SAFETY DATA SHEET
According to EC No 1907/2006 as amended as at the date of this SDS

Ethyl benzene

Version	Revision Date:	SDS Number:	Date of last issue: 28.03.2023
3.0	21.11.2023	800001001033	Print Date 28.11.2023

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

1.1 Product identifier

Trade name	:	Ethyl benzene
Product code	:	Q9212
Registration number EU	:	01-2119489370-35-0002, 01-2119489370-35-0004, 01-2119489370-35-0005
Synonyms	:	EB, phenyl ethane
CAS-No.	:	100-41-4

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

Use of the Substance/Mixture	:	Intermediate in styrene monomer manufacture. Please refer to section 16 and/or the annexes for the registered uses under REACH.
Uses advised against	:	This product must not be used in applications other than the above without first seeking the advice of the supplier.

1.3 Details of the supplier of the safety data sheet

Manufacturer/Supplier	:	**Shell Chemicals Europe B.V.** PO Box 2334 3000 CH Rotterdam Netherlands
Telephone	:	+31 (0)10 441 5137 / +31 (0)10 441 5191
Telefax	:	+31 (0)20 716 8316 / +31 (0)20 713 9230
Contact for Safety Data Sheet	:	sccmsds@shell.com

1.4 Emergency telephone number

+44 (0) 1235 239 670
Nationaal Vergiftigingen Informatie Centrum (NVIC): Tel. nr. +31(0)88 755 8000 (24 uur per dag en 7 dagen per week).
(Uitsluitend bestemd om artsen te informeren bij accidentele vergiftigingen).

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Flammable liquids, Category 2	H225: Highly flammable liquid and vapour.
Aspiration hazard, Category 1	H304: May be fatal if swallowed and enters airways.

Skin irritation, Category 2	H315: Causes skin irritation.
Eye irritation, Category 2	H319: Causes serious eye irritation.
Acute toxicity, Category 4, Inhalation	H332: Harmful if inhaled.
Specific target organ toxicity - single exposure, Category 3	H335: May cause respiratory irritation.
Specific target organ toxicity - repeated exposure, Category 2, Auditory system	H373: May cause damage to organs through prolonged or repeated exposure.
Long-term (chronic) aquatic hazard, Category 3	H412: Harmful to aquatic life with long lasting effects.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :

Signal word : Danger

Hazard statements :

PHYSICAL HAZARDS:
H225 Highly flammable liquid and vapour.
HEALTH HAZARDS:
H304 May be fatal if swallowed and enters airways.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H332 Harmful if inhaled.
H335 May cause respiratory irritation.
H373 May cause damage to organs (Auditory system) through prolonged or repeated exposure.
ENVIRONMENTAL HAZARDS:
H412 Harmful to aquatic life with long lasting effects.

Precautionary statements :

Prevention:

P210 Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
P331 Do NOT induce vomiting.
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with wa-

ter for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Storage:

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

Disposal:

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

2.3 Other hazards

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

Ecological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Vapours are heavier than air. Vapours may travel across the ground and reach remote ignition sources causing a flashback fire danger.
This material is a static accumulator.
Even with proper grounding and bonding, this material can still accumulate an electrostatic charge.
If sufficient charge is allowed to accumulate, electrostatic discharge and ignition of flammable air-vapour mixtures can occur.

SECTION 3: Composition/information on ingredients

3.1 Substances

Components

Chemical name	CAS-No. EC-No.	Concentration (% w/w)
Ethylbenzene	100-41-4 202-849-4	>= 99,8

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice : Take appropriate steps to avoid fire, explosion and inhalation hazards.

Protection of first-aiders	:	When administering first aid, ensure that you are wearing the appropriate personal protective equipment according to the incident, injury and surroundings.
If inhaled	:	Call emergency number for your location / facility. Remove to fresh air. Do not attempt to rescue the victim unless proper respiratory protection is worn. If the victim has difficulty breathing or tightness of the chest, is dizzy, vomiting, or unresponsive, give 100% oxygen with rescue breathing or Cardio-Pulmonary Resuscitation as required and transport to the nearest medical facility.
In case of skin contact	:	Remove contaminated clothing. Immediately flush skin with large amounts of water for at least 15 minutes, and follow by washing with soap and water if available. If redness, swelling, pain and/or blisters occur, transport to the nearest medical facility for additional treatment.
In case of eye contact	:	Immediately flush eye(s) with plenty of water. Remove contact lenses, if present and easy to do. Continue rinsing. Transport to the nearest medical facility for additional treatment.
If swallowed	:	Call emergency number for your location / facility. If swallowed, do not induce vomiting: transport to nearest medical facility for additional treatment. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. If any of the following delayed signs and symptoms appear within the next 6 hours, transport to the nearest medical facility: fever greater than 101° F (38.3°C), shortness of breath, chest congestion or continued coughing or wheezing.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms	:	Respiratory irritation signs and symptoms may include a temporary burning sensation of the nose and throat, coughing, and/or difficulty breathing. The onset of respiratory symptoms may be delayed for several hours after exposure. Skin irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blisters. Eye irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blurred vision. Ingestion may result in nausea, vomiting and/or diarrhoea. If material enters lungs, signs and symptoms may include coughing, choking, wheezing, difficulty in breathing, chest congestion, shortness of breath, and/or fever. If any of the following delayed signs and symptoms appear within the next 6 hours, transport to the nearest medical facility: fever greater than 101° F (38.3°C), shortness of breath, chest congestion or continued coughing or wheezing. Kidney damage may be indicated by changes in urine output

or appearance, pain upon urination or in the lower back, or general oedema (swelling from fluid retention).

Liver damage may be indicated by loss of appetite, jaundice (yellowish skin and eye colour), fatigue, bleeding or easy bruising and sometimes pain and swelling in the upper right abdomen.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : IMMEDIATE TREATMENT IS EXTREMELY IMPORTANT!
Call a doctor or poison control center for guidance.
Potential for chemical pneumonitis.
Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.

Unsuitable extinguishing media : Do not use water in a jet.

5.2 Special hazards arising from the substance or mixture

Specific hazards during fire-fighting : Clear fire area of all non-emergency personnel.
Hazardous combustion products may include:
A complex mixture of airborne solid and liquid particulates and gases (smoke).
Carbon monoxide.
Unidentified organic and inorganic compounds.
Flammable vapours may be present even at temperatures below the flash point.
The vapour is heavier than air, spreads along the ground and distant ignition is possible.
Will float and can be reignited on surface water.

5.3 Advice for firefighters

Special protective equipment for firefighters : Proper protective equipment including chemical resistant gloves are to be worn; chemical resistant suit is indicated if large contact with spilled product is expected. Self-Contained Breathing Apparatus must be worn when approaching a fire in a confined space. Select fire fighter's clothing approved to relevant Standards (e.g. Europe: EN469).

Specific extinguishing methods : Standard procedure for chemical fires.

Further information : Keep adjacent containers cool by spraying with water.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Observe all relevant local and international regulations.
Notify authorities if any exposure to the general public or the environment occurs or is likely to occur.
Local authorities should be advised if significant spillages cannot be contained.
6.1.1 For non emergency personnel:
Avoid contact with skin, eyes and clothing.
Isolate hazard area and deny entry to unnecessary or unprotected personnel.
Do not breathe fumes, vapour.
Do not operate electrical equipment.
6.1.2 For emergency responders:
Avoid contact with skin, eyes and clothing.
Isolate hazard area and deny entry to unnecessary or unprotected personnel.
Do not breathe fumes, vapour.
Do not operate electrical equipment.

6.2 Environmental precautions

Environmental precautions : Shut off leaks, if possible without personal risks. Remove all possible sources of ignition in the surrounding area. Use appropriate containment to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers. Attempt to disperse the vapour or to direct its flow to a safe location for example by using fog sprays. Take precautionary measures against static discharge. Ensure electrical continuity by bonding and grounding (earthing) all equipment.
Monitor area with combustible gas indicator.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up : For small liquid spills (< 1 drum), transfer by mechanical means to a labeled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.
For large liquid spills (> 1 drum), transfer by mechanical means such as vacuum truck to a salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely

Ventilate contaminated area thoroughly.
If contamination of site occurs remediation may require specialist advice.

6.4 Reference to other sections

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

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Technical measures	:	Avoid breathing of or direct contact with material. Only use in well ventilated areas. Wash thoroughly after handling. For guidance on selection of personal protective equipment see Section 8 of this Safety Data Sheet. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material. Ensure that all local regulations regarding handling and storage facilities are followed.
Advice on safe handling	:	Avoid inhaling vapour and/or mists. Avoid contact with skin, eyes and clothing. Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks. Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols. Bulk storage tanks should be diked (bunded). When using do not eat or drink. The vapour is heavier than air, spreads along the ground and distant ignition is possible.
Product Transfer	:	Even with proper grounding and bonding, this material can still accumulate an electrostatic charge. If sufficient charge is allowed to accumulate, electrostatic discharge and ignition of flammable air-vapour mixtures can occur. Be aware of handling operations that may give rise to additional hazards that result from the accumulation of static charges. These include but are not limited to pumping (especially turbulent flow), mixing, filtering, splash filling, cleaning and filling of tanks and containers, sampling, switch loading, gauging, vacuum truck operations, and mechanical movements. These activities may lead to static discharge e.g. spark formation. Restrict line velocity during pumping in order to avoid generation of electrostatic discharge (≤ 1 m/s until fill pipe submerged to twice its diameter, then ≤ 7 m/s). Avoid splash filling. Do NOT use compressed air for filling, discharging, or handling operations. Refer to guidance under Handling section.
Hygiene measures	:	Wash hands before eating, drinking, smoking and using the toilet. Launder contaminated clothing before re-use. Do not ingest. If swallowed, then seek immediate medical assistance.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	:	Refer to section 15 for any additional specific legislation covering the packaging and storage of this product.
Further information on storage stability	:	Storage Temperature: Ambient. Bulk storage tanks should be diked (bunded). Locate tanks away from heat and other sources of ignition. Cleaning, inspection and maintenance of storage tanks is a specialist operation, which requires the implementation of strict procedures and precautions. Must be stored in a diked (bunded) well- ventilated area, away from sunlight, ignition sources and other sources of heat. Keep away from aerosols, flammables, oxidizing agents, corrosives and from other flammable products which are not harmful or toxic to man or to the environment. Electrostatic charges will be generated during pumping. Electrostatic discharge may cause fire. Ensure electrical continuity by bonding and grounding (earthing) all equipment to reduce the risk. The vapours in the head space of the storage vessel may lie in the flammable/explosive range and hence may be flammable.
Packaging material	:	Suitable material: For containers, or container linings use mild steel, stainless steel., For container paints, use epoxy paint, zinc silicate paint. Unsuitable material: Avoid prolonged contact with natural, butyl or nitrile rubbers.
Container Advice	:	Do not cut, drill, grind, weld or perform similar operations on or near containers.

7.3 Specific end use(s)

Specific use(s)	:	Please refer to section 16 and/or the annexes for the registered uses under REACH. See additional references that provide safe handling practices for liquids that are determined to be static accumulators: American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practices on Static Electricity). IEC/TS 60079-32-1: Electrostatic hazards, guidance

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
Ethylbenzene	100-41-4	TLV-8hr	48,6 ppm 215 mg/m3	NL WG
	Further information: Skin notation			
Ethylbenzene		TLV-15 min	97,3 ppm 430 mg/m3	NL WG
	Further information: Skin notation			

Biological occupational exposure limits

No biological limit allocated.

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

Substance name	End Use	Exposure routes	Potential health effects	Value
Ethylbenzene	Workers	Inhalation	Acute local effects	293 mg/m3
Ethylbenzene	Workers	Inhalation	Long-term systemic effects	77 mg/m3
Ethylbenzene	Workers	Dermal	Long-term systemic effects	180 mg/kg bw/day
Ethylbenzene	Consumers	Inhalation	Long-term systemic effects	15 mg/m3
Ethylbenzene	Consumers	Oral	Long-term systemic effects	1,6 mg/kg bw/day

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

Substance name	Environmental Compartment	Value
Ethylbenzene		
Remarks:	Exposure assessments have not been presented for the environment therefore PNEC values not required.	

8.2 Exposure controls

Engineering measures

Read in conjunction with the Exposure Scenario for your specific use contained in the Annex.
The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include:
Use sealed systems as far as possible.
Adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/limits.
Local exhaust ventilation is recommended.
Firewater monitors and deluge systems are recommended.
Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated.
Eye washes and showers for emergency use.

General Information:
Always observe good personal hygiene measures, such as washing hands after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.
Define procedures for safe handling and maintenance of controls.

Educate and train workers in the hazards and control measures relevant to normal activities associated with this product.
Ensure appropriate selection, testing and maintenance of equipment used to control exposure, e.g. personal protective equipment, local exhaust ventilation.
Drain down system prior to equipment break-in or maintenance.
Retain drain downs in sealed storage pending disposal or subsequent recycle.

Personal protective equipment

Read in conjunction with the Exposure Scenario for your specific use contained in the Annex. The provided information is made in consideration of the PPE directive (Council Directive 89/686/EEC) and the CEN European Committee for Standardisation (CEN) standards.

Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.

Eye protection	:	Wear goggles for use against liquids and gas. Wear full face shield if splashes are likely to occur. Approved to EU Standard EN166.
Hand protection		
Remarks	:	Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from the following materials may provide suitable chemical protection. Longer term protection: Viton. Incidental contact/Splash protection: Nitrile rubber. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. For continuous contact we recommend gloves with breakthrough time of more than 240 minutes with preference for > 480 minutes where suitable gloves can be identified. For short-term/splash protection we recommend the same but recognize that suitable gloves offering this level of protection may not be available and in this case a lower breakthrough time maybe acceptable so long as appropriate maintenance and replacement regimes are followed. Glove thickness is not a good predictor of glove resistance to a chemical as it is dependent on the exact composition of the glove material. Glove thickness should be typically greater than 0.35 mm depending on the glove make and model. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended.
Skin and body protection	:	Wear chemical resistant gloves/gauntlets and boots. Where risk of splashing, also wear an apron. Wear antistatic and flame-retardant clothing.

Respiratory protection : If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation.
Check with respiratory protective equipment suppliers.
Where air-filtering respirators are unsuitable (e.g. airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus.
Where air-filtering respirators are suitable, select an appropriate combination of mask and filter.
If air-filtering respirators are suitable for conditions of use:
Select a filter suitable for organic gases and vapours [Type A boiling point > 65°C (149°F)] meeting EN14387.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	:	Clear, mobile liquid.
Colour	:	Data not available
Odour	:	Aromatic hydrocarbon
Odour Threshold	:	Data not available
Melting / freezing point	:	-95 °C
Boiling point/boiling range	:	136,2 °C
Flammability		
Flammability (solid, gas)	:	Not applicable
Lower explosion limit and upper explosion limit / flammability limit		
Upper explosion limit / upper flammability limit	:	8 %(V)
Lower explosion limit / Lower flammability limit	:	1,2 %(V)
Flash point	:	22 - 23 °C
Auto-ignition temperature	:	430 °C
Decomposition temperature		
Decomposition temperature	:	Data not available
pH	:	Not applicable

Viscosity
Viscosity, dynamic : 0,671 mPa.s (20 °C)
Method: ASTM D445

Viscosity, kinematic : 0,5 mm2/s (60 °C)
Method: ASTM D445

0,9 mm2/s (10 °C)
Method: ASTM D445

0,32 mm2/s (110 °C)
Method: ASTM D445

0,773 mm2/s (25 °C)
Method: ASTM D445

Solubility(ies)
Water solubility : 0,2 g/l

Solubility in other solvents : Readily soluble in various organic solvents.

Partition coefficient: n-octanol/water : log Pow: 3,6

Vapour pressure : 500 Pa (10 °C)

950 Pa (20 °C)

7.400 Pa (60 °C)

47.000 Pa (110 °C)

Relative density : 0,86
Method: ASTM D4052

Density : 868 kg/m3 (20 °C)
Method: ASTM D4052

Relative vapour density : 3,7

Particle characteristics
Particle size : Data not available

9.2 Other information

Explosives : Not applicable

Oxidizing properties : Data not available

Evaporation rate : Data not available

Conductivity	:	Low conductivity: < 100 pS/m The conductivity of this material makes it a static accumulator., A liquid is typically considered nonconductive if its conductivity is below 100 pS/m and is considered semi-conductive if its conductivity is below 10,000 pS/m., Whether a liquid is nonconductive or semi-conductive, the precautions are the same., A number of factors, for example liquid temperature, presence of contaminants, and anti-static additives can greatly influence the conductivity of a liquid
Surface tension	:	71,2 mN/m
Molecular weight	:	106,16 g/mol

SECTION 10: Stability and reactivity

10.1 Reactivity

The product does not pose any further reactivity hazards in addition to those listed in the following sub-paragraph.

10.2 Chemical stability

No hazardous reaction is expected when handled and stored according to provisions
Stable under normal conditions of use.

10.3 Possibility of hazardous reactions

Hazardous reactions : Reacts with strong oxidising agents.

10.4 Conditions to avoid

Conditions to avoid : Avoid heat, sparks, open flames and other ignition sources.

In certain circumstances product can ignite due to static electricity.

10.5 Incompatible materials

Materials to avoid : Strong oxidising agents.

10.6 Hazardous decomposition products

Hazardous decomposition products are not expected to form during normal storage.
Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases including carbon monoxide, carbon dioxide, sulphur oxides and unidentified organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation.

SECTION 11: Toxicological information

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

Information on likely routes of : Exposure may occur via inhalation, ingestion, skin absorption,

exposure skin or eye contact, and accidental ingestion.

Acute toxicity

Product:

Acute oral toxicity	:	LD50 (Rat): > 2000 - 5000 mg/kg Remarks: May be harmful if swallowed.
Acute inhalation toxicity	:	LC50: > 10 - 20 mg/l Remarks: Harmful if inhaled.
Acute dermal toxicity	:	LD50 (Rabbit): > 5000 mg/kg Remarks: Low toxicity

Components:

Ethylbenzene:

Acute oral toxicity	:	LD50 (Rat): > 2000 - 5000 mg/kg Remarks: May be harmful if swallowed.
Acute inhalation toxicity	:	LC50: > 10 - 20 mg/l Remarks: Harmful if inhaled.
Acute dermal toxicity	:	LD50 (Rabbit): > 5000 mg/kg Remarks: Low toxicity

Skin corrosion/irritation

Product:

Remarks	:	Causes skin irritation.

Components:

Ethylbenzene:

Remarks	:	Causes skin irritation.

Serious eye damage/eye irritation

Product:

Remarks	:	Causes serious eye irritation.

Components:

Ethylbenzene:

Remarks	:	Causes serious eye irritation.

Respiratory or skin sensitisation

Product:

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

Components:

Ethylbenzene:

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

Germ cell mutagenicity

Product:

Genotoxicity in vivo : Remarks: Not mutagenic.

Germ cell mutagenicity- Assessment : This product does not meet the criteria for classification in categories 1A/1B.

Components:

Ethylbenzene:

Genotoxicity in vivo : Remarks: Not mutagenic.

Germ cell mutagenicity- Assessment : This product does not meet the criteria for classification in categories 1A/1B.

Carcinogenicity

Product:

Remarks : Limited evidence of carcinogenic effect
Causes cancer in laboratory animals.

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

Components:

Ethylbenzene:

Remarks : Limited evidence of carcinogenic effect
Causes cancer in laboratory animals.

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

Material	GHS/CLP Carcinogenicity Classification
Ethylbenzene	No carcinogenicity classification.

Material	Other Carcinogenicity Classification
Ethylbenzene	IARC: Group 2B: Possibly carcinogenic to humans

Reproductive toxicity

Product:

Effects on fertility : Remarks: Not a developmental toxicant., Based on available data, the classification criteria are not met., Does not impair fertility.

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

Components:

Ethylbenzene:

Effects on fertility : Remarks: Not a developmental toxicant., Based on available data, the classification criteria are not met., Does not impair fertility.

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

STOT - single exposure

Product:

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

Components:

Ethylbenzene:

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

STOT - repeated exposure

Product:

Remarks : Harmful: danger of serious damage to health by prolonged exposure through inhalation.
Auditory system: prolonged and repeated exposures to high concentrations have resulted in hearing loss in rats. Solvent abuse and noise interaction in the work environment may cause hearing loss.
Kidney: can cause kidney damage.
Liver: can cause liver damage.

Central nervous system: repeated exposure affects the nervous system.

Components:

Ethylbenzene:

Remarks : Harmful: danger of serious damage to health by prolonged exposure through inhalation.
Auditory system: prolonged and repeated exposures to high concentrations have resulted in hearing loss in rats. Solvent abuse and noise interaction in the work environment may cause hearing loss.
Kidney: can cause kidney damage.
Liver: can cause liver damage.
Central nervous system: repeated exposure affects the nervous system.

Aspiration toxicity

Product:

Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis which can be fatal.

Components:

Ethylbenzene:

Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis which can be fatal.

11.2 Information on other hazards

Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Further information

Product:

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

Remarks : Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).

Components:

Ethylbenzene:

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

SECTION 12: Ecological information

12.1 Toxicity

Product:

Toxicity to fish	:	Remarks: Toxic LC/EC/IC50 >1 - <=10 mg/l
Toxicity to daphnia and other aquatic invertebrates	:	Remarks: Toxic LC/EC/IC50 >1 - <=10 mg/l
Toxicity to algae/aquatic plants	:	EC50 : Remarks: Toxic LC/EC/IC50 >1 - <=10 mg/l
Toxicity to fish (Chronic toxicity)	:	Remarks: NOEC/NOEL > 0.1 - <=1.0 mg/l
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	Remarks: NOEC/NOEL > 0.1 - <=1.0 mg/l
Toxicity to microorganisms	:	Remarks: Harmful LC/EC/IC50 >10 - <=100 mg/l

Components:

Ethylbenzene:

Toxicity to fish	:	Remarks: Toxic LC/EC/IC50 >1 - <=10 mg/l
Toxicity to daphnia and other aquatic invertebrates	:	Remarks: Toxic LC/EC/IC50 >1 - <=10 mg/l
Toxicity to algae/aquatic plants	:	EC50 : Remarks: Toxic LC/EC/IC50 >1 - <=10 mg/l
Toxicity to microorganisms	:	Remarks: Harmful LC/EC/IC50 >10 - <=100 mg/l
Toxicity to fish (Chronic toxicity)	:	Remarks: NOEC/NOEL > 0.1 - <=1.0 mg/l

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	Remarks: NOEC/NOEL > 0.1 - <=1.0 mg/l

12.2 Persistence and degradability

Product:

Biodegradability	:	Remarks: Readily biodegradable. Oxidises rapidly by photo-chemical reactions in air. Not Persistent per IMO criteria. International Oil Pollution Compensation (IOPC) Fund definition: "A non-persistent oil is oil, which, at the time of shipment, consists of hydrocarbon fractions, (a) at least 50% of which, by volume, distills at a temperature of 340ºC (645ºF) and (b) at least 95% of which, by volume, distils at a temperature of 370ºC (700ºF) when tested by the ASTM Method D-86/78 or any subsequent revision thereof."

Components:

Ethylbenzene:

Biodegradability	:	Remarks: Readily biodegradable. Oxidises rapidly by photo-chemical reactions in air. Not Persistent per IMO criteria. International Oil Pollution Compensation (IOPC) Fund definition: "A non-persistent oil is oil, which, at the time of shipment, consists of hydrocarbon fractions, (a) at least 50% of which, by volume, distills at a temperature of 340ºC (645ºF) and (b) at least 95% of which, by volume, distils at a temperature of 370ºC (700ºF) when tested by the ASTM Method D-86/78 or any subsequent revision thereof."

12.3 Bioaccumulative potential

Product:

Bioaccumulation	:	Remarks: Does not bioaccumulate significantly.

Components:

Ethylbenzene:

Bioaccumulation	:	Remarks: Does not bioaccumulate significantly.

12.4 Mobility in soil

Product:

Mobility	:	Remarks: If the product enters soil, one or more constituents will or may be mobile and may contaminate groundwater., Floats on water.

Components:

Ethylbenzene:

Mobility : Remarks: If the product enters soil, one or more constituents will or may be mobile and may contaminate groundwater., Floats on water.

12.5 Results of PBT and vPvB assessment

Product:

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

Components:

Ethylbenzene:

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

12.6 Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 Other adverse effects

Product:

Additional ecological information : In view of the high rate of loss from solution, the product is unlikely to pose a significant hazard to aquatic life.

Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).

Components:

Ethylbenzene:

Additional ecological information : In view of the high rate of loss from solution, the product is unlikely to pose a significant hazard to aquatic life.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product : Recover or recycle if possible.

It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations.
Waste product should not be allowed to contaminate soil or ground water, or be disposed of into the environment.
Do not dispose into the environment, in drains or in water courses.
Do not dispose of tank water bottoms by allowing them to drain into the ground. This will result in soil and groundwater contamination.
Waste arising from a spillage or tank cleaning should be disposed of in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand.

Waste, spills or used product is dangerous waste.

Disposal should be in accordance with applicable regional, national, and local laws and regulations.
Local regulations may be more stringent than regional or national requirements and must be complied with.

MARPOL - see International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) which provides technical aspects at controlling pollutions from ships.

Contaminated packaging : Drain container thoroughly.
After draining, vent in a safe place away from sparks and fire.
Residues may cause an explosion hazard. Do not puncture, cut or weld uncleaned drums.
Send to drum recoverer or metal reclaimer.
Comply with any local recovery or waste disposal regulations.

Dispose in accordance with prevailing regulations, preferably to a recognized collector or contractor. The competence of the collector or contractor should be established beforehand.

SECTION 14: Transport information

14.1 UN number or ID number

ADN : 1175

ADR : 1175

RID : 1175

IMDG : 1175

IATA : 1175

14.2 UN proper shipping name

ADN : ETHYLBENZENE

ADR : ETHYLBENZENE

RID : ETHYLBENZENE

IMDG : ETHYLBENZENE

IATA : ETHYLBENZENE

14.3 Transport hazard class(es)

ADN : 3

ADR : 3

RID : 3

IMDG : 3

IATA : 3

14.4 Packing group

ADN

Packing group : II
Classification Code : F1
Labels : 3 (N3)
CDNI Inland Water Waste Agreement : NST 8191 Ethylbenzene

ADR

Packing group : II
Classification Code : F1
Hazard Identification Number : 33
Labels : 3

RID

Packing group : II
Classification Code : F1
Hazard Identification Number : 33
Labels : 3

IMDG

Packing group : II
Labels : 3

IATA

Packing group : II
Labels : 3

14.5 Environmental hazards

ADN

Environmentally hazardous : yes

ADR

Environmentally hazardous : no

RID

Environmentally hazardous : no

IMDG

Marine pollutant : no

14.6 Special precautions for user

Remarks : Special Precautions: Refer to Section 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.

14.7 Maritime transport in bulk according to IMO instruments

Pollution category : Y
Ship type : 2
Product name : Ethyl benzene

Additional Information **:** This product may be transported under nitrogen blanketing. Nitrogen is an odourless and invisible gas. Exposure to nitrogen enriched atmospheres displaces available oxygen which may cause asphyxiation or death. Personnel must observe strict safety precautions when involved with a confined space entry.

Transport in bulk according to Annex II of Marpol and the IBC Code

SECTION 15: Regulatory information

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

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59). : This product does not contain substances of very high concern (Regulation (EC) No 1907/2006 (REACH), Article 57).

REACH - List of substances subject to authorisation (Annex XIV) : Product is not subject to Authorisation under REACH.

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.	P5c	FLAMMABLE LIQUIDS

Other regulations:

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

Product is subject to Major accident risk decision 2015 (BRZO+) based on Seveso III directive (2012/18/EU).

The components of this product are reported in the following inventories:

AIIC : Listed

DSL	:	Listed
IECSC	:	Listed
ENCS	:	Listed
KECI	:	Listed
NZIoC	:	Listed
PICCS	:	Listed
TSCA	:	Listed
TCSI	:	Listed

15.2 Chemical safety assessment

A Chemical Safety Assessment has been carried out for this substance.

SECTION 16: Other information

Full text of other abbreviations

NL WG	:	Netherlands. Law on Labour conditions - Occupational Exposure Limits
NL WG / TLV-8hr	:	Time Weighted Average
NL WG / TLV-15 min	:	Short Term Exposure Limit

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office

of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of Very High Concern; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

Further information

Training advice	:	Provide adequate information, instruction and training for operators.
Other information	:	For Industry guidance and tools on REACH please visit the CEFIC website at http://cefic.org/Industry-support. The substance does not fulfill all screening criteria for persistence, bioaccumulation and toxicity and hence is not considered to be PBT or vPvB. A vertical bar (|) in the left margin indicates an amendment from the previous version. This product is classified as H304 (May be fatal if swallowed and enters airways). The risk relates to potential for aspiration. The risk arising from aspiration hazard is solely related to the physico-chemical properties of the substance. The risk can therefore be controlled by implementing risk management measures tailored to this specific hazard and included within Section 8 of the SDS. An exposure scenario is not presented.
Sources of key data used to compile the Safety Data Sheet	:	The quoted data are from, but not limited to, one or more sources of information (e.g. toxicological data from Shell Health Services, material suppliers' data, CONCAWE, EU IUCLID date base, EC 1272 regulation, etc).

Identified Uses according to the Use Descriptor System

Uses - Worker
Title : Manufacture of substance- Industrial

Uses - Worker
Title : Use as an intermediate- Industrial

Uses - Worker
Title : Distribution of substance- Industrial

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.

NL / EN

Exposure Scenario - Worker

300000000406 Manufacture of Ethyl Benzene - Industrial	
SECTION 1	**EXPOSURE SCENARIO TITLE**
Title	Manufacture of substance- Industrial
Use Descriptor	**Sector of Use**: SU3, SU8, SU9 **Process Categories**: PROC 1, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 15 **Environmental Release Categories**: ERC1, ERC4
Scope of process	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.

ethoxylate :

SECTION 2	**OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES**
Additional Information	No exposure assessment presented for the environment.

ethoxylate :

Section 2.1	**Control of Worker Exposure**
Product Characteristics	
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Concentration of the Substance in Mixture/Article	Covers use of substance/product up to 100% (unless stated differently).,
Frequency and Duration of Use	
Covers daily exposures up to 8 hours (unless stated differently).	
Other Operational Conditions affecting Exposure	
Assumes a good basic standard of occupational hygiene is implemented. Assumes activities are at ambient temperature (unless stated differently).	

ethoxylate :

Contributing Scenarios	**Risk Management Measures**
General measures (skin irritants).	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

General measures (eye irritants).	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.
General exposures (closed systems)elevated temperatureContinuous processno sampling	No other specific measures identified.
General exposures.Process samplingelevated temperature	Sample via a closed loop or other system to avoid exposure , or: Avoid carrying out activities involving exposure for more than 1 hour. , or: Wear a respirator conforming to EN140 with Type A filter or better.
Bulk transfersDedicated facilityMarine vessel/barge (un)loading.	Transfer via enclosed lines. Use vapour recovery units when necessary. Clear transfer lines prior to de-coupling.
General exposures (closed systems)Batch processelevated temperature	Provide extraction ventilation at points where emissions occur.
General exposures (open systems)Batch processelevated temperature	Provide extraction ventilation at points where emissions occur.
Bulk transfersDedicated facilityRoad tanker/rail car loading.	Operate activity away from sources of substance emission or release. Use vapour recovery units when necessary.
Laboratory activities	No other specific measures identified.
Equipment cleaning and maintenance	Drain down system prior to equipment opening or maintenance. Avoid carrying out activities involving exposure for more than 1 hour. , or: Wear a respirator conforming to EN140 with Type A filter or better.
Storage.	Store substance within a closed system. Ensure dedicated sample points are provided.

ethoxylate :

Section 2.2	**Control of Environmental Exposure**

ethoxylate :

SECTION 3	**EXPOSURE ESTIMATION**

ethoxylate :

Section 3.1 - Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

ethoxylate :

Section 3.2 -Environment
No exposure assessment presented for the environment.

ethoxylate :

SECTION 4	**GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO**

ethoxylate :

Section 4.1 - Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

ethoxylate :

Section 4.2 -Environment
No exposure assessment presented for the environment.

ethoxylate :

Exposure Scenario - Worker

300000000410 Use as an Intermediate Ethyl Benzene - Industrial	
SECTION 1	**EXPOSURE SCENARIO TITLE**
Title	Use as an intermediate- Industrial
Use Descriptor	**Sector of Use**: SU3, SU8, SU9 **Process Categories**: PROC 1, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 15 **Environmental Release Categories**: ERC6a
Scope of process	Use of substance as an intermediate (not related to Strictly Controlled Conditions). Includes recycling/ recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).

ethoxylate :

SECTION 2	**OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES**
Additional Information	No exposure assessment presented for the environment.

ethoxylate :

Section 2.1	**Control of Worker Exposure**
Product Characteristics	
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Concentration of the Substance in Mixture/Article	Covers use of substance/product up to 100% (unless stated differently).,
Frequency and Duration of Use	
Covers daily exposures up to 8 hours (unless stated differently).	
Other Operational Conditions affecting Exposure	
Assumes a good basic standard of occupational hygiene is implemented. Assumes activities are at ambient temperature (unless stated differently).	

ethoxylate :

Contributing Scenarios	**Risk Management Measures**
General measures (skin irritants).	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

General measures (eye irritants).	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.
General exposures (closed systems)elevated temperatureContinuous processno sampling	No other specific measures identified.
General exposures.Process samplingelevated temperature	Sample via a closed loop or other system to avoid exposure , or: Avoid carrying out activities involving exposure for more than 1 hour. , or: Wear a respirator conforming to EN140 with Type A filter or better.
General exposures (closed systems)elevated temperatureBatch process	Provide extraction ventilation at points where emissions occur.
General exposures (open systems)Batch processelevated temperature	Provide extraction ventilation at points where emissions occur.
Bulk transfersDedicated facilityMarine vessel/barge (un)loading.	Transfer via enclosed lines. Use vapour recovery units when necessary. Clear transfer lines prior to de-coupling.
Bulk transfersDedicated facilityRoad tanker/rail car loading.	Operate activity away from sources of substance emission or release. Use vapour recovery units when necessary.
Equipment cleaning and maintenance	Drain down system prior to equipment opening or maintenance. Avoid carrying out activities involving exposure for more than 1 hour. , or: Wear a respirator conforming to EN140 with Type A filter or better. Retain drain downs in sealed storage pending disposal or for subsequent recycle.
Bulk transfersinternalelevated temperature	Provide extraction ventilation at points where emissions occur.
Laboratory activities	No other specific measures identified.
Storage.	Store substance within a closed system. Ensure dedicated sample points are provided.

ethoxylate :

Section 2.2	**Control of Environmental Exposure**

ethoxylate :

SECTION 3	EXPOSURE ESTIMATION

ethoxylate :

Section 3.1 - Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

ethoxylate :

Section 3.2 -Environment
No exposure assessment presented for the environment.

ethoxylate :

SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO

ethoxylate :

Section 4.1 - Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

ethoxylate :

Section 4.2 -Environment
No exposure assessment presented for the environment.

ethoxylate :

Exposure Scenario - Worker

300000000408 Distribution of Ethyl Benzene - Industrial	
SECTION 1	**EXPOSURE SCENARIO TITLE**
Title	Distribution of substance- Industrial
Use Descriptor	**Sector of Use**: SU3, SU8, SU9 **Process Categories**: PROC 1, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 15, PROC 9 **Environmental Release Categories**: ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7
Scope of process	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.

ethoxylate :

SECTION 2	**OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES**
Additional Information	No exposure assessment presented for the environment.

ethoxylate :

Section 2.1	**Control of Worker Exposure**
Product Characteristics	
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Concentration of the Substance in Mixture/Article	Covers use of substance/product up to 100% (unless stated differently).,
Frequency and Duration of Use	
Covers daily exposures up to 8 hours (unless stated differently).	
Other Operational Conditions affecting Exposure	
Assumes a good basic standard of occupational hygiene is implemented. Assumes activities are at ambient temperature (unless stated differently).	

ethoxylate :

Contributing Scenarios	**Risk Management Measures**
General measures (skin irritants).	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

General measures (eye irritants).	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.
General exposures (closed systems)Continuous processno sampling	No other specific measures identified.
General exposures.Process sampling	Ensure dedicated sample points are provided.
Bulk transfersDedicated facilityMarine vessel/barge (un)loading.	Transfer via enclosed lines. Use vapour recovery units when necessary. Clear transfer lines prior to de-coupling.
General exposures (closed systems)Batch process	Provide extraction ventilation at points where emissions occur.
General exposures (open systems)Batch process	Provide extraction ventilation at points where emissions occur.
Material transfersDedicated facilityDrum and small package filling	Provide extract ventilation to material transfer points and other openings.
Laboratory activities	No other specific measures identified.
Equipment cleaning and maintenance	Drain down system prior to equipment opening or maintenance. Retain drain downs in sealed storage pending disposal or for subsequent recycle.
Storage.	Store substance within a closed system. Ensure dedicated sample points are provided.

ethoxylate :

Section 2.2	**Control of Environmental Exposure**

ethoxylate :

SECTION 3	**EXPOSURE ESTIMATION**

ethoxylate :

Section 3.1 - Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

ethoxylate :

Section 3.2 -Environment
No exposure assessment presented for the environment.

ethoxylate :

SECTION 4	**GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO**

ethoxylate :

Section 4.1 - Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

ethoxylate :

Section 4.2 -Environment
No exposure assessment presented for the environment.

ethoxylate :