

SAFETY DATA SHEET



RAFFINATE 1

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Product name : RAFFINATE 1

EC number : 295-405-4

REACH Registration number

Registration number

01-2119474204-43-0017

01-2119474204-43-0019

CAS number : 92045-23-3

Product description : Olefin

1.2 Relevant identified uses of the substance or mixture and uses advised against

Intended Use : Chemical feedstock

Identified uses

Distribution of substance
Manufacture of substance
Use as an intermediate

1.3 Details of the supplier of the safety data sheet

Supplier : ExxonMobil Petroleum & Chemical BV

POLDERDIJKWEG

Antwerpen B-2030 Belgium

Supplier General Contact : + 32 2 239 3111

e-mail address of person responsible for this SDS : SDS-CC@exxonmobil.com

SDS Internet Address : www.sds.exxonmobil.com

1.4 Emergency telephone number

National advisory body/ : (+32)70 245 245

Poison Centre

24 Hour Emergency : +32 2 808 32 37 / +1-703-527-3887 (CHEMTREC)

Telephone

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition : UVCB

Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Flam. Gas 1A, H220

Press. Gas (Liq.), H280

Muta. 1B, H340

Carc. 1A, H350

The product is classified as hazardous according to Regulation (EC) 1272/2008 as amended.

See Section 16 for the full text of the H statements declared above.

See Section 11 for more detailed information on health effects and symptoms.

2.2 Label elements

Date of issue/Date of revision

: 3 September 2024

Date of previous issue

: 4 April 2024

Version : 1.02

1/16

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SECTION 2: Hazards identification

Hazard pictograms

:



Signal word

: Danger

Hazard statements

: H220 - Extremely flammable gas.
 H280 - Contains gas under pressure; may explode if heated.
 H340 - May cause genetic defects.
 H350 - May cause cancer.

Precautionary statements

Prevention

: P201 - Obtain special instructions before use.
 P202 - Do not handle until all safety precautions have been read and understood.
 P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
 P280 - Wear protective gloves, protective clothing, eye protection, face protection, or hearing protection.

Response

: P308 + P313 - IF exposed or concerned: Get medical advice or attention.
 P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
 P381 - In case of leakage, eliminate all ignition sources.

Storage

: P405 - Store locked up.
 P410 + P403 - Protect from sunlight. Store in a well-ventilated place.

Disposal

: P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

Contains

: hydrocarbons, c4, steam-cracker distillate

Supplemental label elements

: Not applicable.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

: None.

2.3 Other hazards

Product meets the criteria for PBT or vPvB according to Regulation (EC) No. 1907/2006, Annex XIII

PBT	P	B	T	vPvB	vP	vB
N/A	N/A	N/A	Yes	N/A	N/A	N/A

Other hazards which do not result in classification

: None known.

Nota

: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 3: Composition/information on ingredients

3.1 Substances

: UVCB

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SECTION 3: Composition/information on ingredients

Product/ingredient name	Identifiers	% by weight	Classification	Specific Conc. Limits, M-factors and ATEs	Type
hydrocarbons, c4, steam-cracker distillate	REACH #: 01-2119474204-43 EC: 295-405-4 CAS: 92045-23-3	100	Flam. Gas 1A, H220 Press. Gas (Liq.), H280 Muta. 1B, H340 Carc. 1A, H350	-	[1]
1,3-butadiene	REACH #: 01-2119471988-16 EC: 203-450-8 CAS: 106-99-0	0.1 - 10	Flam. Gas 1A, H220 Press. Gas (Liq.), H280 Muta. 1B, H340 Carc. 1A, H350 See Section 16 for the full text of the H statements declared above.	-	[1]

There are no additional ingredients present which, within the current knowledge of the supplier, are classified and contribute to the classification of the substance and hence require reporting in this section.

Type

[1] Constituent

Occupational exposure limits, if available, are listed in Section 8.

SECTION 4: First aid measures

4.1 Description of first aid measures

- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
- Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Skin contact** : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. In case of contact with liquid, warm frozen tissues slowly with lukewarm water and get medical attention. Do not rub affected area. Wash clothing before reuse. Clean shoes thoroughly before reuse. To avoid the risk of static discharges and gas ignition, soak contaminated clothing thoroughly with water before removing it. Continue to rinse for at least 10 minutes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Get medical attention.
- Ingestion** : Get medical attention. Ingestion of liquid can cause burns similar to frostbite. If frostbite occurs, get medical attention. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. As this product rapidly becomes a gas when released, refer to the inhalation section.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

4.2 Most important symptoms and effects, both acute and delayed

Over-exposure signs/symptoms

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SECTION 4: First aid measures

- Eye contact** : Adverse symptoms may include the following:
frostbite
- Inhalation** : No specific data.
- Skin contact** : Adverse symptoms may include the following:
frostbite
- Ingestion** : Adverse symptoms may include the following:
frostbite

4.3 Indication of any immediate medical attention and special treatment needed

- Notes to physician** : This material, or a component, may be associated with cardiac sensitization following very high exposures (well above occupational exposure limits) or with concurrent exposure to high stress levels or heart-stimulating substances like epinephrine. Administration of such substances should be avoided.
- Specific treatments** : No specific treatment.

See toxicological information (Section 11)

SECTION 5: Firefighting measures

5.1 Extinguishing media

- Suitable extinguishing media** : Use water fog, dry chemical or carbon dioxide (CO₂) to extinguish flames.
- Unsuitable extinguishing media** : Do not use water jet.

5.2 Special hazards arising from the substance or mixture

- Specific hazards arising from the chemical** : Contains gas under pressure. Extremely flammable gas. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. This material is harmful to aquatic life. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
- Hazardous combustion products** : Incomplete combustion products, Oxides of carbon, Smoke, Fume

5.3 Advice for firefighters

- Special protective actions for fire-fighters** : Use standard firefighting procedures and consider the hazards of other involved materials. Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. Assure an extended cooling down period to prevent re-ignition. If involved in fire, shut off flow immediately if it can be done without risk. If this is impossible, withdraw from area and allow fire to burn. Fight fire from protected location or maximum possible distance. Eliminate all ignition sources if safe to do so. Prevent run-off from fire control or dilution from entering streams, sewers or drinking water supply. No action shall be taken involving any personal risk or without suitable training.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. For incidents involving large quantities, thermally insulated undergarments and thick textile or leather gloves should be worn.

SECTION 6: Accidental release measures

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

6.1 Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flames, smoking or flames in hazard area. Put on appropriate personal protective equipment. Accidental releases pose a serious fire or explosion hazard. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Avoid breathing gas.
- For emergency responders** : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

6.2 Environmental precautions

- : Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

6.3 Methods and material for containment and cleaning up

- Small spill** : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment.
- Large spill** : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

6.4 Reference to other sections

- : See Section 1 for emergency contact information.
See Section 8 for information on appropriate personal protective equipment.
See Section 13 for additional waste treatment information.

SECTION 7: Handling and storage

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

7.1 Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Contains gas under pressure. Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Avoid breathing gas. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Empty containers retain product residue and can be hazardous. Do not puncture or incinerate container. Contact with rapidly expanding gas may cause burns or frostbite.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

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SECTION 7: Handling and storage

- Static Accumulator** : This material is a static accumulator.
Loading/Unloading Temperature : Ambient
Transport Temperature : Ambient
Transport Pressure : Ambient

7.2 Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Store locked up. Eliminate all ignition sources. Keep container tightly closed and sealed until ready for use. See Section 10 for incompatible materials before handling or use.

Seveso Directive - Reporting thresholds

Danger criteria

Category	Notification and MAPP threshold	Safety report threshold
P2	10 tonne	50 tonne

- Storage Temperature** : Ambient
Storage Pressure : Ambient

- Suitable Containers/Packing** : Pipelines, Barges, Dedicated Railcars, Tank Trucks, Tank Vessel
Suitable Materials and Coatings : Vinyl Coatings, steel, zinc, PTFE
Unsuitable Materials and Coatings : aluminium, Plastics, Natural Rubber, butyl rubber

7.3 Specific end use(s)

- Recommendations** : Not available.
Industrial sector specific solutions : Not available.

SECTION 8: Exposure controls/personal protection

The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

8.1 Control parameters

Occupational exposure limits

Product/ingredient name	Exposure limit values
isobutylene	Limit values (Belgium, 12/2023) [Buteen] TWA 8 hours: 250 ppm. TWA 8 hours: 583 mg/m ³ . ACGIH TLV (United States, 1/2024) TWA 8 hours: 250 ppm.
but-1-ene	Limit values (Belgium, 12/2023) [Buteen] TWA 8 hours: 250 ppm. TWA 8 hours: 583 mg/m ³ . ACGIH TLV (United States, 1/2024) [Butenes] TWA 8 hours: 250 ppm.
butene, mixed-1-and-2-isomers	Limit values (Belgium, 12/2023) [Buteen] TWA 8 hours: 250 ppm. TWA 8 hours: 583 mg/m ³ . ACGIH TLV (United States, 1/2024) [Butenes] TWA 8 hours: 250 ppm.

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SECTION 8: Exposure controls/personal protection

butane	<p>Limit values (Belgium, 12/2023) [alifatische koolwaterstoffen: alkanen (C1-C3)] TWA 8 hours: 1000 ppm. Form: gas.</p> <p>Limit values (Belgium, 12/2023) [butaan] STEL 15 minutes: 2370 mg/m³. STEL 15 minutes: 980 ppm.</p> <p>ACGIH TLV (United States, 1/2024) [Butane] Explosive potential. STEL 15 minutes: 1000 ppm.</p>
1,3-butadiene	<p>Limit values (Belgium, 12/2023) TWA 8 hours: 1 ppm. TWA 8 hours: 2.2 mg/m³.</p> <p>EU OEL (Europe, 10/2019) TWA 8 hours: 1 ppm. TWA 8 hours: 2.2 mg/m³.</p> <p>ACGIH TLV (United States, 1/2024) TWA 8 hours: 2 ppm. TWA 8 hours: 4.4 mg/m³.</p>

Recommended monitoring procedures : Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

DNELs/DMELs

Product/ingredient name	Type	Exposure	Value	Population	Effects
1,3-butadiene	DNEL	Long term Inhalation	0.066 mg/m ³	General population	Systemic
	DNEL	Long term Inhalation	2.21 mg/m ³	Workers	Systemic

PNECs

No PNECs available

8.2 Exposure controls

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

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SECTION 8: Exposure controls/personal protection

- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields. Face shield.
- Skin protection**
- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. If contact with the liquid is possible, insulated gloves suitable for low temperatures should be worn. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated. > 8 hours (breakthrough time): Viton, minimum 0.71 mm thickness or comparable protective barrier material
CEN standards EN 420 and EN 374 provide general requirements and lists of glove types.
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use. Recommended: organic vapour filter (Type AX)
European Committee for Standardization (CEN) standards EN 136, 140 and 405 provide respirator masks and EN 149 and 143 provide filter recommendations.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

9.1 Information on basic physical and chemical properties

Appearance

- Physical state** : Gas. [Compressed or Liquified]
- Colour** : Colourless
- Odour** : Aromatic
- Odour threshold** : Not available.
- pH** : Not applicable.
- Melting point/freezing point** : Not applicable.
- Boiling point or initial boiling point and boiling range** : Not available.
- Flash point** : Closed cup: -30.01 to -18°C (-22 to -0.4°F) [ASTM D-56]
- Evaporation rate** : Not available.
- Flammability** : Flammable gases - Category 1

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SECTION 9: Physical and chemical properties

Lower and upper explosion limit	: Lower: 1.7% [In-house method] Upper: 9.6%
Vapour pressure	: Not available.
Relative vapour density	: Not available.
Relative density	: 0.61
Solubility in water	: Negligible
Partition coefficient n-octanol/water (log Pow)	: 2.09 to 2.31 [In-house method] Calculated value
Auto-ignition temperature	: 364 to 413°C (687.2 to 775.4°F) [In-house method]
Decomposition temperature	: Not available.
Viscosity	: Not available.

Particle characteristics

Median particle size : Not applicable.

9.2 Other information

Pour point : -185 to -105.5°C [In-house method]

SECTION 10: Stability and reactivity

10.1 Reactivity : No specific test data related to reactivity available for this product or its ingredients.

10.2 Chemical stability : The product is stable.

10.3 Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

10.4 Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. See Footnote

10.5 Incompatible materials : See Footnote

10.6 Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
hydrocarbons, c4, steam-cracker distillate	LC50 Inhalation Gas.	Rat	>5800 mg/m ³	4 hours

Conclusion/Summary

Inhalation	: Minimally Toxic. Data available. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 403
Dermal	: Minimally Toxic. No end point data for material.
Oral	: Minimally Toxic. No end point data for material.

Acute toxicity estimates

N/A

Irritation/Corrosion

Conclusion/Summary

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SECTION 11: Toxicological information

- Skin** : Negligible irritation to skin at ambient temperatures. Data available. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 404
- Eyes** : May cause mild, short-lasting discomfort to eyes. Data available. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 405
- Respiratory** : Negligible hazard at ambient/normal handling temperatures. No end point data for material.

Respiratory or skin sensitization

Conclusion/Summary

- Skin** : Not expected to be a skin sensitizer. No end point data for material.
- Respiratory** : Not expected to be a respiratory sensitizer. No end point data for material.

Mutagenicity

- Conclusion/Summary** : May cause genetic defects. Data available. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 471 473 474 476 478 482

Carcinogenicity

- Conclusion/Summary** : May cause cancer. Data available. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 453

Reproductive toxicity

- Conclusion/Summary** : Not expected to be a reproductive toxicant. Data available. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 414 421 422

Specific target organ toxicity (single exposure)

- Conclusion/Summary** : Not expected to cause organ damage from a single exposure. No end point data for material.

Specific target organ toxicity (repeated exposure)

Product/ingredient name	Category	Target organs
hydrocarbons, c4, steam-cracker distillate	Not applicable.	-

- Conclusion/Summary** : Not expected to cause organ damage from prolonged or repeated exposure. Data available. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 407 422 453

Aspiration hazard

- Conclusion/Summary** : Not expected to be an aspiration hazard. Based on physico-chemical properties of the material. Data available.

Information on likely routes of exposure : Not available.

11.2 Information on other hazards

11.2.1 Endocrine disrupting properties

No known endocrine disrupting properties that affect human health

11.2.2 Other information

- Contains** : 1,3- Butadiene. 1,3-Butadiene is a multi-site carcinogen in rodents. Epidemiology studies indicate an association between exposure to 1,3-butadiene and leukemia in humans. Mutations have been observed in in-vitro and in-vivo rodent assays. Although several older studies had conflicting results, a newer screening study in rats showed no adverse reproductive or developmental effects.

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SECTION 11: Toxicological information

- Product** : Simple asphyxiant: Acts by displacing oxygen in the lungs thereby diminishing the supply of oxygen available to the blood and tissues. Symptoms include shortness of breath, rapid heart rate, incoordination, lethargy, headaches, nausea, vomiting, and disorientation. Continued lack of oxygen may result in convulsions, loss of consciousness and death. Since exercise increases the tissue need for oxygen, symptoms will occur more quickly during exertion in an oxygen-deficient environment. Oxygen in enclosed spaces should be maintained at 21 percent by volume. Vapour concentrations above recommended exposure levels are irritating to the eyes and the respiratory tract, may cause headaches and dizziness, are anaesthetic and may have other central nervous system effects. Exposure to this material, or one of its components, in situations where there is the potential for high levels, such as in confined spaces or with abuse, may result in abnormal heart rhythm (arrhythmia). High-level exposure to hydrocarbons (above occupational exposure limits) may initiate arrhythmia in a worker that is undergoing stress or is taking a heart-stimulating substance such as epinephrine, a nasal decongestant, or an asthma or cardiovascular drug.

Section 12. Ecological information

The information given is based on data for the material, components of the material, or for similar materials, through the application of bridging principals.

12.1 Toxicity

Conclusion/Summary

- Acute toxicity** : Harmful to aquatic life.
Chronic toxicity : Not expected to demonstrate chronic toxicity to aquatic organisms

12.2 Persistence and degradability

- Photolysis** : 4.064 day a component (s)
Hydrolysis : Material -- Transformation due to hydrolysis not expected to be significant.
Photolysis : Material -- Transformation due to photolysis not expected to be significant.
Atmospheric Oxidation : Material -- Expected to degrade rapidly in air

12.3 Bioaccumulative potential

Not determined.

12.4 Mobility in soil

- Mobility** : Material -- Highly volatile, will partition rapidly to air. Not expected to partition to sediment and wastewater solids.

12.5 Results of PBT and vPvB assessment

Product/ingredient name	PBT	P	B	T	vPvB	vP	vB
hydrocarbons, c4, steam-cracker distillate	N/A	N/A	N/A	Yes	N/A	N/A	N/A

12.6 Endocrine disrupting properties

No known endocrine disrupting properties that affect the environment

12.7 Other adverse effects

- Other adverse effects** : No known significant effects or critical hazards.

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SECTION 13: Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

13.1 Waste treatment methods

Product

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction.

Hazardous waste : The classification of the product may meet the criteria for a hazardous waste.

The European Waste Catalogue (EWC) code is specific to the waste generating process and waste constituents. Determine the EWC according to the criteria provided in the European Waste Catalogue and the hazardous waste list established by Commission Decision 2000/532/EC, as amended.

Packaging

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Empty pressure vessels should be returned to the supplier. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

Special precautions : Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. **DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.**

SECTION 14: Transport information

	ADR/RID	ADN	IMDG	IATA
14.1 UN number or ID number	UN1965	UN1965	UN1965	UN1965
14.2 UN proper shipping name	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S. (hydrocarbons, c4, steam-cracker distillate, isobutylene)	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S. (hydrocarbons, c4, steam-cracker distillate, isobutylene)	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S. (hydrocarbons, c4, steam-cracker distillate, isobutylene)	Hydrocarbon gas mixture, liquefied, n.o.s. (hydrocarbons, c4, steam-cracker distillate, isobutylene)
14.3 Transport hazard class(es)	2	2	2.1	2.1
Label(s) / Mark(s)				
14.4 Packing group	-	-	-	-
14.5 Environmental hazards	No.	No.	No.	No.

Additional information

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SECTION 14: Transport information

ADR/RID	: Hazard identification number 23 Limited quantity 0 Special provisions 274, 583, 652, 662, 392, 674 Tunnel code (B/D)
ADN	: Special provisions 274, 583, 662, 392, 674 CMR, N3
IMDG	: Emergency schedules _F-D_, S-U Special provisions 274, 392 Flash point -30.01 - -18 °C C.C.
IATA	: Quantity limitation Passenger and Cargo Aircraft: Forbidden. Packaging instructions: Forbidden. Cargo Aircraft Only: 150 kg. Packaging instructions: 200. Limited Quantities - Passenger Aircraft: Forbidden. Packaging instructions: Forbidden. Special provisions A1

14.6 Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

14.7 Maritime transport in bulk according to IMO instruments : Not applicable.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

EU Regulation (EC) No. 1907/2006 (REACH)

Annex XIV - List of substances subject to authorisation

Annex XIV

None of the components are listed.

Substances of very high concern

None of the components are listed.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles : None.

Other EU regulations

Explosive precursors : Not applicable.

Seveso Directive

This product is controlled under the Seveso Directive.

Danger criteria

Category

P2

National regulations

Inventory list

Australia inventory (AIC)	: Not determined.
Canada inventory (DSL-NDSL)	: Not determined.
China inventory (IECSC)	: Not determined.
Japan inventory (CSCL)	: Not determined.

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SECTION 15: Regulatory information

Japan inventory (Industrial Safety and Health Act)	: Not determined.
New Zealand Inventory of Chemicals (NZIoC)	: Not determined.
Philippines inventory (PICCS)	: Not determined.
Korea inventory (KECI)	: All components are listed or exempted.
Taiwan Chemical Substances Inventory (TCSI)	: All components are listed or exempted.
United States inventory (TSCA 8b)	: Not determined.

15.2 Chemical safety assessment : This product contains substances for which Chemical Safety Assessments are still required.

SECTION 16: Other information

✔ Indicates information that has changed from previously issued version.

Abbreviations and acronyms	: ATE = Acute Toxicity Estimate CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008] DMEL = Derived Minimal Effect Level DNEL = Derived No Effect Level EUH statement = CLP-specific Hazard statement N/A = Not available PBT = Persistent, Bioaccumulative and Toxic PNEC = Predicted No Effect Concentration RRN = REACH Registration Number SGG = Segregation Group vPvB = Very Persistent and Very Bioaccumulative
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Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Classification	Justification
Flam. Gas 1A, H220	Expert judgment
Press. Gas (Liq.), H280	Expert judgment
Muta. 1B, H340	Expert judgment
Carc. 1A, H350	Expert judgment

Full text of abbreviated H statements

H220	Extremely flammable gas.
H280	Contains gas under pressure; may explode if heated.
H340	May cause genetic defects.
H350	May cause cancer.

Full text of classifications [CLP/GHS]

Carc. 1A	CARCINOGENICITY - Category 1A
Flam. Gas 1A	FLAMMABLE GASES - Category 1A
Muta. 1B	GERM CELL MUTAGENICITY - Category 1B
Press. Gas (Liq.)	GASES UNDER PRESSURE - Liquefied gas

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Notice to reader

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SECTION 16: Other information

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