevent /limit releases, dispersion and exposure	None

Indoor/Outdoor use	Indoor
Operational conditions	Professional

Section 3 - Exposure estimation

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems

Predicted No Effect Concentration (PNEC) No hazard identified. With high probability the substance is not hazardous to aquatic life. No environmental risk assessment is necessary.

Remarks As no environmental hazard was identified no environmental-related exposure assessment and risk characterisation was performed

Derived No Effect Level (DNEL) Long term
Dermal 20 mg/kg bw/d
Inhalation 130 mg/m³
Derived No Effect Level (DNEL) **Short term**
Dermal 20 mg/kg bw/d
Inhalation 130 mg/m³

Calculation method EasyTRA

Exposure estimation

Process category(ies)	Exposure route	Derived No Effect Level (DNEL)	Exposure estimation	Risk characterisation ratio (RCR)
PROC10	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.274286 mg/kg bw/d	0.013714
PROC10	Worker - inhalative, long-term - systemic	130 mg/m³	33.377 mg/m³	0.256746
PROC10	Worker - combined, long-term - systemic	-	5.042 mg/kg bw/d	0.27046
PROC10	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.274286 mg/kg bw/d	0.013714
PROC10	Worker - inhalative, short-term - systemic	130 mg/m³	66.754 mg/m³	0.513492
PROC10	Worker - combined, short-term - systemic	-	9.811 mg/kg bw/d	0.527206
PROC15	Worker - dermal, long-term - systemic	20 mg/kg bw/d	0.068571 mg/kg bw/d	0.003429
PROC15	Worker - inhalative, long-term - systemic	130 mg/m³	13.351 mg/m³	0.102698
PROC15	Worker - combined, long-term - systemic	-	1.976 mg/kg bw/d	0.106127
PROC15	Worker - dermal, short-term - systemic	20 mg/kg bw/d	0.068571 mg/kg bw/d	0.003429
PROC15	Worker - inhalative, short-term - systemic	130 mg/m³	26.702 mg/m³	0.205397
PROC15	Worker - combined, short-term - systemic	-	3.883 mg/kg bw/d	0.208825

Section 4 - Guidance to check compliance with the exposure scenario

ECHA guidance for downstream users

Scaling method	The quantitative risk characterization for this worker exposure has been calculated by EasyTRA
Scalable parameters	Exposure duration and maximum concentration All other parameters have to be taken directly from the exposure scenario provided
Boundaries of scaling	RCR combined is calculated following the recommendation in the ECHA guidance document “Guidance on information requirements and chemical safety assessment – Part E: Risk characterization”

Exposure scenario

ES13 - Use in Cleaning Agents Use in De-icing and Anti-icing agents (consumer use) (spray products)

Section 1 - Title

Title	ES13 - Use in Cleaning Agents Use in De-icing and Anti-icing agents (consumer use) (spray products)
Environmental release category(ies)	- ERC8a - Wide dispersive indoor use of processing aids in open systems - ERC8d - Wide dispersive outdoor use of processing aids in open systems
Product category(ies)	- PC4 - Anti-freeze and de-icing products - PC35 - Washing and cleaning products (including solvent based products)

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems
- ERC8d - Wide dispersive outdoor use of processing aids in open systems

Product characteristics	
Physical form of product	Liquid
Vapour pressure	12.8 kPa
Temperature vapour pressure	20°C
Level of dustiness	High
Volatility	High
Remarks	As no environmental hazard was identified no environmental-related exposure assessment and risk characterisation was performed

Section 2.2 - Control of consumer exposure

Control of consumer exposure	
Product (sub) category(ies)	**PC4 - Anti-freeze and de-icing products Cleaning Short term**
Calculation method	The Consexpo model has been used to estimate consumer exposures unless otherwise indicated Spray cleaner - Application: cleaning
Physical form of product	Liquid
Product characteristics	Spray application: No Product ingredient fraction by weight: 0.590% Molecular weight matrix: 22g/mol Mass transfer weight: 0.413m/min
Amounts used	Inhalation: 16.2g Dermal: 0.160g
Exposure duration	Inhalation: Exposure calculation result type: Mean event concentration Exposure time: 60 minutes Application duration: 10 minutes Dermal: External dose
Release area	1.71E4 cm2 @ 20°C
Covers skin contact area up to	215 cm2
Use in room with a volume of minimum	15 m3

Minimum room ventilation rate for handling/application (air changes per hour)	2.5 l/h

Product (sub) category(ies)	**PC4 - Anti-freeze and de-icing products** **Spraying**
Calculation method	The Consexpo model has been used to estimate consumer exposures unless otherwise indicated Spray cleaner - Application: spraying
Physical form of product	Liquid
Product characteristics	Spray application: Yes Product ingredient fraction by weight: 0.590%
Exposure duration	Inhalation: Exposure calculation result type: Mean event concentration Weight fraction non-volatile: 5 % Maximum diameter: 100 µm Spray duration: 13.8 s Exposure duration: 60 minutes Dermal: External dose Release duration: 28 s
Covers skin contact area up to	2200 cm2
Remarks	Contact rate: 46 mg/min
Use in room with a volume of minimum	15 m3
Minimum room ventilation rate for handling/application (air changes per hour)	2.5 l/h
Operational conditions	Room height: 2.5 m Mass generation rate: 1.6 g/s Airborne fraction: 10 % Density non-volatile: 1 % Droplet distribution: Normal, mean and standard deviation: 2.4 +/-0.370 µm Cut-off diameter: 15 µm

Product (sub) category(ies)	**PC4 - Anti-freeze and de-icing products** **Cleaning** **Long term**
Calculation method	The Consexpo model has been used to estimate consumer exposures unless otherwise indicated Spray cleaner - Application: cleaning
Physical form of product	Liquid
Product characteristics	Spray application: No Product ingredient fraction by weight: 0.590 % Molecular weight matrix: 22 g/mol Mass transfer weight: 0.413 m/min.
Amounts used	Inhalation: 16.2 g Dermal: 0.310 g
Exposure duration	Inhalation: Exposure calculation result type: Mean concentration on day of exposure Exposure time: 60 minutes Application duration: 10 minutes Dermal: Internal dose chronic
Use frequency	365 days per year
Release area	1.71E4 cm2 @ 20°C
Covers skin contact area up to	225 cm2
Use in room with a volume of minimum	15 m3
Minimum room ventilation rate for handling/application (air changes per hour)	2.5 l/h
Operational conditions	Dermal: Uptake fraction: 100 %

Product (sub) category(ies)	**PC4 - Anti-freeze and de-icing products** **Spraying** **Long term**
Calculation method	The Consexpo model has been used to estimate consumer exposures unless otherwise indicated Spray cleaner - Application: spraying
Physical form of product	Liquid
Product characteristics	Spray application: Yes Product ingredient fraction by weight: 0.590 %
Exposure duration	Inhalation: Exposure calculation result type: Mean concentration on day of exposure Weight fraction non-volatile: 5 % Maximum diameter: 100 µm Spray duration: 13.8 s Exposure duration: 60 minutes Dermal: Release duration: 28 s
Use frequency	365 days per year
Covers skin contact area up to	2200 cm2
Remarks	Contact rate: 46 mg/min.
Use in room with a volume of minimum	15 m3
Minimum room ventilation rate for handling/application (air changes per hour)	2.5 l/h
Operational conditions	Inhalation: Room height: 2.5 m Mass generation rate: 0.800 g/s Airborne fraction: 20 % Density non-volatile: 1 % Droplet distribution: Normal, mean and standard deviation: 2.4 +/- 0.370 µm Cut-off diameter: 15 µm Dermal: Uptake fraction: 100 %

Product (sub) category(ies)	**PC35 - Washing and cleaning products (including solvent based products)** **Cleaning** **Short term**
Calculation method	The Consexpo model has been used to estimate consumer exposures unless otherwise indicated Spray cleaner - Application: cleaning
Physical form of product	Liquid
Product characteristics	Spray application: No Product ingredient fraction by weight: 1 % Molecular weight matrix: 22 g/mol Mass transfer weight: 0.413 m/min.
Amounts used	Inhalation: 16.2 g Dermal: 0.310 g
Exposure duration	Inhalation: Exposure calculation result type: Mean event concentration Exposure time: 60 minutes Application duration: 10 minutes Dermal: External dose
Release area	1.71E4 cm2 @ 20°C
Covers skin contact area up to	225 cm2
Use in room with a volume of minimum	15 m3
Minimum room ventilation rate for handling/application (air changes per hour)	2.5 l/h

Product (sub) category(ies)	**PC35 - Washing and cleaning products (including solvent based products)** **Spraying** **Short term**
Calculation method	The Consexpo model has been used to estimate consumer exposures unless otherwise indicated Spray cleaner - Application: spraying
Physical form of product	Liquid
Product characteristics	Spray application: Yes Product ingredient fraction by weight: 1 %
Exposure duration	Inhalation: Exposure calculation result type: Mean event concentration Weight fraction non-volatile: 5% Maximum diameter: 100 µm Spray duration: 13.8 s Exposure duration: 60 minutes Dermal: External dose Release duration: 28 s
Covers skin contact area up to	2200 cm2
Remarks	Contact rate: 46 mg/min
Use in room with a volume of minimum	15 m3
Minimum room ventilation rate for handling/application (air changes per hour)	2.5 l/h
Operational conditions	Inhalation: Room height: 2.5 m Mass generation rate: 1.6 g/s Airborne fraction: 10 % Density non-volatile: 1 % Droplet distribution: LogNormal, median and coefficient of variation: 2.4 +/- 0.370 µm Cut-off diameter: 15 µm

Product (sub) category(ies)	**PC35 - Washing and cleaning products (including solvent based products)** **Cleaning** **Long term**
Calculation method	The Consexpo model has been used to estimate consumer exposures unless otherwise indicated Spray cleaner - Application: cleaning
Physical form of product	Liquid
Product characteristics	Spray application: No Product ingredient fraction by weight: 5 % Molecular weight matrix: 22 g/mol Mass transfer weight: 0.413 m/min.
Amounts used	Inhalation: 16.2 g Dermal. 0.310 g
Exposure duration	Inhalation: Exposure calculation result type. Mean concentration on day of exposure Exposure time: 60 minutes Application duration. 10 minutes Dermal: Internal dose chronic
Use frequency	365 days per year
Release area	1.71E4 cm2 @ 20°C
Covers skin contact area up to	225 cm2
Use in room with a volume of minimum	15 m3
Minimum room ventilation rate for handling/application (air changes per hour)	2.5 l/h
Operational conditions	Dermal: Uptake fraction: 100 %

Product (sub) category(ies)	**PC35 - Washing and cleaning products (including solvent based products)** **Spraying** **Long term**
Calculation method	The Consexpo model has been used to estimate consumer exposures unless otherwise indicated Spray cleaner - Application: spraying
Physical form of product	Liquid
Product characteristics	Spray application: Yes Product ingredient fraction by weight: 5 %
Exposure duration	Inhalation: Exposure calculation result type: Mean concentration yearly Weight fraction non-volatile: 5 % Maximum diameter: 100 µm Spray duration: 13.8 s Exposure duration: 60 minutes Dermal: Internal dose chronic Release duration: 2824.6 s
Use frequency	365 days per year
Covers skin contact area up to	2200 cm2
Remarks	Contact rate: 46 mg/min
Use in room with a volume of minimum	15 m3
Minimum room ventilation rate for handling/application (air changes per hour)	2.5 l/h
Operational conditions	Inhalation: Room height: 2.5 m Mass generation rate: 1.6 g/s Airborne fraction: 10 % Density non-volatile: 1 % Droplet distribution: LogNormal, median and coefficient of variation: 2.4 +/- 0.370 µm Cut-off diameter: 15 µm Dermal: Uptake fraction: 100 %

Section 3 - Exposure estimation

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems
- ERC8d - Wide dispersive outdoor use of processing aids in open systems

Predicted No Effect Concentration (PNEC) No hazard identified. With high probability the substance is not hazardous to aquatic life. No environmental risk assessment is necessary.

Remarks As no environmental hazard was identified no environmental-related exposure assessment and risk characterisation was performed

Derived No Effect Level (DNEL) Long term.
Dermal 4 mg/kg bw/d
Inhalation 26 mg/m^3
Derived No Effect Level (DNEL) **Short term**
Dermal 4 mg/kg bw/d
Inhalation 26 mg/m^3

Calculation method The Consexpo model has been used to estimate consumer exposures unless otherwise indicated

Exposure estimation

Product category(ies)	Sector(s) of use	Exposure route	Derived No Effect Level (DNEL)	Exposure estimation	Risk characterisation ratio (RCR)
PC4: Spray cleaner - Application: cleaning	-	Consumer - dermal, short-term - systemic	4 mg/kg bw/d	0.014523 mg/kg bw/d	0.003631
PC4: Spray cleaner - Application: cleaning	-	Consumer - inhalative, short-term - systemic	26 mg/m³	2.339 mg/m³	0.089957
PC4: Spray cleaner - Application: cleaning	-	Consumer - combined, short-term - systemic	-	0.06385 mg/m³	0.093588
PC4: Spray cleaner - Application: spraying	-	Consumer - dermal, short-term - systemic	4 mg/kg bw/d	0.001841 mg/kg bw/d	0.00046
PC4: Spray cleaner - Application: spraying	-	Consumer - inhalative, short-term - systemic	26 mg/m³	0.295756 mg/m³	0.011375
PC4: Spray cleaner - Application: spraying	-	Consumer - combined, short-term - systemic	-	0.007734 mg/kg bw/d	0.011835
PC4: Spray cleaner - Application: cleaning	-	Consumer - dermal, long-term - systemic	4 mg/kg bw/d	0.02658 mg/kg bw/d	0.006646
PC4: Spray cleaner - Application: cleaning	-	Consumer - inhalative, long-term - systemic	26 mg/m³	0.097454 mg/m³	0.003748
PC4: Spray cleaner - Application: cleaning	-	Consumer - combined, long-term - systemic	-	0.028526 mg/kg bw/d	0.010394
PC4: Spray cleaner - Application: spraying	-	Consumer - dermal, long-term - systemic	4 mg/kg bw/d	0.001841 mg/kg bw/d	0.00046
PC4: Spray cleaner - Application: spraying	-	Consumer - inhalative, long-term - systemic	26 mg/m³	0.012323 mg/m³	0.000474
PC4: Spray cleaner - Application: spraying	-	Consumer - combined, long-term - systemic	-	0.002086 mg/kg bw/d	0.000934
PC35: Spray cleaner - Application: cleaning	-	Consumer - dermal, short-term - systemic	4 mg/kg bw/d	0.045058 mg/kg bw/d	0.011265
PC35: Spray cleaner - Application: cleaning	-	Consumer - inhalative, short-term - systemic	26 mg/m³	3.964 mg/m³	0.15247
PC35: Spray cleaner - Application: cleaning	-	Consumer - combined, short-term - systemic	-	0.124045 mg/kg bw/d	0.163734
PC35: Spray cleaner - Application: spraying	-	Consumer - dermal, short-term - systemic	4 mg/kg bw/d	0.00312 mg/kg bw/d	0.00078
PC35: Spray cleaner - Application: spraying	-	Consumer - inhalative, short-term - systemic	26 mg/m³	0.493621 mg/m³	0.018985

PC35: Spray cleaner - Application: spraying	-	Consumer - combined, short-term - systemic	-	0.012955 mg/kg bw/d	0.019765
PC35 Spray cleaner - Application: cleaning	-	Consumer - dermal, long-term - systemic	4 mg/kg bw/d	0.225291 mg/kg bw/d	0.056323
PC35: Spray cleaner - Application: cleaning	-	Consumer - inhalative, long-term - systemic	26 mg/m³	0.825882 mg/m³	0.031765
PC35: Spray cleaner - Application: cleaning	-	Consumer - combined, long-term - systemic	-	0.241746 mg/kg bw/d	0.088087
PC35: Spray cleaner - Application: spraying	-	Consumer - dermal, long-term - systemic	4 mg/kg bw/d	1.574 mg/kg bw/d	0.393446
PC35: Spray cleaner - Application: spraying	-	Consumer - inhalative, long-term - systemic	26 mg/m³	0.102838 mg/m³	0.003955
PC35: Spray cleaner - Application: spraying	-	Consumer - combined, long-term - systemic	-	1.576 mg/kg bw/d	0.397401

Section 4 - Guidance to check compliance with the exposure scenario

ECHA guidance for downstream users

Scaling method	The quantitative risk characterization for this worker exposure has been calculated by EasyTRA
Scalable parameters	Exposure duration and maximum concentration All other parameters have to be taken directly from the exposure scenario provided
Boundaries of scaling	RCR combined is calculated following the recommendation in the ECHA guidance document “Guidance on information requirements and chemical safety assessment – Part E: Risk characterization”

Exposure scenario

ES14 - Use in Cleaning Agents Use in De-icing and Anti-icing agents (consumer use) (liquid products)

Section 1 - Title

Title	ES14 - Use in Cleaning Agents Use in De-icing and Anti-icing agents (consumer use) (liquid products)
Environmental release category(ies)	- ERC8a - Wide dispersive indoor use of processing aids in open systems - ERC8d - Wide dispersive outdoor use of processing aids in open systems
Product category(ies)	- PC4 - Anti-freeze and de-icing products - PC35 - Washing and cleaning products (including solvent based products)

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems
- ERC8d - Wide dispersive outdoor use of processing aids in open systems

Product characteristics	
Physical form of product	Liquid
Vapour pressure	12.8 kPa
Temperature vapour pressure	20°C
Level of dustiness	High
Volatility	High
Remarks	As no environmental hazard was identified no environmental-related exposure assessment and risk characterisation was performed

Section 2.2 - Control of consumer exposure

Control of consumer exposure	
Product (sub) category(ies)	**PC4 - Anti-freeze and de-icing products Short term**
Calculation method	The Consexpo model has been used to estimate consumer exposures unless otherwise indicated Liquid cleaner – Application
Physical form of product	Liquid
Product characteristics	Spray application: No Product ingredient fraction by weight: 0.590 % Molecular weight matrix: 18 g/mol Mass transfer weight: 0.413 m/min.
Amounts used	Inhalation: 100 g Dermal: 5 g
Exposure duration	Inhalation Exposure calculation result type: Mean event concentration Exposure time: 240 minutes Application duration: 20 minutes Dermal: External dose
Release area	3.20E4 cm2 @ 20°C
Covers skin contact area up to	2200 cm2
Use in room with a volume of minimum	58 m3

Minimum room ventilation rate for handling/application (air changes per hour)	0.500 l/h

Product (sub) category(ies)	**PC4 - Anti-freeze and de-icing products** **Long term**
Calculation method	The Consexpo model has been used to estimate consumer exposures unless otherwise indicated Liquid cleaner – Application
Physical form of product	Liquid
Product characteristics	Spray application: No Product ingredient fraction by weight: 0.590 % Molecular weight matrix: 18 g/mol Mass transfer weight: 0.413 m/min.
Amounts used	Inhalation: 100 g Dermal: 5 g
Exposure duration	Inhalation: Exposure calculation result type: Mean concentration on day of exposure Exposure time: 240 minutes Application duration: 20 minutes Dermal: Internal dose chronic
Use frequency	197 days per year
Release area	5.00E4 cm2 @ 20°C
Covers skin contact area up to	2200 cm2
Use in room with a volume of minimum	58 m3
Minimum room ventilation rate for handling/application (air changes per hour)	0.500 l/h
Operational conditions	Dermal: Uptake fraction: 100 %

Product (sub) category(ies)	**PC35 - Washing and cleaning products (including solvent based products)** **Short term**
Calculation method	The Consexpo model has been used to estimate consumer exposures unless otherwise indicated Liquid cleaner – Application
Physical form of product	Liquid
Product characteristics	Spray application: No Product ingredient fraction by weight: 1 % Molecular weight matrix: 18 g/mol Mass transfer weight: 0.170 m/min.
Amounts used	Inhalation: 100 g Dermal: 5 g
Exposure duration	Inhalation: Exposure calculation result type: Mean event concentration Exposure time: 240 minutes Application duration: 20 minutes Dermal: External dose
Release area	3.20E5 cm2 @ 20°C
Covers skin contact area up to	2200 cm2
Use in room with a volume of minimum	58 m3
Minimum room ventilation rate for handling/application (air changes per hour)	0.500 l/h

Product (sub) category(ies)	**PC35 - Washing and cleaning products (including solvent based products)** **Long term**

Calculation method	The Consexpo model has been used to estimate consumer exposures unless otherwise indicated Liquid cleaner – Application
Physical form of product	Liquid
Product characteristics	Spray application: No Product ingredient fraction by weight: 1 % Molecular weight matrix: 18 g/mol Mass transfer weight: 0.413 m/min.
Amounts used	Inhalation: 100 g Dermal: 5 g
Exposure duration	Inhalation: Exposure calculation result type: Mean concentration on day of exposure Exposure time: 240 minutes Application duration: 20 minutes Dermal: Internal dose chronic
Use frequency	197 days per year
Release area	3.20E5 cm2 @ 20°C
Covers skin contact area up to	2200 cm2
Use in room with a volume of minimum	58 m3
Minimum room ventilation rate for handling/application (air changes per hour)	0.500 l/h
Operational conditions	Dermal: Uptake fraction: 100 %

Section 3 - Exposure estimation

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems
- ERC8d - Wide dispersive outdoor use of processing aids in open systems

Predicted No Effect Concentration (PNEC) No hazard identified. With high probability the substance is not hazardous to aquatic life. No environmental risk assessment is necessary.

Remarks As no environmental hazard was identified no environmental-related exposure assessment and risk characterisation was performed

Derived No Effect Level (DNEL) Long term.
Dermal 4 mg/kg bw/d
Inhalation 26 mg/m^3
Derived No Effect Level (DNEL) **Short term**
Dermal 4 mg/kg bw/d
Inhalation 26 mg/m^3

Calculation method The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated

Exposure estimation					
Product category(ies)	**Sector(s) of use**	**Exposure route**	**Derived No Effect Level (DNEL)**	**Exposure estimation**	**Risk characterisation ratio (RCR)**
PC4: Liquid cleaner – Application	-	Consumer - dermal, short-term - systemic	4 mg/kg bw/d	0.428779 mg/kg bw/d	0.107195
PC4: Liquid cleaner – Application	-	Consumer - inhalative, short-term - systemic	26 mg/m³	4.333 mg/m³	0.166671
PC4: Liquid cleaner –	-	Consumer -	-	0.774154 mg/m³	0.273866

Application		combined, short-term - systemic			
PC4: Liquid cleaner – Application	-	Consumer - dermal, long-term - systemic	4 mg/kg bw/d	0.231423 mg/kg bw/d	0.057856
PC4: Liquid cleaner – Application	-	Consumer - inhalative, long-term - systemic	26 mg/m³	0.722239 mg/m³	0.027778
PC4: Liquid cleaner – Application	-	Consumer - combined, long-term - systemic	-	0.288985 mg/kg bw/d	0.085634
PC35: Liquid cleaner – Application	-	Consumer - dermal, short-term - systemic	4 mg/kg bw/d	0.726744 mg/kg bw/d	0.181686
PC35: Liquid cleaner – Application	-	Consumer - inhalative, short-term - systemic	26 mg/m³	7.345 mg/m³	0.282494
PC35: Liquid cleaner – Application	-	Consumer - combined, short-term - systemic	-	1.312 mg/kg bw/d	0.46418
PC35: Liquid cleaner – Application	-	Consumer - dermal, long-term - systemic	4 mg/kg bw/d	0.392243 mg/kg bw/d	0.098061
PC35: Liquid cleaner – Application	-	Consumer - inhalative, long-term - systemic	26 mg/m³	1.224 mg/m³	0.047082
PC35: Liquid cleaner – Application	-	Consumer - combined, long-term - systemic	-	0.489806 mg/kg bw/d	0.145143

Section 4 - Guidance to check compliance with the exposure scenario

ECHA guidance for downstream users

Scaling method	The quantitative risk characterization for this worker exposure has been calculated by EasyTRA
Scalable parameters	Exposure duration and maximum concentration All other parameters have to be taken directly from the exposure scenario provided
Boundaries of scaling	RCR combined is calculated following the recommendation in the ECHA guidance document “Guidance on information requirements and chemical safety assessment – Part E: Risk characterization”

Exposure scenario

ES15 - Use as Fuel additive (consumer use) (outdoor use)

Section 1 - Title

Title	ES15 - Use as Fuel additive (consumer use) (outdoor use)
Environmental release category(ies)	- ERC8e - Wide dispersive outdoor use of reactive substances in open systems
Product category(ies)	- PC13 - Fuels

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC8e - Wide dispersive outdoor use of reactive substances in open systems

Product characteristics	
Physical form of product	Liquid
Vapour pressure	12.8 kPa
Temperature vapour pressure	20°C
Level of dustiness	High
Volatility	High
Remarks	As no environmental hazard was identified no environmental-related exposure assessment and risk characterisation was performed

Section 2.2 - Control of consumer exposure

Control of consumer exposure	
Product (sub) category(ies)	**PC13 - Fuels Short term**
Physical form of product	Liquid
Product characteristics	Spray application: No Product ingredient fraction by weight: 2 % Molecular weight matrix: 100 g/mol Mass transfer weight: 0.413 m/min.
Amounts used	Inhalation: 10 g Dermal: 10 g
Exposure duration	Inhalation: Exposure calculation result type: Mean event concentration Exposure time: 10 minutes Application duration: 10 minutes Dermal: External dose
Release area	2 cm2 @ 20°C
Covers skin contact area up to	430 cm2
Use in room with a volume of minimum	20 m3
Minimum room ventilation rate for handling/application (air changes per hour)	0.500 l/h

Product (sub) category(ies)	**PC13 - Fuels Long term**
Physical form of product	Liquid
Product characteristics	Spray application: No Product ingredient fraction by weight: 3 %

	Molecular weight matrix: 100 g/mol Mass transfer weight: 0.413 m/min.
Amounts used	Inhalation: 5.00E4 g Dermal: 10 g
Exposure duration	Inhalation: Exposure calculation result type: Mean concentration on day of exposure Exposure time: 10 minutes Application duration: 10 minutes Dermal: Internal dose chronic
Use frequency	2 days per week
Release area	2 cm2 @ 20°C
Covers skin contact area up to	430 cm3
Use in room with a volume of minimum	20 m3
Minimum room ventilation rate for handling/application (air changes per hour)	0.500 l/h
Operational conditions	Dermal: Uptake fraction: 100 %

Section 3 - Exposure estimation

Environmental release category(ies) - ERC8e - Wide dispersive outdoor use of reactive substances in open systems

Predicted No Effect Concentration (PNEC) No hazard identified. With high probability the substance is not hazardous to aquatic life. No environmental risk assessment is necessary.

Remarks As no environmental hazard was identified no environmental-related exposure assessment and risk characterisation was performed

Derived No Effect Level (DNEL) Long term.
Dermal 4 mg/kg bw/d
Inhalation 26 mg/m^3
Derived No Effect Level (DNEL) **Short term**
Dermal 4 mg/kg bw/d
Inhalation 26 mg/m^3

Calculation method The Consexpo model has been used to estimate consumer exposures unless otherwise indicated

Exposure estimation

Product category(ies)	Sector(s) of use	Exposure route	Derived No Effect Level (DNEL)	Exposure estimation	Risk characterisation ratio (RCR)
PC13	-	Consumer - dermal, short-term - systemic	4 mg/kg bw/d	2.907 mg/kg bw/d	0.726744
PC13	-	Consumer - inhalative, short-term - systemic	26 mg/m³	0.266072 mg/m³	0.010234
PC13	-	Consumer - combined, short-term - systemic	-	2.908 mg/m³	0.736978
PC13	-	Consumer - dermal, long-term - systemic	4 mg/kg bw/d	1.319 mg/kg bw/d	0.32967
PC13	-	Consumer - inhalative, long-term	26 mg/m³	0.002716 mg/m³	0.000104

		- systemic			
PC13	-	Consumer - combined, long-term - systemic	-	1.319 mg/kg bw/d	0.329775

Section 4 - Guidance to check compliance with the exposure scenario

ECHA guidance for downstream users

Scaling method	The quantitative risk characterization for this worker exposure has been calculated by EasyTRA
Scalable parameters	Exposure duration and maximum concentration All other parameters have to be taken directly from the exposure scenario provided
Boundaries of scaling	RCR combined is calculated following the recommendation in the ECHA guidance document “Guidance on information requirements and chemical safety assessment – Part E: Risk characterization”

August 21, 2025

To whom it may concern:

West Coast Clean Fuels LLC dba East Coast Clean Fuels through its authorized representative Pasha Hawaii Holdings LLC has contracted with Cliff Berry, Inc. (CBI) for Emergency Response and any material spilled requiring removal as a Hazardous Waster will be handled by CBI.

WEST COAST CLEAN FUELS LLC dba EAST COAST CLEAN FUELS

Edward Washburn
Co-President

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
Office of Emergency Response

APPROVED DISCHARGE CLEANUP ORGANIZATION

Cliff Berry, Inc.
851 Eller Drive
Fort Lauderdale, FL 33316

This is to certify that the organization named above has met the minimum requirements for approval as a Discharge Cleanup Organization at the level of:

First Responder & Complete Cleanup

Samuel Graves, EA
Office of Emergency Response

August 21, 2025

To whom it may concern:

West Coast Clean Fuels LLC dba East Coast Clean Fuels through its authorized representative Pasha Hawaii Holdings LLC has contracted with Cliff Berry, Inc. (CBI) for Emergency Response and any material spilled requiring removal as a Hazardous Waster will be handled by CBI.

WEST COAST CLEAN FUELS LLC dba EAST COAST CLEAN FUELS

Edward Washburn
Co-President

FLORIDA DEPARTMENT OF
Environmental Protection

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, FL 32399

Ron DeSantis
Governor

Alexis A. Lambert
Secretary

6/6/2025

Cliff Berry, Inc.
Mr. Clifford L. Berry II
851 Eller Drive
Fort Lauderdale, FL 33316

RE: Renewal of Certificate for Discharge Cleanup Organization

Dear Mr. Berry:

You are currently listed as an Approved Discharge Cleanup Organization (DCO) for the State of Florida. We are extending the expiration date of your DCO Certificate to ***June 30, 2026.*** Please notify this office of any significant changes in your capabilities as DCO, as well as changes in addresses, phone numbers, or contacts.

Retain a copy of this letter with your most current DCO certificate as evidence of your certification status. If you have any questions, or wish to provide updates, please contact Mr. Shane Gibbs at (850) 245-2872 or via email at Shane.Gibbs@FloridaDEP.gov. You may also contact your District Emergency Response Manager to address any questions or issues regarding this program.

Sincerely,

Samuel Graves, Environmental Administrator
Office of Emergency Response

Section P3- SECURITY GUARDS / SUPERVISORS

a. Provide Applicant's background requirements, education, training etc., for personnel hired as security guards. Training requirements in 33 CFR 105.210 for marine facilities.

b. Provide a historic annual turnover ratio for security guards.

c. Provide a copy of Applicant's job training program/policy including a copy of training curriculum and copies of all manuals and take-home materials made available to security guards. Include information regarding frequency of training.

d. Provide background requirements, experience, licensing, and any and all advanced training provided to supervisory personnel.

e. Provide present policy for individual communication devices either required of security guards or supplied by the employer.

f. Provide procurement criteria and source as well as Applicant's certification requirements for K-9 workforce.

g. Provide information on the number of security guards/supervisors currently employed or expected to be employed to provide security services at Port Everglades.

Supervisors _____
Class D Guards_____
Class G Guards_____
K-9 Handlers _____

Port Everglades Tariff 12

References to the Port Everglades Tariff 12 as amended or reissued: http://www.porteverglades.net/business/tariff

Application Fees

The following fees have been established for franchised businesses at Port Everglades. Initial processing fees are nonrefundable. A franchise is required for each category of business.

Stevedore
Initial processing fee, assignment fee, or reinstatement fee $ 11,550.00
Annual Fee
$ 4,200.00

Cargo Handler
Initial processing fee, assignment fee, or reinstatement fee $ 11,550.00
Annual Fee
$ 4,200.00

Steamship Agent
Initial processing fee, assignment fee, or reinstatement fee $ 4,200.00
Annual Fee
$ 2,360.00

Tugboat and Towing
Initial processing fee, assignment fee, or reinstatement fee $ 27,300.00
Annual Fee
By Contract

Vessel Bunkering, Vessel Oily Waste Removal, Vessel Sanitary Wastewater Removal, and Marine Terminal Security Service
Initial processing fee, assignment fee, or reinstatement fee $ 4,200.00
Annual Fee
$ 2,360.00

For first-time franchise Applicants, both the initial application fee and the annual fee must be submitted at time of application. Thereafter, annual franchise fees are due and payable each year on the franchise anniversary date, which is defined as the effective date of the franchise.

Note: Check(s) should be made payable to:
BROWARD COUNTY BOARD OF COUNTY COMMISSIONERS and mail to:
Port Everglades Business Development Division
1850 Eller Drive, Fort Lauderdale, FL 33316

Required Public Hearing

Staff review of this application will not commence until such time as all of the above-requested information and documentation has been provided and the franchise application has been determined by staff to be complete. All of the above-requested information and Sections are required to be completed prior to the scheduling of the public hearing. Staff will request that the Broward County Board of County Commissioners set a public hearing to consider the franchise application and hear comments from the public. The Applicant will be notified of the Public Hearing date and must plan to attend the Public Hearing.

By signing and submitting this application, Applicant certifies that all information provided in this application is true and correct. Applicant understands that providing false or misleading information on this application may result in the franchise application being denied, or in instances of renewal, a franchise revoked. Applicant hereby waives any and all claims for any damages resulting to the Applicant from any disclosure or publication in any manner of any material or information acquired by Broward County during the franchise application process or during any inquiries, investigations, or public hearings.

Applicant further understands that if there are any changes to the information provided herein (subsequent to this application submission) or to its officers, directors, senior management personnel, or business operation as stated in this application, Applicant agrees to provide such updated information to the Port Everglades Department of Broward County, including the furnishing of the names, addresses (and other information as required above) with respect to persons becoming associated with Applicant after its franchise application is submitted, and any other required documentation requested by Port Everglades Department staff as relating to the changes in the business operation. This information must be submitted within ten (10) calendar days from the date of any change made by the Applicant.

Applicant certifies that all workers performing functions for Applicant who are subject to the Longshore and Harbor Workers' Act are covered by Longshore & Harbor Workers' Act, Jones Act Insurance, as required by federal law.

This application and all related records are subject to Chapter 119, F.S., the Florida Public Records Act.

By its execution of this application, Applicant acknowledges that it has read and understands the rules, regulations, terms, and conditions of the franchise it is applying for as set forth in Chapter 32, Part II, of the Broward County Administrative Code as amended, and agrees, should the franchise be granted by Broward County, to be legally bound and governed by all such rules, regulations, terms and conditions of the franchise as set forth in Chapter 32, Part II, of the Broward County Administrative Code as amended.

The individual executing this application on behalf of the Applicant, personally warrants that s/he has the full legal authority to execute this application and legally bind the Applicant.

Representative Edward Washburn Digitally signed by Edward Washburn Date: 2025.08.21 12:12:35 -07'00' Date Signed 8/21/25

Signature of Applicant's Authorized

Signature name and title - typed or printed Edward Washburn, Sr VP Fleet Operations

Witness Signature (*Required*) Lisa M Guerrero:A0109B30000016F90945D250004FB91 Digitally signed by Lisa M Guerrero:A0109B30000016F90945D250004FB91 Date: 2025.08.21 12:16:43 -07'00'

Witness name-typed or printed Lisa Guerrero, Executive Assistant

Witness Signature (*Required*) Amy S Manning Digitally signed by Amy S Manning Date: 2025.08.21 12:18:31 -07'00'

Witness name-typed or printed Amy S. Manning, Sr. VP and Executive Couns

If a franchise is granted, all official notices/correspondence should be sent to:

Name Amy Manning Title Sr. VP and Executive Counsel

Address 4040 Civic Center Dr., Suite 350 San Rafael,CA 94903 Phone 415-218-9624