

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 identifier **Product Description:** Hexanes, approx. 95% n-hexane Product Grade: SQ, ER, HPLC Cat No. : Q34205, Q3420C, Q34207, Q43586, Q3420H, Q12817, Q43587, Q12815 Synonyms Hexane, Hexane 65°C-70°C(95%) Fraction from Petroleum CAS-No 92112-69-1 EC-No. 203-777-6 C6 H14 **Molecular Formula Reach Registration Number** 01-2119480412-44 1.2. Relevant identified uses of the substance or mixture and uses advised against **Recommended Use** Laboratory chemicals 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

Physical hazards	
Flammable liquids	Category 2
Health hazards	
Aspiration Toxicity	Category 1
Skin Corrosion/irritation	Category 2
Reproductive Toxicity	Category 2
Specific target organ toxicity - (single exposure)	Category 3
Specific target organ toxicity - (repeated exposure)	Category 2
Environmental hazards	
Chronic aquatic toxicity	Category 2

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	SECTION 2: HAZARDS IDENTIFICATION
Symbol(s)	Xn - Harmful
	F - Highly flammable
	N - Dangerous for the environment
R-phrase(s)	R11 - Highly flammable
	R38 - Irritating to skin
	R62 - Possible risk of impaired fertility
	R65 - Harmful: may cause lung damage if swallowed
	R67 - Vapors may cause drowsiness and dizziness
	R48/20 - Harmful: danger of serious damage to health by prolonged exposure through inhalation
	R51/53 - Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

For the full text of the R-phrases and H-Statements mentioned in this Section, 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
- H336 May cause drowsiness or dizziness
- H315 Causes skin irritation
- H373 May cause damage to organs through prolonged or repeated exposure
- H411 Toxic to aquatic life with long lasting effects
- H361f Suspected of damaging fertility

Precautionary Statements

P281 - Use personal protective equipment as required

- P260 Do not breathe dust/fume/gas/mist/vapors/spray
- P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician
- P331 Do NOT induce vomiting
- P273 Avoid release to the environment
- P302 + P352 IF ON SKIN: Wash with plenty of soap and water
- P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking

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

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Component	CAS-No	EC-No.	Weight %	CLP Classification - Regulation (EC) No 1272/2008	DSD Classification - 67/548/EEC
Hexane	92112-69-1	EEC No. 203-777-6	>95	Skin Irrit. 2 (H315) Repr. 2 (H361f) STOT SE 3 (H336) STOT RE 2 (H373) Asp. Tox. 1 (H304) Aquatic Chronic 2 (H411) Flam. Liq. 2 (H225)	F;R11 Repr.Cat.3;R62 Xn;R48/20-65 Xi;R38 R67 N;R51/53

Reach	Registration	Number	
Neach	Neuloualion	NULLINGI	

01-2119480412-44

For the full text of the R-phrases and H-Statements mentioned in this Section, 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. Obtain medical attention.
Ingestion	Do not induce vomiting. Call a physician or Poison Control Center immediately. If vomiting occurs, lean victim forward to reduce the risk of aspiration
Inhalation	Move to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with a respiratory medical device. Obtain medical attention. Aspiration into lungs can produce severe lung damage
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 e	ffects, both acute and delayed
	Breathing difficulties Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

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

CO₂, dry chemical, dry sand, alcohol-resistant foam. Cool closed containers exposed to fire with water spray.

Extinguishing media which must not be used for safety reasons

Do not use a solid water stream as it may scatter and spread fire.

5.2. Special hazards arising from the substance or mixture

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

Hazardous Combustion Products

Carbon monoxide (CO), Carbon dioxide (CO₂).

5.3. Advice for firefighters

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As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Ensure adequate ventilation. Evacuate personnel to safe areas. 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. Take precautionary measures against static discharges.

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. Do not get in eyes, on skin, or on clothing. Do not breathe vapors or spray mist. Keep away from open flames, hot surfaces and sources of ignition. Use only non-sparking tools. Use explosion-proof equipment. Take precautionary measures against static discharges. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded.

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. Flammables area.

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
Hexane	TWA: 20 ppm 8 hr	TWA: 72 mg/m ³	TWA / VME: 20 ppm (8	TWA: 20 ppm 8 uren	TWA / VLA-ED: 20 ppm
	TWA: 72 mg/m ³ 8 hr	TWA: 20 ppm	heures). restrictive limit	TWA: 72 mg/m ³ 8 uren	(8 horas)
		STEL: 60 ppm	TWA / VME: 72 mg/m3 (8		TWA / VLA-ED: 72
		STEL: 216 mg/m ³	heures). restrictive limit		mg/m³ (8 horas)

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Component	Italy	Germany	Portugal	The Netherlands	Finland
Hexane	TWA: 20 ppm 8 ore. TWA: 72 mg/m ³ 8 ore.	TWA: 180 mg/m ³ TWA: 50 ppm	TWA: 50 ppm 8 horas Pele	STEL: 144 mg/m³ 15 minuten TWA: 72 mg/m³ 8 uren	TWA: 20 ppm 8 tunteina TWA: 72 mg/m ³ 8 tunteina Skin
Component	Austria	Denmark	Switzerland	Poland	Norway
Hexane	STEL: 80 ppm 15 Minuten STEL: 288 mg/m ³ 15 Minuten TWA: 20 ppm 8 Stunden TWA: 72 mg/m ³ 8 Stunden	TWA: 20 ppm 8 timer TWA: 72 mg/m ³ 8 timer	Skin STEL: 400 ppm 15 Minuten STEL: 1440 mg/m ³ 15 Minuten MAK: 50 ppm 8 Stunden MAK: 180 mg/m ³ 8 Stunden	TWA: 72 mg/m³ 8 godzinach Skóra	TWA: 20 ppm 8 timer TWA: 72 mg/m ³ 8 timer STEL: 30 ppm 15 minutter. STEL: 108 mg/m ³ 15 minutter.
Component	Bulgaria	Croatia	Ireland	Cyprus	Czech Republic
Hexane	TWA: 72.0 mg/m ³	TWA: 50 ppm 8 satima. TWA: 180 mg/m ³ 8 satima.	TWA: 20 ppm 8 hr. TWA: 72 mg/m ³ 8 hr.	TWA: 20 ppm TWA: 72 mg/m ³	TWA: 100 mg/m ³ 8 hodinách. Potential for cutaneous absorption Ceiling: 400 mg/m ³
0		•		1	
Component Hexane	Estonia TWA: 20 ppm 8 tundides.	Gibraltar TWA: 20 ppm 8 hr	Greece TWA: 20 ppm	Hungary TWA: 72 mg/m ³ 8	Iceland TWA: 20 ppm 8
	TWA: 72 mg/m ³ 8 tundides.	TWA: 72 mg/m ³ 8 hr	TWA: 72 mg/m ³	órában. potential for cutaneous absorption	klukkustundum. TWA: 72 mg/m ³ 8 klukkustundum. Ceiling: 40 ppm Ceiling: 144 mg/m ³
Component	Latvia	Lithuania	Luxombourg	Malta	Romania
Hexane	Latvia TWA: 20 ppm TWA: 72 mg/m ³	TWA: 20 ppm TWA: 72 mg/m ³	Luxembourg TWA: 20 ppm 8 Stunden TWA: 72 mg/m ³ 8 Stunden		TWA: 20 ppm 8 ore TWA: 72 mg/m ³ 8 ore
			1		
Component	Russia	Slovak Republic	Slovenia	Sweden	Turkey
Hexane	TWA: 300 mg/m ³ STEL: 900 mg/m ³ vapor		TWA: 20 ppm 8 urah TWA: 72 mg/m ³ 8 urah	STV: 50 ppm 15 minuter STV: 180 mg/m ³ 15 minuter LLV: 25 ppm 8 timmar. LLV: 90 mg/m ³ 8 timmar.	TWA: 20 ppm 8 saat TWA: 72 mg/m³ 8 saat

Biological limit values List source(s):

Component	European Union	United Kingdom	France	Spain	Germany
Hexane			Total 2,5-Hexanedione	2,5-Hexanedione	2,5-Hexandione plus 4,5-
			(with acid hydrolysis): 5	(without hydrolysis): 0.4	Dihydroxy-2-hexanone: 5
			mg/g creatinine urine end	mg/L urine end of	mg/L urine end of shift
			of shift	workweek	

Component	Italy	Finland	Denmark	Bulgaria	Romania
Hexane					2,5-Hexandion: 5 mg/g
					creatinine urine end of
					shift

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Component Hexane

Gibraltar	Latvia	Slovak Republic	Luxembourg	Turkey
		2,5-Hexanedione: 5 mg/L urine end of exposure or work shift 4,5-Dihydroxy-2- hexanone: 5 mg/L urine		
		end of exposure or work 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) See table for values

Route of exposure	Acute effects (local)	Acute effects (systemic)	Chronic effects (local)	Chronic effects (systemic)
Oral				
Dermal			11 mg/kg bw/day	
Inhalation			75 mg/m ³	

Predicted No Effect Concentration No information available. (PNEC)

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. 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

Safety glasses with side-shields (European standard - EN 166)

Hand Protection	Prote	ctive gloves		
Glove material Nitrile rubber Viton (R) Neoprene gloves	Breakthrough time > 480 minutes > 480 minutes < 180 minutes	Glove thickness 0.38 - 0.56 mm 0.7 mm 0.45 mm	EU standard Level 6 EN 374	Glove comments As tested under EN374-3 Determination of Resistance to Permeation by Chemicals

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.

Skin and body protection	Wear appropriate protective gloves and clothing to prevent skin exposure
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.

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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.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice
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

Appearance Physical State Odor Odor Threshold pH	Colorless Liquid. Petroleum distillates No data available No information available.	
Melting Point/Range Softening Point Boiling Point/Range Flash Point	-95°C / -139°F No data available 69°C / 156.2°F -22°C / -7.6°F	@ 760 mmHg Method - No information available.
Evaporation Rate Flammability (solid,gas) Explosion Limits	No data available Not applicable Lower 1.1 vol% Upper 7.5 vol%	Liquid
Vapor Pressure Vapor Density Specific Gravity / Density Bulk Density Water Solubility Solubility in other solvents	160 mbar @ 20 °C 2.97 0.659 Not applicable Insoluble No information available.	(Air = 1.0) Liquid
Partition Coefficient (n- octanol/water)	Component Hexane	log Pow 4.11
Autoignition Temperature Decomposition temperature Viscosity Explosive Properties Oxidizing Properties	223°C / 433.4°F No data available 0.31 mPa s at 20 °C Not explosive No information available.	Vapors may form explosive mixtures with air
<u>9.2. Other information</u> Molecular Formula Molecular Weight	C6 H14 86.18	
SECTION 10: STABILITY AND REACTIVITY		

10.1. Reactivity

None known, based on information available.

SECTION 10: STABILITY AND REACTIVITY

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Hazardous Polymerization Hazardous Reactions 10.4. Conditions to avoid	No information available No information available.
	Incompatible products, Heat, flames and sparks, Exposure to light, Keep away from open flames, hot surfaces and sources of ignition.
10.5. Incompatible materials	Strong oxidizing agents. Halogens.

10.6. Hazardous decomposition products

Carbon monoxide (CO), Carbon dioxide (CO₂).

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

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	Based on available data, the classification criteria are not met

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Hexane	25 g/kg (Rat)	3000 mg/kg (Rabbit)	48000 ppm (Rat)4 h

(b) skin corrosion/irritation;	Category 2
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(c) serious eye damage/irritation;	Based on available data, the classification criteria are not met
(d) respiratory or skin sensitization; Respiratory Skin	Based on available data, the classification criteria are not met Based on available data, the classification criteria are not met
(e) germ cell mutagenicity;	On basis of test data Based on available data, the classification criteria are not met
	Mutagenic effects have occurred in experimental animals.
(f) carcinogenicity;	Based on available data, the classification criteria are not met
(g) reproductive toxicity; Reproductive Effects Developmental Effects Teratogenicity	There are no known carcinogenic chemicals in this product Category 2 Experiments have shown reproductive toxicity effects on laboratory animals. Developmental effects have occurred in experimental animals. Teratogenic effects have occurred in experimental animals
(h) STOT-single exposure;	Category 3

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(i) STOT-repeated exposure;	Category 2
Target Organs	Skin, Respiratory system, Eyes, Central nervous system (CNS), Heart, Blood, Liver, Reproductive System.
(j) aspiration hazard;	Category 1
Other Adverse Effects	Tumorigenic effects have been reported in experimental animals. See actual entry in RTECS for complete information
Symptoms / effects, both acute and delayed	Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Ecotoxicity effects

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. The product contains following substances which are hazardous for the environment.

Component	Freshwater Fish	Water Flea	Freshwater Algae	Microtox
Hexane	2.1-2.98 mg/L LC50 96 h	EC50: 3.87 mg/L/48h		

12.2. Persistence and degradability Persistence Degradation in sewage treatment plant	Persistence is unlikely, based on information available. 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)	
Hexane	4.11	No data available	
<u>12.4. Mobility in soil</u>	The product contains volatile organic compour surfaces. Will likely be mobile in the environme		
<u>12.5. Results of PBT and vPvB</u> assessment	Substance is not considered persistent, bioaccumulative and toxic (PBT) / very persistent and very bioaccumulative (vPvB).		
12.6. Other adverse effects Endocrine Disruptor Information Persistent Organic Pollutant Ozone Depletion Potential	This product does not contain any known or suspected endocrine disruptors This product does not contain any known or suspected substance 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 waste and hazardous waste. Dispose of in acc	•	
Contaminated Packaging	Dispose of this container to hazardous or special waste collection point Empty containers		

iminated 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 Catalogue, Waste Codes are not product specific, but
application specific.Other InformationDo not dispose of waste into sewer. Waste codes should be assigned by the user based on the
application for which the product was used. Can be incinerated, when in compliance with local
regulations. Do not let this chemical enter the environment. Do not empty into drains.

SECTION 14: TRANSPORT INFORMATION

SECTION 14: TRANSPORT INFORMATION

IMDG/IMO

<u>14.1. UN number</u> 14.2. UN proper shipping name 14.3. Transport hazard class(es) 14.4. Packing group ADR	UN1208 Hexanes 3 II
<u>14.1. UN number</u> 14.2. UN proper shipping name 14.3. Transport hazard class(es) 14.4. Packing group	UN1208 Hexanes 3 II
IATA	
<u>14.1. UN number</u> 14.2. UN proper shipping name 14.3. Transport hazard class(es) 14.4. Packing group	UN1208 Hexanes 3 II
14.5. Environmental hazards	Dangerous for the environment Product is a marine pollutant according to the criteria set by IMDG/IMO
14.6. Special precautions for user 14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	No special precautions required Not applicable, packaged goods

SECTION 15: REGULATORY INFORMATION

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

International Inventories

Component	EINECS	ELINCS	NLP	TSCA	DSL	NDSL	PICCS	ENCS	CHINA	AICS	KECL
Hexane	203-777-6	-		Х	Х	-	Х	Х	Х	Х	Х

National Regulations

Component	Germany - Water Classification (VwVwS)	Germany - TA-Luft Class
Hexane	WGK 2	

Component	France - INRS (Tables of occupational diseases)
Hexane	Tableaux des maladies professionnelles (TMP) - RG 59 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 Dir 92/85/EC on the protection of pregnant and breastfeeding women at work

X = listed

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

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SECTION 16: OTHER INFORMATION

Full text of R-phrases referred to under sections 2 and 3

R11 - Highly flammable

R38 - Irritating to skin

R62 - Possible risk of impaired fertility

R65 - Harmful: may cause lung damage if swallowed

R67 - Vapors may cause drowsiness and dizziness

R48/20 - Harmful: danger of serious damage to health by prolonged exposure through inhalation

R51/53 - Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

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

H225 - Highly flammable liquid and vapor

H304 - May be fatal if swallowed and enters airways

H315 - Causes skin irritation

H336 - May cause drowsiness or dizziness

H361 - Suspected of damaging fertility or the unborn child

H373 - May cause damage to organs through prolonged or repeated exposure

H411 - Toxic to aquatic life with long lasting effects

H361f - Suspected of damaging fertility

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 - China Inventory of Existing Chemical Substances KECL - 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 - Japan 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 Industrial Hygiene 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 PNEC - Predicted No Effect Concentration 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 RoadIMO/IMDG - International Maritime Organization/International Maritime Dangerous Goods CodeOECD - 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 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.

First aid for chemical exposure, including the use of eye wash and safety showers.

Use of personal protective equipment, covering appropriate selection, compatibility, breakthrough thresholds, care, maintenance, fit and standards.

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 on 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 guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as 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 material or in any process, unless specified in the text.

End of Safety Data Sheet