

Safety Data SheetIMO (International Maritime Organization) MSDS per
SOLAS regulation VI/5-1

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY/UNDERTAKING

Material Name : **Tetramer**
Product Code : S1305

Other names / Synonyms : Olefin Mixture C5-C15
Recommended use / Restrictions of use : Chemical intermediate. For industrial use only.

Supplier : Shell - See Bill of Lading for details

Emergency Telephone Number : +1 703-527-3887

MARPOL Annex I Category : Napthas and Condensates
Description on Bill of Lading (B/L)/Bunker delivery note/Shipping document : Olefin Mixture C5-C15

2. HAZARDS IDENTIFICATION

GHS Classification : Flammable liquids, Category 3
Aspiration hazard, Category 1
Skin corrosion/irritation, Category 3
Acute hazards to the aquatic environment, Category 1
Hazardous to the aquatic environment - Long-term Hazard, Category 1

GHS Label Elements**Symbol(s)**

Signal Words : Danger

GHS Hazard statements

: PHYSICAL HAZARDS:
H226: Flammable liquid and vapour.
HEALTH HAZARDS:
H304: May be fatal if swallowed and enters airways.
H316: Causes mild skin irritation.
ENVIRONMENTAL HAZARDS:
H400: Very toxic to aquatic life.
H410: Very toxic to aquatic life with long lasting effects.

GHS Precautionary Statements

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Prevention	: P210: Keep away from heat/sparks/open flames/hot surfaces. - No smoking. P233: Keep container tightly closed. P240: Ground/bond container and receiving equipment. P241: Use explosion-proof electrical/ventilating/lighting equipment. P242: Use only non-sparking tools. P243: Take precautionary measures against static discharge. P273: Avoid release to the environment. P280: Wear protective gloves/protective clothing/eye protection/face protection.
Response	: P301+P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. P331: Do NOT induce vomiting. P303+P361+P353: IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower. P332+P313: If skin irritation occurs: Get medical advice/attention. P370+P378: In case of fire: Use appropriate media for extinction. P391: Collect spillage.
Storage	: P403+P235: Store in a well-ventilated place. Keep cool. P405: Store locked up.
Disposal:	: P501: Dispose of contents and container to appropriate waste site or reclaimer in accordance with local and national regulations.
Other Hazards which do not result in classification	: Repeated exposure may cause skin dryness or cracking. Vapours are heavier than air. Vapours may travel across the ground and reach remote ignition sources causing a flashback fire danger. Will float and can be reignited on surface water. This material is a static accumulator. Even with proper grounding and bonding, this material can still accumulate an electrostatic charge. If sufficient charge is allowed to accumulate, electrostatic discharge and ignition of flammable air-vapour mixtures can occur.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Identity	: Naphtha (petroleum), heavy polymerization
Synonyms	: Olefin Mixture C5-C15
CAS No.	: 68783-10-8

Hazardous Ingredients (GHS)

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Chemical Identity	CAS	Conc.[%]
Naphtha (petroleum), heavy polymerization	68783-10-8	100 %W

4. FIRST-AID MEASURES

- General Information** : Not expected to be a health hazard when used under normal conditions.
- Inhalation** : Remove to fresh air. If rapid recovery does not occur, transport to nearest medical facility for additional treatment.
- Skin Contact** : Remove contaminated clothing. Immediately flush skin with large amounts of water for at least 15 minutes, and follow by washing with soap and water if available. If redness, swelling, pain and/or blisters occur, transport to the nearest medical facility for additional treatment. If persistent irritation occurs, obtain medical attention.
- Eye Contact** : Flush eye with copious quantities of water. If persistent irritation occurs, obtain medical attention.
- Ingestion** : If any of the following delayed signs and symptoms appear within the next 6 hours, transport to the nearest medical facility: fever greater than 101° F (38.3° C), shortness of breath, chest congestion or continued coughing or wheezing. If swallowed, do not induce vomiting; transport to nearest medical facility for additional treatment. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. Give nothing by mouth.

Notes to physician

- Most important symptoms and effects, both acute and delayed** : Skin irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blisters.
Eye irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blurred vision.
If material enters lungs, signs and symptoms may include coughing, choking, wheezing, difficulty in breathing, chest congestion, shortness of breath, and/or fever.
The onset of respiratory symptoms may be delayed for several hours after exposure.
- Immediate medical attention, special treatment** : Potential for chemical pneumonitis. Call a doctor or poison control center for guidance. Narcotic at high vapour concentrations.

5. FIRE-FIGHTING MEASURES

Clear fire area of all non-emergency personnel.

- Specific Hazards** : Carbon monoxide may be evolved if incomplete combustion occurs. Will float and can be reignited on surface water. The vapour is heavier than air, spreads along the ground and distant ignition is possible.
- Suitable Extinguishing Media** : Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.

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- Unsuitable Extinguishing Media** : Do not use water in a jet.
- Protective Equipment for Firefighters** : Wear full protective clothing and self-contained breathing apparatus.
- Other Advice** : Keep adjacent containers cool by spraying with water.

6. ACCIDENTAL RELEASE MEASURES

- Personal Precautions, Protective Equipment and Emergency Procedures** : Avoid contact with spilled or released material. Immediately remove all contaminated clothing. For guidance on selection of personal protective equipment see Chapter 8 of this Safety Data Sheet. For guidance on disposal of spilled material see Chapter 13 of this Safety Data Sheet.
- Environmental Precautions** : Prevent from spreading or entering into drains, ditches or rivers by using sand, earth, or other appropriate barriers. Use appropriate containment to avoid environmental contamination. Ventilate contaminated area thoroughly.
- Methods and Material for Containment and Cleaning Up** : For large liquid spills (> 1 drum), transfer by mechanical means such as vacuum truck to a salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely. For small liquid spills (< 1 drum), transfer by mechanical means to a labelled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.
- Additional Advice** : Observe all relevant local and international regulations. The vapour is heavier than air, spreads along the ground and distant ignition is possible.

7. HANDLING AND STORAGE

- General Precautions** : Avoid breathing vapours or contact with material. Only use in well ventilated areas. Wash thoroughly after handling. On guidance on selection of personal protective equipment see Chapter 8 of this Safety Data Sheet.
- Precautions for Safe Handling** : Avoid contact with the skin. The vapour is heavier than air, spreads along the ground and distant ignition is possible. Even with proper grounding and bonding, this material can still accumulate an electrostatic charge. If sufficient charge is allowed to accumulate, electrostatic discharge and ignition of flammable air-vapour mixtures can occur. Be aware of handling operations that may give rise to additional hazards that result from the accumulation of static charges. These include but are not limited to pumping (especially turbulent flow), mixing, filtering, splash filling, cleaning and filling of tanks and containers, sampling, switch loading, gauging, vacuum truck

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- operations, and mechanical movements. These activities may lead to static discharge e.g. spark formation. Restrict line velocity during pumping in order to avoid generation of electrostatic discharge (≤ 1 m/s until fill pipe submerged to twice its diameter, then ≤ 7 m/s). Avoid splash filling. Do NOT use compressed air for filling, discharging, or handling operations. Handle and open container with care in a well-ventilated area. Do not empty into drains.
- Conditions for Safe Storage** : Electrostatic charges will be generated during pumping. Electrostatic discharge may cause fire. Ensure electrical continuity by bonding and grounding (earthing) all equipment to reduce the risk. The vapours in the head space of the storage vessel may lie in the flammable/explosive range and hence may be flammable.
- Product Transfer** : Bulk storage tanks should be diked (bunded). Keep away from aerosols, flammables, oxidizing agents, corrosives and from products harmful or toxic to man or to the environment. Must be stored in a well-ventilated area, away from sunlight, ignition sources and other sources of heat. Nitrogen blanket recommended. Keep containers closed when not in use. Refer to guidance under Handling section.
- Recommended Materials** : For containers, or container linings use mild steel, stainless steel.
- Unsuitable Materials** : Copper. Copper alloys.
- Container Advice** : Containers, even those that have been emptied, can contain explosive vapours. Do not cut, drill, grind, weld or perform similar operations on or near containers.
- Other Advice** : Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material. See additional references that provide safe handling practices for liquids that are determined to be static accumulators: American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practices on Static Electricity). CENELEC CLC/TR 50404 (Electrostatics – Code of practice for the avoidance of hazards due to static electricity).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

If the American Conference of Governmental Industrial Hygienists (ACGIH) value is provided on this document, it is provided for information only.

Occupational Exposure Limits

None established.

Biological Exposure Index (BEI)

No biological limit allocated.

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- Appropriate Engineering Controls** : The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include: Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated. Use sealed systems as far as possible. Adequate explosion-proof ventilation to control airborne concentrations. Eye washes and showers for emergency use. Firewater monitors and deluge systems are recommended. Always observe good personal hygiene measures, such as washing hands after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping. Define procedures for safe handling and maintenance of controls. Educate and train workers in the hazards and control measures relevant to normal activities associated with this product. Ensure appropriate selection, testing and maintenance of equipment used to control exposure, e.g. personal protective equipment, local exhaust ventilation. Drain down system prior to equipment break-in or maintenance. Retain drain downs in sealed storage pending disposal or for subsequent recycle
- Individual Protection Measures** :
- Respiratory Protection** : Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers. If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are unsuitable (e.g., airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Respirator selection, use and maintenance should be in accordance with the requirements of the OSHA Respiratory Protection Standard, 29 CFR 1910.134. Where respiratory protective equipment is required, use a full-face mask. Respirator selection, use and maintenance should be in accordance with the requirements of the OSHA Respiratory Protection Standard, 29 CFR 1910.134.
- Hand Protection** : Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739, AS/NZS:2161) made from the following materials may provide suitable chemical protection: Incidental contact/Splash protection: PVC, neoprene or nitrile rubber gloves For continuous contact we recommend gloves with breakthrough time of more 240 minutes with preference for > 480 minutes where suitable gloves can be identified. For short-term/splash protection we recommend the same, but recognise that suitable gloves offering this level of protection may not be available and in this case a lower breakthrough time may be acceptable so long as appropriate maintenance and

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replacement regimes are followed. Glove thickness is not a good predictor of glove resistance to a chemical as it is dependent on the exact composition of the glove material. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended.

Eye Protection : Chemical splash goggles (chemical monogoggles).**Protective Clothing** : Wear antistatic and flame retardant clothing if a local risk assessment deems it so. Chemical resistant gloves/gauntlets, boots, and apron (where risk of splashing).**Thermal hazards** : Not applicable**Monitoring Methods** : Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate. Validated exposure measurement methods should be applied by a competent person and samples analysed by an accredited laboratory. Examples of sources of recommended exposure measurement methods are given below or contact the supplier. Further national methods may be available. National Institute of Occupational Safety and Health (NIOSH), USA: Manual of Analytical Methods
<http://www.cdc.gov/niosh/> Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods
<http://www.osha.gov/> Health and Safety Executive (HSE), UK: Methods for the Determination of Hazardous Substances,
<http://www.hse.gov.uk/> Institut für Arbeitsschutz Deutschen Gesetzlichen Unfallversicherung (IFA), Germany.
<http://www.dguv.de/inhalt/index.jsp> L'Institut National de Recherche et de Sécurité, (INRS), France
<http://www.inrs.fr/accueil>**Environmental Exposure Controls** : Local guidelines on emission limits for volatile substances must be observed for the discharge of exhaust air containing vapour. Take appropriate measures to fulfill the requirements of relevant environmental protection legislation. Avoid contamination of the environment by following advice given in Chapter 6. If necessary, prevent undissolved material from being discharged to waste water. Waste water should be treated in a municipal or industrial waste water treatment plant before discharge to surface water.

9. PHYSICAL AND CHEMICAL PROPERTIES

The physical and chemical property data are typical values and do not constitute a specification.

Appearance : Clear yellow Liquid at room temperature.
Odour : Mild
Odour threshold : Data not available.

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pH	: Data not available.
Initial Boiling Point and Boiling Range	: 176 - 246 °C / 349 - 475 °F
Melting / freezing point	: Data not available.
Flash point	: 58 °C / 136 °F (PMCC / ASTM D93)
Upper / lower Flammability or Explosion limits	: Data not available.
Auto-ignition temperature	: Data not available.
Flammability (solid, gas)	: Yes, in certain circumstances product can ignite due to static electricity.
Vapour pressure	: Data not available.
Relative Density	: Data not available.
Density	: 0.7722 g/ml at 20 °C / 68 °F
Water solubility	: Immiscible.
Solubility in other solvents	: Data not available.
n-octanol/water partition coefficient (log Pow)	: Data not available.
Decomposition temperature	: Note:: Stable under normal conditions of use.
Dynamic viscosity	: Data not available.
Viscosity, kinematic	: Data not available.
Vapour density (air=1)	: Data not available.
Electrical conductivity	: Low conductivity: < 100 pS/m, The conductivity of this material makes it a static accumulator., A liquid is typically considered nonconductive if its conductivity is below 100 pS/m and is considered semi-conductive if its conductivity is below 10 000 pS/m., Whether a liquid is nonconductive or semi-conductive, the precautions are the same., A number of factors, for example liquid temperature, presence of contaminants, and anti-static additives can greatly influence the conductivity of a liquid.
Evaporation rate (nBuAc=1)	: Data not available.

10. STABILITY AND REACTIVITY

Chemical stability	: Stable under normal conditions of use.
Conditions to Avoid	: Avoid heat, sparks, open flames and other ignition sources. Avoid exposure to air.
Incompatible Materials	: Strong oxidising agents.
Hazardous Decomposition Products	: Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases, including carbon monoxide, carbon dioxide and other organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation.
Possibility of Hazardous Reactions	: Avoid contact with strong Lewis or mineral acids. Should be reacted with halogens only under controlled conditions. Free radical initiators should be avoided.
Hazardous Polymerisation	: Not applicable
Sensitivity to Static Discharge	: Yes, in certain circumstances product can ignite due to static electricity.

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11. TOXICOLOGICAL INFORMATION

Basis for Assessment	:	Information given is based on product testing, and/or similar products, and/or components.
Likely Routes of Exposure	:	Exposure may occur via inhalation, ingestion, skin absorption, skin or eye contact, and accidental ingestion.
Acute Oral Toxicity	:	Expected to be of low toxicity: LD50 >5000 mg/kg , Rat
Acute Dermal Toxicity	:	Expected to be of low toxicity: LD50 >5000 mg/kg , Rabbit
Acute Inhalation Toxicity	:	Expected to be of low toxicity if inhaled.
Skin Corrosion/Irritation	:	Causes mild skin irritation. Repeated exposure may cause skin dryness or cracking.
Serious Eye Damage/Irritation	:	Expected to be non-irritating to eyes.
Respiratory Irritation	:	Not expected to be a respiratory irritant.
Respiratory or skin sensitisation	:	Not expected to be a sensitiser.
Aspiration hazard	:	Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis which can be fatal.
Germ Cell Mutagenicity	:	Not expected to be mutagenic.
Carcinogenicity	:	Not expected to be carcinogenic.

Material	:	Carcinogenicity Classification
Naphtha (petroleum), heavy polymerization	:	GHS / CLP: No carcinogenicity classification

Reproductive and Developmental Toxicity	:	Not expected to impair fertility. Not expected to be a developmental toxicant.
Specific target organ toxicity - single exposure	:	Not expected to be a hazard.
Specific target organ toxicity - repeated exposure	:	Not expected to be a hazard.

12. ECOLOGICAL INFORMATION

Basis for Assessment	:	Incomplete ecotoxicological data are available for this product. The information given below is based partly on a knowledge of the components and the ecotoxicology of similar products.
Acute Toxicity	:	
Fish	:	Expected to be very toxic: LC/EC/IC50 <= 1 mg/l
Aquatic crustacea	:	Expected to be very toxic: LC/EC/IC50 <= 1 mg/l
Algae/aquatic plants	:	Expected to be very toxic: LC/EC/IC50 <= 1 mg/l

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Microorganisms	:	Expected to be practically non toxic: LC/EC/IC50 > 100 mg/l
Mobility	:	Adsorbs to soil and has low mobility. Floats on water.
Persistence/degradability	:	Expected to be not readily biodegradable.
Bioaccumulative Potential	:	Has the potential to bioaccumulate.

13. DISPOSAL CONSIDERATIONS

Material Disposal	:	MARPOL - see International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) which provides technical aspects at controlling pollutions from ships. Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations.
Container Disposal	:	Drain container thoroughly. After draining, vent in a safe place away from sparks and fire. Residues may cause an explosion hazard. Do not puncture, cut, or weld uncleaned drums. Send to drum recoverer or metal reclaimer.
Local Legislation	:	Disposal should be in accordance with applicable regional, national, and local laws and regulations. Local regulations may be more stringent than regional or national requirements and must be in compliance.

14. TRANSPORT INFORMATION**IMDG**

Identification number	UN 3295
UN proper shipping name	HYDROCARBONS, LIQUID, N.O.S.
Technical name	(PETROLEUM NAPHTHA)
Class / Division	3
Packing group	III
Marine Pollutant:	Yes (PETROLEUM NAPHTHA)

IATA (Country variations may apply)

UN number	: 3295
UN proper shipping name	: Hydrocarbons, liquid, n.o.s.
Technical name	: (PETROLEUM NAPHTHA)
Class / Division	: 3
Packing group	: III

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Pollution Category	: X
Ship Type	: 2
Product Name	: Olefin mixtures (C5-C15)
Special Precaution	: Refer to Chapter 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.

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15. REGULATORY INFORMATION

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

Chemical Inventory Status

AICS	:	Listed.	
DSL	:	Listed.	
KECI (KR)	:	Listed.	KE-18196
TSCA	:	Listed.	

16. OTHER INFORMATION

SDS Version Number	:	1.0
SDS Effective Date	:	13.11.2013
SDS Revisions	:	A vertical bar () in the left margin indicates an amendment from the previous version.
Uses and Restrictions	:	Chemical intermediate.
SDS Distribution	:	The information in this document should be made available to all who may handle the product
Disclaimer	:	This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.