

# SAFETY DATA SHEET

## BHC, Reformate Heartcut

Version 4.0

Revision Date 03.08.2021

Print Date 05.09.2022

### 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : BHC, Reformate Heartcut

Product code : X2355

Synonyms : BHC, Reformate Heartcut, C6 Heart Cut, High Benzene  
Pygas - C6 Heart Cut, Pygas Reformate

CAS-No. : 68955-35-1

#### Manufacturer or supplier's details

Supplier : SHELL EASTERN CHEMICALS (S)  
A REGISTERED BUSINESS OF SHELL EASTERN  
TRADING (PTE) LTD (UEN:198902087C)  
9 North Buona Vista Drive , #07-01  
The Metropolis Tower 1  
Singapore 138588  
Singapore

Telephone : +65 6384 8737

Telefax : +65 6384 8454

Email Contact for Safety Data Sheet :

Emergency telephone number : +800 2537 8747 ( ALERT SGS- toll Free) or +65 6542 9595  
(ALERT SGS)

#### Recommended use of the chemical and restrictions on use

Restrictions on use : This product must not be used in applications other than those listed in Section 1 without first seeking the advice of the supplier.

### 2. HAZARDS IDENTIFICATION

#### GHS Classification

Flammable liquids : Category 2

Skin irritation : Category 2

Aspiration hazard : Category 1

Reproductive toxicity : Category 2

Germ cell mutagenicity : Category 1B

Carcinogenicity : Category 1B

Specific target organ toxicity - single exposure (Inhalation) : Category 3 (Narcotic effects)

Short-term (acute) aquatic hazard : Category 2

Long-term (chronic) aquatic hazard : Category 2

#### GHS label elements

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Hazard pictograms

:



Signal word

:

Danger

Hazard statements

:

**PHYSICAL HAZARDS:**  
H225 Highly flammable liquid and vapour.  
**HEALTH HAZARDS:**  
H304 May be fatal if swallowed and enters airways.  
H315 Causes skin irritation.  
H361 Suspected of damaging fertility or the unborn child.  
H340 May cause genetic defects.  
H350 May cause cancer.  
H336 May cause drowsiness or dizziness.  
**ENVIRONMENTAL HAZARDS:**  
H401 Toxic to aquatic life.  
H411 Toxic to aquatic life with long lasting effects.

Precautionary statements

:

**Prevention:**

P210 Keep away from heat/ sparks/ open flames/ hot surfaces.  
No smoking.  
P243 Take precautionary measures against static discharge.  
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

**Response:**

P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.

**Storage:**

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

**Disposal:**

P501 Dispose of contents/ container to an approved waste disposal plant.

### Other hazards which do not result in classification

Liquid evaporates quickly and can ignite leading to a flash fire, or an explosion in a confined space. A component or components of this material may cause cancer. This product contains benzene which may cause leukaemia (AML - acute myelogenous leukaemia). 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. May cause MDS (Myelodysplastic Syndrome).

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### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Substance

Hazardous components

Chemical name	CAS-No.	Classification	Concentration (% w/w)
Naphtha (petroleum), catalytic reformed	68955-35-1	Flam. Liq.1; H224 Skin Irrit.2; H315 Asp. Tox.1; H304 Repr.2; H361 Muta.1B; H340 Carc.1B; H350 STOT SE3; H336 Aquatic Acute2; H401 Aquatic Chronic2; H411	100

For explanation of abbreviations see section 16.

#### Further information

Contains:

Chemical name	Identification number	Concentration (% w/w)
Benzene	71-43-2	> 30 - < 60
n-Hexane	110-54-3	> 10 - < 30
isopentane	78-78-4	>= 10 - <= 30
pentane	109-66-0	>= 10 - <= 30
butane	106-97-8	>= 0 - <= 10
isobutane	75-28-5	- <= 1

### 4. FIRST-AID MEASURES

- General advice : Not expected to be a health hazard when used under normal conditions.
- If inhaled : Remove to fresh air. If rapid recovery does not occur, transport to nearest medical facility for additional treatment.
- In case of 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.
- In case of eye contact : Flush eye with copious quantities of water. Remove contact lenses, if present and easy to do. Continue rinsing. If persistent irritation occurs, obtain medical attention.
- If swallowed : 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.

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Most important symptoms and effects, both acute and delayed

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.

: The onset of respiratory symptoms may be delayed for several hours after exposure.  
Breathing of high vapour concentrations may cause central nervous system (CNS) depression resulting in dizziness, light-headedness, headache and nausea.  
Skin irritation signs and symptoms may include a burning sensation, redness, or swelling.  
Eye irritation signs and symptoms may include a burning sensation and a temporary redness of the eye.  
If material enters lungs, signs and symptoms may include coughing, choking, wheezing, difficulty in breathing, chest congestion, shortness of breath, and/or fever.  
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.  
Damage to blood-forming organs may be evidenced by: a) fatigue and anaemia (RBC), b) decreased resistance to infection, and/or excessive bruising and bleeding (platelet effect).  
Auditory system effects may include temporary hearing loss and/or ringing in the ears.  
Peripheral nerve damage may be evidenced by impairment of motor function (incoordination, unsteady walk, or muscle weakness in the extremities, and/or loss of sensation in the arms and legs).

Protection of first-aiders

: When administering first aid, ensure that you are wearing the appropriate personal protective equipment according to the incident, injury and surroundings.

Notes to physician

: Treat symptomatically.  
Call a doctor or poison control center for guidance.  
Potential for chemical pneumonitis.  
Do not induce vomiting.

### 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

: Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.

Unsuitable extinguishing media

: Do not use direct water jets on the burning product as they could cause a steam explosion and spread of the fire.  
Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam.

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Specific hazards during firefighting	: Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Unidentified organic and inorganic compounds. Carbon monoxide may be evolved if incomplete combustion occurs. The vapour is heavier than air, spreads along the ground and distant ignition is possible. Will float and can be reignited on surface water.
Specific extinguishing methods	: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Clear fire area of all non-emergency personnel. If the fire cannot be extinguished the only course of action is to evacuate immediately. Keep adjacent containers cool by spraying with water. If possible remove containers from the danger zone. Contain residual material at affected sites to prevent material from entering drains (sewers), ditches, and waterways.
Special protective equipment for firefighters	: Proper protective equipment including chemical resistant gloves are to be worn; chemical resistant suit is indicated if large contact with spilled product is expected. Self-Contained Breathing Apparatus must be worn when approaching a fire in a confined space. Select fire fighter's clothing approved to relevant Standards (e.g. Europe: EN469).

### 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	: Do not breathe fumes, vapour. Do not operate electrical equipment.  : Shut off leaks, if possible without personal risks. Remove all possible sources of ignition in the surrounding area and evacuate all personnel. Attempt to disperse the gas or to direct its flow to a safe location for example by using fog sprays. Take precautionary measures against static discharge. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Monitor area with combustible gas meter. Vapour can travel for considerable distances both above and below the ground surface. Underground services (drains, pipelines, cable ducts) can provide preferential flow paths.
Environmental precautions	: Take measures to minimise the effects on groundwater. Prevent from spreading or entering into drains, ditches or rivers by using sand, earth, or other appropriate barriers. Contain residual material at affected sites to prevent material from entering drains (sewers), ditches, and waterways.
Methods and materials for containment and cleaning up	: Take precautionary measures against static discharges. For large liquid spills (> 1 drum), transfer by mechanical means such as vacuum truck to a salvage tank for recovery or

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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 labeled, 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.

Observe all relevant local and international regulations.

Avoid contact with skin, eyes and clothing.

Evacuate the area of all non-essential personnel.

Ventilate contaminated area thoroughly.

If contamination of site occurs remediation may require specialist advice.

Ensure electrical continuity by bonding and grounding (earthing) all equipment.

### Additional advice

: For guidance on selection of personal protective equipment see Section 8 of this Safety Data Sheet.  
Notify authorities if any exposure to the general public or the environment occurs or is likely to occur.  
For guidance on disposal of spilled material see Section 13 of this Safety Data Sheet.  
Local authorities should be advised if significant spillages cannot be contained.  
Maritime spillages should be dealt with using a Shipboard Oil Pollution Emergency Plan (SOPEP), as required by MARPOL Annex 1 Regulation 26.

## 7. HANDLING AND STORAGE

### General Precautions

: Avoid breathing of or direct contact with material. Only use in well ventilated areas. Wash thoroughly after handling. For guidance on selection of personal protective equipment see Section 8 of this Safety Data Sheet.  
Prevent spillages.  
Do not use as a cleaning solvent or other non-motor fuel uses.  
Turn off all battery operated portable electronic devices (examples include: cellular phones, pagers and CD players) before operating gasoline pump.  
Contaminated leather articles including shoes cannot be decontaminated and should be destroyed to prevent reuse.  
Air-dry contaminated clothing in a well-ventilated area before laundering.  
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.  
Avoid contact with skin, eyes and clothing.

### Advice on safe handling

: Ensure that all local regulations regarding handling and storage facilities are followed.  
When using do not eat or drink.  
Extinguish any naked flames. Do not smoke. Remove ignition

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sources. Avoid sparks.  
Never siphon by mouth.  
The vapour is heavier than air, spreads along the ground and distant ignition is possible.  
Avoid exposure.  
Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols.  
Properly dispose of any contaminated rags or cleaning materials in order to prevent fires.

Avoidance of contact : Strong oxidising agents.

Product Transfer : Wait 2 minutes after tank filling (for tanks such as those on road tanker vehicles) before opening hatches or manholes. Wait 30 minutes after tank filling ( for large storage tanks) before opening hatches or manholes. 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 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 ( $\leq 1$  m/s until fill pipe submerged to twice its diameter, then  $\leq 7$  m/s). Avoid splash filling. Do NOT use compressed air for filling, discharging, or handling operations.

### Storage

Other data : Tank storage:  
Tanks must be specifically designed for use with this product. Bulk storage tanks should be diked (bunded).  
Locate tanks away from heat and other sources of ignition. Cleaning, inspection and maintenance of storage tanks is a specialist operation, which requires the implementation of strict procedures and precautions.  
Keep in a cool place.  
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.  
Refer to section 15 for any additional specific legislation covering the packaging and storage of this product.

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- Packaging material : Suitable material: For containers, or container linings use mild steel, stainless steel., Aluminium may also be used for applications where it does not present an unnecessary fire hazard., Examples of suitable materials are: high density polyethylene (HDPE), polypropylene (PP), and Viton (FKM), which have been specifically tested for compatibility with this product., For container linings, use amine-adduct cured epoxy paint., For seals and gaskets use: graphite, PTFE, Viton A, Viton B.
- Unsuitable material: Some synthetic materials may be unsuitable for containers or container linings depending on the material specification and intended use. Examples of materials to avoid are: natural rubber (NR), nitrile rubber (NBR), ethylene propylene rubber (EPDM), polymethyl methacrylate (PMMA), polystyrene, polyvinyl chloride (PVC), polyisobutylene., However, some may be suitable for glove materials.
- Container Advice : Do not cut, drill, grind, weld or perform similar operations on or near containers. Containers, even those that have been emptied, can contain explosive vapours.
- Specific use(s) : Not applicable
- 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).  
IEC/TS 60079-32-1: Electrostatic hazards, guidance

### 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

#### Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Naphtha (petroleum), catalytic reformed	68955-35-1	TWA	500 ppm 2,000 mg/m <sup>3</sup>	OSHA Z-1
<b>Benzene</b>	<b>71-43-2</b>	<b>TWA</b>	<b>0.25 ppm 0.8 mg/m<sup>3</sup></b>	<b>Shell Internal Standard (SIS) for 8-12 hour TWA.</b>
Benzene	71-43-2	STEL	2.5 ppm 8 mg/m <sup>3</sup>	Shell Internal Standard (SIS) for 15 min (STEL)
Benzene	71-43-2	TWA	0.5 ppm	ACGIH
Benzene		STEL	2.5 ppm	ACGIH
Benzene		PEL	1 ppm	OSHA CARC



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Benzene		STEL	5 ppm	OSHA CARC
Benzene		TWA	10 ppm	OSHA Z-2
Benzene		CEIL	25 ppm	OSHA Z-2
Benzene		Peak	50 ppm	OSHA Z-2
n-Hexane	110-54-3	PEL (long term)	50 ppm 176 mg/m <sup>3</sup>	SG OEL
n-Hexane	110-54-3	TWA	500 ppm 1,800 mg/m <sup>3</sup>	OSHA Z-1
n-Hexane		TWA	50 ppm	ACGIH
isopentane	78-78-4	TWA	1,000 ppm	ACGIH
pentane	109-66-0	TWA	1,000 ppm 2,950 mg/m <sup>3</sup>	OSHA Z-1
pentane		TWA	120 ppm 350 mg/m <sup>3</sup>	NIOSH REL
pentane		C	610 ppm 1,800 mg/m <sup>3</sup>	NIOSH REL
pentane		TWA	1,000 ppm	ACGIH
butane	106-97-8	PEL (long term)	800 ppm 1,900 mg/m <sup>3</sup>	SG OEL
butane	106-97-8	STEL	1,000 ppm	ACGIH
isobutane	75-28-5	STEL	1,000 ppm	ACGIH

### Biological occupational exposure limits

Component	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
Benzene	71-43-2	s-phenylmercaptopuric acid (spma)	Urine	End-of-shift	45.µg/g creatinine	SG BTLV
Benzene		tt-muconic acid (ttma)	Urine	End-of-shift	1.6.mg/g Creatinine	SG BTLV

### 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>

**Engineering measures** : The level of protection and types of controls necessary will

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vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include:  
Use sealed systems as far as possible.  
Adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/limits.  
Local exhaust ventilation is recommended.  
Eye washes and showers for emergency use.  
Prevent unauthorised persons entering the zone.  
Firewater monitors and deluge systems are recommended.

### General Information:

Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance. Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when there is potential for inhalation; clear up spills immediately and dispose of wastes safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.  
Do not ingest. If swallowed, then seek immediate medical assistance.

### Personal protective equipment

#### Protective measures

Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.

Respiratory protection : 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 suitable, select an appropriate combination of mask and filter. Where air-filtering respirators are unsuitable (e.g. airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus. All respiratory protection equipment and use must be in accordance with local regulations.

Select a filter suitable for the combination of organic gases and vapours and particles [Type A/Type P boiling point >65°C (149°F)].

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### Hand protection

#### Remarks

: 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. 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. For continuous contact we recommend gloves with breakthrough time of more than 240 minutes with preference for > 480 minutes where suitable gloves can be identified. For short-term/splash protection we recommend the same but recognize that suitable gloves offering this level of protection may not be available and in this case a lower breakthrough time maybe acceptable so long as appropriate maintenance and 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.

Select gloves tested to a relevant standard (e.g. Europe EN374, US F739). When prolonged or frequent repeated contact occurs, Nitrile gloves may be suitable. (Breakthrough time of > 240 minutes.) For incidental contact/splash protection Neoprene, PVC gloves may be suitable.

### Eye protection

: Wear goggles for use against liquids and gas. If a local risk assessment deems it so then chemical splash goggles may not be required and safety glasses may provide adequate eye protection.

### Skin and body protection

: Wear chemical resistant gloves/gauntlets and boots. Where risk of splashing, also wear an apron.

### Hygiene measures

: 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.

### Environmental exposure controls

#### General advice

: Local guidelines on emission limits for volatile substances must be observed for the discharge of exhaust air containing vapour. Information on accidental release measures are to be found in section 6.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### Appearance

: Liquid.

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Colour	: clear
Odour	: aromatic
Odour Threshold	: Data not available
pH	: Data not available
Melting point/range	: ca. -50 °C / -58 °F
Boiling point/boiling range	: ca. 80 °C / 176 °F
Flash point	: < -20 °C / < -4 °F
Evaporation rate	: Data not available
Flammability (solid, gas)	: Not applicable
Upper explosion limit	: 8 %(V)
Lower explosion limit	: 1 %(V)
Vapour pressure	: Not applicable
Relative vapour density	: 3.3
Relative density	: no data available
Density	: ca. 707 kg/m <sup>3</sup> (15 °C / 59 °F) Method: ASTM D4052
Solubility(ies)	
Water solubility	: Data not available
Partition coefficient: n-octanol/water	: log Pow: 2 - 7
Auto-ignition temperature	: Data not available
Decomposition temperature	: Data not available
Viscosity	
Viscosity, dynamic	: ca. 0.5 - 1 mPa.s (20 °C / 68 °F) Method: ASTM D445
Viscosity, kinematic	: Data not available
Explosive properties	: Classification Code: NOT CLASS: Not classified
Oxidizing properties	: Not applicable
Surface tension	: Data not available
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

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considered semi-conductive if its conductivity is below 10,000 pS/m., A number of factors, for example liquid temperature, presence of contaminants, and anti-static additives can greatly influence the conductivity of a liquid

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 semiconductive, 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

Particle size : Data not available

### 10. STABILITY AND REACTIVITY

- Reactivity : May oxidise in the presence of air.
- Chemical stability : Stable under normal conditions of use.
- Possibility of hazardous reactions : No hazardous reaction is expected when handled and stored according to provisions
- Conditions to avoid : Avoid heat, sparks, open flames and other ignition sources.
- In certain circumstances product can ignite due to static electricity.
- Incompatible materials : Strong oxidising agents.
- Hazardous decomposition products : Hazardous decomposition products are not expected to form during normal storage. Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases including carbon monoxide, carbon dioxide, sulphur oxides and unidentified organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation.

### 11. TOXICOLOGICAL INFORMATION

- Basis for assessment : Information given is based on product data, a knowledge of the components and the toxicology of similar products. Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).

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Information on likely routes of exposure : Exposure may occur via inhalation, ingestion, skin absorption, skin or eye contact, and accidental ingestion.

### Acute toxicity

#### Product:

Acute oral toxicity : LD50 Oral Rat: > 5,000 mg/kg  
Remarks: Low toxicity:

Acute inhalation toxicity : LC 50 Rat: > 5 mg/l  
Exposure time: 4 h  
Remarks: Low toxicity:

Remarks: Based on human experience, breathing of vapours or mists may cause a temporary burning sensation to nose, throat and lungs.

Acute dermal toxicity : LD50 Dermal Rabbit: > 2,000 mg/kg  
Remarks: Low toxicity:

Acute toxicity (other routes of administration) : Remarks: Exposure may occur via inhalation, ingestion, skin absorption, skin or eye contact, and accidental ingestion.

### Skin corrosion/irritation

#### Product:

Remarks: Irritating to skin.

### Serious eye damage/eye irritation

#### Product:

Remarks: Slightly irritating to the eye., Based on available data, the classification criteria are not met.

### Respiratory or skin sensitisation

#### Product:

Remarks: Not a sensitiser.  
Based on available data, the classification criteria are not met.

### Germ cell mutagenicity

#### Product:

: Remarks: Contains Benzene, CAS # 71-43-2., May cause heritable genetic damage

Remarks: Mutagenicity studies on gasoline and gasoline blending streams have shown predominantly negative results.

Germ cell mutagenicity-Assessment : Category 1B

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### Carcinogenicity

#### Product:

Remarks: Contains Benzene, CAS # 71-43-2., Known human carcinogen.

Remarks: Contains Benzene, CAS # 71-43-2., May cause leukaemia (AML - acute myelogenous leukaemia).

Remarks: Inhalation exposure to mice causes liver tumours, which are not considered relevant to humans.

Remarks: An epidemiology study of more than 18,000 petroleum marketing and distribution workers found no significantly increased risk of death from leukemia, multiple myeloma, or kidney cancer associated with gasoline exposure.

Carcinogenicity - Assessment : Category 1B

Material	GHS/CLP Carcinogenicity Classification
Naphtha (petroleum), catalytic reformed	Carcinogenicity Category 1B
Benzene	Carcinogenicity Category 1A
n-Hexane	No carcinogenicity classification.
isopentane	No carcinogenicity classification.
pentane	No carcinogenicity classification.
butane	No carcinogenicity classification.
isobutane	No carcinogenicity classification.

Material	Other Carcinogenicity Classification
Naphtha (petroleum), catalytic reformed	IARC: Group 2B: Possibly carcinogenic to humans
Benzene	IARC: Group 1: Carcinogenic to humans

### Reproductive toxicity

#### Product:

: Remarks: Contains Toluene, CAS # 108-88-3., Causes foetotoxicity at doses which are maternally toxic.

Remarks: Contains n-Hexane, CAS # 110-54-3., May impair fertility at doses which produce other toxic effects.

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Remarks: Contains Toluene, CAS # 108-88-3., Many case studies involving abuse during pregnancy indicate that toluene can cause birth defects, growth retardation and learning difficulties.

Reproductive toxicity -  
Assessment

: This product does not meet the criteria for classification in categories 1A/1B.

### STOT - single exposure

#### Product:

Remarks: High concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea; continued inhalation may result in unconsciousness and/or death.

### STOT - repeated exposure

#### Product:

Remarks: Kidney: caused kidney effects in male rats which are not considered relevant to humans

Remarks: Contains Benzene, CAS # 71-43-2., Blood-forming organs: repeated exposure affects the bone marrow.

Remarks: Contains n-Hexane, CAS # 110-54-3., Peripheral nervous system: repeated exposure causes peripheral neuropathy in animals.

### Aspiration toxicity

#### Product:

Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis which can be fatal.

### Further information

#### Product:

Remarks: Exposure to very high concentrations of similar materials has been associated with irregular heart rhythms and cardiac arrest.

Remarks: Contains Toluene, CAS # 108-88-3., Prolonged and repeated exposures to high concentrations have resulted in hearing loss in rats. Solvent abuse and noise interaction in the work environment may cause hearing loss.

Remarks: Contains Toluene, CAS # 108-88-3., Abuse of vapours has been associated with organ damage and death.

Remarks: Contains Benzene, CAS # 71-43-2., Myelodysplastic syndrome (MDS) was observed



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in individuals exposed to very high levels (50 ppm to 300 ppm range) of benzene over a long period of time in the workplace. The relevance of these results to lower levels of exposure is not known.

Remarks: Classifications by other authorities under varying regulatory frameworks may exist.

### 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.

#### Ecotoxicity

##### Product:

Toxicity to fish (Acute toxicity) : Remarks: Toxic  
LL/EL/IL50 > 1 <= 10 mg/l

Toxicity to crustacean (Acute toxicity) : Remarks: Toxic  
LL/EL/IL50 > 1 <= 10 mg/l

Toxicity to algae/aquatic plants (Acute toxicity) : Remarks: Toxic  
LL/EL/IL50 > 1 <= 10 mg/l

Toxicity to fish (Chronic toxicity) : Remarks: Data not available

Toxicity to crustacean (Chronic toxicity) : Remarks: NOEC/NOEL > 1.0 - <= 10 mg/l

Toxicity to microorganisms (Acute toxicity) : Remarks: LL/EL/IL50 >10 <= 100 mg/l  
Harmful

#### Persistence and degradability

##### Product:

Biodegradability : Remarks: Oxidises rapidly by photo-chemical reactions in air., Inherently biodegradable., Not Persistent per IMO criteria., International Oil Pollution Compensation (IOPC) Fund definition: "A non-persistent oil is oil, which, at the time of shipment, consists of hydrocarbon fractions, (a) at least 50% of which, by volume, distills at a temperature of 340°C (645°F) and (b) at least 95% of which, by volume, distills at a temperature of 370°C (700°F) when tested by the ASTM Method D-86/78 or any subsequent revision thereof."

#### Bioaccumulative potential

##### Product:

Bioaccumulation : Remarks: Contains components with the potential to

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bioaccumulate.

Partition coefficient: n-octanol/water

: log Pow: 2 - 7

### Mobility in soil

#### Product:

Mobility

: Remarks: If the product enters soil, one or more constituents will or may be mobile and may contaminate groundwater., Floats on water., Evaporates within a day from water or soil surfaces.

### Other adverse effects

no data available

## 13. DISPOSAL CONSIDERATIONS

### Disposal methods

Waste from residues

: 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.

Waste product should not be allowed to contaminate soil or ground water, or be disposed of into the environment.

Do not dispose into the environment, in drains or in water courses

Do not dispose of tank water bottoms by allowing them to drain into the ground. This will result in soil and groundwater contamination.

Waste arising from a spillage or tank cleaning should be disposed of in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand.

MARPOL - see International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) which provides technical aspects at controlling pollutions from ships.

Contaminated packaging

: 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.

Do not pollute the soil, water or environment with the waste container.

Local legislation  
Remarks

: Disposal should be in accordance with applicable regional, national, and local laws and regulations.  
Local regulations may be more stringent than regional or

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national requirements and must be complied with.

### 14. TRANSPORT INFORMATION

#### International Regulations

##### ADR

UN number : 3295  
Proper shipping name : HYDROCARBONS, LIQUID, N.O.S.  
Class : 3  
Packing group : II  
Labels : 3  
Hazard Identification Number : 33  
Environmentally hazardous : yes

##### IATA-DGR

UN/ID No. : UN 3295  
Proper shipping name : HYDROCARBONS, LIQUID, N.O.S.  
Class : 3  
Packing group : II  
Labels : 3

##### IMDG-Code

UN number : UN 3295  
Proper shipping name : HYDROCARBONS, LIQUID, N.O.S.  
(Petroleum naphtha)  
Class : 3  
Packing group : II  
Labels : 3  
Marine pollutant : yes

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

Pollution category : Y  
Ship type : 3  
Product name : Benzene and mixtures having 10% benzene or more (i)  
Special precautions : This product may be transported under nitrogen blanketing. Nitrogen is an odourless and invisible gas. Exposure to nitrogen may cause asphyxiation or death. Personnel must observe strict safety precautions when involved with a confined space entry.

#### Special precautions for user

Remarks : Special Precautions: Refer to Section 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.

### 15. REGULATORY INFORMATION

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

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### Local Regulations

Workplace Safety and Health Act & Workplace Safety and Health (General Provision) Regulations	This product is subject to the SDS, Labelling, PEL and other requirements in the Act/ Regulations.
Fire Safety Act and Fire Safety (Petroleum & Flammable Materials) Regulations	This product is subject to the requirements in the Act/ Regulations.
Maritime and Port Authority of Singapore (Dangerous Goods, Petroleum and Explosives) Regulations	This product is subject to the requirements of this regulation.
Environmental Protection and Management Act and Environmental Protection and Management (Hazardous Substances) Regulations	This product is not subject to the requirements in the Act/Regulations.

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

### Other international regulations

**The components of this product are reported in the following inventories:**

TSCA	: All components listed or polymer exempt.
AICS	: All components listed or polymer exempt.
IECSC	: All components listed or polymer exempt.
KECI	: All components listed or polymer exempt.
TCSI	: All components listed or polymer exempt.
PICCS	: All components listed or polymer exempt.
DSL	: All components listed or polymer exempt.

## 16. OTHER INFORMATION

### Full text of H-Statements

H224	Extremely flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H336	May cause drowsiness or dizziness.
H340	May cause genetic defects.
H350	May cause cancer.
H361	Suspected of damaging fertility or the unborn child.
H401	Toxic to aquatic life.
H411	Toxic to aquatic life with long lasting effects.

### Full text of other abbreviations

Aquatic Acute	Short-term (acute) aquatic hazard
Aquatic Chronic	Long-term (chronic) aquatic hazard
Asp. Tox.	Aspiration hazard
Carc.	Carcinogenicity
Flam. Liq.	Flammable liquids
Muta.	Germ cell mutagenicity

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Repr.	Reproductive toxicity
Skin Irrit.	Skin irritation
STOT SE	Specific target organ toxicity - single exposure

### Abbreviations and Acronyms

AIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

### Further information

Other information : This product is intended for use in closed systems only.

There has been a significant change in the required exposure controls/personal protection requirements in section 8.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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