

This safety data sheet was created pursuant to the requirements of:
UK REACH Regulations (SI 2019/758 as amended)

Supersedes date 30-Aug-2024

Revision date 20-Sep-2024

Revision Number 4.01

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

1.1. Product identifier

Product Code(s)	00366
Safety data sheet number	00366
Product Name	CYCLOHEXANE
Index No	601-017-00-1
EC Number	203-806-2
CAS No	110-82-7
Synonyms	INTERMARC CYCLOHEXANE, CYCLOHEXANE TTL, SOLANE CYCLOHEXANE, CYCLOHEXANE CPS
Pure substance/mixture	Substance
Molecular weight	84.16 g/mol

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

Recommended use	Solvent Chemical intermediate Cleaning agent Blowing agent Fuels Coatings For further information, see attached Exposure Scenario
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1.3. Details of the supplier of the safety data sheet

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
GBR

For further information, please contact

E-mail address	SDS.EMEA@univarsolutions.com
Non-Emergency Telephone Number	+44 1274 267300 / +44 1274 267306

1.4. Emergency telephone number

Emergency Telephone	SGS - +32 (0)3 575 55 55 (24h)
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SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Flammable liquids	Category 2 - (H225)
Skin corrosion/irritation	Category 2 - (H315)
Specific target organ toxicity — single exposure	Category 3 - (H336)
Category 3 Narcotic effects	

Aspiration hazard	Category 1 - (H304)
Acute aquatic toxicity	Category 1 - (H400)
Chronic aquatic toxicity	Category 1 - (H410)

2.2. Label elements



Signal word

Danger

Hazard statements

H304 - May be fatal if swallowed and enters airways

H315 - Causes skin irritation

H336 - May cause drowsiness or dizziness

H410 - Very toxic to aquatic life with long lasting effects

H225 - Highly flammable liquid and vapour

Precautionary statements

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking

P261 - Avoid breathing dust/fume/gas/mist/vapours/spray

P280 - Wear protective gloves/protective clothing/eye protection/face protection

P301 + P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor

P331 - Do NOT induce vomiting

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

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

Additional information

This product requires child resistant fastenings if supplied to the general public. This product requires tactile warnings if supplied to the general public.

2.3. Other hazards

No information available.

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical name	Weight-%	EC No (EU Index No)	UK REACH registration number	Classification according to GB CLP (SI 2020/1567 as amended)	Specific concentration limit (SCL)	M-Factor	M-Factor (long-term)
CYCLOHEXANE 110-82-7	100%	203-806-2 (601-017-00-1)	-	Flam. Liq. 2 (H225) Asp. Tox. 1 (H304) Skin Irrit. 2 (H315) STOT SE 3 (H336) Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410)	-	1	1

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

This product does not contain candidate substances of very high concern at a concentration $\geq 0.1\%$ (UK REACH Article 59)

SECTION 4: First aid measures

4.1. Description of first aid measures

General advice

Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

Inhalation

Remove to fresh air. Aspiration into lungs can produce severe lung damage. If breathing has stopped, give artificial respiration. Get medical attention immediately. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation. If breathing is difficult,

(trained personnel should) give oxygen. Get immediate medical attention. Delayed pulmonary edema may occur. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. Place unconscious person on the side in the recovery position and ensure breathing can take place. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Eye contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area. Remove contact lenses, if present and easy to do. Continue rinsing.
Skin contact	Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention if irritation develops and persists. Take off contaminated clothing and wash it before reuse.
Ingestion	Do NOT induce vomiting. Rinse mouth. Never give anything by mouth to an unconscious person. ASPIRATION HAZARD IF SWALLOWED - CAN ENTER LUNGS AND CAUSE DAMAGE. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. Get immediate medical attention. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous.
Self-protection of the first aider	Remove all sources of ignition. Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Use personal protective equipment as required. See section 8 for more information. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation. Avoid contact with skin, eyes or clothing. No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus.

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

Symptoms	Causes skin irritation. May cause drowsiness or dizziness. May be fatal if swallowed and enters airways.
Inhalation	Coughing and/ or wheezing. Difficulty in breathing. Dizziness. Inhalation of high vapour concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting. May cause drowsiness or dizziness.
Eyes	No information available.
Dermal	Causes skin irritation.
Ingestion	May be fatal if swallowed and enters airways

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

Note to doctors	Because of the danger of aspiration, emesis or gastric lavage should not be used unless the risk is justified by the presence of additional toxic substances. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
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SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable Extinguishing Media	Dry chemical. Carbon dioxide (CO2). Water spray. Alcohol resistant foam.
Large Fire	CAUTION: Use of water spray when fighting fire may be inefficient.
Unsuitable extinguishing media	Do not scatter spilled material with high pressure water streams. Do not use water jet.

5.2. Special hazards arising from the substance or mixture

Specific hazards arising from the chemical	Risk of ignition. Keep product and empty container away from heat and sources of ignition. In the event of fire, cool tanks with water spray. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. Highly flammable liquid and vapour. Runoff to sewer may create fire or explosion hazard. Containers can burst violently when heated, due to excess pressure build-up. The vapour/gas is heavier than air and will spread along the ground. Vapours may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Very toxic to aquatic life with long lasting effects. Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
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Hazardous combustion products	Carbon dioxide (CO2). Carbon monoxide. Hydrocarbons. Aldehydes. Smoke production.
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5.3. Advice for firefighters

Special protective equipment and precautions for fire-fighters

Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment. Evacuate personnel to safe areas. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if you can do it without risk. Cool containers with flooding quantities of water until well after fire is out. Eliminate all ignition sources if safe to do so. Do not allow runoff to sewer, waterway or ground. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions

Evacuate personnel to safe areas. Use personal protective equipment as required. See section 8 for more information. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Keep people away from and upwind of spill/leak. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Pay attention to flashback. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. No action shall be taken involving any personal risk or without suitable training. Keep unnecessary and unprotected personnel from entering. In case of inadequate ventilation wear respiratory protection. Use non sparking handtools and explosion-proof electric equipment. Vapours may accumulate to form explosive concentrations. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas.

Other information

Ventilate the area. Refer to protective measures listed in Sections 7 and 8.

For emergency responders

Use personal protection recommended in Section 8.

6.2. Environmental precautions

Environmental precautions

Refer to protective measures listed in Sections 7 and 8. Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. Do not allow runoff to sewer, waterway or ground. Local authorities should be advised if significant spillages cannot be contained. Very toxic to aquatic life with long lasting effects. Collect spillage.

6.3. Methods and material for containment and cleaning up

Methods for containment

Stop leak if you can do it without risk. Do not touch or walk through spilled material. A vapour suppressing foam may be used to reduce vapours. Dyke far ahead of spill to collect run-off water. Keep out of drains, sewers, ditches and waterways. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Use non sparking handtools and explosion-proof electric equipment. Dilute with water and mop up or absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of wastes in an approved waste disposal facility. Approach the release from upwind. Wash spillages into an effluent treatment plant. Contaminated absorbent material may pose the same hazard as the spilt product. Local authorities should be advised if significant spillages cannot be contained. Ventilate the area.

Methods for cleaning up

Take precautionary measures against static discharges. Dam up. Soak up with inert absorbent material. Pick up and transfer to properly labelled containers.

Prevention of secondary hazards

Clean contaminated objects and areas thoroughly observing environmental regulations.

6.4. Reference to other sections

Reference to other sections

See Section 1, 8, 13 for more information.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling

Use personal protection equipment. Avoid breathing vapours or mists. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use grounding and bonding connection when transferring this material to prevent static discharge, fire or explosion. Use with local exhaust ventilation. Use spark-proof tools and explosion-proof equipment. Keep in an area equipped with sprinklers. Use according to package label instructions. Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash it before reuse. In case of insufficient ventilation, wear suitable respiratory equipment. Do not swallow. Avoid release to the environment. Use only with adequate ventilation. Do not enter storage areas and confined spaces unless adequately ventilated. Keep only in original container. Keep container tightly closed. Take precautionary measures against static discharge. Empty containers retain

product residue and can be hazardous. Do not re-use container. Prevent formation of aerosols.

General hygiene considerations

Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product. Wear suitable gloves and eye/face protection. Ensure that eyewash stations and safety showers are close to the workstation location. Handle in accordance with good industrial hygiene and safety practice. Ensure adequate ventilation. Avoid breathing vapours or mists. Remove contaminated clothing and protective equipment before entering eating areas.

7.2. Conditions for safe storage, including any incompatibilities

Storage Conditions

Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity). Keep in properly labelled containers. Do not store near combustible materials. Keep in an area equipped with sprinklers. Store in accordance with the particular national regulations. Store in accordance with local regulations. Store locked up. Store away from other materials. Store in a segregated and approved area. Store away from incompatible materials. See section 10 for more information. Keep away from food, drink and animal feedingstuffs. Incompatible with oxidising agents. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Use appropriate containment to avoid environmental contamination. Empty containers retain product residue and can be hazardous.

7.3. Specific end use(s)

Specific use(s)

See section 1 for more information.

Risk Management Methods (RMM) The information required is contained in this Safety Data Sheet.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure Limits

Chemical name	United Kingdom
CYCLOHEXANE 110-82-7	TWA: 100 ppm TWA: 350 mg/m ³ STEL: 300 ppm STEL: 1050 mg/m ³

Biological occupational exposure limits

This product, as supplied, does not contain any hazardous materials with biological limits established by the region specific regulatory bodies.

Derived No Effect Level (DNEL) - Workers

Chemical name	Oral	Dermal	Inhalation
CYCLOHEXANE 110-82-7		2016 mg/kg bw/day [4] [6]	700 mg/m ³ [4] [6] 700 mg/m ³ [5] [6] 700 mg/m ³ [4] [7] 700 mg/m ³ [5] [7]

Derived No Effect Level (DNEL) - General Public

Chemical name	Oral	Dermal	Inhalation
CYCLOHEXANE 110-82-7	59.4 mg/kg bw/day [4] [6]	1186 mg/kg bw/day [4] [6]	206 mg/m ³ [4] [6] 206 mg/m ³ [5] [6] 412 mg/m ³ [4] [7] 412 mg/m ³ [5] [7]

Predicted No Effect Concentration (PNEC)

Chemical name	Freshwater	Freshwater (intermittent release)	Marine water	Marine water (intermittent release)	Air
CYCLOHEXANE 110-82-7	0.0447 mg/L		0.00447 mg/L		

Chemical name	Freshwater sediment	Marine sediment	Sewage treatment	Soil	Food chain
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CYCLOHEXANE 110-82-7	3.6 mg/kg	0.36 mg/kg	3.24 mg/L	0.694 mg/kg	
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8.2. Exposure controls

Engineering controls

Ensure adequate ventilation. Use engineering controls to keep exposures below the OEL or DNEL. Ground and bond all lines and equipment associated with product system. All equipment should be non-sparking and explosion proof.

Personal protective equipment

Eye/face protection

Tight sealing safety goggles. Use eye protection according to EN 166.

Hand protection

Wear suitable gloves. Impervious gloves. Chemical resistant gloves required for prolonged or repeated contact. Ensure that the breakthrough time of the glove material is not exceeded. Refer to glove supplier for information on breakthrough time for specific gloves. Gloves must conform to standard EN 374.

Gloves			
Duration of contact	PPE - Glove material	Glove thickness	Break through time
Long term (repeated)	Nitrile rubber	> 0.55 mm	> 480 minutes
Long term (repeated)	Fluorinated rubber		> 480 minutes
Long term (repeated)	Polyvinyl alcohol (PVA)		> 480 minutes
Short term	Nitrile rubber	> 0.38 mm	> 60 minutes
Short term	Neoprene gloves	> 0.75 mm	> 60 minutes

Skin and body protection

Wear suitable protective clothing. Long sleeved clothing. Chemical resistant apron. Antistatic boots. Clothing should include anti-static overalls, boots and gloves if there is a risk of ignition from static electricity. Refer to European Standard EN 1149 for further information on material and design requirements and test methods.

Respiratory protection

In case of inadequate ventilation wear respiratory protection. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

General hygiene considerations

Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product. Wear suitable gloves and eye/face protection. Ensure that eyewash stations and safety showers are close to the workstation location. Handle in accordance with good industrial hygiene and safety practice. Ensure adequate ventilation. Avoid breathing vapours or mists. Remove contaminated clothing and protective equipment before entering eating areas.

Environmental exposure controls

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels. Keep out of drains, sewers, ditches and waterways. Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained. Ensure all waste water is collected and treated via a waste water treatment plant.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Liquid
Appearance	Liquid
Colour	Colourless
Odour	Irritating. Pungent. Solvent.
Odour threshold	No information available

Property	Values	Remarks • Method
Melting point / freezing point	6.47 °C	No information available.
Initial boiling point and boiling range	81 °C	No information available.
Flammability		No information available.
Flammability Limit in Air		No information available.
Upper flammability or explosive limits	8.4%	
Lower flammability or explosive limits	1.3%	
Flash point	-18 °C	Closed cup.
Autoignition temperature	245 - 260 °C	No information available.
Decomposition temperature		No information available.

pH		No information available.
pH (as aqueous solution)		No information available.
Kinematic viscosity	0.98 mm ² /s	No information available.
Dynamic viscosity	0.894 mPa s @ 25°C	No information available.
Water solubility	Immiscible with water	No information available.
Solubility(ies)	Soluble in hydrocarbons Oils	No information available.
Partition coefficient	: 3.44	No information available.
Vapour pressure	12.7 kPa @ 20°C	No information available.
Relative density		No information available.
Bulk density		No information available
Liquid Density	0.775 - 0.785 g/mL	@ 15 °C
Relative vapour density	2.9	No information available.
Particle characteristics		No information available.
Particle Size	No information available	
Particle Size Distribution	No information available	
Explosive properties	No data available	
Oxidising properties	No data available	

9.2. Other information

Molecular weight	84.16 g/mol
Molecular formula	C6-H12

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity	Stable under recommended storage conditions.
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10.2. Chemical stability

Stability	Stable under normal conditions.
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Explosion data

Sensitivity to mechanical impact	None.
Sensitivity to static discharge	Yes.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions	Highly flammable liquid and vapour. Vapours can form explosive mixtures with air.
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10.4. Conditions to avoid

Conditions to avoid	Heat, flames and sparks. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapour to accumulate in low or confined areas. static discharge (electrostatic discharge).
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10.5. Incompatible materials

Incompatible materials	Strong acids. Strong oxidising agents.
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10.6. Hazardous decomposition products

Hazardous decomposition products	Carbon oxides.
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SECTION 11: Toxicological information

11.1. Information on toxicological effects

Information on likely routes of exposure

Product Information

Inhalation	Aspiration into lungs can produce severe lung damage. May cause pulmonary edema. Pulmonary edema can be fatal. May cause drowsiness or dizziness. May cause central nervous system depression.
Eye contact	May cause irritation.
Skin contact	Causes skin irritation.
Ingestion	Potential for aspiration if swallowed. May cause lung damage if swallowed. Aspiration may cause pulmonary edema and pneumonitis. May be fatal if swallowed and enters airways. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea. May cause central nervous system depression.

Symptoms related to the physical, chemical and toxicological characteristics**Symptoms**

Inhalation of high vapour concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting. May be fatal if swallowed and enters airways. Causes skin irritation. May cause drowsiness or dizziness.

Acute toxicity**Numerical measures of toxicity****Component Information**

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
CYCLOHEXANE	6240 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	32.88 mg/L (Rat) 4 h

Delayed and immediate effects as well as chronic effects from short and long-term exposure**Skin corrosion/irritation**

Causes skin irritation.

CYCLOHEXANE (110-82-7)

Method	Species	Exposure route	Effective dose	Exposure time	Results
	Rabbit	Dermal			Mild skin irritant

Serious eye damage/eye irritation

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

CYCLOHEXANE (110-82-7)

Method	Species	Exposure route	Effective dose	Exposure time	Results
	Rabbit	eye			Mild eye irritation

Respiratory or skin sensitisation

Based on available data the classification criteria are not met.

CYCLOHEXANE (110-82-7)

Method	Species	Exposure route	Results
	Guinea pig	Dermal	Not a skin sensitiser

Germ cell mutagenicity

Based on available data the classification criteria are not met.

Component Information**CYCLOHEXANE (110-82-7)**

Method	Species	Results
OECD 471	in vitro	Negative
OECD 476	in vitro	Negative
OECD 476	in vivo	Negative

Carcinogenicity

Based on available data the classification criteria are not met.

Component Information**CYCLOHEXANE (110-82-7)**

Method	Species	Results
	Mouse	Negative

Reproductive toxicity

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

CYCLOHEXANE (110-82-7)

Method	Species	Results
	Rat	Negative

STOT - single exposure

May cause drowsiness or dizziness.

CYCLOHEXANE (110-82-7)

Method	Species	Exposure route	Effective dose	Exposure time	Results
	human data and animal	Inhalation			May cause drowsiness or dizziness
	human data and animal	Inhalation			Based on available data, specific target

					organ toxicity is not expected after single oral, single inhalation, or single dermal exposure.
	Professional Judgement	Oral			May cause drowsiness or dizziness

STOT - repeated exposure

Based on available data the classification criteria are not met.

Component Information CYCLOHEXANE (110-82-7)

Method	Species	Exposure route	Effective dose	Exposure time	Results
	Rat	Inhalation	NOAEL 24 mg/L	90 days	Not classified
	Rat	Inhalation	NOAEL 1.7 mg/L	90 days	Not classified
	Rabbit	Inhalation	NOAEL 2.7 mg/L	10 weeks	Not classified
	Mouse	Inhalation	NOAEL 24 mg/L	14 weeks	Not classified
	Rat	Inhalation	NOAEL 8.6 mg/L	30 weeks	Not classified

Aspiration hazard

May be fatal if swallowed and enters airways.

Other adverse effects

No information available.

SECTION 12: Ecological information

12.1. Toxicity

Ecotoxicity

Very toxic to aquatic life with long lasting effects.

CYCLOHEXANE (110-82-7)

Method	Species	Endpoint type	Effective dose	Exposure time	Results
	Bacteria toxicity	IC50	97 mg/L	24 hours	
OECD Test No. 203: Fish, Acute Toxicity Test	Fish	LC50	4.53 mg/L	96 hours	Toxic to aquatic life
OECD Test No. 202: Daphnia sp., Acute Immobilisation Test	Daphnia magna	EC50	0.9 mg/L	48 hours	Very toxic to aquatic life
OECD Test No. 201: Freshwater Algae and Cyanobacteria, Growth Inhibition Test	Algae	EC50	3.4 mg/L	72 hours	Toxic to aquatic life

12.2. Persistence and degradability

Persistence and degradability

Readily biodegradable.

CYCLOHEXANE (110-82-7)

Method	Exposure time	Value	Results
OECD Test No. 301F: Ready Biodegradability: Manometric Respirometry Test (TG 301 F)	28 days	77% Biodegradation	Readily biodegradable

12.3. Bioaccumulative potential

Bioaccumulation

Low.

Bioconcentration factor (BCF)

167

Component Information

Chemical name	Partition coefficient
CYCLOHEXANE	3.44

12.4. Mobility in soil

Mobility in soil

Low solubility and floats on water.

12.5. Results of PBT and vPvB assessment

PBT and vPvB assessment

The product does not contain any substance(s) classified as PBT or vPvB.

Chemical name	PBT and vPvB assessment
CYCLOHEXANE	The substance is not PBT / vPvB

12.6. Other adverse effects

No information available.

SECTION 13: Disposal considerations**13.1. Waste treatment methods**

Waste from residues/unused products	Should not be released into the environment. Waste is classified as hazardous waste. Disposal to licensed waste disposal site in accordance with the local Waste Disposal Authority.
Contaminated packaging	Empty containers pose a potential fire and explosion hazard. Do not cut, puncture or weld containers.

SECTION 14: Transport information**IATA**

14.1 UN number or ID number	UN1145
14.2 UN proper shipping name	CYCLOHEXANE
14.3 Transport hazard class(es)	3
14.4 Packing group	II
14.5 Environmental hazards	Yes
14.6 Special precautions for user	
Special Provisions	None
ERG Code	3H

IMDG

14.1 UN number or ID number	UN1145
UN proper shipping name	CYCLOHEXANE
14.3 Transport hazard class(es)	3
14.4 Packing group	II
14.5 Environmental hazards	Yes
14.6 Special precautions for user	
Special Provisions	None
EmS-No	F-E, S-D
14.7 Maritime transport in bulk according to IMO instruments	No information available

RID

14.1 UN number or ID number	UN1145
14.2 UN proper shipping name	CYCLOHEXANE
14.3 Transport hazard class(es)	3
14.4 Packing group	II
14.5 Environmental hazards	Yes
14.6 Special precautions for user	
Special Provisions	None
Classification code	F1

ADR

14.1 UN number or ID number	UN1145
14.2 UN proper shipping name	CYCLOHEXANE
14.3 Transport hazard class(es)	3
14.4 Packing group	II
14.5 Environmental hazards	Yes
14.6 Special precautions for user	
Special Provisions	None
Classification code	F1
Tunnel restriction code	(D/E)

SECTION 15: Regulatory information**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture****National regulations**

Authorisations and/or restrictions on use:

This product contains one or more substances subject to restriction (UK REACH - Annex XVII).

This product does not contain substances subject to authorisation (UK REACH - Annex XIV).

Product restricted per REACH Annex XVII: 3

Chemical name	Restricted substance per REACH Annex XVII	Substance subject to authorisation per REACH Annex XIV
CYCLOHEXANE - 110-82-7	57. 75.	-

Persistent Organic Pollutants

Not applicable

Export Notification requirements

Not applicable

Dangerous substance category per COMAH Regulations 2015 (as amended)

P5c - FLAMMABLE LIQUIDS

E1 - Hazardous to the Aquatic Environment in Category Acute 1 or Chronic 1

Named dangerous substances per COMAH Regulations 2015 (as amended)

Not applicable

The Ozone-Depleting Substances Regulations 2015

Not applicable

The Biocidal Products Regulations 2001 (as amended)

Not applicable

The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (as amended)

Not applicable

Poisons Act 1972 (Explosive Precursors) Regulations (as Amended)

Not applicable

Other Regulations

Directive 2010/75/EU on industrial emissions. The provisions of directive 2004/42/EC on VOC apply to this product. Refer to the product label and/or technical data sheet for further information.

International Inventories

TSCA	Contact supplier for inventory compliance status
DSL/NDSL	Contact supplier for inventory compliance status
EINECS/ELINCS	Contact supplier for inventory compliance status
ENCS	Contact supplier for inventory compliance status
IECSC	Contact supplier for inventory compliance status
KECI	Contact supplier for inventory compliance status
PICCS	Contact supplier for inventory compliance status
AIIC	Contact supplier for inventory compliance status
NZIoC	Contact supplier for inventory compliance status

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

ENCS - Japan Existing and New Chemical Substances

IECSC - China Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

AIIC - Australian Inventory of Industrial Chemicals

NZIoC - New Zealand Inventory of Chemicals

15.2. Chemical safety assessment**Chemical Safety Report**

A Chemical Safety Assessment has been carried out for this substance

SECTION 16: Other information**Key or legend to abbreviations and acronyms used in the safety data sheet****Full text of H-Statements referred to under section 3**

H225 - Highly flammable liquid and vapour

H304 - May be fatal if swallowed and enters airways

H315 - Causes skin irritation

H336 - May cause drowsiness or dizziness

H400 - Very toxic to aquatic life
H410 - Very toxic to aquatic life with long lasting effects

Legend

SVHC: Substances of Very High Concern for Authorisation:

Legend Section 8: Exposure controls/personal protection

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	*	Skin designation
+	Sensitisers		

Revision Note **SDS sections updated 1 16**

Classification procedure

Classification according to Regulation (EC) No. 1272/2008 [CLP]	Method Used
Acute oral toxicity	On basis of test data
Acute dermal toxicity	On basis of test data
Acute inhalation toxicity - gas	Calculation method
Acute inhalation toxicity - vapour	On basis of test data
Acute inhalation toxicity - dust/mist	Calculation method
Skin corrosion/irritation	On basis of test data
Serious eye damage/eye irritation	On basis of test data
Respiratory sensitisation	Calculation method
Skin sensitisation	On basis of test data
Mutagenicity	On basis of test data
Carcinogenicity	On basis of test data
Reproductive toxicity	On basis of test data
STOT - single exposure	On basis of test data
STOT - repeated exposure	On basis of test data
Acute aquatic toxicity	On basis of test data
Chronic aquatic toxicity	Calculation method
Aspiration hazard	On basis of test data
Ozone	Calculation method

Key literature references and sources for data used to compile the SDS

Agency for Toxic Substances and Disease Registry (ATSDR)
U.S. Environmental Protection Agency ChemView Database
European Food Safety Authority (EFSA)
European Chemicals Agency (ECHA) Committee for Risk Assessment (ECHA_RAC)
European Chemicals Agency (ECHA) (ECHA_API)
Environmental Protection Agency
Acute Exposure Guideline Level(s) (AEGL(s))
U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act
U.S. Environmental Protection Agency High Production Volume Chemicals
Food Research Journal
Hazardous Substance Database
International Uniform Chemical Information Database (IUCLID)
National Institute of Technology and Evaluation (NITE)
Australian National Industrial Chemicals Notification and Assessment Scheme (NICNAS)
NIOSH (National Institute for Occupational Safety and Health)
National Library of Medicine's ChemID Plus (NLM CIP)
National Library of Medicine's PubMed database (NLM PUBMED)
U.S. National Toxicology Program (NTP)
New Zealand's Chemical Classification and Information Database (CCID)
Organisation for Economic Co-operation and Development Environment, Health, and Safety Publications
Organisation for Economic Co-operation and Development High Production Volume Chemicals Programme
Organisation for Economic Co-operation and Development Screening Information Data Set
World Health Organization

Prepared By K Winter

Supersedes date 30-Aug-2024

Revision date 20-Sep-2024

This material safety data sheet complies with the requirements of UK REACH Regulations (SI 2019/758 as amended)
Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work

Disclaimer

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

End of Safety Data Sheet

Exposure scenario Use in coatings - Consumer

Identification

Product name	Cyclohexane
REACH registration number	01-2119463273-41-XXXX
CAS number	110-82-7
EC number	203-806-2
EU index number	601-017-00-1
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use in coatings - Consumer
Process scope	Covers general exposures to consumers arising from the use of household products sold as washing and cleaning products, aerosols, coatings, de-icers, lubricants and air care products.
Product category	PC1 Adhesives, sealants. PC4 Anti-freeze and de-icing products. PC8 Biocidal products PC9a Coatings and paints, thinners, paint removers. PC9b Fillers, putties, plasters, modelling clay. PC15 Non-metal-surface treatment products. PC18 Ink and toners. PC23 Leather treatment products PC24 Lubricants, greases and release products. PC31 Polishes and wax blends. PC34 Textile dyes and impregnating products PC5 Artists supply and hobby preparations. PC10 Building and construction preparations not covered elsewhere.
Main sector	SU21 Consumer uses
<u>Environment</u>	
Environmental release category	ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)
SPERC	ESVOC SPERC 9.12c.v1

Use in coatings - Consumer

2. Conditions of use affecting exposure (Non-industrial - Environment 1)

Product characteristics

Physical state	Liquid, vapour pressure > 10 kPa at STP
Concentration details	Covers concentrations up to 100 %. Readily biodegradable. Predominantly hydrophobic.

Amounts used

Annual amount used in the EU: 1900 tonnes
Regional use tonnage: 190 tonnes/year
Fraction of Regional tonnage used locally: 0.002

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 98.5%
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 1%
Emission factor - soil	Release fraction to soil from process (initial release prior to RMM): 0.5%

Risk management measures

STP type	Municipal STP.
STP details	Assumed domestic sewage treatment plant flow: 20000 m ³ /day Estimated substance removal from wastewater via domestic sewage treatment: 96.6%

Conditions and measures related to external treatment of waste for disposal

Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
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2. Conditions of use affecting exposure (Non-industrial - Health 1)

Product characteristics

Physical state	Liquid, vapour pressure > 10 kPa at STP
Concentration details	Covers concentrations up to 100 %. Unless otherwise stated. PC1_1 Glues, hobby use PC1_2 Glues DIY-use (carpet glue, tile glue, wood parquet glue) PC1_3 Glue from spray Covers concentrations up to 30 %. PC1_4 Sealants PC24_2 Pastes Covers concentrations up to 20 %. PC4_1 Washing car window Covers concentrations up to 1 %. PC4_2 Pouring into radiator PC18 Ink and toners. PC34 Textile dyes and impregnating products Covers concentrations up to 10 %. PC8_2 Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners) Covers concentrations up to 5 %. PC8_3 Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners) Covers concentrations up to 15 %. PC9a_2 Solvent-rich, high-solid, water-borne paint PC15 Non-metal-surface treatment products. Water-borne paint Covers concentrations up to 27.5 %. PC9a_3 Aerosol spray can PC9a_4 Removers (paint-, glue-, wallpaper-, sealant-remover) PC15 Non-metal-surface treatment products. Aerosol Paint remover Glue remover Wallpaper remover PC23 Leather treatment products PC24_3 Sprays PC31 Polishes and wax blends. Covers concentrations up to 50 %. PC9b_1 Fillers and putty PC9b_2 Plasters and floor equalisers Covers concentrations up to 2 %.

Amounts used

Use in coatings - Consumer

For each use event, covers use amounts up to 13800 g.

Unless otherwise stated.

PC1_1 Glues, hobby use

For each use event, covers use amounts up to 9 g.

PC1_2 Glues DIY-use (carpet glue, tile glue, wood parquet glue)

For each use event, covers use amounts up to 6390 g.

PC1_3 Glue from spray

For each use event, covers use amounts up to 85.05 g.

PC1_4 Sealants

For each use event, covers use amounts up to 75 g.

PC4_1 Washing car window

For each use event, covers use amounts up to 0.5 g.

PC4_2 Pouring into radiator

For each use event, covers use amounts up to 2000 g.

PC8_2 Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)

For each use event, covers use amounts up to 27 g.

PC8_3 Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)

PC31_2 Polishes, spray (furniture, shoes)

For each use event, covers use amounts up to 35 g.

PC9a_2 Solvent-rich, high-solid, water-borne paint

PC15 Non-metal-surface treatment products.

Water-borne paint

For each use event, covers use amounts up to 744 g.

PC9a_3 Aerosol spray can

PC15 Non-metal-surface treatment products.

Aerosol

For each use event, covers use amounts up to 215 g.

PC9a_4 Removers (paint-, glue-, wallpaper-, sealant-remover)

PC15 Non-metal-surface treatment products.

Paint remover

Wallpaper remover

Glue remover

For each use event, covers use amounts up to 491 g.

PC9b_1 Fillers and putty

For each use event, covers use amounts up to 85 g.

PC18 Ink and toners.

For each use event, covers use amounts up to 40 g.

PC23 Leather treatment products

For each use event, covers use amounts up to 56 g.

PC24_1 Liquids

For each use event, covers use amounts up to 2200 g.

PC24_2 Pastes

For each use event, covers use amounts up to 34 g.

PC24_3 Sprays

For each use event, covers use amounts up to 73 g.

PC31_1 Polishes, wax/cream (floor, furniture, shoes)

For each use event, covers use amounts up to 142 g.

PC34 Textile dyes and impregnating products

For each use event, covers use amounts up to 115 g.

Frequency and duration of use

Use in coatings - Consumer

Covers use up to 365 day(s)/year.

Unless otherwise stated.

PC1_2 Glues DIY-use (carpet glue, tile glue, wood parquet glue)

Covers use up to 1 day(s)/year.

PC1_3 Glue from spray

PC9a_2 Solvent-rich, high-solid, water-borne paint

PC24_3 Sprays

Covers use up to 6 day(s)/year.

PC8_3 Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)

Covers use up to 128 day(s)/year.

PC9a_3 Aerosol spray can

Covers use up to 2 day(s)/year.

PC9a_4 Removers (paint-, glue-, wallpaper-, sealant-remover).

Covers use up to 3 days/year.

PC9b Fillers, putties, plasters, modelling clay.

Covers use up to 12 day(s)/year.

PC31_1 Polishes, wax/cream (floor, furniture, shoes)

Covers use up to 29 day(s)/year.

PC31_2 Polishes, spray (furniture, shoes)

Covers use up to 8 day(s)/year.

PC24_1 Liquids

Covers use up to 4 day(s)/year.

PC24_2 Pastes

Covers use up to 10 day(s)/year.

Covers use up to 1 times/day of use . Covers exposure up to 6 hours per event. Unless otherwise stated. PC1_1 Glues, hobby use PC1_3 Glue from spray PC9b_1 Fillers and putty Covers exposure up to 4 hours per event. PC1_4 Sealants PC34 Textile dyes and impregnating products Covers exposure up to 1 hours per event. PC4_1 Washing car window Covers exposure up to 0.02 hours per event. PC4_2 Pouring into radiator PC8_3 Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners) PC24_1 Liquids PC24_3 Sprays Covers exposure up to 0.17 hours per event. PC8_2 Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners) PC9a_3 Aerosol spray can PC15 Non-metal-surface treatment products. Aerosol PC31_2 Polishes, spray (furniture, shoes) Covers exposure up to 0.33 hours per event. PC9a_4 Removers (paint-, glue-, wallpaper-, sealant-remover) PC9b_2 Plasters and floor equalisers PC15 Non-metal-surface treatment products. Paint remover Wallpaper remover Glue remover Covers exposure up to 2 hours per event. PC9a_2 Solvent-rich, high-solid, water-borne paint PC15 Non-metal-surface treatment products. Water-borne paint PC18 Ink and toners. Covers exposure up to 2.2 hours per event. PC31_1 Polishes, wax/cream (floor, furniture, shoes) Covers exposure up to 1.23 hours per event.

Human factors not influenced by risk management

Potentially exposed body parts

Covers skin contact area up to 857.50 cm². Unless otherwise stated. PC1_1 Glues, hobby use PC1_3 Glue from spray PC1_4 Sealants PC9b_1 Fillers and putty Covers skin contact area up to 35.73 cm². PC1_2 Glues DIY-use (carpet glue, tile glue, wood parquet glue) Covers skin contact area up to 110 cm². PC4_2 Pouring into radiator PC8_3 Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners) PC9a_2 Solvent-rich, high-solid, water-borne paint PC15 Non-metal-surface treatment products. Water-borne paint PC23 Leather treatment products PC24_3 Sprays PC31 Polishes and wax blends. Covers skin contact area up to 430 cm². PC18 Ink and toners. Covers skin contact area up to 71.4 cm². PC24_2 Pastes Covers skin contact area up to 468 cm².

Other given operational conditions affecting Non-industrial exposure

Temperature

Assumes activities are at ambient temperature (unless stated differently).

Use in coatings - Consumer

Room size Covers use in room size of 20 m³. Unless otherwise stated. PC1_4 Sealants PC4_1 Washing car window PC4_2 Pouring into radiator PC9a_3 Aerosol spray can. PC15 Non-metal-surface treatment products. Aerosol PC24_1 Liquids Covers use in a one car garage (34 m³) under typical ventilation.

Ventilation rate Covers use under typical household ventilation.

Other given operational conditions affecting Non-industrial exposure

No specific risk management measure identified beyond those operational conditions stated.

3. Exposure estimation (Environment 1)

Assessment method Used EUSES model.
The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Environment 1)

Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

3. Exposure estimation (Health 1)

Assessment method Used ECETOC TRA model.
The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Health 1)

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.

Exposure scenario Use as a fuel - Consumer

Identification

Product name	Cyclohexane
REACH registration number	01-2119463273-41-XXXX
CAS number	110-82-7
EC number	203-806-2
EU index number	601-017-00-1
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use as a fuel - Consumer
Process scope	Covers consumer uses in liquid fuels.
Product category	PC13 Fuels.
Main sector	SU21 Consumer uses

Environment

Environmental release category	ERC9a Widespread use of functional fluid (indoor) ERC9b Widespread use of functional fluid (outdoor)
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2. Conditions of use affecting exposure (Non-industrial - Environment 1)

Product characteristics

Physical state	Liquid, vapour pressure > 10 kPa at STP
Concentration details	Covers concentrations up to 100 %. Readily biodegradable. Predominantly hydrophobic.

Amounts used

Annual amount used in the EU: 1900 tonnes
Regional use tonnage: 190 tonnes/year
Fraction of Regional tonnage used locally: 0.002

Frequency and duration of use

Emission days: 365 days/year

Use as a fuel - Consumer

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from wide dispersive use (regional only): 0.05
Emission factor - water	Release fraction to wastewater from wide dispersive use: 0.05
Emission factor - soil	Release fraction to soil from wide dispersive use (regional only): 0.05

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
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Risk management measures

STP type	Municipal STP.
STP details	Assumed domestic sewage treatment plant flow: 20000 m ³ /day Estimated substance removal from wastewater via domestic sewage treatment: 96.6%

Conditions and measures related to external treatment of waste for disposal

Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
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2. Conditions of use affecting exposure (Non-industrial - Health 1)

Product characteristics

Physical state	Liquid, vapour pressure > 10 kPa at STP
Concentration details	Covers concentrations up to 100 %. Unless otherwise stated. PC13_1 Liquid: automotive refuelling Covers concentrations up to 25 %. PC13_2 Liquid: scooter refuelling Covers concentrations up to 30 %. PC13_3 Liquid: garden equipment - use PC13_4 Liquid: Garden equipment - Refuelling PC13_5 Liquid: lamp oil Covers concentrations up to 50 %.

Amounts used

PC13_1 Liquid: automotive refuelling
For each use event, covers use amounts up to 37500 g.
PC13_2 Liquid: scooter refuelling
For each use event, covers use amounts up to 3750 g.
PC13_3 Liquid: garden equipment - use
PC13_4 Liquid: Garden equipment - Refuelling
For each use event, covers use amounts up to 750 g.
PC13_5 Liquid: lamp oil
For each use event, covers use amounts up to 100 g.

Frequency and duration of use

PC13_1 Liquid: automotive refuelling
PC13_2 Liquid: scooter refuelling
PC13_5 Liquid: lamp oil
Covers use up to 52 day(s)/year.
PC13_3 Liquid: garden equipment - use
PC13_4 Liquid: Garden equipment - Refuelling
Covers use up to 26 day(s)/year.

Covers use up to 1 times/day of use . PC13_1 Liquid: automotive refuelling Covers exposure up to 0.05 hours per event. PC13_2 Liquid: scooter refuelling PC13_4 Liquid: Garden equipment - Refuelling Covers exposure up to 0.03 hours per event. PC13_3 Liquid: garden equipment - use Covers exposure up to 2 hours per event. PC13_5 Liquid: lamp oil Covers exposure up to 0.01 hours per event.

Human factors not influenced by risk management

Use as a fuel - Consumer

Potentially exposed body parts	PC13_1 Liquid: automotive refuelling PC13_2 Liquid: scooter refuelling PC13_3 Liquid: garden equipment - use PC13_5 Liquid: lamp oil Covers skin contact area up to 210 cm ² . PC13_4 Liquid: Garden equipment - Refuelling Covers skin contact area up to 420 cm ² .
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Other given operational conditions affecting Non-industrial exposure

Setting	Indoor/outdoor use.
Temperature	Assumes activities are at ambient temperature (unless stated differently).
Room size	Covers use in room size of 100 m ³ . Unless otherwise stated. PC13_4 Liquid: Garden equipment - Refuelling Covers use in a one car garage (34 m ³) under typical ventilation. PC13_5 Liquid: lamp oil Covers use in room size of 20 m ³ .
Ventilation rate	Covers use under typical household ventilation.

3. Exposure estimation (Environment 1)

Assessment method	Used EUSES model. The use is assessed to be safe.
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3. Exposure estimation (Health 1)

Assessment method	Used ECETOC TRA model. The use is assessed to be safe.
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4. Guidance to check compliance with the exposure scenario (Health 1)

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.

Exposure scenario Use as a Cleaning Agent - Consumer

Identification

Product name	Cyclohexane
REACH registration number	01-2119457290-43-XXXX
CAS number	110-82-7
EC number	203-806-2
EU index number	601-017-00-1
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use as a Cleaning Agent - Consumer
Process scope	Covers general exposures to consumers arising from the use of household products sold as washing and cleaning products, aerosols, coatings, de-icers, lubricants and air care products.
Product category	PC3 Air care products. PC4 Anti-freeze and de-icing products. PC8 Biocidal products PC9a Coatings and paints, thinners, paint removers. PC9b Fillers, putties, plasters, modelling clay. PC9c Finger paints. PC24 Lubricants, greases and release products. PC35 Washing and cleaning products PC38 Welding and soldering products, flux products
Main sector	SU21 Consumer uses
<u>Environment</u>	
Environmental release category	ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

2. Conditions of use affecting exposure (Non-industrial - Environment 1)

Product characteristics

Physical state	Liquid, vapour pressure > 10 kPa at STP
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Use as a Cleaning Agent - Consumer

Concentration details Covers concentrations up to 100 %.
Readily biodegradable. Predominantly hydrophobic.

Amounts used

Annual amount used in the EU: 1900 tonnes
Regional use tonnage: 190 tonnes/year
Fraction of Regional tonnage used locally: 0.002

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from wide dispersive use (regional only): 0.95
Emission factor - water Release fraction to wastewater from wide dispersive use: 0.025
Emission factor - soil Release fraction to soil from wide dispersive use (regional only): 0.025

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Risk management measures

STP type Municipal STP.
STP details Assumed domestic sewage treatment plant flow: 20000 m³/day
Estimated substance removal from wastewater via domestic sewage treatment: 96.6%

Conditions and measures related to external treatment of waste for disposal

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

2. Conditions of use affecting exposure (Non-industrial - Health 1)

Product characteristics

Physical state Liquid, vapour pressure > 10 kPa at STP

Concentration details Covers concentrations up to 100 %. Unless otherwise stated. PC3_1 Air care, instant action (aerosol sprays) PC4_3 Lock de-icer Covers concentrations up to 50 %. PC3_2 Air care, continuous action (solid and liquid) Covers concentrations up to 10 %. PC4_1 Washing car window PC9b_3 Modelling clay Covers concentrations up to 1 %. PC4_2 Pouring into radiator Covers concentrations up to 7.5 %. PC8 Biocidal products PC24_3 Sprays Covers concentrations up to 5 %. PC9a_1 Water-borne latex wall paint Covers concentrations up to 0.25 %. PC9a_2 Solvent-rich, high-solid, water-borne paint Covers concentrations up to 0.9 %. PC9a_3 Aerosol spray can Covers concentrations up to 4 %. PC9a_4 Removers (paint-, glue-, wallpaper-, sealant-remover) Covers concentrations up to 1.3 %. PC9b_1 Fillers and putty Covers concentrations up to 2 %. PC9b_2 Plasters and floor equalisers Covers concentrations up to 0.05 %. PC9c Finger paints. Covers concentrations up to 30 %. PC24_1 Liquids Covers concentrations up to 35 %. PC24_2 Pastes PC38 Welding and soldering products, flux products Covers concentrations up to 20 %. PC35 Washing and cleaning products PC8_1 Laundry and dish-washing products PC35 Washing and cleaning products PC8_2 Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners) Covers concentrations up to 5 %. PC35 Washing and cleaning products PC8_3 Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners) Covers concentrations up to 10 %.

Amounts used

Use as a Cleaning Agent - Consumer

For each use event, covers use amounts up to 37500 g.
Unless otherwise stated.

PC3_1 Air care, instant action (aerosol sprays)

For each use event, covers use amounts up to 0.1 g.

PC3_2 Air care, continuous action (solid and liquid)

For each use event, covers use amounts up to 0.48 g.

PC4_1 Washing car window

For each use event, covers use amounts up to 0.5 g.

PC4_2 Pouring into radiator

For each use event, covers use amounts up to 2000 g.

PC4_3 Lock de-icer

For each use event, covers use amounts up to 4 g.

PC8_1 Laundry and dish-washing products

For each use event, covers use amounts up to 15 g.

PC8_2 Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)

For each use event, covers use amounts up to 27 g.

PC9a_1 Water-borne latex wall paint

For each use event, covers use amounts up to 2760 g.

PC9a_2 Solvent-rich, high-solid, water-borne paint

For each use event, covers use amounts up to 744 g.

PC9a_3 Aerosol spray can

For each use event, covers use amounts up to 215 g.

PC9a_4 Removers (paint-, glue-, wallpaper-, sealant-remover)

For each use event, covers use amounts up to 491 g.

PC9b_1 Fillers and putty

For each use event, covers use amounts up to 85 g.

PC9b_2 Plasters and floor equalisers

For each use event, covers use amounts up to 13800 g.

PC9b_3 Modelling clay

For each use event, covers use amounts up to 1 g.

PC9c Finger paints

For each use event, covers use amounts up to 1.35 g.

PC24_1 Liquids

For each use event, covers use amounts up to 2200 g.

PC24_2 Pastes

For each use event, covers use amounts up to 34 g.

PC24_3 Sprays

For each use event, covers use amounts up to 73 g.

PC35 Washing and cleaning products

PC8_1 Laundry and dish-washing products

For each use event, covers use amounts up to 15 g.

PC35 Washing and cleaning products

PC8_2 Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)

For each use event, covers use amounts up to 27 g.

PC35 Washing and cleaning products

PC8_3 Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)

For each use event, covers use amounts up to 35 g.

PC38 Welding and soldering products, flux products

For each use event, covers use amounts up to 12 g.

Frequency and duration of use

Use as a Cleaning Agent - Consumer

Covers use up to 365 day(s)/year.

Unless otherwise stated.

PC8_2 Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)

Covers use up to 128 day(s)/year.

PC9a_1 Water-borne latex wall paint

PC9a_3 Aerosol spray can.

PC24_1 Liquids

Covers use up to 4 day(s)/year.

PC9a_2 Solvent-rich, high-solid, water-borne paint

PC24_3 Sprays

Covers use up to 6 day(s)/year.

PC9a_4 Removers (paint-, glue-, wallpaper-, sealant-remover)

Covers use up to 3 days/year.

PC9b_1 Fillers and putty

PC9b_2 Plasters and floor equalisers

Covers use up to 12 day(s)/year.

PC24_2 Pastes

Covers use up to 10 day(s)/year.

PC35 Washing and cleaning products

PC8_2 Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)

PC35 Washing and cleaning products

PC8_3 Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)

Covers use up to 128 day(s)/year.

Covers use up to 1 times/day of use . Unless otherwise stated. PC3_1 Air care, instant action (aerosol sprays) Covers use up to 4 times/day of use . Covers exposure up to 2 hours per event. Unless otherwise stated. PC3_1 Air care, instant action (aerosol sprays) Covers

exposure up to 0.25 hours per event. PC3_2 Air care, continuous action (solid and liquid) Covers exposure up to 8 hours per event. PC4_1 Washing car window Covers exposure up to

0.02 hours per event. PC4_2 Pouring into radiator PC24_1 Liquids PC24_3 Sprays PC35 Washing and cleaning products PC8_3 Cleaners, trigger sprays (all purpose cleaners,

sanitary products, glass cleaners) Covers exposure up to 0.17 hours per event. PC4_3 Lock de-icer Covers exposure up to 0.25 hours per event. PC8_1 Laundry and dish-washing

products PC35 Washing and cleaning products PC8_1 Laundry and dish-washing products Covers exposure up to 0.5 hours per event. PC8_2 Cleaners, liquids (all purpose cleaners,

sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners) PC9a_3 Aerosol spray can PC35 Washing and cleaning products PC8_2 Cleaners, liquids (all purpose

cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners) Covers exposure up to 0.33 hours per event. PC9a_1 Water-borne latex wall paint PC9a_2

Solvent-rich, high-solid, water-borne paint Covers exposure up to 2.2 hours per event. PC9b_1 Fillers and putty Covers exposure up to 4 hours per event. PC38 Welding and

soldering products, flux products Covers exposure up to 1 hours per event.

Human factors not influenced by risk management

Potentially exposed body parts

Covers skin contact area up to 430 cm². Unless otherwise stated. PC3_2 Air care, continuous action (solid and liquid) PC9b_1 Fillers and putty Covers skin contact area up to 35.7 cm².

PC4_3 Lock de-icer Covers skin contact area up to 214.4 cm². PC8 Biocidal products PC9a_4 Removers (paint-, glue-, wallpaper-, sealant-remover) PC9b_2 Plasters and floor equalisers

PC35 Washing and cleaning products PC8_1 Laundry and dish-washing products PC35 Washing and cleaning products PC8_2 Cleaners, liquids (all purpose cleaners, sanitary

products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners) Covers skin contact area up to 857.5 cm². PC9b_3 Modelling clay PC9c Finger paints Covers skin contact area up

to 254.4 cm². PC24_1 Liquids PC24_2 Pastes Covers skin contact area up to 468 cm².

Use as a Cleaning Agent - Consumer

Other given operational conditions affecting Non-industrial exposure

Temperature	Assumes activities are at ambient temperature (unless stated differently).
Room size	Covers use in room size of 20 m ³ . Unless otherwise stated. PC4 Anti-freeze and de-icing products. PC9a_3 Aerosol spray can PC24_1 Liquids PC24_2 Pastes Covers use in a one car garage (34 m ³) under typical ventilation.
Ventilation rate	Covers use under typical household ventilation.

3. Exposure estimation (Environment 1)

Assessment method	Used EUSES model.
	The use is assessed to be safe.

3. Exposure estimation (Health 1)

Assessment method	Used ECETOC TRA model.
	The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Health 1)

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.

Exposure scenario

Distribution of substance - Industrial

Identification

Product name	Cyclohexane
REACH registration number	01-2119463273-41-XXXX
CAS number	110-82-7
EC number	203-806-2
EU index number	601-017-00-1
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Distribution of substance - Industrial
Process scope	Loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading distribution and associated laboratory activities.
Main sector	SU3 Industrial uses
Sector of use	SU8 Manufacture of bulk, large-scale chemicals (including petroleum products) SU9 Manufacture of fine chemicals

Environment

Environmental release category	ERC1 Manufacture of the substance ERC2 Formulation into mixture
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Worker

Distribution of substance - Industrial

Process category	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
	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 mixture into small containers (dedicated filling line, including weighing)
	PROC15 Use as laboratory reagent.

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Liquid, vapour pressure > 10 kPa at STP
Concentration details	Covers concentrations up to 100 %.
	Readily biodegradable. Predominantly hydrophobic.

Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Common practices vary across sites, thus conservative process release estimates used.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Liquid, vapour pressure > 10 kPa at STP
Concentration details	Covers concentrations up to 100 %. Unless otherwise stated.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Temperature	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
	Common practices vary across sites, thus conservative process release estimates used.

Technical conditions and measures at process level (source) to prevent release

Technical protective measures	Provide extract ventilation to points where emissions occur. Clear transfer lines prior to de-coupling. Drain or remove substance from equipment prior to break-in or maintenance.
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Risk management measures

Wear suitable gloves tested to EN374.
Wear suitable coveralls to prevent exposure to the skin.
Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Environment 1)

Assessment method	EUSES v2.1
	The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Environment 1)

Distribution of substance - Industrial

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given 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.

3. Exposure estimation (Health 1)

Assessment method	Used EUSES model.
	The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Health 1)

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.

Exposure scenario

Manufacture of substance - Industrial

Identification

Product name	Cyclohexane
REACH registration number	01-2119463273-41-XXXX
CAS number	110-82-7
EC number	203-806-2
EU index number	601-017-00-1
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Manufacture of substance - Industrial
Process scope	Manufacture of the substance or use as a process chemical or extraction 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.
Main sector	SU3 Industrial uses
<u>Environment</u>	
Environmental release category	ERC1 Manufacture of the substance ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
<u>Worker</u>	
Process category	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 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 PROC15 Use as laboratory reagent.

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Manufacture of substance - Industrial

Physical state	Liquid, vapour pressure > 10 kPa at STP
Concentration details	Covers concentrations up to 100 %.
	Readily biodegradable. Predominantly hydrophobic.

Amounts used

Regional use tonnage: 300000 tonnes/year
Annual amount used in the EU: 1000000 tonnes

Frequency and duration of use

Emission days: 300 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 0.05
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.000015
Emission factor - soil	Release fraction to soil from process (initial release prior to RMM): 0.0001

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 40 Local marine water dilution factor: 100
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Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Air	Treat air emission to provide a typical removal efficiency of 90%.
Soil	Soil emission controls are not applicable as there is no direct release to soil. Do not apply industrial sludge to natural soils. Common practices vary across sites, thus conservative process release estimates used.

Conditions and measures related to external treatment of waste for disposal

Sludge treatment	Sludge should be incinerated, contained or reclaimed.
Waste treatment	During manufacturing no waste of the substance is generated.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Liquid, vapour pressure > 10 kPa at STP
Concentration details	Covers concentrations up to 100 %. Unless otherwise stated.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Temperature	Assumes use at not more than 20°C above ambient temperature, unless stated differently. Common practices vary across sites, thus conservative process release estimates used.
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Technical conditions and measures at process level (source) to prevent release

Technical protective measures	Provide extract ventilation to points where emissions occur. Clear transfer lines prior to de-coupling. Drain or remove substance from equipment prior to break-in or maintenance. Sample via a closed loop or other system to avoid exposure. Avoid dip sampling.
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Risk management measures

Manufacture of substance - Industrial

Wear suitable gloves tested to EN374.

Wear suitable coveralls to prevent exposure to the skin.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Environment 1)

Assessment method EUSES v2.1

The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given 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.

3. Exposure estimation (Health 1)

Assessment method Used EUSES model.

The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Health 1)

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.

Exposure scenario

Formulation and (re)packing of substances and mixtures - Industrial

Identification

Product name	Cyclohexane
REACH registration number	01-2119463273-41-XXXX
CAS number	110-82-7
EC number	203-806-2
EU index number	601-017-00-1
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Formulation and (re)packing of substances and mixtures - Industrial
Process scope	Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tableting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.
Main sector	SU3 Industrial uses
Sector of use	SU10 Formulation [mixing] of preparations and/or re-packaging
<u>Environment</u>	
Environmental release category	ERC2 Formulation into mixture
<u>Worker</u>	

Formulation and (re)packing of substances and mixtures - Industrial

Process category	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 PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC14 Tableting, compression, extrusion, pelletisation, granulation PROC15 Use as laboratory reagent.
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Liquid, vapour pressure > 10 kPa at STP
Concentration details	Covers concentrations up to 100 %. Readily biodegradable. Predominantly hydrophobic.

Amounts used

Annual amount used in the EU: 17142000 tonnes
Annual amount per site: 1714 tonnes

Frequency and duration of use

Emission days: 300 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 0.025
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.0002
Emission factor - soil	Release fraction to soil from process (initial release prior to RMM): 0.0001

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
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Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Air	Treat air emission to provide a typical removal efficiency of 90%.
Water	Prevent discharge of undissolved substance to or recover from onsite waste water. If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of 96.6%.
Soil	Soil emission controls are not applicable as there is no direct release to soil. Do not apply industrial sludge to natural soils. Common practices vary across sites, thus conservative process release estimates used.

Conditions and measures related to external treatment of waste for disposal

Sludge treatment	Sludge should be incinerated, contained or reclaimed.
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Formulation and (re)packing of substances and mixtures - Industrial

Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
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2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Liquid, vapour pressure > 10 kPa at STP
Concentration details	Covers concentrations up to 100 %. Unless otherwise stated.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Temperature	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Ventilation rate	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Common practices vary across sites, thus conservative process release estimates used.

Technical conditions and measures at process level (source) to prevent release

Technical protective measures	Provide extract ventilation to points where emissions occur. Clear transfer lines prior to de-coupling. Drain or remove substance from equipment prior to break-in or maintenance. Sample via a closed loop or other system to avoid exposure. Avoid dip sampling.
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Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Ensure the ventilation system is regularly maintained and tested.
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Risk management measures

Wear suitable gloves tested to EN374.
Wear suitable coveralls to prevent exposure to the skin.
Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Environment 1)

Assessment method	EUSES v2.1 The use is assessed to be safe.
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4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given 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.

3. Exposure estimation (Health 1)

Assessment method	Used EUSES model. The use is assessed to be safe.
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4. Guidance to check compliance with the exposure scenario (Health 1)

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.

Exposure scenario Use in laboratories - Industrial

Identification

Product name	Cyclohexane
REACH registration number	01-2119463273-41-XXXX
CAS number	110-82-7
EC number	203-806-2
EU index number	601-017-00-1
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use in laboratories - Industrial
Process scope	Use of the substance within laboratory settings, including material transfers and equipment cleaning.
Main sector	SU3 Industrial uses
Sector of use	SU10 Formulation [mixing] of preparations and/or re-packaging

Environment

Environmental release category	ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
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Worker

Process category	PROC10 Roller application or brushing PROC15 Use as laboratory reagent.
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Liquid, vapour pressure > 10 kPa at STP
Concentration details	Covers concentrations up to 100 %. Readily biodegradable. Predominantly hydrophobic.

Frequency and duration of use

Emission days: 100 days/year

Use in laboratories - Industrial

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 0.025
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.02
Emission factor - soil	Release fraction to soil from process (initial release prior to RMM): 0.00001

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
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Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Air	Treat air emission to provide a typical removal efficiency of 90%.
Water	Prevent discharge of undissolved substance to or recover from onsite waste water. Typical onsite wastewater treatment technology provides removal efficiency of 96.6%.
Soil	Soil emission controls are not applicable as there is no direct release to soil. Do not apply industrial sludge to natural soils. Common practices vary across sites, thus conservative process release estimates used.

Conditions and measures related to external treatment of waste for disposal

Sludge treatment	Sludge should be incinerated, contained or reclaimed.
Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Liquid, vapour pressure > 10 kPa at STP
Concentration details	Covers concentrations up to 100 %. Unless otherwise stated.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Temperature	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Ventilation rate	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Common practices vary across sites, thus conservative process release estimates used.

Technical conditions and measures at process level (source) to prevent release

Technical protective measures	Handle in a fume cupboard or under extract ventilation.
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Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Ensure the ventilation system is regularly maintained and tested.
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Risk management measures

Wear suitable gloves tested to EN374.
Wear suitable coveralls to prevent exposure to the skin.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Environment 1)

Assessment method	EUSES v2.1
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Use in laboratories - Industrial

The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given 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.

3. Exposure estimation (Health 1)

Assessment method Used EUSES model.

The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Health 1)

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.

Exposure scenario Use in laboratories - Professional

Identification

Product name	Cyclohexane
REACH registration number	01-2119463273-41-XXXX
CAS number	110-82-7
EC number	203-806-2
EU index number	601-017-00-1
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use in laboratories - Professional
Process scope	Use of small quantities within laboratory settings, including material transfers and equipment cleaning.
Main sector	SU22 Professional uses
<u>Environment</u>	
Environmental release category	ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
<u>Worker</u>	
Process category	PROC10 Roller application or brushing PROC15 Use as laboratory reagent.

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Liquid, vapour pressure > 10 kPa at STP
Concentration details	Covers concentrations up to 100 %. Readily biodegradable. Predominantly hydrophobic.

Amounts used

Annual site tonnage: 2.85 tonnes

Frequency and duration of use

Use in laboratories - Professional

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 1
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 1
Emission factor - soil	Release fraction to soil from process (initial release prior to RMM): 0

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
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Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Air	Treat air emission to provide a typical removal efficiency of 90%.
Water	Prevent discharge of undissolved substance to or recover from onsite waste water. Typical onsite wastewater treatment technology provides removal efficiency of 96.6%.
Soil	Soil emission controls are not applicable as there is no direct release to soil. Do not apply industrial sludge to natural soils. Common practices vary across sites, thus conservative process release estimates used.

Conditions and measures related to external treatment of waste for disposal

Sludge treatment	Sludge should be incinerated, contained or reclaimed.
Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Liquid, vapour pressure > 10 kPa at STP
Concentration details	Covers concentrations up to 100 %. Unless otherwise stated.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Temperature	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Ventilation rate	Provide a good standard of controlled ventilation (10 to 15 air changes per hour). Common practices vary across sites, thus conservative process release estimates used.

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Handle in a fume cupboard or under extract ventilation.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure the ventilation system is regularly maintained and tested.

Risk management measures

Wear suitable gloves tested to EN374.
Wear suitable coveralls to prevent exposure to the skin.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Environment 1)

Use in laboratories - Professional

Assessment method EUSES v2.1

The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given 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.

3. Exposure estimation (Health 1)

Assessment method Used EUSES model.

The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Health 1)

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.

Exposure scenario

Use as a cleaning agent - Industrial

Identification

Product name	Cyclohexane
REACH registration number	01-2119463273-41-XXXX
CAS number	110-82-7
EC number	203-806-2
EU index number	601-017-00-1
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use as a cleaning agent - Industrial
Process scope	Covers the use as a component of cleaning products, including transfer from storage, pouring/unloading from drums or containers and exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping, automated and by hand), related equipment cleaning and maintenance.
Main sector	SU3 Industrial uses
<u>Environment</u>	
Environmental release category	ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
<u>Worker</u>	
Process category	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 PROC7 Industrial spraying 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 PROC10 Roller application or brushing PROC13 Treatment of articles by dipping and pouring.

Use as a cleaning agent - Industrial

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Liquid, vapour pressure > 10 kPa at STP
Concentration details	Covers concentrations up to 100 %. Readily biodegradable. Predominantly hydrophobic.

Amounts used

Annual amount used in the EU: 1900 tonnes

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 1
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.000003
Emission factor - soil	Release fraction to soil from process (initial release prior to RMM): 0

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
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Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Air	Treat air emission to provide a typical removal efficiency of 70%.
Water	Prevent discharge of undissolved substance to or recover from onsite waste water. If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of 96.6%.
Soil	Soil emission controls are not applicable as there is no direct release to soil. Do not apply industrial sludge to natural soils. Common practices vary across sites, thus conservative process release estimates used.

Conditions and measures related to external treatment of waste for disposal

Sludge treatment	Sludge should be incinerated, contained or reclaimed.
Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Liquid, vapour pressure > 10 kPa at STP
Concentration details	Covers concentrations up to 100 %. Unless otherwise stated.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Temperature	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Ventilation rate	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Common practices vary across sites, thus conservative process release estimates used.

Use as a cleaning agent - Industrial

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Ensure material transfers are under containment or extract ventilation. Provide extract ventilation to points where emissions occur. Clear transfer lines prior to de-coupling. Use drum pumps or carefully pour from container. Drain or remove substance from equipment prior to break-in or maintenance. PROC7 Industrial spraying Provide a good standard of controlled ventilation (10 to 15 air changes per hour).

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure the ventilation system is regularly maintained and tested.

Risk management measures

Wear suitable gloves tested to EN374.

Wear suitable coveralls to prevent exposure to the skin.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Environment 1)

Assessment method EUSES v2.1

The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given 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.

3. Exposure estimation (Health 1)

Assessment method Used EUSES model.

The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Health 1)

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.

Exposure scenario

Use as a cleaning agent - Professional

Identification

Product name	Cyclohexane
REACH registration number	01-2119463273-41-XXXX
CAS number	110-82-7
EC number	203-806-2
EU index number	601-017-00-1
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use as a cleaning agent - Professional
Process scope	Covers the use as a component of cleaning products, including transfer from storage, pouring/unloading from drums or containers and exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping, automated and by hand), related equipment cleaning and maintenance.
Main sector	SU22 Professional uses
<u>Environment</u>	
Environmental release category	ERC9b Widespread use of functional fluid (outdoor)
<u>Worker</u>	
Process category	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 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 PROC16 Use of fuels

2. Conditions of use affecting exposure (Industrial - Environment 1)

Use as a cleaning agent - Professional

Product characteristics

Physical state	Liquid, vapour pressure > 10 kPa at STP
Concentration details	Covers concentrations up to 100 %.
	Readily biodegradable. Predominantly hydrophobic.

Amounts used

Annual amount used in the EU: 1900 tonnes

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 0.05
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.05
Emission factor - soil	Release fraction to soil from process (initial release prior to RMM): 0.05

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 40
	Local marine water dilution factor: 100

Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Air	Treat air emission to provide a typical removal efficiency of 90%.
Water	Prevent discharge of undissolved substance to or recover from onsite waste water. If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of 96.6%.
Soil	Soil emission controls are not applicable as there is no direct release to soil. Do not apply industrial sludge to natural soils.
	Common practices vary across sites, thus conservative process release estimates used.

Conditions and measures related to external treatment of waste for disposal

Sludge treatment	Sludge should be incinerated, contained or reclaimed.
Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Liquid, vapour pressure > 10 kPa at STP
Concentration details	Covers concentrations up to 100 %. Unless otherwise stated.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Temperature	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Ventilation rate	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
	Common practices vary across sites, thus conservative process release estimates used.

Technical conditions and measures at process level (source) to prevent release

Use as a cleaning agent - Professional

Technical protective measures Ensure material transfers are under containment or extract ventilation. Provide extract ventilation to points where emissions occur. Clear transfer lines prior to de-coupling. Use drum pumps or carefully pour from container. Drain or remove substance from equipment prior to break-in or maintenance. Avoid dip sampling.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure the ventilation system is regularly maintained and tested.

Risk management measures

Wear suitable gloves tested to EN374.

Wear suitable coveralls to prevent exposure to the skin.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Environment 1)

Assessment method EUSES v2.1

The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given 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.

3. Exposure estimation (Health 1)

Assessment method Used EUSES model.

The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Health 1)

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.

Exposure scenario Use as a blowing agent - Industrial

Identification

Product name	Cyclohexane
REACH registration number	01-2119463273-41-XXXX
CAS number	110-82-7
EC number	203-806-2
EU index number	601-017-00-1
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use as a blowing agent - Industrial
Process scope	Use as a blowing agent for rigid and flexible foams, including material transfers, mixing and injection, curing, cutting, storage and packing
Main sector	SU3 Industrial uses
Sector of use	SU10 Formulation [mixing] of preparations and/or re-packaging

Environment

Environmental release category	ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
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Worker

Process category	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 PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC12 Use of blow agents in manufacture of foam.
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Use as a blowing agent - Industrial

Physical state	Liquid, vapour pressure > 10 kPa at STP
Concentration details	Covers concentrations up to 100 %.
	Readily biodegradable. Predominantly hydrophobic.

Amounts used

Annual amount used in the EU: 5710 tonnes
Regional use tonnage: 0.19 tonnes/year

Frequency and duration of use

Emission days: 300 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 1
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.00003
Emission factor - soil	Release fraction to soil from process (initial release prior to RMM): 0

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
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Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Air	No air emission controls required; required removal efficiency is 0%.
Water	Prevent discharge of undissolved substance to or recover from onsite waste water. If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of 96.6%.
Soil	Soil emission controls are not applicable as there is no direct release to soil. Do not apply industrial sludge to natural soils. Common practices vary across sites, thus conservative process release estimates used.

Conditions and measures related to external treatment of waste for disposal

Sludge treatment	Sludge should be incinerated, contained or reclaimed.
Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Liquid, vapour pressure > 10 kPa at STP
Concentration details	Covers concentrations up to 100 %. Unless otherwise stated.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Temperature	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Ventilation rate	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Common practices vary across sites, thus conservative process release estimates used.

Technical conditions and measures at process level (source) to prevent release

Use as a blowing agent - Industrial

Technical protective measures Provide extract ventilation to points where emissions occur.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure the ventilation system is regularly maintained and tested.

Risk management measures

Wear suitable gloves tested to EN374.

Wear suitable coveralls to prevent exposure to the skin.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Environment 1)

Assessment method EUSES v2.1

The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given 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.

3. Exposure estimation (Health 1)

Assessment method Used EUSES model.

The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Health 1)

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.

Exposure scenario Use as a fuel - Industrial

Identification

Product name	Cyclohexane
REACH registration number	01-2119463273-41-XXXX
CAS number	110-82-7
EC number	203-806-2
EU index number	601-017-00-1
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use as a fuel - Industrial
Process scope	Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.
Main sector	SU3 Industrial uses
Sector of use	SU10 Formulation [mixing] of preparations and/or re-packaging

Environment

Environmental release category	ERC7 Use of functional fluid at industrial site
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Worker

Process category	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 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 PROC16 Use of fuels
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Use as a fuel - Industrial

Product characteristics

Physical state	Liquid, vapour pressure > 10 kPa at STP
Concentration details	Covers concentrations up to 100 %.
	Readily biodegradable. Predominantly hydrophobic.

Amounts used

Annual amount used in the EU: 1900 tonnes
Regional use tonnage: 0.19 tonnes/year

Frequency and duration of use

Emission days: 300 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 0.05
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.05
Emission factor - soil	Release fraction to soil from process (initial release prior to RMM): 0.05

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 40 Local marine water dilution factor: 100
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Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Air	Treat air emission to provide a typical removal efficiency of 90%.
Water	Prevent discharge of undissolved substance to or recover from onsite waste water. If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of 96.6%.
Soil	Soil emission controls are not applicable as there is no direct release to soil. Do not apply industrial sludge to natural soils. Common practices vary across sites, thus conservative process release estimates used.

Conditions and measures related to external treatment of waste for disposal

Sludge treatment	Sludge should be incinerated, contained or reclaimed.
Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Liquid, vapour pressure > 10 kPa at STP
Concentration details	Covers concentrations up to 100 %. Unless otherwise stated.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Temperature	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Ventilation rate	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Common practices vary across sites, thus conservative process release estimates used.

Use as a fuel - Industrial

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Provide extract ventilation to points where emissions occur. Drain or remove substance from equipment prior to break-in or maintenance. Avoid dip sampling.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure the ventilation system is regularly maintained and tested.

Risk management measures

Wear suitable gloves tested to EN374.

Wear suitable coveralls to prevent exposure to the skin.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Environment 1)

Assessment method EUSES v2.1

The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given 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.

3. Exposure estimation (Health 1)

Assessment method Used EUSES model.

The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Health 1)

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.

Exposure scenario Use as a fuel - Professional

Identification

Product name	Cyclohexane
REACH registration number	01-2119463273-41-XXXX
CAS number	110-82-7
EC number	203-806-2
EU index number	601-017-00-1
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use as a fuel - Professional
Process scope	Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.
Main sector	SU22 Professional uses
<u>Environment</u>	
Environmental release category	ERC9a Widespread use of functional fluid (indoor)
<u>Worker</u>	
Process category	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 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 PROC16 Use of fuels

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Use as a fuel - Professional

Physical state	Liquid, vapour pressure > 10 kPa at STP
Concentration details	Covers concentrations up to 100 %.
	Readily biodegradable. Predominantly hydrophobic.

Amounts used

Annual amount used in the EU: 1900 tonnes
Regional use tonnage: 0.19 tonnes/year

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 0.05
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.05
Emission factor - soil	Release fraction to soil from process (initial release prior to RMM): 0.05

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 40 Local marine water dilution factor: 100
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Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Air	Treat air emission to provide a typical removal efficiency of 90%.
Water	Prevent discharge of undissolved substance to or recover from onsite waste water. If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of 96.6%.
Soil	Soil emission controls are not applicable as there is no direct release to soil. Do not apply industrial sludge to natural soils. Common practices vary across sites, thus conservative process release estimates used.

Conditions and measures related to external treatment of waste for disposal

Sludge treatment	Sludge should be incinerated, contained or reclaimed.
Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Liquid, vapour pressure > 10 kPa at STP
Concentration details	Covers concentrations up to 100 %. Unless otherwise stated.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Temperature	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Ventilation rate	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Common practices vary across sites, thus conservative process release estimates used.

Technical conditions and measures at process level (source) to prevent release

Use as a fuel - Professional

Technical protective measures Provide extract ventilation to points where emissions occur. Drain or remove substance from equipment prior to break-in or maintenance. Use drum pumps or carefully pour from container. Avoid dip sampling.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure the ventilation system is regularly maintained and tested.

Risk management measures

Wear suitable gloves tested to EN374.

Wear suitable coveralls to prevent exposure to the skin.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Environment 1)

Assessment method EUSES v2.1

The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given 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.

3. Exposure estimation (Health 1)

Assessment method Used EUSES model.

The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Health 1)

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.

Exposure scenario

Use as an intermediate - Industrial

Identification

Product name	Cyclohexane
REACH registration number	01-2119463273-41-XXXX
CAS number	110-82-7
EC number	203-806-2
EU index number	601-017-00-1
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use as an intermediate - Industrial
Process scope	Manufacture of the substance or use as a process chemical or extraction 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.
Main sector	SU3 Industrial uses
Sector of use	SU8 Manufacture of bulk, large-scale chemicals (including petroleum products) SU9 Manufacture of fine chemicals

Environment

Environmental release category	ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
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Worker

Process category	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 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 PROC15 Use as laboratory reagent.
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Use as an intermediate - Industrial

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Liquid, vapour pressure > 10 kPa at STP
Concentration details	Covers concentrations up to 100 %. Readily biodegradable. Predominantly hydrophobic.

Amounts used

Annual amount used in the EU: 1900 tonnes
Regional use tonnage: 0.19 tonnes/year

Frequency and duration of use

Emission days: 300 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 0.002
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.0003
Emission factor - soil	Release fraction to soil from process (initial release prior to RMM): 0.001

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
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Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Air	Treat air emission to provide a typical removal efficiency of 90%.
Water	Prevent discharge of undissolved substance to or recover from onsite waste water. If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of 96.6%.
Soil	Soil emission controls are not applicable as there is no direct release to soil. Do not apply industrial sludge to natural soils. Common practices vary across sites, thus conservative process release estimates used.

Conditions and measures related to external treatment of waste for disposal

Sludge treatment	Sludge should be incinerated, contained or reclaimed.
Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Liquid, vapour pressure > 10 kPa at STP
Concentration details	Covers concentrations up to 100 %. Unless otherwise stated.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Temperature	Assumes use at not more than 20°C above ambient temperature, unless stated differently. Common practices vary across sites, thus conservative process release estimates used.
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Use as an intermediate - Industrial

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Handle substance within a closed system. Sample via a closed loop or other system to avoid exposure. Ensure samples are obtained under containment or extract ventilation. Drain or remove substance from equipment prior to break-in or maintenance. Clear transfer lines prior to de-coupling.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Apply vessel entry procedures, including use of forced supplied air. Ensure the ventilation system is regularly maintained and tested.

Risk management measures

Wear suitable gloves tested to EN374.

Wear suitable coveralls to prevent exposure to the skin.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Environment 1)

Assessment method EUSES v2.1

The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given 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.

3. Exposure estimation (Health 1)

Assessment method Used EUSES model.

The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Health 1)

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.

Exposure scenario

Use in polymer processing - Industrial

Identification

Product name	Cyclohexane
REACH registration number	01-2119463273-41-XXXX
CAS number	110-82-7
EC number	203-806-2
EU index number	601-017-00-1
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use in polymer processing - Industrial
Process scope	Processing of formulated polymers, including material transfers, moulding and forming activities, material reworks and associated maintenance.
Main sector	SU3 Industrial uses
Sector of use	SU10 Formulation [mixing] of preparations and/or re-packaging

Environment

Environmental release category	ERC6d Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article)
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Worker

Use in polymer processing - Industrial

Process category	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
	PROC6 Calendering operations.
	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 mixture into small containers (dedicated filling line, including weighing)
	PROC13 Treatment of articles by dipping and pouring.
	PROC14 Tableting, compression, extrusion, pelletisation, granulation
	PROC21 Low energy manipulation and handling of substances bound in/on materials or articles

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Liquid, vapour pressure > 10 kPa at STP
Concentration details	Covers concentrations up to 100 %. Readily biodegradable. Predominantly hydrophobic.

Amounts used

Annual amount used in the EU: 28600 tonnes
Regional use tonnage: 0.286 tonnes/year

Frequency and duration of use

Emission days: 100 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 0.35
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.00005
Emission factor - soil	Release fraction to soil from process (initial release prior to RMM): 0.00025

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
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Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Air	Treat air emission to provide a typical removal efficiency of 90%.
Water	Prevent discharge of undissolved substance to or recover from onsite waste water. If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of 96.6%.
Soil	Soil emission controls are not applicable as there is no direct release to soil. Do not apply industrial sludge to natural soils. Common practices vary across sites, thus conservative process release estimates used.

Conditions and measures related to external treatment of waste for disposal

Use in polymer processing - Industrial

Sludge treatment	Sludge should be incinerated, contained or reclaimed.
Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Liquid, vapour pressure > 10 kPa at STP
Concentration details	Covers concentrations up to 100 %. Unless otherwise stated.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Temperature	Assumes use at not more than 20°C above ambient temperature, unless stated differently. Common practices vary across sites, thus conservative process release estimates used.
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Technical conditions and measures at process level (source) to prevent release

Technical protective measures	Ensure samples are obtained under containment or extract ventilation. Drain or remove substance from equipment prior to break-in or maintenance. Clear transfer lines prior to de-coupling. Carry out in a vented booth or extracted enclosure.
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Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Ensure the ventilation system is regularly maintained and tested.
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Risk management measures

Wear suitable gloves tested to EN374.
Wear suitable coveralls to prevent exposure to the skin.
Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Environment 1)

Assessment method	EUSES v2.1 The use is assessed to be safe.
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4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given 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.

3. Exposure estimation (Health 1)

Assessment method	Used EUSES model. The use is assessed to be safe.
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4. Guidance to check compliance with the exposure scenario (Health 1)

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.

Exposure scenario Use in coatings - Industrial

Identification

Product name	Cyclohexane
REACH registration number	01-2119463273-41-XXXX
CAS number	110-82-7
EC number	203-806-2
EU index number	601-017-00-1
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use in coatings - Industrial
Process scope	Covers the use in coatings (paints, inks, adhesives, etc.), including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, brush, spreader by hand or similar methods and film formation) and equipment cleaning, maintenance and associated laboratory activities.
Main sector	SU3 Industrial uses
<u>Environment</u>	
Environmental release category	ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
<u>Worker</u>	

Use in coatings - Industrial

Process category	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 PROC7 Industrial spraying 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 PROC10 Roller application or brushing PROC13 Treatment of articles by dipping and pouring. PROC15 Use as laboratory reagent.
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Liquid, vapour pressure > 10 kPa at STP
Concentration details	Covers concentrations up to 100 %. Readily biodegradable. Predominantly hydrophobic.

Amounts used

Annual amount used in the EU: 1900 tonnes
Regional use tonnage: 0.19 tonnes/year

Frequency and duration of use

Emission days: 100 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 0.098
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.0007
Emission factor - soil	Release fraction to soil from process (initial release prior to RMM): 0

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 40 Local marine water dilution factor: 100
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Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Water	Prevent discharge of undissolved substance to or recover from onsite waste water.
Soil	Soil emission controls are not applicable as there is no direct release to soil. Do not apply industrial sludge to natural soils. Common practices vary across sites, thus conservative process release estimates used.

Conditions and measures related to external treatment of waste for disposal

Sludge treatment	Sludge should be incinerated, contained or reclaimed.
Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.

2. Conditions of use affecting exposure (Workers - Health 1)

Use in coatings - Industrial

Product characteristics

Physical state Liquid, vapour pressure > 10 kPa at STP

Concentration details Covers concentrations up to 100 %. Unless otherwise stated.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Temperature Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Film formation - force drying (50 - 100°C), stoving (> 100°C), UV/EB radiation curing Assumes activities reflect a hot process.

Ventilation rate Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
PROC7 Industrial spraying Manual spraying Provide a good standard of controlled ventilation (10 to 15 air changes per hour).

Common practices vary across sites, thus conservative process release estimates used.

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Provide extract ventilation to points where emissions occur. Drain or remove substance from equipment prior to break-in or maintenance. Avoid dip sampling. Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of > 20.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure the ventilation system is regularly maintained and tested.

Risk management measures

Wear suitable gloves tested to EN374.

Wear suitable coveralls to prevent exposure to the skin.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Environment 1)

Assessment method EUSES v2.1

The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given 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.

3. Exposure estimation (Health 1)

Assessment method Used EUSES model.

The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Health 1)

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.

Exposure scenario Use in coatings - Professional

Identification

Product name	Cyclohexane
REACH registration number	01-2119463273-41-XXXX
CAS number	110-82-7
EC number	203-806-2
EU index number	601-017-00-1
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use in coatings - Professional
Process scope	Covers the use in coatings (paints, inks, adhesives, etc.), including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, brush, spreader by hand or similar methods and film formation) and equipment cleaning, maintenance and associated laboratory activities.
Main sector	SU22 Professional uses
<u>Environment</u>	
Environmental release category	ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
<u>Worker</u>	

Use in coatings - Professional

Process category	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 PROC10 Roller application or brushing PROC11 Non industrial spraying PROC13 Treatment of articles by dipping and pouring. PROC15 Use as laboratory reagent. PROC19 Manual activities involving hand contact
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Liquid, vapour pressure > 10 kPa at STP
Concentration details	Covers concentrations up to 100 %. Readily biodegradable. Predominantly hydrophobic.

Amounts used

Annual amount used in the EU: 1900 tonnes
Regional use tonnage: 0.19 tonnes/year

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 0.98
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.01
Emission factor - soil	Release fraction to soil from process (initial release prior to RMM): 0.01

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 40 Local marine water dilution factor: 100
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Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Water	Prevent discharge of undissolved substance to or recover from onsite waste water. If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of 96.6%.
Soil	Soil emission controls are not applicable as there is no direct release to soil. Do not apply industrial sludge to natural soils. Common practices vary across sites, thus conservative process release estimates used.

Conditions and measures related to external treatment of waste for disposal

Sludge treatment	Sludge should be incinerated, contained or reclaimed.
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Use in coatings - Professional

Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
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2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Liquid, vapour pressure > 10 kPa at STP
Concentration details	Covers concentrations up to 100 %. Unless otherwise stated.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Temperature	Assumes use at not more than 20°C above ambient temperature, unless stated differently. Film formation - force drying (50 - 100°C), stoving (> 100°C), UV/EB radiation curing Assumes activities reflect a hot process.
Ventilation rate	Provide a good standard of controlled ventilation (10 to 15 air changes per hour). , or: Ensure operation is undertaken outdoors. Common practices vary across sites, thus conservative process release estimates used.

Technical conditions and measures at process level (source) to prevent release

Technical protective measures	Provide extract ventilation to points where emissions occur. Drain or remove substance from equipment prior to break-in or maintenance. Use drum pumps. Avoid dip sampling. Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of > 20.
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Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Ensure the ventilation system is regularly maintained and tested.
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Risk management measures

Wear suitable gloves tested to EN374.
Wear suitable coveralls to prevent exposure to the skin.
Wear a respirator conforming to EN140 with Type A/P2 filter or better.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Environment 1)

Assessment method	EUSES v2.1 The use is assessed to be safe.
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4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given 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.

3. Exposure estimation (Health 1)

Assessment method	Used EUSES model. The use is assessed to be safe.
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4. Guidance to check compliance with the exposure scenario (Health 1)

Use in coatings - Professional

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.

Exposure scenario

Use in polymer processing - Professional

Identification

Product name	Cyclohexane
REACH registration number	01-2119463273-41-XXXX
CAS number	110-82-7
EC number	203-806-2
EU index number	601-017-00-1
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use in polymer processing - Professional
Process scope	Processing of formulated polymers, including material transfers, moulding and forming activities, material reworks and associated maintenance.
Main sector	SU22 Professional uses
<u>Environment</u>	
Environmental release category	ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) ERC8c Widespread use leading to inclusion into/onto article (indoor) ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) ERC8f Widespread use leading to inclusion into/onto article (outdoor)
<u>Worker</u>	
Process category	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 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 PROC14 Tableting, compression, extrusion, pelletisation, granulation PROC21 Low energy manipulation and handling of substances bound in/on materials or articles

Use in polymer processing - Professional

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Liquid, vapour pressure > 10 kPa at STP
Concentration details	Covers concentrations up to 100 %. Readily biodegradable. Predominantly hydrophobic.

Amounts used

Annual amount used in the EU: 28600 tonnes
Regional use tonnage: 0.286 tonnes/year

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 0.98
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.01
Emission factor - soil	Release fraction to soil from process (initial release prior to RMM): 0.01

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
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Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Water	Prevent discharge of undissolved substance to or recover from onsite waste water. If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of 96.6%.
Soil	Soil emission controls are not applicable as there is no direct release to soil. Do not apply industrial sludge to natural soils. Common practices vary across sites, thus conservative process release estimates used.

Conditions and measures related to external treatment of waste for disposal

Sludge treatment	Sludge should be incinerated, contained or reclaimed.
Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Liquid, vapour pressure > 10 kPa at STP
Concentration details	Covers concentrations up to 100 %. Unless otherwise stated.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Temperature	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Ventilation rate	Provide a good standard of controlled ventilation (10 to 15 air changes per hour). Common practices vary across sites, thus conservative process release estimates used.

Use in polymer processing - Professional

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Ensure material transfers are under containment or extract ventilation. Provide extract ventilation to points where emissions occur. Clear transfer lines prior to de-coupling. Drain or remove substance from equipment prior to break-in or maintenance. Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of > 20.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure the ventilation system is regularly maintained and tested.

Risk management measures

Wear suitable gloves tested to EN374.

Wear suitable coveralls to prevent exposure to the skin.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Environment 1)

Assessment method EUSES v2.1

The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given 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.

3. Exposure estimation (Health 1)

Assessment method Used EUSES model.

The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Health 1)

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.

Exposure scenario Polymer production - Industrial

Identification

Product name	Cyclohexane
REACH registration number	01-2119463273-41-XXXX
CAS number	110-82-7
EC number	203-806-2
EU index number	601-017-00-1
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Polymer production - Industrial
Process scope	Manufacture of polymers from monomers in continuous and batch processes. Includes production, recycling and recovery, degassing, discharging, reactor maintenance and immediate polymer product formation (i.e. compounding, pelletisation, product off-gassing).
Main sector	SU3 Industrial uses
Sector of use	SU10 Formulation [mixing] of preparations and/or re-packaging
<u>Environment</u>	
Environmental release category	ERC6a Use of intermediate ERC6c Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article)
<u>Worker</u>	

Polymer production - Industrial

Process category	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
	PROC6 Calendering operations.
	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 mixture into small containers (dedicated filling line, including weighing)
	PROC14 Tabletting, compression, extrusion, pelletisation, granulation
	PROC21 Low energy manipulation and handling of substances bound in/on materials or articles

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Liquid, vapour pressure > 10 kPa at STP
Concentration details	Covers concentrations up to 100 %. Readily biodegradable. Predominantly hydrophobic.

Amounts used

Annual amount used in the EU: 5710 tonnes
Regional use tonnage: 0.571 tonnes/year

Frequency and duration of use

Emission days: 300 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 0.002
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.0003
Emission factor - soil	Release fraction to soil from process (initial release prior to RMM): 0.0001

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
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Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Water	Prevent discharge of undissolved substance to or recover from onsite waste water. If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of 96.6%.
Soil	Soil emission controls are not applicable as there is no direct release to soil. Do not apply industrial sludge to natural soils. Common practices vary across sites, thus conservative process release estimates used.

Conditions and measures related to external treatment of waste for disposal

Sludge treatment	Sludge should be incinerated, contained or reclaimed.
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Polymer production - Industrial

Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
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2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Liquid, vapour pressure > 10 kPa at STP
Concentration details	Covers concentrations up to 100 %. Unless otherwise stated.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Temperature	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Ventilation rate	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Common practices vary across sites, thus conservative process release estimates used.

Technical conditions and measures at process level (source) to prevent release

Technical protective measures	Ensure material transfers are under containment or extract ventilation. Provide extract ventilation to points where emissions occur. Clear transfer lines prior to de-coupling. Drain or remove substance from equipment prior to break-in or maintenance. Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of > 20. PROC5 Mixing or blending in batch processes PROC14 Tableting, compression, extrusion, pelletisation, granulation Limit the substance content in the product to 5%.
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Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Ensure the ventilation system is regularly maintained and tested.
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Risk management measures

Wear suitable gloves tested to EN374.
Wear suitable coveralls to prevent exposure to the skin.
Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Environment 1)

Assessment method	EUSES v2.1 The use is assessed to be safe.
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4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given 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.

3. Exposure estimation (Health 1)

Assessment method	Used EUSES model. The use is assessed to be safe.
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4. Guidance to check compliance with the exposure scenario (Health 1)

Polymer production - Industrial

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.