

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Light Cycle Oil (LCO)
Chemical name : Light Catalytic Cracked Distillate
Product use : Refinery intermediate - Catalytic Hydro-desulphuriser (CHD) feedstock

Supplier : Engen Refinery Durban (Tel: 031-460 3109, a/h: 031-430 3109)
Poisons Information Helpline : 0861 555 777 (South Africa)
Spill Response : 086 100 0366 (South Africa)
Customer Service Centre : 0860 036 436 (Sales and Technical Information)
Engen Website : <http://www.engen.co.za/>

2. HAZARDS IDENTIFICATION

Emergency response data : Amber Storage tank headspace may contain flammable vapours. DOT
ERG No. : 128

GHS Classification:

Health

Acute inhalation toxicity : Hazard category 4.
Skin corrosion/irritation : Hazard category 2.
Carcinogenicity : Hazard Category 1B
STOT - repeated exposure : Hazard category 2.
Aspiration hazard : Hazard category 1.

Environmental

Acute toxicity : Hazard category 1.
Chronic toxicity : Hazard category 1.

Physical

Flammability : Hazard category 4.

Signal Word : DANGER

GHS Labels/Pictograms:



Hazard Statements

Combustible liquid. Harmful if swallowed or inhaled. Causes skin irritation. May be fatal if swallowed and enters airways. May cause damage to organs. (Thymus, Liver, Bone Marrow) May cause cancer.

Precautionary Statements

Prevention

Do not handle until all safety precautions have been read and understood. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces – No smoking. Wear protective gloves/protective clothing/eye protection/face protection. Wash exposed skin after handling this product. Avoid release to the environment.

Response

IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breath. Call a POISON CENTRE or doctor if you feel unwell. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF SWALLOWED: Immediately call a POISON CENTRE or

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doctor. IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breath. Call a POISON CENTRE or doctor if you feel unwell. IF ON SKIN (or hair): Immediately remove all contaminated clothing. Gently wash skin with plenty of soap and water. Launder contaminated clothing before re-use.

Storage

Ground/bond container and receiving equipment. Use explosion-proof electrical, ventilating and transfer equipment.

Disposal

Dispose of contents/container to an approved waste disposal plant in accordance with local/regional/national/international regulation. Avoid release to the environment. Refer to special instructions / Safety Data Sheets.

See Section 11 for further health effects/toxicological data.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name	CAS-No.	Weight%
Light Catalytic Cracked Distillate	64741-59-9	<= 100.00

See Section 8 for Exposure Limits (if applicable).

4. FIRST AID MEASURES

- Inhalation : Remove from further exposure. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with mechanical device or use mouth-to-mouth resuscitation with a mouthpiece.
- Skin contact : Remove contaminated clothing. Dry wipe exposed skin and cleanse with hand cleaner, soap and water. Launder contaminated clothing before reuse. (See Section 16 - Injection Injury)
- Eye contact : Flush thoroughly with water for at least 15 minutes. Get medical assistance.
- Ingestion : Do not induce vomiting or give anything by mouth to a groggy or unconscious person.
- Note to doctors : Material if aspirated into the lungs may cause chemical pneumonitis. Skin contact may aggravate an existing dermatitis. Treat appropriately.
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5. FIRE-FIGHTING MEASURES

- Extinguishing media : Carbon dioxide, foam, dry chemical and water fog.
- Special fire fighting procedure : Water spray should only be used to keep fire-exposed containers cool, flush spills away from exposures, disperse vapours and protect personnel attempting to stop leak. Prevent runoff from fire control or dilution from entering streams, municipal sewers, or drinking water supply.
- Special protective equipment for firefighters : For fires in enclosed areas, fire fighters must use Self-Contained Breathing Apparatus.
- Unusual fire and explosive hazards : During abnormal operations Hydrogen sulphide may be present. Hydrogen sulphide, an extremely flammable, very toxic gas, may collect in the vapour space of tanks or other enclosed vessels. Flammable.

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Products of decomposition	:	Fumes, smoke, carbon monoxide, sulphur oxides, aldehydes and other decomposition products, in the case of incomplete combustion.
Flash Point	:	> 23 °C (ASTM D-93)
Upper Explosion Limit (UEL)	:	7 %(V)
Lower Explosion Limit (LEL)	:	0.6 %(V)
NFPA Hazard Id	:	Health: 3; Flammability: 2; Reactivity: 0

6. ACCIDENTAL RELEASE MEASURES

Procedure if material is released or spilled	:	Report spills/releases as required to appropriate authorities. Divert product to refinery Effluent Treatment Plant.
Methods for cleaning up	:	Eliminate sources of ignition. Warn personnel in the downwind areas of fire and explosion hazard, and warn them to stay clear. LAND SPILL: Shut off source taking normal safety precautions. Take measures to minimize the effects on ground water. Recover by pumping using explosion-proof equipment or contain spilled liquid with sand or other suitable absorbent and remove mechanically into containers. If necessary, dispose of absorbed residues as directed in Section 13. WATER SPILL: Not applicable.
Personal precautions	:	See Section 8.
Environmental precautions	:	Prevent spill from entering stormwater drains and the Badullah Canal. Advise the relevant authorities if external contaminations have occurred.

7. HANDLING AND STORAGE

Safe handling advice	:	Keep product away from high energy ignition sources, heat, sparks, pilot lights, static electricity, and open flames. Harmful in contact with or if absorbed through the skin. Avoid inhalation of vapours or mists. Use in well ventilated area away from all ignition sources. See Section 8 for additional personal protection advice when handling this product.
Storage information	:	This product should be contained within pipes, exchangers, towers and other storage vessels which comply with the relevant engineering standards.
Storage and handling procedures	:	Can be stored in floating roof tanks in the refinery tankfarm.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational Exposure Limits (OELs)

Components	CAS-No.	Source	TWA	Value	Notations
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Note : This product does not contain any components which have recognised exposure limits. An estimated LTEL of 0.2 mg/m³ is recommended.

LTEL: Long Term Exposure Limits - Time Weight Average (TWA) over 8 hours.

STEL: Short Term Exposure Limits - Time Weight Average (TWA) over 15 Minutes

Note: Limits Shown for guidance only. Follow applicable regulations.

Personal Protective Equipment (PPE)

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Engineering controls	:	Use in well ventilated area. Explosive-proof ventilation equipment with local exhaust is desirable.
Respiratory protection	:	Approved respiratory equipment must be used when airborne concentrations are unknown or exceed the recommended exposure limit. Self-Contained Breathing Apparatus may be required for use in confined or enclosed spaces.
Eye protection	:	If splash with liquid is possible, chemical type goggles should be worn.
Skin and body protection	:	Impervious gloves must be worn. If body contact is likely, appropriate personal protective equipment must be worn. Good personal hygiene practices should always be followed.

9. PHYSICAL AND CHEMICAL PROPERTIES

Colour	:	Amber
Odour	:	Hydrocarbon
Boiling point	:	> 260 °C
Flash Point	:	> 23 °C (ASTM D-93)
Upper Explosion Limit (UEL)	:	7 %(V)
Lower Explosion Limit (LEL)	:	0.6 %(V)
Vapour pressure	:	< 1 hPa
Density	:	1.01 g/cm ³ @ 20 °C (ASTM D-4052)
Viscosity, kinematic	:	3 mm ² /s @ 50 °C

10. STABILITY AND REACTIVITY

Stability	:	Stable.
Conditions to avoid	:	Extreme heat and high energy sources of ignition, such as sparks and static electricity.
Materials to avoid	:	Halogens, strong acids, alkalis and oxidizers.
Hazardous decomposition products	:	Fumes, smoke, carbon monoxide, sulphur oxides, aldehydes and other decomposition products, in the case of incomplete combustion.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Components

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Acute oral toxicity	:	No available data.
Acute inhalation toxicity	:	(Rats) : 11 mg/l(Estimate)
Acute dermal toxicity	:	No available data.

Skin corrosion/irritation

Components

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Result	:	Skin Irritation (Rabbit)
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Eye irritation

Components

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Result : No available data.

Sensitization Components

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Remarks : No known significant effects or critical hazards.

Germ cell mutagenicity Components

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Remarks : No available data.

Carcinogenicity Components

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Remarks : Suspected human carcinogen.

Reproductive toxicity (Teratogenicity) Components

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Remarks : No known significant effects or critical hazards.

STOT - single exposure Components

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Remarks : No available data.

Specific target organ toxicity (STOT) - repeated exposure Components

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Remarks : May cause damage to organs.(Thymus, Liver, Bone Marrow)

Aspiration hazard Components

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Remarks : May be fatal if swallowed and enters airways.

12. ECOLOGICAL INFORMATION

Ecotoxicity effects Components

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Acute toxicity : Fish, invertebrates and algae with E(L)C50s <1 mg/L

Chronic toxicity : Fish, invertebrates and algae with E(L)C50s <1 mg/L

Persistence and degradability Components

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Biodegradability : Readily Biodegradable.

Bioaccumulation Components

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Bioaccumulation : Does not bio-accumulate significantly.

13. DISPOSAL CONSIDERATIONS

Waste disposal : Product can be diverted to the refinery recycling facility, or alternatively can undergo supervised burning.

Other regulations : Disposal of unused product may be subject to RCRA regulations (40 CFR 261). Disposal of the used product may also be regulated due to ignitability, corrosivity, reactivity, or toxicity as determined by the Toxicity Characteristic Leaching Procedure (TCLP).

Flash Point : > 23 °C (ASTM D-93)

14. TRANSPORT INFORMATION

ADR

Proper shipping name : GAS OIL
UN number : 1202
Class : 3
Letter : F
Packing group : III
Labelling number : 3

CFR

Proper shipping name : GAS OIL
UN number : 1202
Class : 3
Letter : F
Packing group : III
Labelling number : 3

IATA_C

Proper shipping name : GAS OIL
UN number : 1202
Class : 3
Letter : F
Packing group : III
Labelling number : 3

IMDG

Proper shipping name : GAS OIL
UN number : 1202
Class : 3
Letter : F
Packing group : III
Labelling number : 3
Marine pollutant : Marine Pollutant
Medical First Aid Guide (MFAG) table : 311

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Emergency Schedule (EmS) : 3-07
number
IMDG code page number : 3375

15. REGULATORY INFORMATION

South African Legislation and Standards : South African OHS Act, 85 of 1993: Hazardous Chemical Substances, Regulation 9A
National Environmental Management: Waste Act 2008

South African Guidelines
SANS 10234:2008 - Globally Harmonized System of classification & labelling of chemicals
SANS 11014:2010 - Safety data sheet for chemical products - Content & order of sections

US OSHA Hazard Communication Standard : Product assessed in accordance with OSHA 29 CFR 1910.1200 and determined to be hazardous.

Governmental Inventory Status : All components comply with TSCA, EINECS/ELINCS, AICS, METI, DSL, KECI, ENCS, PICCS and IECSC.

Note : Contains Aromatic Oils.

SARA

U.S. Superfund Amendments and Reauthorization Act SARA Title III : This product contains no "EXTREMELY HAZARDOUS SUBSTANCES".

SARA (311/312) Reportable Hazard Categories : Fire Chronic Acute

The following product ingredients are cited on the lists below

Chemical name	CAS-No.	Concentration [%]	List Citations
Light Catalytic Cracked Distillate	64741-59-9	<= 100.00	8, 16

Regulatory List Searched

1 = ACGIH ALL	6 = IARC 1	11 = TSCA 4	17 = CA P65	22 = MI 293
2 = ACGIH A1	7 = IARC 2A	12 = TSCA 5a2	18 = CA RTK	23 = MN RTK
3 = ACGIH A2	8 = IARC 2B	13 = TSCA 5e	19 = FL RTK	24 = NJ RTK
4 = NTP CARC	9 = OSHA CARC	14 = TSCA 6	20 = IL RTK	25 = PA RTK
5 = NTP SUS	10 = OSHA Z	15 = TSCA 12b	21 = LA RTK	26 = RI RTK

Code Key: CARC = Carcinogen; SUS = Suspected Carcinogen

16. OTHER INFORMATION

Note: Engen products do not contain PCBs.

Health studies have shown that many hydrocarbons pose potential human health risks which may vary from person to person. Information provided on this MSDS reflects intended use. This product should not be used for any other applications. In any case, the following advice should be considered:

INJECTION INJURY WARNING: If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a doctor as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal

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or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

Precautionary Label Text:

CONTAINS AROMATIC OILS

WARNING!

COMBUSTIBLE LIQUID AND VAPOUR. RESPIRATORY IRRITATION, HEADACHE, DIZZINESS, NAUSEA, LOSS OF CONSCIOUSNESS, AND IN CASES OF EXTREME EXPOSURE, POSSIBLY DEATH. LOW VISCOSITY MATERIAL-IF SWALLOWED, MAY BE ASPIRATED AND CAN CAUSE SERIOUS OR FATAL LUNG DAMAGE.

MAY CAUSE SKIN CANCER ON PROLONGED, REPEATED SKIN CONTACT. ANIMAL SKIN ABSORPTION STUDIES RESULTED IN INCREASED MORTALITY, EFFECTS ON BODY WEIGHT, THE IMMUNE SYSTEM AND THE UNBORN CHILD. PROLONGED, REPEATED SKIN CONTACT MAY CAUSE IRRITATION. DIESEL FUMES MAY CAUSE LUNG CANCER.

SAFETY: Keep away from heat and flame. Avoid prolonged or repeated overexposure by skin contact or inhalation. Use with adequate ventilation. Keep container closed. Keep out of reach of children.

FIRST AID: If inhaled, remove from further exposure. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation. In case of contact, remove contaminated clothing. Dry wipe the exposed skin and cleanse with waterless hand cleaner and follow by washing thoroughly with soap and water. For those providing assistance, avoid further skin contact to yourself and others. Wear impervious gloves. If swallowed, seek immediate medical attention. Do not induce vomiting. Only induce vomiting at the instruction of a doctor.

This warning is given to comply with California Health and Safety Code 25249.6 and does not constitute an admission or a waiver of rights. This product contains a chemical known to the State of California to cause cancer, birth defects, or other reproductive harm. Chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm are created by the combustion of this product. Refer to product Material Safety Data Sheet for further safety and health information.

Disclaimer

Information given herein is offered in good faith as accurate, but without guarantee. Conditions of use and suitability of the product for particular uses are beyond our control; all risks of use of the product are therefore assumed by the user and we expressly disclaim all warranties of every kind and nature, including warranties of merchantability and fitness for a particular purpose in respect to the use or suitability of the product. Nothing is intended as a recommendation for uses which infringe valid patents or as extending license under valid patents. Appropriate warnings and safe handling procedures should be provided to handlers and users.
