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

**1.1. Product identifier**

Product form : Substance  
Trade name : Reliance C60, Hydrotreated neutral oil-based; Baseoil;  
IUPAC name : Reliance C60, Hydrotreated neutral oil-based; Baseoil;  
EC-No. : 276-738-4  
CAS-No. : 72623-87-1  
REACH registration No : 01-2119474889-13-0015  
Product code : Reliance 6.0 CST

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

**1.2.1. Relevant identified uses**

Main use category : Industrial uses, Professional uses  
Use of the substance/mixture : Lubricant

**1.2.2. Uses advised against**

No additional information available

**1.3. Details of the supplier of the safety data sheet**

**Supplier**

RELIANCE PETROCHEM INDUSTRIES (PVT.) LTD  
1301-1305, 13<sup>th</sup> Floor, Chapal Plaza, Hasrat Mohani Rd,  
Karachi, Pakistan  
UAN: +92-21-111-774-111 | FAX: +92-21-32474244  
[info@reliancepetrochem.com](mailto:info@reliancepetrochem.com) | [www.reliancepetrochem.com](http://www.reliancepetrochem.com)

**1.4. Emergency telephone number**

Emergency number : (92)-111-774-111  
Only available during office hours.


Country	Official advisory body	Address	Emergency number
Ireland	National Poisons Information Centre Beaumont Hospital	PO Box 1297 Beaumont Road 9 Dublin	+353 1 809 2566 (Healthcare professionals-24/7) +353 1 809 2166 (public, 8am - 10pm, 7/7)
United Kingdom	National Poisons Information Service (Newcastle Centre) Regional Drugs and Therapeutics Centre, Wolfson Unit	Claremont Place Newcastle-upon-Tyne NE1 4LP Newcastle	0844 892 0111 (UK only, 24/7, healthcare professionals only)

**SECTION 2: Hazards identification**

**2.1. Classification of the substance or mixture**

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

Asp. Tox. 1 H304

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## 2.2. Label elements

### Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :



GHS08

Signal word :

Danger

Hazard statements (CLP) :

H304 - May be fatal if swallowed and enters airways.

Precautionary statements (CLP) :

P301+P310 - IF SWALLOWED: Immediately call a POISON CENTER, a doctor.  
P331 - Do NOT induce vomiting.

## 2.3. Other hazards

Other hazards :

Results of PBT and vPvB assessment. The product does not meet the PBT and vPvB classification criteria.

Component	
Lubricating oils (petroleum), C60, hydrotreated neutral oil-based; Baseoil—unspecified (72623-87-1)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

The mixture does not contain substance(s) included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605

## SECTION 3: Composition/information on ingredients

### 3.1. Substances

Comments :

Note L: The harmonised classification as a carcinogen applies unless it can be shown that the substance contains less than 3 % of dimethyl sulphoxide extract as measured by IP 346 ("Determination of polycyclic aromatics in unused lubricating base oils and asphaltene free petroleum fractions – Dimethyl sulphoxide extraction refractive index method" Institute of Petroleum, London), in which case a classification in accordance with Title II of this Regulation shall be performed also for that hazard class.

Substance name :

Lubricating oils (petroleum), C60, hydrotreated neutral oil-based; Baseoil—unspecified

CAS-No. :


72623-87-1

EC-No. :

276-738-4

Substance name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Lubricating oils (petroleum), C60, hydrotreated neutral oil-based; Baseoil—unspecified	(CAS-No.) 72623-87-1 (EC-No.) 276-738-4 (EC Index) 649-483-00-5 (REACH-no) 01-2119474889-13-0015	100	Asp. Tox. 1, H304

Full text of H- and EUH-statements: see section 16

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### **3.2. Mixtures**

Not applicable

## **SECTION 4: First aid measures**

### **4.1. Description of first aid measures**

Additional advice	: First aider: Pay attention to self-protection!. Concerning personal protective equipment to use, see section 8. Never give anything by mouth to an unconscious person. In case of doubt or persistent symptoms, consult always a physician. Show this safety data sheet to the doctor in attendance. Treat symptomatically.
Inhalation	: Remove casualty to fresh air and keep warm and at rest. In case of doubt or persistent symptoms, consult always a physician.
Skin contact	: Remove contaminated clothing and shoes. Gently wash with plenty of soap and water. In case of doubt or persistent symptoms, consult always a physician.
Eyes contact	: Rinse immediately carefully and thoroughly with eye-bath or water. Remove contact lenses, if present and easy to do. Continue rinsing. In case of doubt or persistent symptoms, consult always a physician.
Ingestion	: Rinse mouth thoroughly with water. Do NOT induce vomiting. Get immediate medical advice/attention.

### **4.2. Most important symptoms and effects, both acute and delayed**

Inhalation	: Inhalation is unlikely except at elevated temperature and/or pressure. The following symptoms may occur: Irritating to the respiratory system, may cause throat pain and cough.
Skin contact	: The following symptoms may occur: Prolonged or repeated contact may cause skin to become dry. Prolonged or repeated contact with the skin may cause dermatitis.
Eyes contact	: The following symptoms may occur: May cause slight irritation.
Ingestion	: May be fatal if swallowed and enters airways. The following symptoms may occur: Pulmonary oedema. Nausea. Diarrhoea.

### **4.3. Indication of any immediate medical attention and special treatment needed**

No additional information available

## **SECTION 5: Firefighting measures**

### **5.1. Extinguishing media**


Suitable extinguishing media	: carbon dioxide (CO <sub>2</sub> ), powder, alcohol-resistant foam, water spray.
Unsuitable extinguishing media	: Strong water jet.

### **5.2. Special hazards arising from the substance or mixture**

Specific hazards	: Not flammable. Heating will cause a rise in pressure with a risk of bursting.
Hazardous decomposition products in case of fire	: Carbon oxides (CO, CO <sub>2</sub> ). inorganic compounds. Organic compounds. Nitrogen oxides (NO <sub>x</sub> ).

### **5.3. Advice for firefighters**

Firefighting instructions	: Evacuate area. Use water spray or fog for cooling exposed containers. Contain the extinguishing fluids by bunding. Prevent fire fighting water from entering the environment.
Protection during firefighting	: Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus.
Other information	: Do not allow run-off from fire-fighting to enter drains or water courses. Dispose of waste in accordance with environmental legislation.

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## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

#### 6.1.1. For non-emergency personnel

For non-emergency personnel : Evacuate unnecessary personnel. Keep upwind. Provide adequate ventilation. Wear recommended personal protective equipment. Concerning personal protective equipment to use, see section 8. Do not breathe vapours. Avoid contact with skin, eyes and clothing.

#### 6.1.2. For emergency responders

For emergency responders : Ensure procedures and training for emergency decontamination and disposal are in place. Concerning personal protective equipment to use, see section 8.

### 6.2. Environmental precautions

Do not allow to enter into surface water or drains. Notify authorities if product enters sewers or public waters.

### 6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Stop leak if safe to do so. Dam up the liquid spill. Small quantities of liquid spill: take up in non-combustible absorbent material and shovel into container for disposal. Recover large spills by pumping (use an explosion proof or hand pump). Place in a suitable container for disposal in accordance with the waste regulations (see Section 13). This material and its container must be disposed of in a safe way, and as per local legislation.

### 6.4. Reference to other sections

Concerning personal protective equipment to use, see section 8. Concerning disposal elimination after cleaning, see section 13.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

Precautions for safe handling : Provide adequate ventilation. Use personal protective equipment as required. Concerning personal protective equipment to use, see section 8. Do not breathe vapours. Avoid contact with skin, eyes and clothing. Take any precaution to avoid mixing with Incompatible materials, Refer to Section 10 on Incompatible Materials. Ensure proper process control to avoid excess waste discharge (temperature, concentration, pH, time). Avoid release to the environment.

#### Hygiene measures

: Keep good industrial hygiene. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Do not eat, drink or smoke when using this product. Keep away from food, drink and animal feedingstuffs. Remove contaminated clothes. Separate working clothes from town clothes. Launder separately. Wash contaminated clothing before reuse.

### 7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store in a dry, cool and well-ventilated place. Keep away from heat. Do not store near or with any of the incompatible materials listed in section 10. Bund storage facilities to prevent soil and water pollution in the event of spillage.

#### Packaging materials

: Keep only in the original container.


### 7.3. Specific end use(s)

No data available.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

<b>Lubricating oils (petroleum), C60, hydrotreated neutral oil-based; Baseoil— unspecified (72623-87-1)</b>	
DNEL/DMEL (workers)	
Long-term - systemic effects, dermal	0,97 mg/kg bodyweight/day

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Lubricating oils (petroleum), C60, hydrotreated neutral oil-based; Baseoil— unspecified (72623-87-1)	
Long-term - systemic effects, inhalation	2,73 mg/m <sup>3</sup>
Long-term - local effects, inhalation	5,58 mg/m <sup>3</sup>
PNEC (water)	
PNEC aqua (freshwater)	study technically not feasible
PNEC aqua (marine water)	study technically not feasible
PNEC (sediment)	
PNEC sediment (freshwater)	study technically not feasible
PNEC sediment (marine water)	study technically not feasible
PNEC (soil)	
PNEC soil	study technically not feasible
PNEC (STP)	
PNEC sewage treatment plant	study technically not feasible

Additional information : Recommended monitoring procedures :. Personal air monitoring. Room air monitoring


## 8.2. Exposure controls

Engineering measure(s)	: Provide adequate ventilation. Organisational measures to prevent /limit releases, dispersion and exposure. See Section 7 for information on safe handling.
Personal protective equipment	: The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.
Hand protection	: Wear chemically resistant gloves (tested to EN374) . Suitable material: Nitrile rubber. Breakthrough time : 8h. Thickness : 0,7 mm. The quality of the protective gloves resistant to chemicals must be chosen as a function of the specific working place concentration and quantity of hazardous substances.
Eye protection	: Not required for normal conditions of use. If there is a risk of liquid being splashed : Safety glasses with side shields (EN166)
Body protection	: Wear suitable protective clothing. Wear suitable coveralls to prevent exposure to the skin
Respiratory protection	: In case of insufficient ventilation, wear suitable respiratory equipment. Half-face mask (DIN EN 140). full face mask (DIN EN 136). Filter type: A (EN141). The filter class must be suitable for the maximum contaminant concentration (gas/vapour/aerosol/particulates) that may arise when handling the product. If the concentration is exceeded, self-contained breathing apparatus must be used. (EN 137)
Thermal hazard protection	: Not required for normal conditions of use. Use dedicated equipment.
Environmental exposure controls	: Avoid release to the environment. Comply with applicable Community environmental protection legislation.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Appearance	: Liquid. clear.
Color	: Colorless.
Odor	: Oily.
Odor threshold	: No data available
pH	: No data available
Relative evaporation rate (butylacetate=1)	: No data available
Melting / freezing point	: -60 – 0 °C (EN ISO 3016)

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Freezing point	: No data available
Initial boiling point and boiling range	: 200 – 800 °C (EN 15199)
Flash point	: 235 °C (EN ISO 2719, D93)
Pour Point	: -15 °C
Sulfur	: < 3 mg/kg
Aromatic Content	: < 0.2 mass%
Saturates	: 99.8 mass%
Vapor pressure	: < 0,1 hPa (20°C)
Evaporation Loss Noack Method	: 6.8 %M/M
Apparent Viscosity by CSS	: 3700 mPas
Density	: 0.844 g/ml (15°C)
Solubility	: Water: UVCB: Not applicable
Partition coefficient n-octanol/water	: No data available
Kinematic viscosity	: 34 mm <sup>2</sup> /s (40 °C)
Kinematic viscosity	: 6.18 mm <sup>2</sup> /s (100 °C)
Dynamic viscosity	: No data available
Viscosity Index	: 137
Explosive properties	: Not applicable. The study does not need to be conducted because there are no chemical groups associated with explosive properties present in the molecule.
Oxidising properties	: Not applicable. The classification procedure needs not to be applied because there are no chemical groups present in the molecule which are associated with oxidising properties.
Explosive limits	: No data available
Particle size	: Not applicable
Particle size distribution	: Not applicable
Particle shape	: Not applicable
Particle aspect ratio	: Not applicable
Particle aggregation state	: Not applicable
Particle agglomeration state	: Not applicable
Particle specific surface area	: Not applicable
Particle dustiness	: Not applicable

## **9.2. Other information**

### **9.2.1. Information with regard to physical hazard classes**

No additional information available

### **9.2.2. Other safety characteristics**

No additional information available

## **SECTION 10: Stability and reactivity**

### **10.1. Reactivity**


None under normal conditions. Reference to other sections: 10.4 & 10.5.

### **10.2. Chemical stability**

Stable under normal conditions.

### **10.3. Possibility of hazardous reactions**

No dangerous reactions known under normal conditions of use.

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#### 10.4. Conditions to avoid

Keep away from heat. See Section 7 for information on safe handling.

#### 10.5. Incompatible materials

Strong acids. Strong oxidizing agents. See Section 7 for information on safe handling.

#### 10.6. Hazardous decomposition products

Reference to other sections 5.2.

### SECTION 11: Toxicological information

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

Acute toxicity : Not classified (Based on available data, the classification criteria are not met)

<b>Lubricating oils (petroleum), C60, hydrotreated neutral oil-based; Baseoil— unspecified (72623-87-1)</b>	
LD50/oral/rat	> 5000 mg/kg (OECD 401)
LD50/dermal/rabbit	> 2000 mg/kg (OECD 402)
LC50/inhalation/4h/rat	> 5000 mg/m <sup>3</sup> (OECD 403)
LC50 Inhalation - Rat (Dust/Mist)	2,18 mg/l/4h

Skin corrosion/irritation : Not classified (Based on available data, the classification criteria are not met)  
pH: No data available

Serious eye damage/irritation : Not classified (Based on available data, the classification criteria are not met)  
pH: No data available

Respiratory or skin sensitisation : Not classified (Based on available data, the classification criteria are not met)

Germ cell mutagenicity : Not classified (Based on available data, the classification criteria are not met)

Carcinogenicity : Not classified (Based on available data, the classification criteria are not met)

Reproductive toxicity : Not classified (Based on available data, the classification criteria are not met)

STOT-single exposure : Not classified (Based on available data, the classification criteria are not met)

STOT-repeated exposure : Not classified (Based on available data, the classification criteria are not met)

<b>Lubricating oils (petroleum), C60, hydrotreated neutral oil-based; Baseoil— unspecified (72623-87-1)</b>	
LOAEL (oral, rat, 90 days)	125 mg/kg bodyweight/day

Aspiration hazard : May be fatal if swallowed and enters airways.

<b>Lubricating oils (petroleum), C60, hydrotreated neutral oil-based; Baseoil— unspecified (72623-87-1)</b>	
Kinematic viscosity	< 20,5 mm <sup>2</sup> /s (40 °C)

Other information : Symptoms related to the physical, chemical and toxicological characteristics. For further information see section 4.

#### 11.2. Information on other hazards


##### 11.2.1. Endocrine disrupting properties

Adverse health effects caused by endocrine disrupting properties : Not applicable

##### 11.2.2 Other information

Other information : Symptoms related to the physical, chemical and toxicological characteristics, For further information see section 4

### SECTION 12: Ecological information

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### 12.1. Toxicity

Environmental properties : According to the criteria of the European classification and labelling system, the substance/the product has not to be labelled as "dangerous for the environment".

Hazardous to the aquatic environment, short-term (acute) : Not classified

Hazardous to the aquatic environment, long-term (chronic) : Not classified

Lubricating oils (petroleum), C60, hydrotreated neutral oil-based; Baseoil— unspecified (72623-87-1)	
LC50 - Fish [1]	> 5000 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss)
EC50 - Crustacea [1]	> 1000 mg/l (Exposure time: 48 h - Species: Daphnia magna)

### 12.2. Persistence and degradability

Lubricating oils (petroleum), C60, hydrotreated neutral oil-based; Baseoil— unspecified (72623-87-1)	
Persistence and degradability	Not readily biodegradable (OECD 301B).
Biodegradation	31 % (28 days)

### 12.3. Bioaccumulative potential

Lubricating oils (petroleum), C60, hydrotreated neutral oil-based; Baseoil— unspecified (72623-87-1)	
Partition coefficient n-octanol/water	UVCB: Not applicable
Bioaccumulative potential	Low potential.

### 12.4. Mobility in soil

Lubricating oils (petroleum), C60, hydrotreated neutral oil-based; Baseoil— unspecified (72623-87-1)	
Mobility in soil	No data available

### 12.5. Results of PBT and vPvB assessment

Component	
Lubricating oils (petroleum), C60, hydrotreated neutral oil-based; Baseoil— unspecified (72623-87-1)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII


### 12.6. Endocrine disrupting properties

Adverse effects on the environment caused by endocrine disrupting properties : Not applicable

### 12.7. Other adverse effects

Other adverse effects : No data available



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### SECTION 13: Disposal considerations

#### 13.1. Waste treatment methods

Product/Packaging disposal recommendations

: Avoid release to the environment. Dispose of empty containers and wastes safely. See Section 7 for information on safe handling. Refer to manufacturer/supplier for information on recovery/recycling. Recycling is preferred to disposal or incineration. If recycling is not possible, eliminate in accordance with local valid waste disposal regulations. Handle contaminated packages in the same way as the substance itself. Dispose of contaminated materials in accordance with current regulations.

European waste catalogue (2001/573/EC, 75/442/EEC, 91/689/EEC)

: This material and its container must be disposed of as hazardous waste. Waste codes should be assigned by the user, preferably in discussion with the waste disposal authorities. The following Waste Codes are only suggestions: :  
160113 - brake fluids  
150110 - packaging containing residues of or contaminated by dangerous substances

### SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

ADR	IMDG	IATA	ADN	RID
<b>14.1. UN number</b>				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
<b>14.2. UN proper shipping name</b>				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
<b>14.3. Transport hazard class(es)</b>				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
<b>14.4. Packing group</b>				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
<b>14.5. Environmental hazards</b>				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
No supplementary information available				

#### 14.6. Special precautions for user

Special precautions for user : No data available

##### - Overland transport

Not applicable

##### - Transport by sea

Not applicable

##### - Air transport


Not applicable

##### - Inland waterway transport

Not applicable

##### - Rail transport

Not applicable

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**14.7. Maritime transport in bulk according to IMO instruments**

Code: IBC : No data available.

**SECTION 15: Regulatory information**

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

**15.1.1. EU-Regulations**

No REACH Annex XVII restrictions

Lubricating oils (petroleum), C60, hydrotreated neutral oil-based; Baseoil— unspecified is not on the REACH Candidate List

Lubricating oils (petroleum), C60, hydrotreated neutral oil-based; Baseoil— unspecified is not on the REACH Annex XIV List

**15.1.2. National regulations**

**France**

No ICPE	Installations classées Désignation de la rubrique	Code Régime	Rayon
na	Not Applicable	na	na

**Germany**

Regulatory reference : WGK 1, Slightly hazardous to water

German storage class (LGK) : LGK 12 - Non-combustible liquids

Employment restrictions : No employment prohibitions or restrictions according to MuSchG based on substance classification.

Hazardous Incident Ordinance (12. BImSchV) : Is not subject of the 12. BImSchV (Hazardous Incident Ordinance)

**Netherlands**

Waterbezwaarlijkheid : B (4) - Weinig schadelijk voor in het water levende organismen

SZW-lijst van kankerverwekkende stoffen : The substance is not listed

SZW-lijst van mutagene stoffen : The substance is not listed

SZW-lijst van reprotoxische stoffen – Borstvoeding : The substance is not listed

SZW-lijst van reprotoxische stoffen – Vruchtbaarheid : The substance is not listed

SZW-lijst van reprotoxische stoffen – Ontwikkeling : The substance is not listed


**Denmark**

Classification remarks : NA

**15.2. Chemical safety assessment**

**SECTION 16: Other information**

Indication of changes:

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1.2	Exposure scenarios	Added	
2.3	ED text	Added	
9.1	Kinematic viscosity	Modified	
11	Adverse health effects caused by endocrine disrupting properties	Modified	
11.1	Information on toxicological effects	Modified	
12.6	Adverse effects on the environment caused by endocrine disrupting properties	Modified	
16	Other information	Modified	

Abbreviations and acronyms:


	ABM = Algemene beoordelingsmethodiek
	ADN = Accord Européen relatif au Transport International des Marchandises Dangereuses par voie de Navigation du Rhin ADR = Accord européen relatif au transport international des marchandises Dangereuses par Route CLP = Classification, Labelling and Packaging Regulation according to 1272/2008/EC IATA = International Air Transport Association IMDG = International Maritime Dangerous Goods Code LEL = Lower Explosive Limit/Lower Explosion Limit UEL = Upper Explosion Limit/Upper Explosive Limit REACH = Registration, Evaluation, Authorisation and Restriction of Chemicals
	BTT = Breakthrough time (maximum wearing time)
	DMEL = Derived Minimal Effect level
	DNEL = Derived No Effect Level
	EC50 = Median Effective Concentration
	EL50 = Median effective level
	ErC50 = EC50 in terms of reduction of growth rate
	ErL50 = EL50 in terms of reduction of growth rate
	EWC = European waste catalogue
	LC50 = Median lethal concentration
	LD50 = Median lethal dose
	LL50 = Median lethal level
	NA = Not applicable
	NOEC = No observed effect concentration
	NOEL: no-observed-effect level
	NOELR = No observed effect loading rate
	NOAEC = No observed adverse effect concentration
	NOAEL = No observed adverse effect level
	N.O.S. = Not Otherwise Specified
	OEL = Occupational Exposure Limits - Short Term Exposure Limits (STELs)
	PNEC = Predicted No Effect Concentration
	Quantitative structure-activity relationship (QSAR)
	STOT = Specific Target Organ Toxicity
	TWA = time weighted average
	VOC = Volatile organic compounds
	WGK = Wassergefährdungsklasse (Water Hazard Class under German Federal Water Management Act)

Sources of key data used to compile the datasheet : CSR = Chemical Safety Report, Loli, information supplier.

Training advice : Training staff on good practice.


Full text of H- and EUH-statements:

Asp. Tox. 1	Aspiration hazard, Category 1
H304	May be fatal if swallowed and enters airways.

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according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2020/878  
 Classification according to Regulation (EC) No. 1272/2008 [CLP]  
 Labelling according to Regulation (EC) No. 1272/2008 [CLP]

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## Annex to the safety data sheet

Annex : Identified uses						
Title	Sector of use	Product category	Process category	Article category	Environmental release	SPERC
Manufacture of substance	SU3, SU22		PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15, PROC28		ERC1	ESVOC SPERC 1.1.v1
Formulation & (re)packing of substances and mixtures	SU3, SU22		PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC8b, PROC9, PROC14, PROC15, PROC28		ERC2	ESVOC SPERC 2.2.v1

### 1. Exposure scenario 01 - Manufacture of substance (classified; H304 only; IP 346 < 3%; ≤ 20.5 cSt @ 40 °C)

#### Manufacture of substance

ES Ref.: 01 - Manufacture of substance (classified; H304 only; IP 346 < 3%; ≤ 20.5 cSt @ 40 °C)  
ES Type: Worker


Association ref code: 1

Use descriptors	PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15, PROC28 SU3, SU22 ERC1 ESVOC SPERC 1.1.v1
Processes, tasks activities covered	Manufacture of substance or use as process chemical or extracting agent. Includes recycling/recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities.
Assessment method	see section 3 of this exposure scenario.

### 2. Operational conditions and risk management measures

#### 2.1 Contributing scenario controlling worker exposure (PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15, PROC28)

PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure

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	or processes with equivalent containment condition
PROC4	Chemical production where opportunity for exposure arises
PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC15	Use as laboratory reagent
PROC28	Manual maintenance (cleaning and repair) of machinery

#### Product characteristics

Physical form	clear, Colourless liquid
Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently)
Vapour pressure	Liquid, vapour pressure < 0,5 kPa at STP

#### Operational conditions

Frequency and duration of use		Covers daily exposures up to 8 hours (unless stated differently).
Other given operational conditions affecting workers exposure	Covers use at ambient temperatures, Assumes a good basic standard of occupational hygiene is implemented.	

#### Risk management measures

##### Other risk management measures:


General measures (aspiration hazard)	Do not ingest.	
General exposures (closed systems) (PROC_1)	Handle substance within a closed system, Sample via a closed loop or other system to avoid exposure, Assumes process temperature up to 800.0 °C	
General exposures (closed systems) (PROC_3, PROC_2)	Provide extract ventilation to points where emissions occur, Handle substance within a closed system, Sample via a closed loop or other system to avoid exposure, Ensure operation is undertaken outdoors, Assumes process temperature up to 800.0 °C	
General exposures (open systems) ((PROC_4)	No other specific measures identified.	
Process sampling (PROC_9)	No other specific measures identified.	
Laboratory activities (PROC_15)	No other specific measures identified, Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply, Put lids on containers immediately after use.	
Closed systems, Bulk transfers (PROC_8b)	Handle substance within a closed system	
Bulk transfers, Open systems (PROC_8b)	No other specific measures identified, Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply, Ensure no splashing occurs during transfer.	
Equipment cleaning and maintenance (PROC_8a, PROC_28)	Drain down and flush system prior to equipment break-in or maintenance, Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply, Wear suitable coveralls to prevent exposure to the skin, Clear spills immediately	
Storage (PROC_1, PROC_2)	Store substance within a closed system.	

#### 2.2 Contributing scenario controlling environmental exposure (ERC1, ESVO SPERC 1.1.v1)

ERC1	Manufacture of the substance
ESVO SPERC 1.1.v1	Manufacture of substance: Industrial (SU3)

#### Product characteristics

Physical form	clear, Colourless liquid
Vapour pressure	Liquid, vapour pressure < 0,5 kPa at STP

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#### Operational conditions

Amount used	Regional use tonnage (tons/year):	36000
	Fraction of regional tonnage used locally:	1
	Annual site tonnage (tons/year):	36000
	Maximum daily site tonnage (kg/day)	120000
	Fraction of EU tonnage used in region:	1
Frequency and duration of use	Continuous use/release.	
	Emission days (days/year):	300
Environmental factors not influenced by risk management	Local freshwater dilution factor:	10
	Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	Release fraction to air from process (initial release prior to RMM):	0,0001
	Release fraction to wastewater from process (initial release prior to RMM):	0,00001
	Release fraction to soil from process (initial release prior to RMM):	0,0001

#### Risk management measures

Technical conditions and measures at process level to prevent release	Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Risk from environmental exposure is driven by freshwater sediment.	
	Prevent discharge of undissolved substance to or recover from onsite wastewater.	
	If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.	
	Treat air emission to provide a typical removal efficiency of (%):	90
	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of $\geq$ (%):	$\geq 93,5$
	If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	$\geq 0$
Conditions and measures related to sewage treatment plant	Not applicable as there is no release to wastewater	
	Estimated substance removal from wastewater via domestic sewage treatment (%):	95
	Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	95
	Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):	150000 kg/day
	Assumed on-site sewage treatment plant flow (m <sup>3</sup> /d):	10000
Conditions and measures related to external treatment of waste for disposal	During manufacturing no waste of the substance is generated.	
Conditions and measures related to external recovery of waste	During manufacturing no waste of the substance is generated.	


### 3. Exposure estimation and reference to its source

#### 3.1. Health

Information for contributing exposure scenario	
2.1	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

#### 3.2. Environment

Information for contributing exposure scenario	
2.2	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

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#### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES


##### 4.1. Health

Guidance - Health	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented, Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels, Available hazard data do not enable the derivation of a DNEL for aspiration effects, Risk Management Measures are based on qualitative risk characterisation.
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##### 4.2. Environment

Guidance - Environment	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures, Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination, Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination, Further details on scaling and control technologies are provided in SpERC factsheet ( <a href="http://cefic.org/en/reach-for-industries-libraries.html">http://cefic.org/en/reach-for-industries-libraries.html</a> ), Maximum Risk Characterization Ratios for air emissions 0,0011, Maximum Risk Characterization Ratios for wastewater emissions 0,77
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**1. Exposure scenario 02 - Formulation & (re)packing of substances and mixtures (classified; H304 only; IP 346 < 3%; ≤ 20.5 cSt @ 40 °C)**

**Formulation & (re)packing of substances and mixtures**

ES Ref.: 02 - Formulation & (re)packing of substances and mixtures (classified; H304 only; IP 346 < 3%; ≤ 20.5 cSt @ 40 °C) ES Type: Worker	Association ref code: 2
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Use descriptors	PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC8b, PROC9, PROC14, PROC15, PROC28 SU3, SU22 ERC2 ESVOC SPERC 2.2.v1
Processes, tasks activities covered	Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, large and small scale packing, maintenance and associated laboratory activities

**2. Operational conditions and risk management measures**

**2.1 Contributing scenario controlling worker exposure (PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC8b, PROC9, PROC14, PROC15, PROC28)**

PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4	Chemical production where opportunity for exposure arises
PROC5	Mixing or blending in batch processes
PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC8b	Cleaning and maintenance
PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC14	Tableting, compression, extrusion, pelettisation, granulation
PROC15	Use as laboratory reagent
PROC28	Manual maintenance (cleaning and repair) of machinery

**Product characteristics**

Physical form	clear, Colourless liquid
Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently)
Vapour pressure	Liquid, vapour pressure < 0,5 kPa at STP


**Operational conditions**

Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).
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**Risk management measures**

Other risk management measures:

General measures (aspiration hazard)	Do not ingest.
General exposures (closed systems) (PROC_1, PROC_2, PROC_3)	Handle substance within a closed system, Sample via a closed loop or other system to avoid exposure.
General exposures (open systems) ((PROC_4)	No other specific measures identified.
Batch process, Elevated temperature, Use in contained systems (PROC_3)	Handle substance within a closed system, Assumes process temperature up to 60.0 °C

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Process sampling (PROC_9)	No other specific measures identified.	
Laboratory activities (PROC_15)	No other specific measures identified, Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply, Put lids on containers immediately after use.	
Dedicated facility, Bulk transfers (PROC_8b)	Handle substance within a closed system, Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply, Ensure no splashing occurs during transfer.	
Mixing operations, Open systems (PROC_5)	No other specific measures identified.	
Manual, Transfer from/pouring from containers, Non-dedicated facility (PROC_8a)	Use drum pumps, Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply, Ensure no splashing occurs during transfer.	
Dedicated facility, Drum/batch transfers (PROC_8b)	No other specific measures identified, Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply, Ensure no splashing occurs during transfer.	
tableting, compression, extrusion or pelletisation (PROC_14)	No other specific measures identified.	
Drum and small package filling	No other specific measures identified.	
Equipment cleaning and maintenance (PROC_8a, PROC_28)	Drain down and flush system prior to equipment break-in or maintenance, Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply, Wear suitable coveralls to prevent exposure to the skin, Clear spills immediately	
Storage (PROC_1, PROC_2)	Store substance within a closed system.	

## 2.2 Contributing scenario controlling environmental exposure (ERC2, ESVOC SPERC 2.2.v1)

ERC2	Formulation into mixture
ESVOC SPERC 2.2.v1	Formulation & packing of preparations and mixtures: Industrial (SU10)

### Product characteristics


Physical form	clear, Colourless liquid
Vapour pressure	Liquid, vapour pressure < 0,5 kPa at STP

### Operational conditions

Amount used	Fraction of EU tonnage used in region:	0,1
	Regional use tonnage (tons/year):	3900
	Fraction of regional tonnage used locally:	1
	Annual site tonnage (tons/year):	3900
Frequency and duration of use	Maximum daily site tonnage (kg/day)	13000
	Continuous use/release.	
	Emission days (days/year):	300
Environmental factors not influenced by risk management	Local freshwater dilution factor:	10
	Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	Release fraction to air from process (initial release prior to RMM):	0,0025
	Release fraction to wastewater from process (initial release prior to RMM):	0,00005
	Release fraction to soil from process (initial release prior to RMM):	0,0001

### Risk management measures

Technical conditions and measures at process level to prevent release	Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Risk from environmental exposure is driven by freshwater sediment.	
	Prevent discharge of undissolved substance to or recover from onsite wastewater.	

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	If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.	
	Treat air emission to provide a typical removal efficiency of (%):	0
	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of $\geq$ (%):	$\geq 76,2$
	If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	$\geq 0$
Organizational measures to prevent/limit release from the site	Do not apply industrial sludge to natural soils, Sludge should be incinerated, contained or reclaimed.	
Conditions and measures related to sewage treatment plant	Not applicable as there is no release to wastewater	
	Estimated substance removal from wastewater via domestic sewage treatment (%):	95
	Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	95
	Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):	62000 kg/day
	Assumed on-site sewage treatment plant flow (m <sup>3</sup> /d):	2000
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations.	
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations.	

### 3. Exposure estimation and reference to its source

#### 3.1. Health

#### 3.2. Environment

Information for contributing exposure scenario	
2.2	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

#### 4.1. Health

Guidance - Health	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented, Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels, Available hazard data do not enable the derivation of a DNEL for aspiration effects, Risk Management Measures are based on qualitative risk characterisation.
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#### 4.2. Environment

Guidance - Environment	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures, Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination, Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination, Further details on scaling and control technologies are provided in SpERC factsheet ( <a href="http://cefic.org/en/reach-for-industries-libraries.html">http://cefic.org/en/reach-for-industries-libraries.html</a> ), Maximum Risk Characterization Ratios for air emissions 0,007, Maximum Risk Characterization Ratios for wastewater emissions 0,2
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