SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Revision Date 24-Mar-2024 **Revision Number** 2

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Product Description: **Ethylbenzene**
Cat No. : **C11808**

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

Recommended Use	Laboratory chemicals.
Sector of use	SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites
Product category	PC21 - Laboratory chemicals
Process categories	PROC15 - Use as a laboratory reagent
Environmental release category	ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)
Uses advised against	No Information available

1.3. Details of the supplier of the safety data sheet

Company

Thermo Fisher (Kandel) GmbH
Erlenbachweg 2, 76870 Kandel, Germany
Tel: +49 (0) 721 84007 280
Fax: +49 (0) 721 84007 300

Swiss distributor - Fisher Scientific AG
Neuhofstrasse 11, CH 4153 Reinach
Tel: +41 (0) 56 618 41 11
https://www.fishersci.ch/ch/en/customer-help-support/forms/email-us.html

E-mail address begel.sdsdesk@thermofisher.com

1.4. Emergency telephone number

For information **US** call: 001-800-227-6701 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No.**US:**001-800-424-9300 / **Europe:**001-703-527-3887

customers in Switzerland:
Tox Info Suisse Emergency Number: **145 (24hr)**
Tox Info Suisse: +41-44 251 51 51 (Emergency number from abroad)
Chemtrec (24h) Toll-Free: 0800 564 402
Chemtrec Local: +41-43 508 20 11 (Zurich)

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

CLP Classification - Regulation (EC) No 1272/2008

Physical hazards

Flammable liquids	Category 2 (H225)

Health hazards

Aspiration Toxicity	Category 1 (H304)
Acute Inhalation Toxicity - Vapors	Category 4 (H332)
Germ Cell Mutagenicity	Category 1B (H340)
Carcinogenicity	Category 1A (H350)
Specific target organ toxicity - (repeated exposure)	Category 2 (H373)

Environmental hazards

Chronic aquatic toxicity	Category 3 (H412)

Full text of Hazard Statements: see section 16

2.2. Label elements

Signal Word **Danger**

Hazard Statements

H225 - Highly flammable liquid and vapor
H304 - May be fatal if swallowed and enters airways
H332 - Harmful if inhaled
H340 - May cause genetic defects
H350 - May cause cancer
H373 - May cause damage to organs through prolonged or repeated exposure
H412 - Harmful to aquatic life with long lasting effects

Precautionary Statements

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower
P301 + P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
P331 - Do NOT induce vomiting
P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing
P280 - Wear protective gloves/protective clothing/eye protection/face protection

Additional EU labelling

Restricted to professional users

2.3. Other hazards

Substance is not considered persistent, bioaccumulative and toxic (PBT) / very persistent and very bioaccumulative (vPvB)

Toxicity to Soil Dwelling Organisms

This product does not contain any known or suspected endocrine disruptors

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

Component	CAS No	EC No	Weight %	CLP Classification - Regulation (EC) No 1272/2008
Ethylbenzene	100-41-4	EEC No. 202-849-4	99.88	Flam. Liq. 2 (H225) Asp. Tox. 1 (H304) Acute Tox. 4 (H332) STOT RE 2 (H373) Aquatic Chronic 3 (H412)
Benzene	71-43-2	EEC No. 200-753-7	0.12	Flam. Liq. 2 (H225) Asp. Tox. 1 (H304) Skin Irrit. 2 (H315) Eye Irrit. 2 (H319) Muta. 1B (H340) Carc. 1A (H350) STOT RE 1 (H372) Aquatic Chronic 3 (H412)

Full text of Hazard Statements: see section 16

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

General Advice If symptoms persist, call a physician.

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. If skin irritation persists, call a physician.

Ingestion Clean mouth with water and drink afterwards plenty of water. Do NOT induce vomiting. Call a physician or poison control center immediately. If vomiting occurs naturally, have victim lean forward.

Inhalation Remove to fresh air. If not breathing, give artificial respiration. Get medical attention if symptoms occur. Risk of serious damage to the lungs (by aspiration).

Self-Protection of the First Aider Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

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

None reasonably foreseeable. . Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting

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

Notes to Physician Treat symptomatically.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

Suitable Extinguishing Media
Water mist may be used to cool closed containers.

Extinguishing media which must not be used for safety reasons
No information available.

5.2. Special hazards arising from the substance or mixture

Flammable. Containers may explode when heated. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back.

Hazardous Combustion Products
Carbon oxides.

5.3. Advice for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation. Use personal protective equipment as required. Remove all sources of ignition. Take precautionary measures against static discharges.

6.2. Environmental precautions

Do not flush into surface water or sanitary sewer system.

6.3. Methods and material for containment and cleaning up

Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

6.4. Reference to other sections

Refer to protective measures listed in Sections 8 and 13.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Wear personal protective equipment/face protection. Ensure adequate ventilation. Do not get in eyes, on skin, or on clothing. Avoid ingestion and inhalation. Keep away from open flames, hot surfaces and sources of ignition. Use only non-sparking tools. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Take precautionary measures against static discharges.

Hygiene Measures
Handle in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash hands before breaks and after work.

7.2. Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place. Keep away from heat, sparks and flame.

Technical Rules for Hazardous Substances (TRGS) 510 Storage Class (LGK) (Germany) Class 3

Switzerland - Storage of hazardous substances Storage class - SC 3
https://www.kvu.ch/de/themen/stoffe-und-produkte
https://www.kvu.ch/fr/themes/substances-et-produits
https://www.kvu.ch/it/temi/sostanze-e-prodotti

7.3. Specific end use(s)

Use in laboratories

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Exposure limits
List source(s): **EU** - Commission Directive (EU) 2019/1831 of 24 October 2019 establishing a fifth list of indicative occupational exposure limit values pursuant to Council Directive 98/24/EC and amending Commission Directive 2000/39/EC **UK** - EH40/2005 Work Exposure Limits, Forth edition. Published 2020. **IRE -** 2010 Code of Practice for the Safety, Health and Welfare at Work (Chemical Agents) Regulations 2001. Published by the Health and Safety Authority. **CH** - The Government of Switzerland has set a directive on limit values for working materials (Grenzwerte am Arbeitsplatz) which is based on the Swiss Federal Regulation "Verordnung über die Verhütung von Unfällen und Berufskrankheiten". This directive is administered, periodically revised and enforced by SUVA (Swiss National Accident Insurance Fund).

Component	European Union	The United Kingdom	France	Belgium	Spain
Ethylbenzene	TWA: 100 ppm (8h) TWA: 442 mg/m³ (8h) STEL: 200 ppm (15min) STEL: 884 mg/m³ (15min) Skin	STEL: 125 ppm 15 min STEL: 552 mg/m³ 15 min TWA: 100 ppm 8 hr TWA: 441 mg/m³ 8 hr Skin	TWA / VME: 20 ppm (8 heures). restrictive limit TWA / VME: 88.4 mg/m³ (8 heures). restrictive limit TWA / VME: 1000 mg/m³ (8 heures). STEL / VLCT: 100 ppm. restrictive limit STEL / VLCT: 442 mg/m³. restrictive limit STEL / VLCT: 1500 mg/m³. Peau	TWA: 20 ppm 8 uren TWA: 87 mg/m³ 8 uren STEL: 125 ppm 15 minuten STEL: 551 mg/m³ 15 minuten Huid	STEL / VLA-EC: 200 ppm (15 minutos). STEL / VLA-EC: 884 mg/m³ (15 minutos). TWA / VLA-ED: 100 ppm (8 horas) TWA / VLA-ED: 441 mg/m³ (8 horas) Piel
Benzene	TWA: 0.2 ppm (8h) TWA: 0.66 mg/m³ (8h) Skin	STEL: 3 ppm 15 min STEL: 9.75 mg/m³ 15 min TWA: 1 ppm 8 hr TWA: 3.25 mg/m³ 8 hr Carc. Skin	TWA / VME: 1 ppm (8 heures). restrictive limit TWA / VME: 3.25 mg/m³ (8 heures). restrictive limit TWA / VME: 1000 mg/m³ (8 heures). STEL / VLCT: 1500 mg/m³. Peau	TWA: 1 ppm 8 uren TWA: 3.25 mg/m³ 8 uren Huid	TWA / VLA-ED: 1 ppm (8 horas) TWA / VLA-ED: 3.25 mg/m³ (8 horas) Piel

Component	Italy	Germany	Portugal	The Netherlands	Finland
Ethylbenzene	TWA: 100 ppm 8 ore. Time Weighted Average TWA: 442 mg/m³ 8 ore. Time Weighted Average STEL: 200 ppm 15 minuti. Short-term STEL: 884 mg/m³ 15 minuti. Short-term Pelle	TWA: 20 ppm (8 Stunden). AGW - exposure factor 2 TWA: 88 mg/m³ (8 Stunden). AGW - exposure factor 2 TWA: 20 ppm (8 Stunden). MAK TWA: 88 mg/m³ (8 Stunden). MAK	STEL: 200 ppm 15 minutos STEL: 884 mg/m³ 15 minutos TWA: 100 ppm 8 horas TWA: 442 mg/m³ 8 horas Pele	huid STEL: 430 mg/m³ 15 minuten TWA: 215 mg/m³ 8 uren	TWA: 50 ppm 8 tunteina TWA: 220 mg/m³ 8 tunteina STEL: 200 ppm 15 minuutteina STEL: 880 mg/m³ 15 minuutteina Iho

		Höhepunkt: 40 ppm Höhepunkt: 176 mg/m³ Haut			
Benzene	TWA: 3.25 mg/m³ 8 ore. Time Weighted Average TWA: 1 ppm 8 ore. Time Weighted Average Pelle	Haut	STEL: 2.5 ppm 15 minutos TWA: 1 ppm 8 horas TWA: 3.25 mg/m³ 8 horas Pele	huid TWA: 0.7 mg/m³ 8 uren	TWA: 1 ppm 8 tunteina TWA: 3.25 mg/m³ 8 tunteina Iho

Component	Austria	Denmark	Switzerland	Poland	Norway
Ethylbenzene	Haut MAK-KZGW: 200 ppm 15 Minuten MAK-KZGW: 880 mg/m³ 15 Minuten MAK-TMW: 100 ppm 8 Stunden MAK-TMW: 440 mg/m³ 8 Stunden	TWA: 50 ppm 8 timer TWA: 217 mg/m³ 8 timer STEL: 434 mg/m³ 15 minutter STEL: 100 ppm 15 minutter Hud	Haut/Peau STEL: 50 ppm 15 Minuten STEL: 220 mg/m³ 15 Minuten TWA: 50 ppm 8 Stunden TWA: 220 mg/m³ 8 Stunden	STEL: 400 mg/m³ 15 minutach TWA: 200 mg/m³ 8 godzinach	TWA: 5 ppm 8 timer TWA: 20 mg/m³ 8 timer STEL: 10 ppm 15 minutter. value calculated STEL: 30 mg/m³ 15 minutter. value calculated Hud
Benzene	TRK-KZGW: 4 ppm 15 Minuten TRK-KZGW: 12.8 mg/m³ 15 Minuten Haut TRK-TMW: 1 ppm TRK-TMW: 3.2 mg/m³	TWA: 0.5 ppm 8 timer TWA: 1.6 mg/m³ 8 timer STEL: 1 ppm 15 minutter STEL: 3.2 mg/m³ 15 minutter Hud	Haut/Peau TWA: 0.2 ppm 8 Stunden TWA: 0.7 mg/m³ 8 Stunden	TWA: 1.6 mg/m³ 8 godzinach	TWA: 0.2 ppm 8 timer TWA: 0.66 mg/m³ 8 timer STEL: 0.6 ppm 15 minutter. value calculated STEL: 1.98 mg/m³ 15 minutter. value calculated Hud

Component	Bulgaria	Croatia	Ireland	Cyprus	Czech Republic
Ethylbenzene	TWA: 435 mg/m³ STEL : 545 mg/m³ Skin notation	kože TWA-GVI: 100 ppm 8 satima. TWA-GVI: 442 mg/m³ 8 satima. STEL-KGVI: 200 ppm 15 minutama. STEL-KGVI: 884 mg/m³ 15 minutama.	TWA: 100 ppm 8 hr. TWA: 442 mg/m³ 8 hr. STEL: 200 ppm 15 min STEL: 884 mg/m³ 15 min Skin	Skin-potential for cutaneous absorption STEL: 200 ppm STEL: 884 mg/m³ TWA: 100 ppm TWA: 442 mg/m³	TWA: 200 mg/m³ 8 hodinách. Potential for cutaneous absorption Ceiling: 500 mg/m³
Benzene	TWA: 3.25 mg/m³ TWA: 1 ppm Skin notation	kože TWA-GVI: 1 ppm 8 satima. TWA-GVI: 3.25 mg/m³ 8 satima.	TWA: 1 ppm 8 hr. TWA: 3.25 mg/m³ 8 hr. STEL: 3 ppm 15 min STEL: 9.75 mg/m³ 15 min Skin	Skin-potential for cutaneous absorption TWA: 1 ppm TWA: 3.25 mg/m³	TWA: 3 mg/m³ 8 hodinách. Potential for cutaneous absorption Ceiling: 10 mg/m³

Component	Estonia	Gibraltar	Greece	Hungary	Iceland
Ethylbenzene	Nahk TWA: 100 ppm 8 tundides. TWA: 442 mg/m³ 8 tundides. STEL: 200 ppm 15 minutites. STEL: 884 mg/m³ 15 minutites.	Skin notation TWA: 100 ppm 8 hr TWA: 442 mg/m³ 8 hr STEL: 200 ppm 15 min STEL: 884 mg/m³ 15 min	STEL: 125 ppm STEL: 545 mg/m³ TWA: 100 ppm TWA: 435 mg/m³	STEL: 884 mg/m³ 15 percekben. CK TWA: 442 mg/m³ 8 órában. AK lehetséges borön keresztüli felszívódás	STEL: 200 ppm STEL: 884 mg/m³ TWA: 50 ppm 8 klukkustundum. TWA: 200 mg/m³ 8 klukkustundum. Skin notation
Benzene	Nahk TWA: 0.5 ppm 8 tundides. TWA: 1.5 mg/m³ 8 tundides. STEL: 3 ppm 15 minutites. STEL: 9 mg/m³ 15 minutites.		skin - potential for cutaneous absorption TWA: 3.25 mg/m³ TWA: 1.0 ppm	TWA: 3.25 mg/m³ 8 órában. AK lehetséges borön keresztüli felszívódás	TWA: 0.5 ppm 8 klukkustundum. TWA: 1.6 mg/m³ 8 klukkustundum. Skin notation Ceiling: 1 ppm Ceiling: 3.2 mg/m³

Component	Latvia	Lithuania	Luxembourg	Malta	Romania
Ethylbenzene	skin - potential for cutaneous exposure STEL: 200 ppm STEL: 884 mg/m³ TWA: 100 ppm TWA: 442 mg/m³	TWA: 100 ppm IPRD TWA: 442 mg/m³ IPRD Oda STEL: 200 ppm STEL: 884 mg/m³	Possibility of significant uptake through the skin TWA: 100 ppm 8 Stunden TWA: 442 mg/m³ 8 Stunden STEL: 200 ppm 15 Minuten STEL: 884 mg/m³ 15 Minuten	possibility of significant uptake through the skin TWA: 100 ppm TWA: 442 mg/m³ STEL: 200 ppm 15 minuti STEL: 884 mg/m³ 15 minuti	Skin notation TWA: 100 ppm 8 ore TWA: 442 mg/m³ 8 ore STEL: 200 ppm 15 minute STEL: 884 mg/m³ 15 minute
Benzene	skin - potential for cutaneous exposure TWA: 1 ppm TWA: 3.25 mg/m³	TWA: 1 ppm IPRD TWA: 3.25 mg/m³ IPRD Oda STEL: 6 ppm STEL: 19 mg/m³			Skin notation TWA: 1 ppm 8 ore TWA: 3.25 mg/m³ 8 ore

Component	Russia	Slovak Republic	Slovenia	Sweden	Turkey
Ethylbenzene	TWA: 50 mg/m³ 2418 MAC: 150 mg/m³	Ceiling: 884 mg/m³ Potential for cutaneous absorption TWA: 100 ppm TWA: 442 mg/m³	TWA: 100 ppm 8 urah TWA: 442 mg/m³ 8 urah Koža STEL: 200 ppm 15 minutah STEL: 884 mg/m³ 15 minutah	Binding STEL: 200 ppm 15 minuter Binding STEL: 884 mg/m³ 15 minuter TLV: 50 ppm 8 timmar. NGV TLV: 220 mg/m³ 8 timmar. NGV Hud	Deri TWA: 100 ppm 8 saat TWA: 442 mg/m³ 8 saat STEL: 200 ppm 15 dakika STEL: 884 mg/m³ 15 dakika
Benzene	TWA: 5 mg/m³ 0280 Skin notation MAC: 15 mg/m³	TWA: 1.0 ppm 8 hodinách TWA: 3.25 mg/m³ 8 hodinách Potential for cutaneous absorption STEL: 5.0 ppm 15 minútach STEL: 16.25 mg/m³ 15 minútach	TWA: 1 ppm 8 urah TWA: 3.25 mg/m³ 8 urah Koža	Binding STEL: 3 ppm 15 minuter Binding STEL: 9 mg/m³ 15 minuter TLV: 0.5 ppm 8 timmar. NGV TLV: 1.5 mg/m³ 8 timmar. NGV Hud	Deri TWA: 1 ppm 8 saat TWA: 3.25 mg/m³ 8 saat

Biological limit values

List source(s):

Component	European Union	United Kingdom	France	Spain	Germany
Ethylbenzene			Mandelic acid: 1500 mg/g creatinine urine end of shift at end of workweek	Mandelic acid plus Phenylglyoxylic acid: 700 mg/g Creatinine urine end of workweek	Mandelic acid plus Phenylglyoxylic acid: 250 mg/g Creatinine urine (end of shift)
Benzene			Muconic acid: 5 mg/L urine end of shift	S-Phenyl mercapturic acid: 0.045 mg/g Creatinine urine end of exposure or end of shift trans, trans-Muconic acid: 2 mg/L urine end of exposure or end of shift	

Component	Italy	Finland	Denmark	Bulgaria	Romania
Ethylbenzene		Mandelic acid: 5.2 mmol/L urine after the shift after a working week or exposure period.		Mandelic acid and Phenylglyoxylic acid - total: 2000 mg/g Creatinine urine at the end of exposure or end of work shift possible significant absorption through the skin	Mandelic acid: 1.5 g/g Creatinine urine end of work week
Benzene				Trans, trans-Muconic acid: 2.0 mg/L urine at the end of exposure or end of work shift	S-Phenylmercapturic acid: 25 µg/g Creatinine urine end of shift Trans, trans-muconic

				possible significant absorption through the skin S-Phenyl Mercapturic acid: 0.045 mg/g Creatinine urine at the end of exposure or end of work shift possible significant absorption through the skin	acid: 500 µg/g Creatinine urine end of shift total Phenols: 50 mg/L urine end of shift

Component	Gibraltar	Latvia	Slovak Republic	Luxembourg	Turkey
Ethylbenzene			2 and 4-Ethylphenol: 12 mg/L urine end of exposure or work shift also after all work shifts for long-term exposure Mandelic acid and Phenylglycolic acid: 1600 mg/L urine end of exposure or work shift also after all work shifts for long-term exposure		
Benzene		Phenol: 46 µg/g Creatinine urine end of shift : 28 µg/L blood end of shift			

Monitoring methods

BS EN 14042:2003 Title Identifier: Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents.
MDHS70 General methods for sampling airborne gases and vapours
MDHS 88 Volatile organic compounds in air. Laboratory method using diffusive samplers, solvent desorption and gas chromatography
MDHS 96 Volatile organic compounds in air - Laboratory method using pumped solid sorbent tubes, solvent desorption and gas chromatography

Derived No Effect Level (DNEL) / Derived Minimum Effect Level (DMEL)

See table for values

Component	Acute effects local (Dermal)	Acute effects systemic (Dermal)	Chronic effects local (Dermal)	Chronic effects systemic (Dermal)
Ethylbenzene 100-41-4 (99.88)				DNEL = 180mg/kg bw/day DNEL = 212mg/kg bw/day

Component	Acute effects local (Inhalation)	Acute effects systemic (Inhalation)	Chronic effects local (Inhalation)	Chronic effects systemic (Inhalation)
Ethylbenzene 100-41-4 (99.88)	DMEL = 884mg/m³ DNEL = 293mg/m³ DNEL = 442mg/m³	DMEL = 884mg/m³ DNEL = 442mg/m³	DMEL = 442mg/m³ DNEL = 221mg/m³	DMEL = 442mg/m³ DNEL = 77mg/m³ DNEL = 221mg/m³

Predicted No Effect Concentration (PNEC)

See values below.

Component	Fresh water	Fresh water sediment	Water Intermittent	Microorganisms in sewage treatment	Soil (Agriculture)
Ethylbenzene	PNEC = 0.327mg/L	PNEC =	PNEC = 0.327mg/L	PNEC = 6.58mg/L	PNEC = 2.31mg/kg

100-41-4 (99.88)		12.46mg/kg sediment dw			soil dw

Component	Marine water	Marine water sediment	Marine water Intermittent	Food chain	Air
Ethylbenzene 100-41-4 (99.88)	PNEC = 0.327mg/L	PNEC = 12.46mg/kg sediment dw			

8.2. Exposure controls

Engineering Measures
Ensure adequate ventilation, especially in confined areas. Use explosion-proof electrical/ventilating/lighting/equipment.
Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

Personal protective equipment

Eye Protection Wear safety glasses with side shields (or goggles) (European standard - EN 166)

Hand Protection Protective gloves

Glove material	Breakthrough time	Glove thickness	EU standard	Glove comments
Nitrile rubber Neoprene Natural rubber PVC	See manufacturers recommendations	-	EN 374	(minimum requirement)

Skin and body protection Long sleeved clothing.

Inspect gloves before use. observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information) gloves are suitable for the task: Chemical compatability, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion. gloves with care avoiding skin contamination.

Respiratory Protection When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly

Large scale/emergency use Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced
Recommended Filter type: Organic gases and vapours filter Type A Brown conforming to EN14387

Small scale/Laboratory use Use a NIOSH/MSHA or European Standard EN 149:2001 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
Recommended half mask:- Valve filtering: EN405; or; Half mask: EN140; plus filter, EN 141
When RPE is used a face piece Fit Test should be conducted

Environmental exposure controls Prevent product from entering drains. Do not allow material to contaminate ground water system.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Physical State	Liquid	
Appearance	Colorless	
Odor	aromatic	
Odor Threshold	No data available	
Melting Point/Range	-95 °C / -139 °F	
Softening Point	No data available	
Boiling Point/Range	135 - 136 °C / 275 - 276.8 °F	
Flammability (liquid)	Highly flammable	On basis of test data
Flammability (solid,gas)	Not applicable	Liquid
Explosion Limits	No data available	
Flash Point	15 °C / 59 °F	**Method -** No information available
Autoignition Temperature	No data available	
Decomposition Temperature	No data available	
pH	Not applicable	
Viscosity	No data available	
Water Solubility	No information available	
Solubility in other solvents	No information available	

Partition Coefficient (n-octanol/water)

Component	**log Pow**
Ethylbenzene	3.6
Benzene	2.13

Vapor Pressure	No data available	
Density / Specific Gravity	0.867	
Bulk Density	Not applicable	Liquid
Vapor Density	No data available	(Air = 1.0)
Particle characteristics	Not applicable (liquid)	

9.2. Other information

Explosive Properties Vapors may form explosive mixtures with air

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

None known, based on information available

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Hazardous Polymerization No information available.
Hazardous Reactions None under normal processing.

10.4. Conditions to avoid

Keep away from open flames, hot surfaces and sources of ignition.

10.5. Incompatible materials

None known.

10.6. Hazardous decomposition products

Carbon oxides.

SECTION 11: TOXICOLOGICAL INFORMATION

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

Product Information

(a) acute toxicity;

Oral Based on available data, the classification criteria are not met
Dermal Based on available data, the classification criteria are not met
Inhalation Category 4
Based on available data, the classification criteria are not met

Toxicology data for the components

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Ethylbenzene	3500 mg/kg (Rat)	15400 mg/kg (Rabbit)	17.2 mg/L (Rat) 4 h
Benzene	LD50 = 810 mg/kg (Rat)	LD50 > 8200 mg/kg (Rabbit)	LC50 = 44.66 mg/L (Rat) 4 h

(b) skin corrosion/irritation; Based on available data, the classification criteria are not met

(c) serious eye damage/irritation; Based on available data, the classification criteria are not met

(d) respiratory or skin sensitization;

Respiratory Based on available data, the classification criteria are not met
Skin Based on available data, the classification criteria are not met

(e) germ cell mutagenicity; Category 1B Based on available data, the classification criteria are not met

(f) carcinogenicity; Category 1A Based on available data, the classification criteria are not met

The table below indicates whether each agency has listed any ingredient as a carcinogen

Component	EU	UK	Germany	IARC
Ethylbenzene				Group 2B
Benzene	Carc Cat. 1A		Cat. 1	Group 1

(g) reproductive toxicity; Based on available data, the classification criteria are not met

(h) STOT-single exposure; Based on available data, the classification criteria are not met

(i) STOT-repeated exposure; Category 2
Based on available data, the classification criteria are not met

Target Organs No information available.

(j) aspiration hazard; Category 1
Based on available data, the classification criteria are not met

Symptoms / effects,both acute and delayed Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.

11.2. Information on other hazards

Endocrine Disrupting Properties Assess endocrine disrupting properties for human health. This product does not contain any known or suspected endocrine disruptors.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Ecotoxicity effects The product contains following substances which are hazardous for the environment. Contains a substance which is:. Toxic to aquatic organisms.

Component	Freshwater Fish	Water Flea	Freshwater Algae
Ethylbenzene	LC50: 9.1 - 15.6 mg/L, 96h static (Pimephales promelas) LC50: 11.0 - 18.0 mg/L, 96h static (Oncorhynchus mykiss) LC50: = 4.2 mg/L, 96h semi-static (Oncorhynchus mykiss) LC50: 7.55 - 11 mg/L, 96h flow-through (Pimephales promelas) LC50: = 32 mg/L, 96h static (Lepomis macrochirus) LC50: = 9.6 mg/L, 96h static (Poecilia reticulata)	EC50: 1.8 - 2.4 mg/L, 48h (Daphnia magna)	EC50: 2.6 - 11.3 mg/L, 72h static (Pseudokirchneriella subcapitata) EC50: 1.7 - 7.6 mg/L, 96h static (Pseudokirchneriella subcapitata) EC50: > 438 mg/L, 96h (Pseudokirchneriella subcapitata) EC50: = 4.6 mg/L, 72h (Pseudokirchneriella subcapitata)
Benzene	LC50: = 22.49 mg/L, 96h static (Lepomis macrochirus) LC50: = 5.3 mg/L, 96h flow-through (Oncorhynchus mykiss) LC50: 70000 - 142000 µg/L, 96h static (Lepomis macrochirus) LC50: = 28.6 mg/L, 96h static (Poecilia reticulata) LC50: 22330 - 41160 µg/L, 96h static (Pimephales promelas) LC50: 10.7 - 14.7 mg/L, 96h flow-through (Pimephales promelas)	EC50: = 10 mg/L, 48h (Daphnia magna) EC50: 8.76 - 15.6 mg/L, 48h Static (Daphnia magna)	EC50: = 29 mg/L, 72h (Pseudokirchneriella subcapitata)

Component	Microtox	M-Factor
Ethylbenzene	EC50 = 9.68 mg/L 30 min EC50 = 96 mg/L 24 h	

12.2. Persistence and degradability No information available

Persistence Persistence is unlikely.

Degradation in sewage treatment plant Contains substances known to be hazardous to the environment or not degradable in waste water treatment plants.

12.3. Bioaccumulative potential Bioaccumulation is unlikely

Component	log Pow	Bioconcentration factor (BCF)
Ethylbenzene	3.6	15 dimensionless
Benzene	2.13	3.5 - 4.4 dimensionless

12.4. Mobility in soil No information available

12.5. Results of PBT and vPvB assessment Substance is not considered persistent, bioaccumulative and toxic (PBT) / very persistent and very bioaccumulative (vPvB).

12.6. Endocrine disrupting

properties

Endocrine Disruptor Information This product does not contain any known or suspected endocrine disruptors

12.7. Other adverse effects

Persistent Organic Pollutant This product does not contain any known or suspected substance

Ozone Depletion Potential This product does not contain any known or suspected substance

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste from Residues/Unused Products Waste is classified as hazardous. Dispose of in accordance with the European Directives on waste and hazardous waste. Dispose of in accordance with local regulations.

Contaminated Packaging Dispose of this container to hazardous or special waste collection point. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep product and empty container away from heat and sources of ignition.

European Waste Catalogue (EWC) According to the European Waste Catalog, Waste Codes are not product specific, but application specific.

Other Information Do not flush to sewer. Waste codes should be assigned by the user based on the application for which the product was used. Can be landfilled or incinerated, when in compliance with local regulations. Do not let this chemical enter the environment. Do not empty into drains.

Switzerland - Waste Ordinance Disposal should be in accordance with applicable regional, national and local laws and regulations. Ordinance on the Avoidance and the Disposal of Waste (Waste Ordinance, ADWO) SR 814.600
https://www.fedlex.admin.ch/eli/cc/2015/891/en

SECTION 14: TRANSPORT INFORMATION

IMDG/IMO

14.1. UN number UN1175
14.2. UN proper shipping name ETHYLBENZENE
14.3. Transport hazard class(es) 3
14.4. Packing group II

ADR

14.1. UN number UN1175
14.2. UN proper shipping name ETHYLBENZENE
14.3. Transport hazard class(es) 3
14.4. Packing group II

IATA

14.1. UN number UN1175
14.2. UN proper shipping name ETHYLBENZENE
14.3. Transport hazard class(es) 3
14.4. Packing group II

14.5. Environmental hazards No hazards identified

14.6. Special precautions for user No special precautions required.

14.7. Maritime transport in bulk according to IMO instruments Not applicable, packaged goods

SECTION 15: REGULATORY INFORMATION

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

International Inventories

China, X = listed, Australia, U.S.A. (TSCA), Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Australia (AICS), Korea (KECL), China (IECSC), Japan (ENCS), Philippines (PICCS), Taiwan (TCSI), Japan (ISHL), New Zealand (NZIoC), Japan (ISHL). US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)

Component	CAS No	EINECS	ELINCS	NLP	IECSC	TCSI	KECL	ENCS	ISHL
Ethylbenzene	100-41-4	202-849-4	-	-	X	X	KE-13532	X	X
Benzene	71-43-2	200-753-7	-	-	X	X	KE-02150	X	X

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	DSL	NDSL	AICS	NZIoC	PICCS
Ethylbenzene	100-41-4	X	ACTIVE	X	-	X	X	X
Benzene	71-43-2	X	ACTIVE	X	-	X	X	X

Legend: X - Listed '-' - Not Listed **KECL** - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)

Authorisation/Restrictions according to EU REACH

Component	CAS No	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
Ethylbenzene	100-41-4	-	-	-
Benzene	71-43-2	-	Use restricted. See item 72. (see link for restriction details) Use restricted. See item 5. (see link for restriction details) Use restricted. See item 28. (see link for restriction details) Use restricted. See item 29. (see link for restriction details) Use restricted. See item 75. (see link for restriction details)	-

REACH links

https://echa.europa.eu/substances-restricted-under-reach

Seveso III Directive (2012/18/EC)

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements

Ethylbenzene	100-41-4	Not applicable	Not applicable
Benzene	71-43-2	Not applicable	Not applicable

Regulation (EC) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of dangerous chemicals

Component	ANNEX I - PART 1 List of chemicals subject to export notification procedure (referred to in Article 8)	ANNEX I - PART 2 List of chemicals qualifying for PIC notification (referred to in Article 11)	ANNEX I - PART 3 List of chemicals subject to the PIC procedure (referred to in Articles 13 and 14)
Benzene 71-43-2 (0.12)	sr — severe restriction i(2) — industrial chemical for public	-	-

https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32012R0649&qid=1604065742303.

Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)?
Not applicable

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 .
Take note of Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values
Take note of Dir 76/769/EEC relating to restrictions on the marketing and use of certain dangerous substances and preparations

National Regulations

UK - Take note of Control of Substances Hazardous to Health Regulations (COSHH) 2002 and 2005 Amendment

WGK Classification Water endangering class = 3 (self classification)

Component	Germany - Water Classification (AwSV)	Germany - TA-Luft Class
Ethylbenzene	WGK1	
Benzene	WGK3	Krebserzeugende Stoffe - Class II : 0.5 mg/m³ (Massenkonzentration)

Component	France - INRS (Tables of occupational diseases)
Ethylbenzene	Tableaux des maladies professionnelles (TMP) - RG 84
Benzene	Tableaux des maladies professionnelles (TMP) - RG 4,RG 4bis,RG 84

Swiss Regulations
Article 4 para. 4 of the Ordinance on the protection of young people in the workplace (SR 822.115) and Article 1 lit. f of the EAER regulation on hazardous work and young people (SR 822.115.2).
Take note on Article 13 Maternity Ordinance (SR 822.111.52) with regards expectant and nursing mothers.

Component	Switzerland - Ordinance on the Reduction of Risk from handling of hazardous substances preparation (SR 814.81)	Switzerland - Ordinance on Incentive Taxes on Volatile Organic Compounds (OVOC)	Switzerland - Ordinance of the Rotterdam Convention on the Prior Informed Consent Procedure
Ethylbenzene 100-41-4 (99.88)	Prohibited and Restricted Substances	Group I	
Benzene 71-43-2 (0.12)	Prohibited and Restricted Substances	Group I	Annex I - industrial chemical

15.2. Chemical safety assessment

Chemical Safety Assessment/Reports (CSA/CSR) are not required for mixtures

SECTION 16: OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3

H304 - May be fatal if swallowed and enters airways
H332 - Harmful if inhaled
H340 - May cause genetic defects
H350 - May cause cancer
H373 - May cause damage to organs through prolonged or repeated exposure
H412 - Harmful to aquatic life with long lasting effects
H225 - Highly flammable liquid and vapor
H315 - Causes skin irritation
H319 - Causes serious eye irritation
H372 - Causes damage to organs through prolonged or repeated exposure

Legend

CAS - Chemical Abstracts Service

EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
IECSC - Chinese Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
ENCS - Japanese Existing and New Chemical Substances
AICS - Australian Inventory of Chemical Substances
NZIoC - New Zealand Inventory of Chemicals

WEL - Workplace Exposure Limit
ACGIH - American Conference of Governmental Industrial Hygienists
DNEL - Derived No Effect Level
RPE - Respiratory Protective Equipment
LC50 - Lethal Concentration 50%
NOEC - No Observed Effect Concentration
PBT - Persistent, Bioaccumulative, Toxic

TWA - Time Weighted Average
IARC - International Agency for Research on Cancer
Predicted No Effect Concentration (PNEC)
LD50 - Lethal Dose 50%
EC50 - Effective Concentration 50%
POW - Partition coefficient Octanol:Water
vPvB - very Persistent, very Bioaccumulative

ADR - European Agreement Concerning the International Carriage of Dangerous Goods by Road
IMO/IMDG - International Maritime Organization/International Maritime Dangerous Goods Code
OECD - Organisation for Economic Co-operation and Development
BCF - Bioconcentration factor

ICAO/IATA - International Civil Aviation Organization/International Air Transport Association
MARPOL - International Convention for the Prevention of Pollution from Ships
ATE - Acute Toxicity Estimate
VOC - (volatile organic compound)

Key literature references and sources for data

https://echa.europa.eu/information-on-chemicals
Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

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

Physical hazards	On basis of test data
Health Hazards	Calculation method
Environmental hazards	Calculation method

Training Advice

Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene.
Use of personal protective equipment, covering appropriate selection, compatibility, breakthrough thresholds, care, maintenance, fit and standards.
First aid for chemical exposure, including the use of eye wash and safety showers.

Prepared By	Health, Safety and Environmental Department
Revision Date	24-Mar-2024
Revision Summary	New emergency telephone response service provider.

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006. COMMISSION REGULATION (EU) 2020/878 amending Annex II to Regulation (EC) No 1907/2006 .

For Switzerland - Compiled in accordance with the technical provisions referred to in Annex 2, Number 3, ChemO (SR 813.11 - Ordinance on Protection against Dangerous Substances and Preparations).

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