SAFETY DATA SHEET

Creation Date Oct-2013 **Revision Date** Oct-2018 **Revision Number** 2

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

1.1. Product identification

Product Description:	**Ethylene glycol**
Product Grade:	SQ, ER
Cat No. :	Q12775, Q12777, Q23405, Q23406, Q23407, Q2340C
Synonyms	Monoethylene glycol; 1,2-Ethanediol
CAS-No	107-21-1
EC-No.	203-473-3
Molecular Formula	C2 H6 O2
Reach Registration Number	01-2119456816-28

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 Scientific India Pvt. Ltd 403-404, B-wing, Delphi, Hiranandani Business Park, Powai, Mumbai 400076, INDIA.
E-mail address	laboratorysolutions@thermofisher.com

1.4. Emergency telephone number

India Toll Free: 18 00 22 22 30
Chemtrec US: (800)424-9300
Chemtrec EU: 001(202)483-7616

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

CLP Classification - Regulation (EC) No 1272/2008

Physical hazards

Based on available data, the classification criteria are not met

Health hazards

Acute oral toxicity	Category 4 (H302)
Specific target organ toxicity - (repeated exposure)	Category 2 (H373)

Environmental hazards
Based on available data, the classification criteria are not met

2.2. Label elements

Signal Word **Warning**

Hazard Statements

H302 - Harmful if swallowed
H373 - May cause damage to organs through prolonged or repeated exposure

Precautionary Statements

P280 - Wear protective gloves/ protective clothing/ eye protection/ face protection
P301 + P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician

2.3. Other hazards

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

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

Component	CAS-No	EC-No.	Weight %	CLP Classification - Regulation (EC) No 1272/2008
Ethylene glycol	107-21-1	EEC No. 203-473-3	>95	Acute Tox. 4 (H302) STOT RE 2 (H373)

Reach Registration Number	01-2119456816-28

Full text of Hazard Statements: see section 16

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

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

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Get medical attention immediately if symptoms occur.

Ingestion Do not induce vomiting. Call a physician or Poison Control Center immediately.

Inhalation Move to fresh air. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Get medical attention immediately if symptoms occur. If not breathing, give artificial respiration.

Protection of First-aiders 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

Breathing difficulties.

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

Notes to Physician Treat symptomatically. Symptoms may be delayed.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

Suitable Extinguishing Media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

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

5.2. Special hazards arising from the substance or mixture

Thermal decomposition can lead to release of irritating gases and vapors. Keep product and empty container away from heat and sources of ignition.

Hazardous Combustion Products
Carbon monoxide (CO), Carbon dioxide (CO_2).

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.

6.2. Environmental precautions

Should not be released into the environment. See Section 12 for additional ecological information.

6.3. Methods and material for containment and cleaning up

Soak up with inert absorbent material. Keep in suitable, closed containers for disposal.

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. Ensure adequate ventilation. Do not breathe vapors or spray mist. Avoid contact with skin, eyes and clothing.

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 before re-use. Wash hands before breaks and at the end of workday.

7.2. Conditions for safe storage, including any incompatibilities

Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat and sources of ignition.

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 2006/15/EC of 7 February 2006 establishing a second list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC and amending Directives 91/322/EEC and 2000/39/EC on the protection of the health and safety of workers from the risks related to chemical agents at work. **UK** - EH40/2005 Containing the workplace exposure limits (WELs) for use with the Control of Substances Hazardous to Health Regulations (COSHH) 2002 (as amended). Updated by September 2006 official press release and October 2007 Supplement. **IRE -** 2010 Code of Practice for the Safety, Health and Welfare at Work (Chemical Agents) Regulations 2001. Published by the Health and Safety Authority.

Component	European Union	The United Kingdom	France	Belgium	Spain
Ethylene glycol	TWA: 20 ppm 8 hr TWA: 52 mg/m³ 8 hr STEL: 40 ppm 15 min STEL: 104 mg/m³ 15 min Possibility of significant uptake through the skin	STEL: 40 ppm 15 min STEL: 104 mg/m³ 15 min STEL: 30 mg/m³ 15 min TWA: 10 mg/m³ 8 hr TWA: 20 ppm 8 hr TWA: 52 mg/m³ 8 hr Skin	TWA / VME: 20 ppm (8 heures). indicative limit TWA / VME: 52 mg/m³ (8 heures). indicative limit STEL / VLCT: 40 ppm. indicative limit STEL / VLCT: 104 mg/m³. indicative limit Peau	Huid	STEL / VLA-EC: 40 ppm (15 minutos). STEL / VLA-EC: 104 mg/m³ (15 minutos). TWA / VLA-ED: 20 ppm (8 horas) TWA / VLA-ED: 52 mg/m³ (8 horas) Piel

Component	Italy	Germany	Portugal	The Netherlands	Finland
Ethylene glycol	TWA: 20 ppm 8 ore. Media Ponderata nel Tempo TWA: 52 mg/m³ 8 ore. Media Ponderata nel Tempo STEL: 40 ppm 15 minuti. Breve termine STEL: 104 mg/m³ 15 minuti. Breve termine Pelle	TWA: 10 ppm (8 Stunden). AGW - exposure factor 2 TWA: 26 mg/m³ (8 Stunden). AGW - exposure factor 2 TWA: 10 ppm (8 Stunden). MAK can occur as vapor and aerosol at the same time TWA: 26 mg/m³ (8 Stunden). MAK can occur as vapor and aerosol at the same time Höhepunkt: 20 ppm Höhepunkt: 52 mg/m³ Haut	STEL: 40 ppm 15 minutos STEL: 104 mg/m³ 15 minutos Ceiling: 100 mg/m³ TWA: 20 ppm 8 horas TWA: 52 mg/m³ 8 horas Pele	huid STEL: 104 mg/m³ 15 minuten TWA: 52 mg/m³ 8 uren TWA: 10 mg/m³ 8 uren	TWA: 20 ppm 8 tunteina TWA: 50 mg/m³ 8 tunteina STEL: 40 ppm 15 minuutteina STEL: 100 mg/m³ 15 minuutteina Iho

Component	Austria	Denmark	Switzerland	Poland	Norway
Ethylene glycol	Haut MAK-KZW: 20 ppm 15 Minuten MAK-KZW: 52 mg/m³ 15 Minuten MAK-TMW: 10 ppm 8 Stunden MAK-TMW: 26 mg/m³ 8 Stunden	TWA: 10 ppm 8 timer TWA: 26 mg/m³ 8 timer TWA: 10 mg/m³ 8 timer Hud	Haut/Peau STEL: 20 ppm 15 Minuten STEL: 52 mg/m³ 15 Minuten TWA: 10 ppm 8 Stunden TWA: 26 mg/m³ 8 Stunden	STEL: 50 mg/m³ 15 minutach TWA: 15 mg/m³ 8 godzinach	TWA: 20 mg/m³ 8 timer TWA: 52 ppm 8 timer TWA: 52 mg/m³ 8 timer STEL: 52 mg/m³ 15 minutter. Norm is based on the sum calculation for the total gas and particulate form of the substance dust STEL: 20 ppm 15 minutter. Norm is based on the sum calculation for the total gas and particulate form of the substance Hud

Component	Bulgaria	Croatia	Ireland	Cyprus	Czech Republic
Ethylene glycol	TWA: 52 mg/m³ TWA: 20 ppm STEL : 40 ppm STEL : 104 mg/m³ Skin notation	kože TWA-GVI: 20 ppm 8 satima. TWA-GVI: 52 mg/m³ 8 satima. STEL-KGVI: 40 ppm 15 minutama. STEL-KGVI: 104 mg/m³ 15 minutama.	TWA: 10 mg/m³ 8 hr. particulate TWA: 20 ppm 8 hr. vapour TWA: 52 mg/m³ 8 hr. vapour STEL: 40 ppm 15 min STEL: 104 mg/m³ 15 min Skin	Skin-potential for cutaneous absorption STEL: 40 ppm STEL: 104 mg/m³ TWA: 20 ppm TWA: 52 mg/m³	TWA: 50 mg/m³ 8 hodinách. Potential for cutaneous absorption Ceiling: 100 mg/m³

Component	Estonia	Gibraltar	Greece	Hungary	Iceland
Ethylene glycol	Nahk TWA: 20 ppm 8 tundides. total concentration of aerosol and vapor TWA: 52 mg/m³ 8 tundides. total concentration of aerosol and vapor STEL: 40 ppm 15 minutites. total concentration of aerosol and vapor STEL: 104 mg/m³ 15 minutites. total concentration of aerosol and vapor	Skin notation TWA: 20 ppm 8 hr TWA: 52 mg/m³ 8 hr STEL: 40 ppm 15 min STEL: 104 mg/m³ 15 min	STEL: 50 ppm STEL: 125 mg/m³ TWA: 50 ppm TWA: 125 mg/m³	STEL: 104 mg/m³ 15 percekben. CK TWA: 52 mg/m³ 8 órában. AK lehetséges borön keresztüli felszívódás	STEL: 40 ppm STEL: 104 mg/m³ TWA: 10 ppm 8 klukkustundum. regulated under Glycol aerosol TWA: 26 mg/m³ 8 klukkustundum. regulated under Glycol aerosol Skin notation Ceiling: 20 ppm regulated under Glycol aerosol Ceiling: 52 mg/m³ regulated under Glycol aerosol

Component	Latvia	Lithuania	Luxembourg	Malta	Romania
Ethylene glycol	skin - potential for cutaneous exposure STEL: 40 ppm STEL: 104 mg/m³ TWA: 20 ppm TWA: 52 mg/m³	TWA: 10 ppm aerosol and vapor IPRD TWA: 25 mg/m³ aerosol and vapor IPRD Oda STEL: 20 ppm STEL: 50 mg/m³	Possibility of significant uptake through the skin TWA: 20 ppm 8 Stunden TWA: 52 mg/m³ 8 Stunden STEL: 40 ppm 15 Minuten STEL: 104 mg/m³ 15 Minuten	possibility of significant uptake through the skin TWA: 20 ppm TWA: 52 mg/m³ STEL: 40 ppm 15 minuti STEL: 104 mg/m³ 15 minuti	Skin notation TWA: 20 ppm 8 ore TWA: 52 mg/m³ 8 ore STEL: 40 ppm 15 minute STEL: 104 mg/m³ 15 minute

Component	Russia	Slovak Republic	Slovenia	Sweden	Turkey
Ethylene glycol	TWA: 5 mg/m³ 2308 STEL: 10 mg/m³ 2308	Ceiling: 104 mg/m³ Potential for cutaneous absorption TWA: 20 ppm TWA: 52 mg/m³	TWA: 20 ppm 8 urah TWA: 52 mg/m³ 8 urah Koža STEL: 40 ppm 15 minutah STEL: 104 mg/m³ 15 minutah	Binding STLV: 40 ppm 15 minuter aerosol and vapor Binding STLV: 104 mg/m³ 15 minuter aerosol and vapor LLV: 10 ppm 8 timmar. aerosol and vapor LLV: 25 mg/m³ 8 timmar. aerosol and vapor Hud	Deri TWA: 20 ppm 8 saat TWA: 52 mg/m³ 8 saat STEL: 40 ppm 15 dakika STEL: 104 mg/m³ 15 dakika

Biological limit values

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

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.

Derived No Effect Level (DNEL) No information available

Route of exposure	Acute effects (local)	Acute effects (systemic)	Chronic effects (local)	Chronic effects (systemic)
Oral				
Dermal		106 mg/kg bw/day		
Inhalation			35 mg/m^3	

Predicted No Effect Concentration (PNEC) No information available.

Fresh water	10 mg/l
Marine water	1 mg/l
Water Intermittent	10 mg/l
Microorganisms in sewage treatment	199.5 mg/l
Soil (Agriculture)	1.53 mg/l

8.2. Exposure controls

Engineering Measures
Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.
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	Safety glasses with side-shields (European standard - EN 166)
Hand Protection	Protective gloves

Glove material	Breakthrough time	Glove thickness	EU standard	Glove comments
Viton (R)	See manufacturers recommendations	-	EN 374	(minimum requirement)

Skin and body protection Long sleeved clothing

Inspect gloves before use.
Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information)
Ensure 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.
Remove 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 No information available.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Appearance	Colorless	
Physical State	Viscous liquid Liquid	
Odor	Odorless	
Odor Threshold	No data available	
pH	5.5-7.5	50% aq. sol
Melting Point/Range	-13 °C / 8.6 °F	
Softening Point	No data available	
Boiling Point/Range	196 - 198 °C / 384.8 - 388.4 °F	@ 760 mmHg
Flash Point	111 °C / 231.8 °F	**Method -** DIN 51758
Evaporation Rate	No information available	
Flammability (solid,gas)	Not applicable	Liquid
Explosion Limits	**Lower** 3.2 vol %	
	Upper 28 vol %	
Vapor Pressure	0.12 mmHg @ 20 °C	
Vapor Density	2.14 (Air = 1.0)	(Air = 1.0)
Specific Gravity / Density	1.113	
Bulk Density	Not applicable	Liquid
Water Solubility	Miscible	
Solubility in other solvents	No information available	
Partition Coefficient (n-octanol/water)		
Component	**log Pow**	
Ethylene glycol	-1.93	
Autoignition Temperature	413 °C / 775.4 °F	
Decomposition Temperature	> 500°C	
Viscosity	21 cP (20°C)	
Explosive Properties	No information available	
Oxidizing Properties	No information available	

9.2. Other information

Molecular Formula	C2 H6 O2
Molecular Weight	62.06

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

None known, based on information available

10.2. Chemical stability

Hygroscopic.

10.3. Possibility of hazardous reactions

Hazardous Polymerization	Hazardous polymerization does not occur.
Hazardous Reactions	None under normal processing.

10.4. Conditions to avoid

Incompatible products. Excess heat. Exposure to moist air or water.

10.5. Incompatible materials

Strong oxidizing agents. Strong acids. Strong bases. Aldehydes.

10.6. Hazardous decomposition products

Carbon monoxide (CO). Carbon dioxide (CO_2).

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Product Information

(a) acute toxicity;

Oral Category 4

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

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

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Ethylene glycol	7712 mg/kg (Rat)	9530 µL/kg (Rabbit) 10600 mg/kg (Rat)	

(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; Based on available data, the classification criteria are not met

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

There are no known carcinogenic chemicals in this product

(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

Target Organs Central nervous system (CNS), Liver, Kidney.

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

Symptoms / effects,both acute and delayed No information available

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Ecotoxicity effects Do not empty into drains. .

Component	Freshwater Fish	Water Flea	Freshwater Algae	Microtox
Ethylene glycol	LC50: = 16000 mg/L, 96h static (Poecilia reticulata) LC50: 40000 - 60000 mg/L, 96h static (Pimephales promelas) LC50: = 40761 mg/L, 96h static (Oncorhynchus mykiss) LC50: = 27540 mg/L, 96h static (Lepomis macrochirus) LC50: 14 - 18 mL/L, 96h static (Oncorhynchus mykiss) LC50: = 41000 mg/L, 96h (Oncorhynchus mykiss)	EC50: = 46300 mg/L, 48h (Daphnia magna)	EC50: 6500 - 13000 mg/L, 96h (Pseudokirchneriella subcapitata)	

12.2. Persistence and degradability Readily biodegradable

Persistence Miscible with water, Persistence is unlikely, based on information available.

12.3. Bioaccumulative potential Bioaccumulation is unlikely

Component	log Pow	Bioconcentration factor (BCF)
Ethylene glycol	-1.93	No data available

12.4. Mobility in soil The product is water soluble, and may spread in water systems Will likely be mobile in the environment due to its water solubility. Highly mobile in soils

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. Other adverse effects

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

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.

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

Other Information Waste codes should be assigned by the user based on the application for which the product was used. Do not empty into drains.

SECTION 14: TRANSPORT INFORMATION

IMDG/IMO Not regulated

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

ADR Not regulated

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

IATA Not regulated

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

14.5. Environmental hazards No hazards identified

14.6. Special precautions for user No special precautions required

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the Not applicable, packaged goods

IBC Code

SECTION 15: REGULATORY INFORMATION

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

International Inventories X = listed

Component	EINECS	ELINCS	NLP	TSCA	DSL	NDSL	PICCS	ENCS	IECSC	AICS	KECL
Ethylene glycol	203-473-3	-		X	X	-	X	X	X	X	X

National Regulations

Component	Germany - Water Classification (VwVwS)	Germany - TA-Luft Class
Ethylene glycol	WGK 1	

Component	France - INRS (Tables of occupational diseases)
Ethylene glycol	Tableaux des maladies professionnelles (TMP) - RG 84

Take note of Control of Substances Hazardous to Health Regulations (COSHH) 2002 and 2005 Amendment.
Take note of Dir 94/33/EC on the protection of young people at work
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

15.2. Chemical safety assessment

A Chemical Safety Assessment/Report (CSA/CSR) has been conducted by the manufacturer/importer

SECTION 16: OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3
H302 - Harmful if swallowed
H373 - May cause damage to organs through prolonged or repeated exposure

Legend

CAS - Chemical Abstracts Service

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

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

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

PICCS - Philippines Inventory of Chemicals and Chemical Substances

ENCS - Japanese Existing and New Chemical Substances

IECSC - Chinese Inventory of Existing Chemical Substances

AICS - Australian Inventory of Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

NZIoC - New Zealand Inventory of Chemicals

WEL - Workplace Exposure Limit

TWA - Time Weighted Average

ACGIH - American Conference of Governmental Industrial Hygienists

IARC - International Agency for Research on Cancer

DNEL - Derived No Effect Level

PNEC - Predicted No Effect Concentration

RPE - Respiratory Protective Equipment

LD50 - Lethal Dose 50%

LC50 - Lethal Concentration 50%

EC50 - Effective Concentration 50%

NOEC - No Observed Effect Concentration

POW - Partition coefficient Octanol:Water

PBT - Persistent, Bioaccumulative, Toxic

vPvB - very Persistent, very Bioaccumulative

ADR - European Agreement Concerning the International Carriage of Dangerous Goods by Road

ICAO/IATA - International Civil Aviation Organization/International Air Transport Association

IMO/IMDG - International Maritime Organization/International Maritime Dangerous Goods Code

MARPOL - International Convention for the Prevention of Pollution from Ships

OECD - Organisation for Economic Co-operation and Development

ATE - Acute Toxicity Estimate

BCF - Bioconcentration factor

VOC - Volatile Organic Compounds

Key literature references and sources for data
Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

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.
Chemical incident response training.
Fire prevention and fighting, identifying hazards and risks, static electricity, explosive atmospheres posed by vapours and dusts.

Creation Date	Oct-2013
Next Revision Date	Oct-2023
Revision Summary	SDS section 1 updated and update of Format

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006

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