Safety Data Sheet
DIESEL ANTI-FREEZE

Safety Data Sheet dated 2/3/2022, version 14

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

1.1. Product identifier

Mixture identification:

Trade name: DIESEL ANTI-FREEZE

Trade code: 31037

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

Recommended use:

Fuel additive

1.3. Details of the supplier of the safety data sheet

Supplier:

Arexons S.p.A.

via Antica di Cassano, 23, 20063

Cernusco sul Naviglio (MI), Italy

Arexons S.p.A.

Tel. +39 (0)2/924361 - Fax +39 (0)2/92436306

Competent person responsible for the safety data sheet:

arexons@arexons.it

1.4. Emergency telephone number

Arexons S.p.A.

Tel. +39 (0)2/924361 - Fax +39 (0)2/92436306

In England and Wales: NHS 111 - dial 111

In Scotland: NHS 24 - dial 111

In Ireland: Beaumont Hospital - National Poisons Information Centre 01 809 2166 (7days, 8:00 - 22:00)

In South Africa: Poison Information Helpline 0861 555 777

In Malta: emergency number 112

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

EC regulation criteria 1272/2008 (CLP):

Warning, STOT SE 3, May cause drowsiness or dizziness.

Danger, Asp. Tox. 1, May be fatal if swallowed and enters airways.

Aquatic Chronic 2, Toxic to aquatic life with long lasting effects.

EUH066 Repeated exposure may cause skin dryness or cracking.

Adverse physicochemical, human health and environmental effects:

No other hazards

2.2. Label elements

Hazard pictograms:

Danger

Hazard statements:

H336 May cause drowsiness or dizziness.

H304 May be fatal if swallowed and enters airways.

H411 Toxic to aquatic life with long lasting effects.

Precautionary statements:

P101 If medical advice is needed, have product container or label at hand.

P102 Keep out of reach of children.

P103 Read carefully and follow all instructions.
P271 Use only outdoors or in a well-ventilated area.
P273 Avoid release to the environment.
P301+P310 IF SWALLOWED: Immediately call a POISON CENTER.
P331 Do NOT induce vomiting.
P391 Collect spillage.
P405 Store locked up.
P501 Dispose of contents/container in accordance with applicable regulations.

Special Provisions:

EUH066 Repeated exposure may cause skin dryness or cracking.
PACK1 The packing must be featured by a safety lock for children.
PACK2 The packing must have tactive indications of danger for blind people.

Contains

Distillates (petroleum), hydrotreated light
Solvent naphtha (petroleum), heavy arom.; Kerosine - unspecified; [A complex combination of hydrocarbons obtained from distillation of aromatic streams. It consists predominantly of aromatic hydrocarbons having carbon numbers predominantly in the range of C9 through C16 and boiling in the range of approximately 165 oC to 290 oC (330 oF to 554 oF).]

Special provisions according to Annex XVII of REACH and subsequent amendments:

None

2.3. Other hazards

No PBT, vPvB or endocrine disruptor substances present in concentration >= 0.1%

Other Hazards:

No other hazards

SECTION 3: Composition/information on ingredients

3.1. Substances

N.A.

3.2. Mixtures

Hazardous components within the meaning of the CLP regulation and related classification:

>= 50% - < 60% Distillates (petroleum), hydrotreated light

REACH No.: 01-2119456620-43, EC: 926-141-6
3.10/1 Asp. Tox. 1 H304
EUH066

>= 30% - < 35% Solvent naphtha (petroleum), heavy arom.; Kerosine - unspecified; [A complex combination of hydrocarbons obtained from distillation of aromatic streams. It consists predominantly of aromatic hydrocarbons having carbon numbers predominantly in the range of C9 through C16 and boiling in the range of approximately 165 oC to 290 oC (330 oF to 554 oF).]

REACH No.: 01-2119463583-34, Index number: 649-424-00-3, CAS: 64742-94-5, EC: 265-198-5
3.10/1 Asp. Tox. 1 H304
3.8/3 STOT SE 3 H336
4.1/C2 Aquatic Chronic 2 H411
EUH066

>= 1% - < 2% 1,2,4-trimethylbenzene

Index number: 601-043-00-3, CAS: 95-63-6, EC: 202-436-9
2.6/3 Flam. Liq. 3 H226
3.1/4/Inhal Acute Tox. 4 H332
3.2/2 Skin Irrit. 2 H315
3.3/2 Eye Irrit. 2 H319
3.8/3 STOT SE 3 H335
4.1/C2 Aquatic Chronic 2 H411

>= 0.1% - < 0.25% naphthalene
Index number: 601-052-00-2, CAS: 91-20-3, EC: 202-049-5
3.1/4/Oral Acute Tox. 4 H302
3.6/2 Carc. 2 H351
4.1/A1 Aquatic Acute 1 H400 M=1.
4.1/C1 Aquatic Chronic 1 H410 M=1.

>= 0.1% - < 0.25% 2-ethylhexanoic acid
REACH No.: 01-2119488942-23, Index number: 607-230-00-6, CAS: 149-57-5, EC: 205-743-6
3.7/2 Repr. 2 H361d

SECTION 4: First aid measures

4.1. Description of first aid measures
In case of skin contact:
Immediately take off all contaminated clothing.
Areas of the body that have - or are only even suspected of having - come into contact with the product must be rinsed immediately with plenty of running water and possibly with soap.
Wash thoroughly the body (shower or bath).
Remove contaminated clothing immediately and dispose off safely.
In case of eyes contact:
In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
In case of Ingestion:
Do NOT induce vomiting.
In case of Inhalation:
Remove casualty to fresh air and keep warm and at rest.
4.2. Most important symptoms and effects, both acute and delayed
None
4.3. Indication of any immediate medical attention and special treatment needed
In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).
Treatment:
None

SECTION 5: Firefighting measures

5.1. Extinguishing media
Appropriate Extinguishing Media:
To carbon dioxide.
To dust.
Foam
Water spray.
Not Recommended Extinguishing Media:
Do not use direct water jets.
5.2. Special hazards arising from the substance or mixture
Do not inhale explosion and combustion gases.
Burning produces heavy smoke.
5.3. Advice for firefighters
Use suitable breathing apparatus .
Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Move undamaged containers from immediate hazard area if it can be done safely.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Wear personal protection equipment.
Remove persons to safety.
See protective measures under point 7 and 8.
6.2. Environmental precautions
Do not allow to enter into soil/subsoil. Do not allow to enter into surface water or drains.
Retain contaminated washing water and dispose it.
In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.
Suitable material for taking up: absorbing material, organic, sand
6.3. Methods and material for containment and cleaning up
Wash with plenty of water.
6.4. Reference to other sections
See also section 8 and 13

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Avoid contact with skin and eyes, inhalation of vapours and mists.
Don't use empty container before they have been cleaned.
Before making transfer operations, assure that there aren't any incompatible material residuals in the containers.
See also section 8 for recommended protective equipment.
Advice on general occupational hygiene:
Contamined clothing should be changed before entering eating areas.
Do not eat or drink while working.
7.2. Conditions for safe storage, including any incompatibilities
Keep away from food, drink and feed.
None in particular.
Instructions as regards storage premises:
Adequately ventilated premises.
7.3. Specific end use(s)
None in particular

SECTION 8: Exposure controls/personal protection

8.1. Control parameters
Distillates (petroleum), hydrotreated light
20101.12 - TWA: 1200 mg/m3, 165 ppm
1,2,4-trimethylbenzene - CAS: 95-63-6
EU - TWA(8h): 100 mg/m3, 20 ppm
naphthalene - CAS: 91-20-3
EU - TWA(8h): 50 mg/m3, 10 ppm
ACGIH - TWA(8h): 10 ppm - Notes: Skin, A3 - URT irr, cataracts, hemolytic anemia
2-ethylhexanoic acid - CAS: 149-57-5
ACGIH - TWA(8h): 5 mg/m3 - Notes: (IFV) - Teratogenic eff
DNEL Exposure Limit Values
2-ethylhexanoic acid - CAS: 149-57-5
Worker Professional: 2 mg/kg - Consumer: 1 mg/kg - Exposure: Human Dermal - Frequency: Long Term, systemic effects
Worker Professional: 14 mg/m3 - Consumer: 3.5 mg/m3 - Exposure: Human Inhalation - Frequency: Long Term, systemic effects
Consumer: 1 mg/kg - Exposure: Human Oral - Frequency: Long Term, systemic effects
PNEC Exposure Limit Values
2-ethylhexanoic acid - CAS: 149-57-5
Target: Fresh Water - Value: 0.36 mg/l
Target: Marine water - Value: 0.03 mg/l

Target: Freshwater sediments - Value: 6.37 mg/kg
Target: Marine water sediments - Value: 0.63 mg/kg
Target: 09 - Value: 71.7 mg/l

8.2. Exposure controls

Eye protection:
Eye glasses with side protection.
Compliant with EN 166

Protection for skin:
protective clothing

Protection for hands:
Nitrile or Viton gloves.
Compliant with EN 374.

Respiratory protection:
Use adequate protective respiratory equipment.

Thermal Hazards:
None

Environmental exposure controls:
None

Appropriate engineering controls:
None

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Properties	Value	Method:	Notes:
Physical state:	Liquid	--	--
Colour:	N.A.	--	--
Odour:	Characteristic	--	--
Melting point/freezing point:	N.A.	--	--
Boiling point or initial boiling point and boiling range:	N.A.	--	--
Flammability:	N.A.	--	--
Lower and upper explosion limit:	N.A.	--	--
Flash point:	>61°C	IP 170	--
Auto-ignition temperature:	>200°C	--	--
Decomposition temperature:	N.A.	--	--
pH:	N.A.	--	--
Kinematic viscosity:	<= 14 mm2/ sec (40 °C)	--	--
Solubility in water:	N.A.	--	--
Solubility in oil:	N.A.	--	--

Partition coefficient n-octanol/water (log value):	N.A.	--	--
Vapour pressure:	N.A.	--	--
Density and/or relative density:	0.840 g/l (15°C)	07	--
Relative vapour density:	N.A.	--	--
Particle characteristics:			
Particle size:	N.A.	--	--
9.2. Other information No other relevant information Viscosity:	 3 mm2/s	 07	 --

SECTION 10: Stability and reactivity

10.1. Reactivity
Stable under normal conditions
10.2. Chemical stability
Stable under normal conditions
10.3. Possibility of hazardous reactions
10.4. Conditions to avoid
Stable under normal conditions.
10.5. Incompatible materials
None in particular.
10.6. Hazardous decomposition products
None.

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008
Toxicological information of the product:
DIESEL ANTI-FREEZE
a) acute toxicity
Not classified
Based on available data, the classification criteria are not met
b) skin corrosion/irritation
Not classified
Based on available data, the classification criteria are not met
c) serious eye damage/irritation
Not classified
Based on available data, the classification criteria are not met
d) respiratory or skin sensitisation
Not classified
Based on available data, the classification criteria are not met
e) germ cell mutagenicity
Not classified
Based on available data, the classification criteria are not met
f) carcinogenicity
Not classified
Based on available data, the classification criteria are not met

g) reproductive toxicity
Not classified
Based on available data, the classification criteria are not met
h) STOT-single exposure
The product is classified: STOT SE 3 H336
i) STOT-repeated exposure
Not classified
Based on available data, the classification criteria are not met
j) aspiration hazard
The product is classified: Asp. Tox. 1 H304

Toxicological information of the main substances found in the product:

Distillates (petroleum), hydrotreated light
a) acute toxicity:
Test: LC50 - Route: Inhalation - Species: Rat > 5000 mg/m3 - Duration: 8h
Test: LD50 - Route: Oral - Species: Rat > 5000 mg/kg
Test: LD50 - Route: Skin - Species: Rabbit > 5000 mg/kg
b) skin corrosion/irritation:
Test: OECD TG 404 - Route: Skin Negative
c) serious eye damage/irritation:
Test: OECD TG 405 - Route: EYE Negative
d) respiratory or skin sensitisation:
Test: Inhalation Sesitization 3
Test: Skin Sensitization 3
j) aspiration hazard:
Test: May be fatal if swallowed and enters airways (physical-chemical properties) - Route: Oral Positive

Solvent naphtha (petroleum), heavy arom.; Kerosine - unspecified; [A complex combination of hydrocarbons obtained from distillation of aromatic streams. It consists predominantly of aromatic hydrocarbons having carbon numbers predominantly in the range of C9 through C16 and boiling in the range of approximately 165 oC to 290 oC (330 oF to 554 oF).] - CAS: 64742-94-5
a) acute toxicity:
Test: LD50 - Route: Oral - Species: Rat > 2500 mg/kg
Test: LD50 - Route: Skin - Species: Rabbit > 2000 mg/kg

1,2,4-trimethylbenzene - CAS: 95-63-6
a) acute toxicity:
Test: LD50 - Route: Oral - Species: Rat 5000 mg/kg
Test: LD50 - Route: Skin - Species: Rabbit 3160 mg/kg
Test: LC50 - Route: Inhalation - Species: Rat 18000 mg/l - Duration: 4h

naphthalene - CAS: 91-20-3
a) acute toxicity:
Test: LD50 - Route: Oral - Species: Rat > 500 mg/kg
Test: LD50 - Route: Skin - Species: Rabbit > 2500 mg/kg

2-ethylhexanoic acid - CAS: 149-57-5
a) acute toxicity:
Test: LD50 - Route: Oral - Species: Rat = 2043 mg/kg
Test: LD50 - Route: Skin - Species: Rat > 2000 mg/kg
Test: LC0 - Route: Inhalation - Species: Rat = 0.11 mg/l - Duration: 8h

11.2. Information on other hazards
Endocrine disrupting properties:
No endocrine disruptor substances present in concentration >= 0.1%

SECTION 12: Ecological information

12.1. Toxicity
Adopt good working practices, so that the product is not released into the environment.
Distillates (petroleum), hydrotreated light

a) Aquatic acute toxicity:
Endpoint: EL0 - Species: Daphnia 1000 mg/l - Duration h: 48
Endpoint: EL0 - Species: Algae 1000 mg/l - Duration h: 72
Endpoint: CE7 - Species: Fish 1000 mg/l - Duration h: 96
Solvent naphtha (petroleum), heavy arom.; Kerosine - unspecified; [A complex combination of hydrocarbons obtained from distillation of aromatic streams. It consists predominantly of aromatic hydrocarbons having carbon numbers predominantly in the range of C9 through C16 and boiling in the range of approximately 165 oC to 290 oC (330 oF to 554 oF).] - CAS: 64742-94-5
b) Aquatic chronic toxicity:
Endpoint: LC50 - Species: Fish 9.9 mg/l - Duration h: 96
Endpoint: EC50 - Species: Daphnia 9.9 mg/l - Duration h: 48
Endpoint: EC50 - Species: Algae 9.9 mg/l - Duration h: 72
1,2,4-trimethylbenzene - CAS: 95-63-6
b) Aquatic chronic toxicity:
Endpoint: LC50 - Species: Daphnia 6.14 mg/l - Duration h: 48
naphthalene - CAS: 91-20-3
b) Aquatic chronic toxicity:
Endpoint: LC50 - Species: Fish 0.51 mg/l - Duration h: 96
Endpoint: EC50 - Species: Daphnia 3.4 mg/l - Duration h: 48
2-ethylhexanoic acid - CAS: 149-57-5
a) Aquatic acute toxicity:
Endpoint: LC50 - Species: Fish > 302 mg/l - Duration h: 48
Endpoint: EC50 - Species: Daphnia = 85.4 mg/l - Duration h: 48
Endpoint: EC50 - Species: Algae = 49.3 mg/l - Duration h: 72

12.2. Persistence and degradability
None
Distillates (petroleum), hydrotreated light
Biodegradability: Readily biodegradable - Duration: 28gg - %: 69
2-ethylhexanoic acid - CAS: 149-57-5
Test: OECD 302B - Duration: 6 days - %: 85-95

12.3. Bioaccumulative potential
N.A.

12.4. Mobility in soil
N.A.

12.5. Results of PBT and vPvB assessment
vPvB Substances: None - PBT Substances: None

12.6. Endocrine disrupting properties
No endocrine disruptor substances present in concentration >= 0.1%

12.7. Other adverse effects
None

SECTION 13: Disposal considerations

13.1. Waste treatment methods
Recover, if possible. Send to authorised disposal plants or for incineration under controlled conditions. In so doing, comply with the local and national regulations currently in force.

SECTION 14: Transport information

14.1. UN number or ID number
ADR-UN Number: 3082

IATA-UN Number: 3082
IMDG-UN Number: 3082

14.2. UN proper shipping name

ADR-Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(naphthalene, Solvent naphtha (petroleum), heavy arom.)
IATA-Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(naphthalene, Solvent naphtha (petroleum), heavy arom.)
IMDG-Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(naphthalene, Solvent naphtha (petroleum), heavy arom.)

14.3. Transport hazard class(es)

ADR-Class: 9
ADR - Hazard identification number: 90
IATA-Class: 9
IATA-Label: 9
IMDG-Class: 9
Sea (IMO): 9

14.4. Packing group

ADR-Packing Group: III
IATA-Packing group: III
IMDG-Packing group: III

14.5. Environmental hazards

ADR-Enviromental Pollutant: Yes
IMDG-Marine pollutant: Marine Pollutant
IMDG-EmS: F-A, S-F

14.6. Special precautions for user

Rail (RID): 9
ADR-Subsidiary hazards: -
ADR-S.P.: 274 335 375 601
ADR-Transport category (Tunnel restriction code): 3 (E)
IATA-Passenger Aircraft: 964
IATA-Subsidiary hazards: -
IATA-Cargo Aircraft: 964
IATA-S.P.: A97 A158 A197
IATA-ERG: 9L
IMDG-Subsidiary hazards: -
IMDG-Stowage and handling: Category A
IMDG-Segregation: -

14.7. Maritime transport in bulk according to IMO instruments

N.A.
Limited Quantity: 5 L
Exempted Quantity: E1

SECTION 15: Regulatory information

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

Dir. 98/24/EC (Risks related to chemical agents at work)
Dir. 2000/39/EC (Occupational exposure limit values)
Regulation (EC) n. 1907/2006 (REACH)
Regulation (EC) n. 1272/2008 (CLP)
Regulation (EC) n. 790/2009 (ATP 1 CLP) and (EU) n. 758/2013
Regulation (EU) n. 2020/878
Regulation (EU) n. 286/2011 (ATP 2 CLP)
Regulation (EU) n. 618/2012 (ATP 3 CLP)
Regulation (EU) n. 487/2013 (ATP 4 CLP)
Regulation (EU) n. 944/2013 (ATP 5 CLP)
Regulation (EU) n. 605/2014 (ATP 6 CLP)

Regulation (EU) n. 2015/1221 (ATP 7 CLP)
Regulation (EU) n. 2016/918 (ATP 8 CLP)
Regulation (EU) n. 2016/1179 (ATP 9 CLP)
Regulation (EU) n. 2017/776 (ATP 10 CLP)
Regulation (EU) n. 2018/669 (ATP 11 CLP)
Regulation (EU) n. 2018/1480 (ATP 13 CLP)
Regulation (EU) n. 2019/521 (ATP 12 CLP)
Regulation (EU) n. 2020/217 (ATP 14 CLP)
Regulation (EU) n. 2020/1182 (ATP 15 CLP)
Regulation (EU) n. 2021/643 (ATP 16 CLP)

Restrictions related to the product or the substances contained according to Annex XVII Regulation (EC) 1907/2006 (REACH) and subsequent modifications:

Restrictions related to the product:

Restriction 3

Restrictions related to the substances contained:

Restriction 40
Restriction 75

Volatile Organic compounds - VOCs = 59.54 %
Volatile Organic compounds - VOCs = 595.40 g/Kg
Volatile Organic compounds - VOCs = 500.14 g/l

Where applicable, refer to the following regulatory provisions :

Directive 2012/18/EU (Seveso III)
Regulation (EC) nr 648/2004 (detergents).
Dir. 2004/42/EC (VOC directive)

Provisions related to directive EU 2012/18 (Seveso III):

Seveso III category according to Annex 1, part 1

Product belongs to category: E2

15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out for the mixture.

Substances for which a Chemical Safety Assessment has been carried out:

None

SECTION 16: Other information

Text of phrases referred to under heading 3:

H304 May be fatal if swallowed and enters airways.
EUH066 Repeated exposure may cause skin dryness or cracking.
H336 May cause drowsiness or dizziness.
H411 Toxic to aquatic life with long lasting effects.
H226 Flammable liquid and vapour.
H332 Harmful if inhaled.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
H302 Harmful if swallowed.
H351 Suspected of causing cancer.
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.
H361d Suspected of damaging the unborn child.

Hazard class and hazard category	Code	Description
Flam. Liq. 3	2.6/3	Flammable liquid, Category 3
Acute Tox. 4	3.1/4/Inhal	Acute toxicity (inhalation), Category 4
Acute Tox. 4	3.1/4/Oral	Acute toxicity (oral), Category 4
Asp. Tox. 1	3.10/1	Aspiration hazard, Category 1
Skin Irrit. 2	3.2/2	Skin irritation, Category 2
Eye Irrit. 2	3.3/2	Eye irritation, Category 2
Carc. 2	3.6/2	Carcinogenicity, Category 2
Repr. 2	3.7/2	Reproductive toxicity, Category 2
STOT SE 3	3.8/3	Specific target organ toxicity - single exposure, Category 3
Aquatic Acute 1	4.1/A1	Acute aquatic hazard, category 1
Aquatic Chronic 1	4.1/C1	Chronic (long term) aquatic hazard, category 1
Aquatic Chronic 2	4.1/C2	Chronic (long term) aquatic hazard, category 2

Paragraphs modified from the previous revision:

SECTION 9: Physical and chemical properties

Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]:

Classification according to Regulation (EC) Nr. 1272/2008	Classification procedure
STOT SE 3, H336	Calculation method
Asp. Tox. 1, H304	Calculation method
Aquatic Chronic 2, H411	Calculation method

This document was prepared by a competent person who has received appropriate training.
Main bibliographic sources:

ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre, Commission of the European Communities

SAX's DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS - Eight Edition - Van Nostrand Reinold

The information contained herein is based on our state of knowledge at the above-specified date. It refers solely to the product indicated and constitutes no guarantee of particular quality.
It is the duty of the user to ensure that this information is appropriate and complete with respect to the specific use intended.
This MSDS cancels and replaces any preceding release.

ADR:	European Agreement concerning the International Carriage of Dangerous Goods by Road.
ATE:	Acute Toxicity Estimate
ATEmix:	Acute toxicity Estimate (Mixtures)
CAS:	Chemical Abstracts Service (division of the American Chemical Society).
CLP:	Classification, Labeling, Packaging.
DNEL:	Derived No Effect Level.
EINECS:	European Inventory of Existing Commercial Chemical Substances.
GefStoffVO:	Ordinance on Hazardous Substances, Germany.
GHS:	Globally Harmonized System of Classification and Labeling of Chemicals.
IATA:	International Air Transport Association.
IATA-DGR:	Dangerous Goods Regulation by the "International Air Transport Association" (IATA).
ICAO:	International Civil Aviation Organization.
ICAO-TI:	Technical Instructions by the "International Civil Aviation Organization" (ICAO).
IMDG:	International Maritime Code for Dangerous Goods.
INCI:	International Nomenclature of Cosmetic Ingredients.
KSt:	Explosion coefficient.
LC50:	Lethal concentration, for 50 percent of test population.
LD50:	Lethal dose, for 50 percent of test population.
NA:	Not applicable
PNEC:	Predicted No Effect Concentration.
RID:	Regulation Concerning the International Transport of Dangerous Goods by Rail.
STEL:	Short Term Exposure limit.
STOT:	Specific Target Organ Toxicity.
TLV:	Threshold Limiting Value.
TWA:	Time-weighted average
WGK:	German Water Hazard Class.

Exposure Scenario, 18/07/2019

Substance identity	
Chemical name	Idrocarburi , C11- C14 , n-alcani , isoalcani, ciclici,< 2% aromatici.
CAS No.	64742-47-8
EINECS No.	926-141-6

Table of contents

1. ES 1 Use at industrial site

1.1 TITLE SECTION

Exposure Scenario name	Fuel
Date - Version	18/07/2019 - 1.0
Life Cycle Stage	Use at industrial site
Main user group	Industrial uses
Sector(s) of use	Industrial uses (SU3)

Environment Contributing Scenario

CS1 Covered by	ERC7

Worker Contributing Scenario

CS2 Industrial	PROC1 - PROC2 - PROC3 - PROC8a - PROC8b - PROC16

1.2 Conditions of use affecting exposure

1.2. CS1: Environment Contributing Scenario: Covered by (ERC7)

Environmental release categories	Use of functional fluid at industrial site (ERC7)

1.2. CS2: Worker Contributing Scenario: Industrial (PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16)

Process Categories	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions - Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions - Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition - Transfer of substance or mixture (charging and discharging) at non-dedicated facilities - Transfer of substance or mixture (charging and discharging) at dedicated facilities - Use of fuels (PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16)

Product (article) characteristics

Physical form of product:

Liquid

Concentration of substance in product:

Covers percentage substance in the product up to 100 %.

Amount used, frequency and duration of use/exposure

Duration:

Covers daily exposures up to 8 hours

1.3 Exposure estimation and reference to its source

N/A

1.4 Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Guidance to check compliance with the exposure scenario:

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

2. ES 2 Widespread use by professional workers

2.1 TITLE SECTION

Exposure Scenario name	Fuel
Date - Version	18/07/2019 - 1.0
Life Cycle Stage	Widespread use by professional workers
Main user group	Professional uses

Environment Contributing Scenario	
CS1 Solids based process	ERC9a - ERC9b

Worker Contributing Scenario	
CS2 General use from professional operators	PROC1 - PROC2 - PROC3 - PROC8a - PROC8b - PROC16

2.2 Conditions of use affecting exposure

2.2. CS1: Environment Contributing Scenario: Solids based process (ERC9a, ERC9b)	
Environmental release categories	Widespread use of functional fluid (indoor) - Widespread use of functional fluid (outdoor) (ERC9a, ERC9b)

2.2. CS2: Worker Contributing Scenario: General use from professional operators (PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16)	
Process Categories	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions - Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions - Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition - Transfer of substance or mixture (charging and discharging) at non-dedicated facilities - Transfer of substance or mixture (charging and discharging) at dedicated facilities - Use of fuels (PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16)

Product (article) characteristics

Concentration of substance in product:

Covers percentage substance in the product up to 100 %.

Amount used, frequency and duration of use/exposure

Duration:

Covers daily exposures up to 8 hours

2.3 Exposure estimation and reference to its source

N/A

2.4 Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Guidance to check compliance with the exposure scenario:

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

3. ES 3 Consumer use; Fuels (PC13)

3.1 TITLE SECTION

Exposure Scenario name	Fuel
Date - Version	18/07/2019 - 1.0
Life Cycle Stage	Consumer use
Main user group	Consumer uses
Sector(s) of use	Consumer uses (SU21)
Product Categories	Fuels (PC13)

Environment Contributing Scenario

CS1 Covered by	ERC9a - ERC9b

Consumer Contributing Scenario

CS2 Consumer	PC13

3.2 Conditions of use affecting exposure

3.2. CS1: Environment Contributing Scenario: Covered by (ERC9a, ERC9b)

Environmental release categories	Widespread use of functional fluid (indoor) - Widespread use of functional fluid (outdoor) (ERC9a, ERC9b)

3.2. CS2: Consumer Contributing Scenario: Consumer (PC13)

Product Categories	Fuels (PC13)

3.3 Exposure estimation and reference to its source

N/A

3.4 Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Guidance to check compliance with the exposure scenario:

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Exposure Scenario, 25/07/2019

Substance identity	
Chemical name	2-ETHYLHEXANOIC ACID
CAS No.	149-57-5
EINECS No.	205-743-6

Table of contents

1. ES 1 Use at industrial site

1.1 TITLE SECTION

Exposure Scenario name	Hydraulic (functional) fluids
Date - Version	25/07/2019 - 1.0
Life Cycle Stage	Use at industrial site
Main user group	Industrial uses
Sector(s) of use	Industrial uses (SU3)

Environment Contributing Scenario	
CS1 Covered by	ERC7
Worker Contributing Scenario	
CS2 Industrial	PROC1
CS3 Industrial	PROC2
CS4 Industrial	PROC3
CS5 Industrial	PROC4
CS6 Industrial	PROC8a
CS7 Industrial	PROC8b
CS8 Industrial	PROC9

1.2 Conditions of use affecting exposure

1.2. CS1: Environment Contributing Scenario: Covered by (ERC7)

Environmental release categories	Use of functional fluid at industrial site (ERC7)

Amount used, frequency and duration of use (or from service life)

Amounts used:

Annual amount per site 200 t(onnes)/year
Daily amount per site 2 t

Maximum allowable site tonnage (MSafe): 5282 kg/day

Release type: Continuous release

Emission days: 100 days per year

Conditions and measures related to sewage treatment plant

STP type:

Municipal Sewage Treatment Plant
Water - minimum efficiency of: = 87.5 %

STP effluent (m³/day): 2000

Conditions and measures related to treatment of waste (including article waste)

Waste treatment

External recovery and recycling of waste should comply with applicable local and/or national regulations.

Other conditions affecting environmental exposure

Local marine water dilution factor: 100
Local freshwater dilution factor: 10
Receiving surface water flow: 18000 m³/day

1.2. CS2: Worker Contributing Scenario: Industrial (PROC1)

Process Categories	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

Product (article) characteristics

Vapour pressure:

< 5 hPa

Concentration of substance in product:

Covers percentage substance in the product up to 25 %.

Amount used, frequency and duration of use/exposure

Duration:

Exposure duration < 8 h

Frequency:

Covers exposure up to 5 days per week

Other conditions affecting worker exposure

Indoor use

Body parts exposed:

Palm of one hand

Additional conditions human health

Covers skin contact area up to 240 cm²

1.2. CS3: Worker Contributing Scenario: Industrial (PROC2)

Process Categories	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

Product (article) characteristics

Vapour pressure:

< 5 hPa

Concentration of substance in product:

Covers percentage substance in the product up to 25 %.

Amount used, frequency and duration of use/exposure

Duration:

Exposure duration < 8 h

Frequency:

Covers exposure up to 5 days per week

Conditions and measures related to personal protection, hygiene and health evaluation

Personal protection

Wear suitable gloves tested to EN374.	Dermal - minimum efficiency of: > 95 %

Other conditions affecting worker exposure

Indoor use

Body parts exposed:

Assumes that potential dermal contact is limited to hands.

Additional conditions human health

Covers skin contact area up to 480 cm²

1.2. CS4: Worker Contributing Scenario: Industrial (PROC3)

Process Categories	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

Product (article) characteristics

Vapour pressure:
< 5 hPa

Concentration of substance in product:
Covers percentage substance in the product up to 25 %.

Amount used, frequency and duration of use/exposure

Duration:
Exposure duration < 8 h

Frequency:
Covers exposure up to 5 days per week

Technical and organisational conditions and measures

Technical and organisational measures
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

Conditions and measures related to personal protection, hygiene and health evaluation

Personal protection

Wear suitable gloves tested to EN374.	Dermal - minimum efficiency of: > 95 %

Other conditions affecting worker exposure

Indoor use

Body parts exposed:
Palm of one hand

Additional conditions human health
Covers skin contact area up to 240 cm^2

1.2. CS5: Worker Contributing Scenario: Industrial (PROC4)

Process Categories	Chemical production where opportunity for exposure arises (PROC4)

Product (article) characteristics

Vapour pressure:
< 5 hPa

Concentration of substance in product:
Covers percentage substance in the product up to 25 %.

Amount used, frequency and duration of use/exposure

Duration:
Exposure duration < 8 h

Frequency:
Covers exposure up to 5 days per week

Technical and organisational conditions and measures

Technical and organisational measures
Provide a good standard of controlled ventilation (5 to 10 air changes per hour).

Conditions and measures related to personal protection, hygiene and health evaluation

Personal protection

Wear suitable gloves tested to EN374.	Dermal - minimum efficiency of: > 95 %

Other conditions affecting worker exposure

Indoor use

Body parts exposed:

Assumes that potential dermal contact is limited to hands.

Additional conditions human health

Covers skin contact area up to 480 cm²

1.2. CS6: Worker Contributing Scenario: Industrial (PROC8a)

Process Categories	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC8a)

Product (article) characteristics

Vapour pressure:

< 5 hPa

Concentration of substance in product:

Covers percentage substance in the product up to 25 %.

Amount used, frequency and duration of use/exposure

Duration:

Exposure duration < 4 h

Frequency:

Covers exposure up to 5 days per week

Technical and organisational conditions and measures

Technical and organisational measures

Provide a good standard of controlled ventilation (5 to 10 air changes per hour).

Conditions and measures related to personal protection, hygiene and health evaluation

Personal protection

Wear suitable gloves tested to EN374.	Dermal - minimum efficiency of: > 95 %

Other conditions affecting worker exposure

Indoor use

Body parts exposed:

Assumes that potential dermal contact is limited to hands.

Additional conditions human health

Covers skin contact area up to 960 cm²

1.2. CS7: Worker Contributing Scenario: Industrial (PROC8b)

Process Categories	Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC8b)

Product (article) characteristics

Vapour pressure:

< 5 hPa

Concentration of substance in product:

Covers percentage substance in the product up to 25 %.

Amount used, frequency and duration of use/exposure

Duration:

Exposure duration < 8 h

Frequency:

Covers exposure up to 5 days per week

Technical and organisational conditions and measures

Technical and organisational measures

Provide a good standard of controlled ventilation (5 to 10 air changes per hour).

Conditions and measures related to personal protection, hygiene and health evaluation

Personal protection

Wear suitable gloves tested to EN374.	Dermal - minimum efficiency of: > 95 %

Other conditions affecting worker exposure

Indoor use

Body parts exposed:

Assumes that potential dermal contact is limited to hands.

Additional conditions human health

Covers skin contact area up to 960 cm²

1.2. CS8: Worker Contributing Scenario: Industrial (PROC9)

Process Categories	Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

Product (article) characteristics

Vapour pressure:

< 5 hPa

Concentration of substance in product:

Covers percentage substance in the product up to 25 %.

Amount used, frequency and duration of use/exposure

Duration:

Exposure duration < 8 h

Frequency:

Covers exposure up to 5 days per week

Technical and organisational conditions and measures

Technical and organisational measures

Provide a good standard of controlled ventilation (5 to 10 air changes per hour).

Conditions and measures related to personal protection, hygiene and health evaluation

Personal protection

Wear suitable gloves tested to EN374.	Dermal - minimum efficiency of: > 95 %

Other conditions affecting worker exposure

Indoor use

Body parts exposed:

Assumes that potential dermal contact is limited to hands.

Additional conditions human health

Covers skin contact area up to 480 cm²

1.3 Exposure estimation and reference to its source

1.3. CS1: Environment Contributing Scenario: Covered by (ERC7)

Release route	Release rate	Release estimation method
Air	1 %	N/A
Water	1 %	N/A

soil	1 %	N/A

protection target	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
freshwater	0.13 mg/L	N/A	0.35
freshwater sediment	2.21 mg/kg bw/day	N/A	0.35
marine water	0.01 mg/L	N/A	0.35
marine sediment	0.22 mg/kg bw/day	N/A	0.35
soil	0.39 mg/kg bw/day	N/A	0.37
Sewage treatment plant	1.25 mg/L	N/A	0.02

1.3. CS2: Worker Contributing Scenario: Industrial (PROC1)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	0.04 mg/m³	N/A	0.003
dermal, systemic, long-term	0.02 mg/kg bw/day	N/A	0.01

1.3. CS3: Worker Contributing Scenario: Industrial (PROC2)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	3.61 mg/m³	N/A	0.26
dermal, systemic, long-term	0.04 mg/kg bw/day	N/A	0.02

1.3. CS4: Worker Contributing Scenario: Industrial (PROC3)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	7.75 mg/m³	N/A	0.54
dermal, systemic, long-term	0.02 mg/kg bw/day	N/A	0.01

1.3. CS5: Worker Contributing Scenario: Industrial (PROC4)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	5.41 mg/m³	N/A	0.39
dermal, systemic, long-term	0.21 mg/kg bw/day	N/A	0.1

1.3. CS6: Worker Contributing Scenario: Industrial (PROC8a)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	6.49 mg/m³	N/A	0.46
dermal, systemic, long-term	0.41 mg/kg bw/day	N/A	0.21

1.3. CS7: Worker Contributing Scenario: Industrial (PROC8b)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	5.41 mg/m³	N/A	0.39
dermal, systemic, long-term	0.41 mg/kg bw/day	N/A	0.21

1.3. CS8: Worker Contributing Scenario: Industrial (PROC9)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	5.41 mg/m³	N/A	0.39
dermal, systemic, long-term	0.21 mg/kg bw/day	N/A	0.1

1.4 Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Guidance to check compliance with the exposure scenario:

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

2. ES 2 Widespread use by professional workers

2.1 TITLE SECTION

Exposure Scenario name	Hydraulic (functional) fluids
Date - Version	25/07/2019 - 1.0
Life Cycle Stage	Widespread use by professional workers
Main user group	Professional uses
Sector(s) of use	Professional uses (SU22)

Environment Contributing Scenario

CS1 Covered by	ERC9a - ERC9b

Worker Contributing Scenario

CS2 General use from professional operators	PROC1
CS3 General use from professional operators	PROC2
CS4 General use from professional operators	PROC3
CS5 General use from professional operators	PROC8a
CS6 General use from professional operators	PROC9
CS7 General use from professional operators	PROC20

2.2 Conditions of use affecting exposure

2.2. CS1: Environment Contributing Scenario: Covered by (ERC9a, ERC9b)

Environmental release categories	Widespread use of functional fluid (indoor) - Widespread use of functional fluid (outdoor) (ERC9a, ERC9b)

Amount used, frequency and duration of use (or from service life)

Amounts used:

Annual site tonnage 100 t(onnes)/year

Maximum allowable site tonnage (MSafe): 21.8 kg/day

Release type: Continuous release

Emission days: 100 days per year

Conditions and measures related to sewage treatment plant

STP type:

Municipal Sewage Treatment Plant
Water - minimum efficiency of: = 87.5 %

STP effluent (m³/day): 2000

Conditions and measures related to treatment of waste (including article waste)

Waste treatment

External treatment and disposal of waste should comply with applicable local and/or national regulations.

Other conditions affecting environmental exposure

Local marine water dilution factor: 100
Local freshwater dilution factor: 10
Receiving surface water flow: 18000 m³/day

2.2. CS2: Worker Contributing Scenario: General use from professional operators (PROC1)

Process Categories	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

Product (article) characteristics

Vapour pressure:
< 5 hPa

Concentration of substance in product:
Covers percentage substance in the product up to 25 %.

Additional conditions human health
Covers skin contact area up to 240 cm²

Amount used, frequency and duration of use/exposure

Duration:
Exposure duration < 8 h
Frequency:
Use frequency 5 days per week

Technical and organisational conditions and measures

Technical and organisational measures
Provide a good standard of controlled ventilation (5 to 10 air changes per hour).

Other conditions affecting worker exposure

Indoor use
Body parts exposed:
Palm of one hand

2.2. CS3: Worker Contributing Scenario: General use from professional operators (PROC2)

Process Categories	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

Product (article) characteristics

Vapour pressure:
< 5 hPa

Concentration of substance in product:
Covers percentage substance in the product up to 25 %.

Additional conditions human health
Covers skin contact area up to 480 cm²

Amount used, frequency and duration of use/exposure

Duration:
Exposure duration < 8 h
Frequency:
Use frequency 5 days per week

Technical and organisational conditions and measures

Technical and organisational measures
Provide a good standard of controlled ventilation (5 to 10 air changes per hour).

Conditions and measures related to personal protection, hygiene and health evaluation

Personal protection

Wear suitable gloves tested to EN374.	Dermal - minimum efficiency of: 90 %

Other conditions affecting worker exposure

Indoor use
Body parts exposed:

Assumes that potential dermal contact is limited to hands.

2.2. CS4: Worker Contributing Scenario: General use from professional operators (PROC3)

Process Categories	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

Product (article) characteristics

Vapour pressure:

< 5 hPa

Concentration of substance in product:

Covers percentage substance in the product up to 25 %.

Additional conditions human health

Covers skin contact area up to 240 cm²

Amount used, frequency and duration of use/exposure

Duration:

Exposure duration < 8 h

Frequency:

Use frequency 5 days per week

Technical and organisational conditions and measures

Technical and organisational measures

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

Conditions and measures related to personal protection, hygiene and health evaluation

Personal protection

Wear suitable gloves tested to EN374.	Dermal - minimum efficiency of: 90 %

Other conditions affecting worker exposure

Indoor use

Body parts exposed:

Palm of one hand

2.2. CS5: Worker Contributing Scenario: General use from professional operators (PROC8a)

Process Categories	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC8a)

Product (article) characteristics

Vapour pressure:

< 5 hPa

Concentration of substance in product:

Covers percentage substance in the product up to 25 %.

Additional conditions human health

Covers skin contact area up to 960 cm²

Amount used, frequency and duration of use/exposure

Duration:

Exposure duration < 1 h

Frequency:

Use frequency 5 days per week

Technical and organisational conditions and measures

Technical and organisational measures

Provide a good standard of controlled ventilation (5 to 10 air changes per hour).

Conditions and measures related to personal protection, hygiene and health evaluation

Personal protection

Wear suitable gloves tested to EN374.	Dermal - minimum efficiency of: 90 %

Other conditions affecting worker exposure

Indoor use

Body parts exposed:

Assumes that potential dermal contact is limited to hands.

2.2. CS6: Worker Contributing Scenario: General use from professional operators (PROC9)

Process Categories	Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

Product (article) characteristics

Vapour pressure:

< 5 hPa

Concentration of substance in product:

Covers percentage substance in the product up to 25 %.

Additional conditions human health

Covers skin contact area up to 480 cm²

Amount used, frequency and duration of use/exposure

Duration:

Exposure duration < 4 h

Frequency:

Use frequency 5 days per week

Technical and organisational conditions and measures

Technical and organisational measures

Provide a good standard of controlled ventilation (5 to 10 air changes per hour).

Conditions and measures related to personal protection, hygiene and health evaluation

Personal protection

Wear suitable gloves tested to EN374.	Dermal - minimum efficiency of: 90 %

Other conditions affecting worker exposure

Indoor use

Body parts exposed:

Assumes that potential dermal contact is limited to hands.

2.2. CS7: Worker Contributing Scenario: General use from professional operators (PROC20)

Process Categories	Use of functional fluids in small devices (PROC20)

Product (article) characteristics

Vapour pressure:

< 5 hPa

Concentration of substance in product:

Covers percentage substance in the product up to 25 %.

Additional conditions human health

Covers skin contact area up to 480 cm²

Amount used, frequency and duration of use/exposure

Duration:

Exposure duration < 8 h

Frequency:

Use frequency 5 days per week

Technical and organisational conditions and measures

Technical and organisational measures

Provide a good standard of controlled ventilation (5 to 10 air changes per hour).

Conditions and measures related to personal protection, hygiene and health evaluation

Personal protection

Wear suitable gloves tested to EN374.	Dermal - minimum efficiency of: 90 %

Other conditions affecting worker exposure

Indoor use

Body parts exposed:

Assumes that potential dermal contact is limited to hands.

2.3 Exposure estimation and reference to its source

2.3. CS1: Environment Contributing Scenario: Covered by (ERC9a, ERC9b)

Release route	Release rate	Release estimation method
Air	1 %	N/A
Water	0.5 %	N/A
soil	0.1 %	N/A

protection target	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
freshwater	0.0002 mg/L	N/A	0.0006
freshwater sediment	0.004 mg/kg bw/day	N/A	0.0006
marine water	2E-05 mg/L	N/A	0.0006
freshwater sediment	0.0004 mg/kg bw/day	N/A	0.0006
Agricultural soil	0.0002 mg/kg bw/day	N/A	0.0002
Sewage treatment plant	6E-05 mg/L	N/A	< 1E-06

2.3. CS2: Worker Contributing Scenario: General use from professional operators (PROC1)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	0.04 mg/m³	N/A	0.003
dermal, systemic, long-term	0.02 mg/kg bw/day	N/A	0.01

2.3. CS3: Worker Contributing Scenario: General use from professional operators (PROC2)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	5.41 mg/m³	N/A	0.39
dermal, systemic, long-term	0.08 mg/kg bw/day	N/A	0.04

2.3. CS4: Worker Contributing Scenario: General use from professional operators (PROC3)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	7.57 mg/m³	N/A	0.54
dermal, systemic, long-term	0.04 mg/kg bw/day	N/A	0.02

2.3. CS5: Worker Contributing Scenario: General use from professional operators (PROC8a)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	5.41 mg/m³	N/A	0.39
dermal, systemic, long-term	0.82 mg/kg bw/day	N/A	0.41

2.3. CS6: Worker Contributing Scenario: General use from professional operators (PROC9)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	6.49 mg/m³	N/A	0.46
dermal, systemic, long-term	0.41 mg/kg bw/day	N/A	0.21

2.3. CS7: Worker Contributing Scenario: General use from professional operators (PROC20)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
dermal, systemic, long-term	0.1 mg/kg bw/day	N/A	0.05

2.4 Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Guidance to check compliance with the exposure scenario:

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.