SAFETY DATA SHEET

Cracked Residue

1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	Cracked Residue
Product code	:	X1928
Synonyms	:	Cracker Oil, Fuel Oil Blend component
CAS-No.	:	64742-90-1

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 8269
Telefax	:	+65 6384 8454
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

Recommended use	:	Base chemical., Fuel/Solvent., Raw material for use in the chemical industry.
Restrictions on use	:	This product must not be used in applications other than the above without first seeking the advice of the supplier. 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 4
Skin irritation	:	Category 2
Germ cell mutagenicity	:	Category 1B
Carcinogenicity	:	Category 1B
Long-term (chronic) aquatic	:	Category 2

hazard

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : PHYSICAL HAZARDS:
H227 Combustible liquid.
HEALTH HAZARDS:
H315 Causes skin irritation.
H340 May cause genetic defects.
H350 May cause cancer.
ENVIRONMENTAL HAZARDS:
H411 Toxic to aquatic life with long lasting effects.

Precautionary statements :

Prevention:
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P264 Wash hands thoroughly after handling.
P273 Avoid release to the environment.

Response:
P370+P378 In case of fire: Use appropriate media for extinction.
P302 + P352 IF ON SKIN: Wash with plenty of water and soap.
P332 + P313 If skin irritation occurs: Get medical advice/ attention.
P362 Take off contaminated clothing and wash before reuse.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
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

Inhalation of vapours or mists may cause irritation to the respiratory system.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

Substance / Mixture : Substance

3.1 Substances

Components

Chemical name	CAS-No.	Classification	Concentration (% w/w)
Residues (petroleum), steam-cracked	64742-90-1	Flam. Liq.4; H227 Skin Irrit.2; H315 Muta.1B; H340 Carc.1B; H350 Aquatic Chronic2; H411	> 80 - < 85
distillates (petroleum), cracked steam-cracked petroleum distillates	68477-38-3	Flam. Liq.4; H227 Carc.1B; H350 Acute Tox.3; H301 Acute Tox.5; H313 Skin Irrit.2; H315 Aquatic Acute3; H402 Aquatic Chronic3; H412	> 15 - < 20

For explanation of abbreviations see section 16.

4. FIRST AID MEASURES

General advice : Not expected to be a health hazard when used under normal conditions.

If inhaled : No treatment necessary under normal conditions of use. If symptoms persist, obtain medical advice.
If inhalation of mists, fumes or vapour causes irritation to the nose or throat, remove to fresh air.

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. If contact with hot product, cool the burn area by flushing with large amounts of water for at least 15 minutes. Do not attempt to remove anything from the burn area or apply burn creams or ointments. Do not attempt to remove anything from the burn area. Do not apply burn creams or ointments. Cover the burn area loosely with a sterile dressing, if available. Transport to the nearest medical facility for additional treatment. All burns should receive medical attention.
In case of eye contact	:	Flush eye with copious quantities of water. If persistent irritation occurs, obtain medical attention. If contact with hot product, cool the burn area by flushing with large amounts of water for at least 15 minutes. Do not attempt to remove anything from the burn area or apply burn creams or ointments. Do not attempt to remove anything from the burn area. Do not apply burn creams or ointments. Remove contact lenses, if present and easy to do. Continue rinsing. Cover the burn area loosely with a sterile dressing, if available. Transport to the nearest medical facility for additional treatment. All burns should receive medical attention.
If swallowed	:	In general no treatment is necessary unless large quantities are swallowed, however, get medical advice.
Most important symptoms and effects, both acute and delayed	:	Respiratory irritation signs and symptoms may include a temporary burning sensation of the nose and throat, coughing, and/or difficulty breathing. Hot product - Contact with the skin can cause severe burns, redness, swelling, blisters and/or tissue damage. Hot product - Contact with the eye can cause severe burns, redness, swelling, blurred vision, and may result in permanent loss of vision. No specific hazards under normal use conditions. Ingestion may result in nausea, vomiting and/or diarrhoea.
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	:	IMMEDIATE TREATMENT IS EXTREMELY IMPORTANT! Call a doctor or poison control center for guidance.

Treat symptomatically.
Potential for chemical pneumonitis.

5. FIREFIGHTING 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 water in a jet.
Specific hazards during firefighting	:	Carbon monoxide may be evolved if incomplete combustion occurs. The vapour is heavier than air, spreads along the ground and distant ignition is possible.
Specific extinguishing methods	:	Standard procedure for chemical fires. Clear fire area of all non-emergency personnel. Keep adjacent containers cool by spraying with water.
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	:	Observe the relevant local and international regulations Risk of explosion. Inform the emergency services if liquid enters surface water drains. Notify authorities if any exposure to the general public or the environment occurs or is likely to occur. Local authorities should be advised if significant spillages cannot be contained.
	:	Avoid contact with skin, eyes and clothing. Be ready for fire or possible exposure. Stay upwind and keep out of low areas. Isolate hazard area and deny entry to unnecessary or unprotected personnel. Do not breathe fumes, vapour. Do not operate electrical equipment.
Environmental precautions	:	Shut off leaks, if possible without personal risks. Remove all possible sources of ignition in the surrounding area. Use appropriate containment to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers. Attempt to disperse the vapour 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.

Methods and materials for containment and cleaning up : 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.
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

Additional advice : For guidance on selection of personal protective equipment see Section 8 of this Safety Data Sheet.
For guidance on disposal of spilled material see Section 13 of this Safety Data Sheet.

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.
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.
Ensure that all local regulations regarding handling and storage facilities are followed.

Advice on safe handling : Avoid inhaling vapour and/or mists.
Avoid contact with skin, eyes and clothing.
Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols.
Bulk storage tanks should be diked (bunded).
Properly dispose of any contaminated rags or cleaning materials in order to prevent fires.
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 (≤ 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.
The vapour is heavier than air. Beware of accumulation in pits and confined spaces.
Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks.

Avoidance of contact : Strong oxidising agents.

Product Transfer : Refer to guidance under Handling section.

Storage

Conditions for safe storage : Refer to section 15 for any additional specific legislation covering the packaging and storage of this product.

Other data : Keep away from aerosols, flammables, oxidizing agents, corrosives and from other flammable products which are not harmful or toxic to man or to the environment.
Keep container tightly closed.
Must be stored in a diked (bunded) well- ventilated area, away from sunlight, ignition sources and other sources of heat.
Vapours from tanks should not be released to atmosphere.
Breathing losses during storage should be controlled by a suitable vapour treatment system.
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.

Packaging material : Suitable material: For containers, or container linings use mild steel, stainless steel.
Unsuitable material: Natural, butyl, neoprene or nitrile rubbers., PVC.

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.

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/PERSONAL PROTECTION

Components with workplace control parameters

Biological occupational exposure limits

No biological limit allocated.

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 Securité, (INRS), France http://www.inrs.fr/accueil

Engineering measures : 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.
Firewater monitors and deluge systems are recommended.
Eye washes and showers for emergency use.
Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated.
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:

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.

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 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.
If air-filtering respirators are suitable for conditions of use: Select a filter suitable for organic gases and vapours [Type A boiling point >65°C (149°F)].

Hand protection
Remarks : Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from the following materials may provide suitable chemical protection. Longer term protection: Viton. Incidental contact/Splash protection: Nitrile rubber.

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. Glove thickness should be typically greater than 0.35 mm depending on the glove make and model. 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	:	Wear goggles for use against liquids and gas. Wear full face shield if splashes are likely to occur.
Skin and body protection	:	Wear chemical resistant gloves/gauntlets and boots. Where risk of splashing, also wear an apron. Wear antistatic and flame-retardant clothing, if a local risk assessment deems it so.
Thermal hazards	:	When handling heated product, wear heat resistant gloves, safety hat with chin strap, face shield (preferably with a chin guard), safety glasses, heat resistant coveralls (with cuffs over gloves and legs over boots), neck protection and heavy duty boots, e.g. leather for heat resistance.
Hygiene measures	:	Wash hands before eating, drinking, smoking and using the toilet. Launder contaminated clothing before re-use.

Environmental exposure controls

General advice	:	Local guidelines on emission limits for volatile substances must be observed for the discharge of exhaust air containing vapour. Minimise release to the environment. An environmental assessment must be made to ensure compliance with local environmental legislation. Information on accidental release measures are to be found in section 6.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Liquid at room temperature.
Colour	:	clear
Odour	:	Slight hydrocarbon
Odour Threshold	:	Data not available
pH	:	Not applicable
Melting point/freezing point	:	> 20 °C / 68 °F
Boiling point/boiling range	:	170 - 600 °C / 338 - 1112 °F
Flash point	:	> 70 °C / > 158 °F
Evaporation rate	:	Data not available
Flammability (solid, gas)	:	Not applicable

Upper explosion limit	:	7 %(V)
Lower explosion limit	:	1 %(V)
Vapour pressure	:	Data not available (50 °C / 122 °F)
Relative vapour density	:	No data available
Relative density	:	No data available
Density	:	1,060 - 1,100 kg/m3 (15 °C / 59 °F) Method: ASTM D4052
Solubility(ies)		
Solubility in other solvents	:	Data not available
Partition coefficient: n-octanol/water	:	Data not available
Auto-ignition temperature	:	Data not available
Decomposition temperature	:	Data not available
Viscosity		
Viscosity, kinematic	:	> 35 mm2/s (100 °C / 212 °F) Method: ASTM D445
Particle characteristics		
Particle size	:	Data not available
Explosive properties	:	No data available
Oxidizing properties	:	Data not available
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 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, Medium conductivity: 100 - 10,000 pS/m

10. STABILITY AND REACTIVITY

Reactivity	:	The product does not pose any further reactivity hazards in addition to those listed in the following sub-paragraph.
Chemical stability	:	No hazardous reaction is expected when handled and stored according to provisions
Possibility of hazardous reactions	:	Stable under normal conditions of use.
Conditions to avoid	:	Heat, flames, and sparks. In certain circumstances product can ignite due to static electricity.
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, 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 data obtained from similar substances. Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).
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	:	LD 50 Rat, male: > 2,000 mg/kg Method: OECD Test Guideline 401 Remarks: Based on available data, the classification criteria are not met.
Acute inhalation toxicity	:	LC 50 Rat, male and female: 28.1 mg/l Exposure time: 4 h Test atmosphere: vapour Method: Test(s) equivalent or similar to OECD Test Guideline 403 Remarks: Based on available data, the classification criteria are not met.
Acute dermal toxicity	:	LD 50 Rat, male and female: > 2,000 mg/kg

Method: OECD Test Guideline 402
Remarks: Based on available data, the classification criteria are not met.

Components:

Residues (petroleum), steam-cracked:

Acute oral toxicity : LD 50 Rat, male: > 2,000 mg/kg
Method: OECD Test Guideline 401
Remarks: Based on available data, the classification criteria are not met.

Acute inhalation toxicity : LC 50 Rat, male and female: 28.1 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Method: Test(s) equivalent or similar to OECD Test Guideline 403
Remarks: Based on available data, the classification criteria are not met.

Acute dermal toxicity : LD 50 Rat, male and female: > 2,000 mg/kg
Method: OECD Test Guideline 402
Remarks: Based on available data, the classification criteria are not met.

Skin corrosion/irritation

Product:

Species: Rabbit
Method: OECD Test Guideline 404
Remarks: Causes skin irritation.

Components:

Residues (petroleum), steam-cracked:
Species: Rabbit
Method: OECD Test Guideline 404
Remarks: Causes skin irritation.

Serious eye damage/eye irritation

Product:

Species: Rabbit
Method: Test(s) equivalent or similar to OECD Test Guideline 405
Remarks: Based on available data, the classification criteria are not met.

Components:

Residues (petroleum), steam-cracked:
Species: Rabbit
Method: Test(s) equivalent or similar to OECD Test Guideline 405
Remarks: Based on available data, the classification criteria are not met.

Respiratory or skin sensitisation

Product:

Species: Guinea pig
Method: Other guideline method.
Remarks: Based on available data, the classification criteria are not met.

Components:

Residues (petroleum), steam-cracked:
Species: Guinea pig
Method: Other guideline method.
Remarks: Based on available data, the classification criteria are not met.

Germ cell mutagenicity

Product:

Genotoxicity in vitro	:	Method: Test(s) equivalent or similar to OECD Guideline 471 Remarks: May cause genetic defects.
	:	Method: Regulation (EC) No. 440/2008, Annex, B.21 Remarks: May cause genetic defects.
	:	Test species: MouseMethod: Test(s) equivalent or similar to OECD Test Guideline 474 Remarks: May cause heritable genetic damage
Germ cell mutagenicity-Assessment	:	May cause genetic defects.

Components:

Residues (petroleum), steam-cracked:

Genotoxicity in vitro	:	Method: Test(s) equivalent or similar to OECD Guideline 471 Remarks: May cause genetic defects.
	:	Method: Regulation (EC) No. 440/2008, Annex, B.21 Remarks: May cause genetic defects.
	:	Test species: MouseMethod: Test(s) equivalent or similar to OECD Test Guideline 474 Remarks: May cause heritable genetic damage
Germ cell mutagenicity-Assessment	:	May cause genetic defects.

Carcinogenicity

Product:

Species: Rat, (male and female)
Application Route: Oral
Method: Other guideline method.
Remarks: May cause cancer., Causes cancer in laboratory animals.

Species: Mouse, (male and female)
Application Route: Dermal

Method: Literature data
Remarks: May cause cancer., Causes cancer in laboratory animals.

Carcinogenicity - Assessment : May cause cancer.

Components:

Residues (petroleum), steam-cracked:
Species: Rat, (male and female)
Application Route: Oral
Method: Other guideline method.
Remarks: May cause cancer., Causes cancer in laboratory animals.

Species: Mouse, (male and female)
Application Route: Dermal
Method: Literature data
Remarks: May cause cancer., Causes cancer in laboratory animals.

Carcinogenicity - Assessment : May cause cancer.

Material	GHS/CLP Carcinogenicity Classification
Residues (petroleum), steam-cracked	Carcinogenicity Category 1B
distillates (petroleum), cracked steam-cracked petroleum distillates	Carcinogenicity Category 1B

Reproductive toxicity

Product:

: Species: Rat
Sex: male and female
Application Route: Oral

Method: OECD Test Guideline 422
Remarks: Based on available data, the classification criteria are not met.

Effects on foetal development : Species: Rat, female
Application Route: Inhalation
Method: Literature data
Remarks: Based on available data, the classification criteria are not met.

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

Components:

Residues (petroleum), steam-cracked:

: Species: Rat
Sex: male and female
Application Route: Oral

Method: OECD Test Guideline 422
Remarks: Based on available data, the classification criteria are not met.

Effects on foetal development : Species: Rat, female
Application Route: Inhalation
Method: Literature data
Remarks: Based on available data, the classification criteria are not met.

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

STOT - single exposure

Product:

Remarks: Based on available data, the classification criteria are not met., Inhalation of vapours or mists may cause irritation to the respiratory system.

Components:

Residues (petroleum), steam-cracked:
Remarks: Based on available data, the classification criteria are not met., Inhalation of vapours or mists may cause irritation to the respiratory system.

STOT - repeated exposure

Product:

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

Components:

Residues (petroleum), steam-cracked:
Remarks: Based on available data, the classification criteria are not met.

Repeated dose toxicity

Product:

Rat, male and female:
Application Route: Oral
Method: Test(s) equivalent or similar to OECD Test Guideline 408
Target Organs: hematopoietic system

Rat, male and female:
Application Route: Inhalation
Test atmosphere: vapour
Method: Test(s) equivalent or similar to OECD Test Guideline 413
Target Organs: No specific target organs noted

Rabbit, male and female:
Application Route: Dermal
Method: Test(s) equivalent or similar to OECD Test Guideline 410
Target Organs: No specific target organs noted

Components:

Residues (petroleum), steam-cracked:

Rat, male and female:
Application Route: Oral
Method: Test(s) equivalent or similar to OECD Test Guideline 408
Target Organs: hematopoietic system

Rat, male and female:
Application Route: Inhalation
Test atmosphere: vapour
Method: Test(s) equivalent or similar to OECD Test Guideline 413
Target Organs: No specific target organs noted

Rabbit, male and female:
Application Route: Dermal
Method: Test(s) equivalent or similar to OECD Test Guideline 410
Target Organs: No specific target organs noted

Aspiration toxicity

Product:

Based on available data, the classification criteria are not met.

Components:
Residues (petroleum), steam-cracked:
Based on available data, the classification criteria are not met.

Further information

Product:

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

Components:
Residues (petroleum), steam-cracked:
Remarks: Classifications by other authorities under varying regulatory frameworks may exist.

12. ECOLOGICAL INFORMATION

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

Ecotoxicity

Product:

Toxicity to fish (Acute toxicity) : LL50 (Oncorhynchus mykiss (rainbow trout)): 1.1 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203
Remarks: Toxic
LL/EL/IL50 1-10 mg/l

Toxicity to crustacean (Acute toxicity) : EC50 (Daphnia magna (Water flea)): 1.2 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202
Remarks: Toxic
LL/EL/IL50 1-10 mg/l

Toxicity to algae/aquatic plants (Acute toxicity) : LOELR (Selenastrum capricornutum (green algae)): 1 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
Remarks: Toxic
LL/EL/IL50 1-10 mg/l

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

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

Toxicity to microorganisms (Acute toxicity) : EC50 (Activated sludge): 470 mg/l
Exposure time: 3 h
Method: OECD Test Guideline 209
Remarks: Practically non toxic:
LL/EL/IL50 > 100 mg/l

Components:
Residues (petroleum), steam-cracked :

Toxicity to fish (Acute toxicity) : LL50 (Oncorhynchus mykiss (rainbow trout)): 1.1 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203
Remarks: Toxic
LL/EL/IL50 1-10 mg/l

Toxicity to crustacean (Acute toxicity) : EC50 (Daphnia magna (Water flea)): 1.2 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202
Remarks: Toxic
LL/EL/IL50 1-10 mg/l

Toxicity to algae/aquatic plants (Acute toxicity)	:	LOELR (Selenastrum capricornutum (green algae)): 1 mg/l Exposure time: 72 h Method: OECD Test Guideline 201 Remarks: Toxic LL/EL/IL50 1-10 mg/l
Toxicity to microorganisms (Acute toxicity)	:	EC50 (Activated sludge): 470 mg/l Exposure time: 3 h Method: OECD Test Guideline 209 Remarks: Practically non toxic: LL/EL/IL50 > 100 mg/l
Toxicity to fish (Chronic toxicity)	:	Remarks: Data not available
Toxicity to crustacean(Chronic toxicity)	:	Remarks: Data not available

Persistence and degradability

Product:

Biodegradability	:	Biodegradation: 29 % Exposure time: 28 d Method: OECD Test Guideline 301D Remarks: Not readily biodegradable.

Components:
Residues (petroleum), steam-cracked :

Biodegradability	:	Biodegradation: 29 % Exposure time: 28 d Method: OECD Test Guideline 301D Remarks: Not readily biodegradable.

Bioaccumulative potential

Product:

Bioaccumulation	:	Bioconcentration factor (BCF): 39 - 18,220 Method: Based on quantitative structure-activity relationship (QSAR) modelling Remarks: Has the potential to bioaccumulate.
Partition coefficient: n-octanol/water	:	Remarks: Data not available

Components:
Residues (petroleum), steam-cracked :

Bioaccumulation	:	Bioconcentration factor (BCF): 39 - 18,220 Method: Based on quantitative structure-activity relationship (QSAR) modelling Remarks: Has the potential to bioaccumulate.

Mobility in soil

Product:

Mobility	:	Remarks: Floats on water., If it enters soil, it will adsorb to soil particles and will not be mobile.

Components:
Residues (petroleum), steam-cracked :
Mobility : Remarks: Floats on water., If it enters soil, it will adsorb to soil particles and will not be mobile.

Other adverse effects

Product:

Results of PBT and vPvB assessment : The substance does not fulfill all screening criteria for persistence, bioaccumulation and toxicity and hence is not considered to be PBT or vPvB.

Components:
Residues (petroleum), steam-cracked :

Results of PBT and vPvB assessment : The substance does not fulfill all screening criteria for persistence, bioaccumulation and toxicity and hence is not considered to be PBT or vPvB.

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.

Do not dispose into the environment, in drains or in water courses.
Waste product should not be allowed to contaminate soil or water.

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 complied with.

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.

14. TRANSPORT INFORMATION

International Regulations

ADR
UN number : 3082
Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,

		N.O.S. (CRACKER OIL)
Class	:	9
Packing group	:	III
Labels	:	9
Hazard Identification Number	:	90
Environmentally hazardous	:	yes

IATA-DGR

UN/ID No.	:	UN 3082
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CRACKER OIL)
Class	:	9
Packing group	:	III
Labels	:	9

IMDG-Code

UN number	:	UN 3082
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CRACKER OIL)
Class	:	9
Packing group	:	III
Labels	:	9
Marine pollutant	:	yes

Maritime transport in bulk according to IMO instruments

MARPOL Annex 1 rules apply for bulk shipments by sea.

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

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 not subject to the requirements in the Act/Regulations.

Maritime and Port Authority of Singapore (Dangerous Goods, Petroleum and Explosives)	This product is subject to the requirements of this regulation.

Regulations	

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	:	Listed
AIIC	:	Listed
NDSL	:	This product contains one or several components listed in the Canadian NDSL.
KECI	:	Listed

16. OTHER INFORMATION

Full text of H-Statements

H227	Combustible liquid.
H301	Toxic if swallowed.
H313	May be harmful in contact with skin.
H315	Causes skin irritation.
H340	May cause genetic defects.
H350	May cause cancer.
H402	Harmful to aquatic life.
H411	Toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.

Full text of other abbreviations

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

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

Training advice	:	Provide adequate information, instruction and training for operators.
Other information	:	A vertical bar (|) in the left margin indicates an amendment from the previous version.
Sources of key data used to compile the Safety Data Sheet	:	The quoted data are from, but not limited to, one or more sources of information (e.g. toxicological data from Shell Health Services, material suppliers' data, CONCAWE, EU IUCLID date base, EC 1272 regulation, etc).

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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