

Creation Date 23-Apr-2010 Revision Date 27-Oct-2016 Revision Number 6

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

1.1. Product identification

Product Description: <u>Thiophenol</u>

Cat No. : 430720000; 430721000; 430728000
Synonyms Phenyl mercaptan; Benzenethiol

CAS-No 108-98-5 **EC-No**. 203-635-3 **Molecular Formula** C6 H6 S

Reach Registration Number 01-2119480142-47

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 Acros Organics BVBA

Janssen Pharmaceuticalaan 3a

2440 Geel, Belgium

E-mail address begel.sdsdesk@thermofisher.com

1.4. Emergency telephone number

For information **US** call: 001-800-ACROS-01 / **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

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

CLP Classification - Regulation (EC) No 1272/2008

Physical hazards

Flammable liquids Category 3 (H226)

Health hazards

Acute oral toxicity	Category 2 (H300)
Acute dermal toxicity	Category 2 (H310)
Acute Inhalation Toxicity - Vapors	Category 1 (H330)
Skin Corrosion/irritation	Category 2 (H315)
Serious Eye Damage/Eye Irritation	Category 2 (H319)
Reproductive Toxicity	Category 2 (H361)
Specific target organ toxicity - (single exposure)	Category 2 (H371)
	Category 3 (H335)
Specific target organ toxicity - (repeated exposure)	Category 1 (H372)

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Environmental hazards

Acute aquatic toxicity
Chronic aquatic toxicity
Category 1 (H400)
Category 1 (H410)

2.2. Label elements



Signal Word

Danger

Hazard Statements

- H226 Flammable liquid and vapor
- H300 Fatal if swallowed
- H310 Fatal in contact with skin
- H330 Fatal if inhaled
- H315 Causes skin irritation
- H319 Causes serious eye irritation
- H371 May cause damage to organs
- H335 May cause respiratory irritation
- H361 Suspected of damaging fertility or the unborn child
- H372 Causes damage to organs through prolonged or repeated exposure
- H410 Very toxic to aquatic life with long lasting effects

Precautionary Statements

- P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking
- P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower
- P264 Wash face, hands and any exposed skin thoroughly after handling
- P330 Rinse mouth
- P310 Immediately call a POISON CENTER or doctor/ physician
- P304 + P340 IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing
- P280 Wear protective gloves/ protective clothing/ eye protection/ face protection

2.3. Other hazards

No information available Stench

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

Component	CAS-No	EC-No.	Weight %	CLP Classification - Regulation (EC) No 1272/2008
Benzenethiol	108-98-5	EEC No. 203-635-3	>95	Flam Liq. 3 (H226) STOT SE 3 (H335) Skin Irrit. 2 (H315) Eye Irrit. 2 (H319) Acute Tox. 2 (H300) Acute Tox. 2 (H310) Acute Tox. 1 (H330) Repr. 2 (H361)

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	STOT SE 2 (H371) STOT RE 1 (H372)
	Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410)

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Full text of Hazard Statements: see section 16

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

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

required.

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

the case of contact with eyes, rinse immediately with plenty of water and seek medical

advice.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Immediate medical

attention is required.

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

Inhalation Move to fresh air. If not breathing, give artificial respiration. 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.

Immediate medical attention is required.

Protection of First-aidersUse personal protective equipment.

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

None reasonably foreseeable. 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.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

Suitable Extinguishing Media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Cool closed containers exposed to fire with water spray.

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. Do not allow run-off from fire fighting to enter drains or water courses.

Hazardous Combustion Products

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

5.3. Advice for firefighters

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

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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. Keep people away from and upwind of spill/leak. 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. Do not allow material to contaminate ground water system. Prevent product from entering drains. Local authorities should be advised if significant spillages cannot be contained.

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. Do not get in eyes, on skin, or on clothing. Use only under a chemical fume hood. Do not breathe vapors or spray mist. Do not ingest. Keep away from open flames, hot surfaces and sources of ignition. Use only non-sparking tools. Take precautionary measures against static discharges.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

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. Store under an inert atmosphere.

7.3. Specific end use(s)

Use in laboratories

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Exposure limits

List source(s): **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
Benzenethiol			TWA / VME: 0.5 ppm (8	TWA: 0.5 ppm 8 uren	TWA / VLA-ED: 0.1 ppm
			heures).	TWA: 2.3 mg/m ³ 8 uren	(8 horas)
			TWA / VME: 2 mg/m³ (8	_	TWA / VLA-ED: 0.46
			heures).		mg/m³ (8 horas)
					Piel

Component	Italy	Germany	Portugal	The Netherlands	Finland
Benzenethiol			TWA: 0.1 ppm 8 horas Pele		STEL: 0.5 ppm 15 minuutteina STEL: 2.3 mg/m³ 15

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			minuutteina Iho
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Component	Austria	Denmark	Switzerland	Poland	Norway
Benzenethiol	MAK-KZW: 0.8 ppm 15 Minuten MAK-KZW: 4 mg/m³ 15 Minuten MAK-TMW: 0.4 ppm 8 Stunden MAK-TMW: 2 mg/m³ 8 Stunden	TWA: 2.3 mg/m ³ 8 timer	TWA: 0.5 ppm 8 Stunden TWA: 2.3 mg/m³ 8 Stunden	TWA: 2 mg/m³ 8 godzinach	TWA: 0.5 ppm 8 timer TWA: 2 mg/m³ 8 timer STEL: 0.5 ppm 15 minutter. STEL: 2 mg/m³ 15 minutter.

Component	Bulgaria	Croatia	Ireland	Cyprus	Czech Republic
Benzenethiol			TWA: 0.5 ppm 8 hr. : 2 mg/m³ 8 hr. STEL: 1.5 ppm 15 min STEL: 6 mg/m³ 15 min Skin		

Component	Estonia	Gibraltar	Greece	Hungary	Iceland
Benzenethiol	TWA: 0.5 ppm 8 tundides. TWA: 2 mg/m ³ 8 tundides.		TWA: 0.5 ppm TWA: 2.3 mg/m³		TWA: 0.5 ppm 8 klukkustundum. TWA: 2.3 mg/m³ 8 klukkustundum. Ceiling: 1 ppm Ceiling: 4.6 mg/m³

Component	Russia	Slovak Republic	Slovenia	Sweden	Turkey
Benzenethiol	Skin notation MAC: 0.2 mg/m ³		TWA: 2 mg/m ³ 8 urah		

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.

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)	No information availab	le		
Route of exposure	Acute effects (local)	Acute effects (systemic)	Chronic effects (local)	Chronic effects (systemic)
Oral		(-3	(/	(-)
Dermal				
Inhalation				

Predicted No Effect Concentration No information available. (PNEC)

8.2. Exposure controls

Engineering Measures

Use only under a chemical fume hood. Ensure that eyewash stations and safety showers are close to the workstation location. Use explosion-proof electrical/ventilating/lighting/equipment. Ensure adequate ventilation, especially in confined areas.

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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 Goggles (European standard - EN 166)

Hand Protection Protective gloves

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

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.

When workers are facing concentrations above the exposure limit they must use **Respiratory Protection**

appropriate certified respirators.

To protect the wearer, respiratory protective equipment must be the correct fit and be used

and maintained properly

Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits Large scale/emergency use

are exceeded or if irritation or other symptoms are experienced

Recommended Filter type: Organic gases and vapours filter Type A Brown conforming to

EN14387

Use a NIOSH/MSHA or European Standard EN 149:2001 approved respirator if exposure Small scale/Laboratory use

limits are exceeded or if irritation or other symptoms are experienced.

Recommended half mask:- Valve filtering: EN405; or; Half mask: EN140; plus filter, EN

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. Local authorities should be advised if significant spillages cannot be contained.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Clear **Appearance Physical State** Liquid

Stench Odor

Odor Threshold No data available

pН saturated solution -15 °C / 5 °F

Melting Point/Range

Softening Point No data available

Boiling Point/Range 167 - 169 °C / 332.6 - 336.2 °F @ 760 mmHg

50 °C / 122 °F Flash Point Method - No information available

Evaporation Rate No data available

Flammability (solid,gas) Not applicable Liquid

Explosion Limits No data available

Vapor Pressure 1.6 mmHg @ 25 °C

Vapor Density No data available (Air = 1.0)

Specific Gravity / Density 1.078

. Bulk Density Not applicable Liquid

Water Solubility Insoluble

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Solubility in other solvents No information available

Partition Coefficient (n-octanol/water)

Componentlog PowBenzenethiol2.52

Autoignition Temperature 450 °C / 842 °F

Decomposition Temperature > 200°C

Viscosity 0.981cSt at 30 °C

Explosive Properties No information available explosive air/vapour mixtures possible

Oxidizing Properties No information available

9.2. Other information

Molecular FormulaC6 H6 SMolecular Weight110.17

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

None known, based on information available

10.2. Chemical stability

Air sensitive.

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 air. Keep away from open flames, hot

surfaces and sources of ignition.

10.5. Incompatible materials

Strong oxidizing agents. Acids.

10.6. Hazardous decomposition products

Carbon monoxide (CO). Carbon dioxide (CO2). Sulfur oxides.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Product Information

(a) acute toxicity;

OralCategory 2DermalCategory 2InhalationCategory 1

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Benzenethiol	46 mg/kg (Rat)	134 mg/kg (Rabbit)	LC50 = 33 ppm (Rat) 4 h
		300 mg/kg (Rat)	

(b) skin corrosion/irritation; Category 2

(c) serious eye damage/irritation; Category 2

(d) respiratory or skin sensitization;

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

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

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

There are no known carcinogenic chemicals in this product

(g) reproductive toxicity; Category 2

(h) STOT-single exposure; Category 3

Results / Target organs Respiratory system.

(i) STOT-repeated exposure; Category 1

Target Organs Liver, Kidney, Eyes, Skin, Central nervous system (CNS), Respiratory system, Lungs,

spleen.

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

Other Adverse Effects The toxicological properties have not been fully investigated.

Symptoms / effects,both acute and Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting delayed

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic **Ecotoxicity effects**

environment. The product contains following substances which are hazardous for the

environment.

Component	Freshwater Fish	Water Flea	Freshwater Algae	Microtox
Benzenethiol		EC50 = 0.0044 mg/L		EC50 = 0.875 mg/L 15
		48h		min
				EC50 = 0.875 mg/L 30
				min
				EC50 = 0.875 mg/L 5
				min

12.2. Persistence and degradability Not readily biodegradable

Persistence

May persist, based on information available.

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 May have some potential to bioaccumulate

	12101 210400 dilitatati o potontata:								
Component		log Pow	Bioconcentration factor (BCF)						
	Benzenethiol	2.52	No data available						

12.4. Mobility in soil Spillage unlikely to penetrate soil The product is insoluble and sinks in water The product

evaporates slowly . Is not likely mobile in the environment due its low water solubility.

Spillage unlikely to penetrate soil

12.5. Results of PBT and vPvB

assessment

No data available for assessment.

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

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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 Catalogue, Waste Codes are not product specific, but

application specific.

Other Information

Do 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

IMDG/IMO

UN2337 14.1. UN number

14.2. UN proper shipping name Phenyl mercaptan

14.3. Transport hazard class(es) **Subsidiary Hazard Class** 3 14.4. Packing group Ι

ADR

UN2337 14.1. UN number

14.2. UN proper shipping name Phenyl mercaptan

6.1 14.3. Transport hazard class(es) 3 **Subsidiary Hazard Class** 14.4. Packing group I

IATA

UN2337 14.1. UN number

Phenyl mercaptan, FORBIDDEN FOR IATA TRANSPORT 14.2. UN proper shipping name

14.3. Transport hazard class(es) 6.1 **Subsidiary Hazard Class** 3

14.4. Packing group

14.5. Environmental hazards Dangerous for the environment

Product is a marine pollutant according to the criteria set by IMDG/IMO

No special precautions required 14.6. Special precautions for user

14.7. Transport in bulk according to Not applicable, packaged goods

Annex II of MARPOL73/78 and the

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
Benzenethiol	203-635-3	-		Х	Х	-	Χ	Χ	Χ	Х	Х

National Regulations

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Component	Germany - Water Classification (VwVwS)	Germany - TA-Luft Class
Benzenethiol	WGK 3	

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

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 not been conducted

SECTION 16: OTHER INFORMATION

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

H300 - Fatal if swallowed

H310 - Fatal in contact with skin

H330 - Fatal if inhaled

H315 - Causes skin irritation

H319 - Causes serious eye irritation

H371 - May cause damage to organs

H335 - May cause respiratory irritation

H361 - Suspected of damaging fertility or the unborn child

H372 - Causes damage to organs through prolonged or repeated exposure

H400 - Very toxic to aquatic life

H410 - Very toxic to aquatic life with long lasting effects

H226 - Flammable liquid and vapor

Legend

CAS - Chemical Abstracts Service

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

ENCS - Japanese Existing and New Chemical Substances

AICS - Australian Inventory of Chemical Substances

IARC - International Agency for Research on Cancer PNEC - Predicted No Effect Concentration

NZIoC - New Zealand Inventory of Chemicals

TWA - Time Weighted Average

LD50 - Lethal Dose 50%

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

Substances List

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

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

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

EC50 - Effective Concentration 50%

POW - Partition coefficient Octanol:Water

vPvB - very Persistent, very Bioaccumulative

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.

Creation Date 23-Apr-2010

ACR43072

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Revision Date 27-Oct-2016

Revision Summary SDS sections updated, 2, 3.

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