

SAFETY DATA SHEET

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

Identification of the substance or mixture

Product code 15596026
Product name TRIZOL REAGENT

Company/undertaking identification

Life Technologies
5791 Van Allen Way
PO Box 6482
Carlsbad, CA 92008
+1 760 603 7200

LIFE TECHNOLOGIES LIMITED
3 FOUNTAIN DRIVE
INCHINNAN BUSINESS PARK
PAISLEY, PA4 9RF
SCOTLAND
44-141 814-6100

24 hour Emergency Response:

866-536-0631
301-431-8585
Outside of the U.S. ++1-301-431-8585

For research use only. Not intended for human or animal diagnostic or therapeutic uses.

SECTION 2: Hazards identification

In accordance with local and national regulations

Complies Regulation (EC) No 1272/2008 Classification according to Directive 67/548/EEC or 1999/45/EC

GHS - Classification

Signal word

Danger



Health hazards

Acute oral toxicity	Category 3
Acute dermal toxicity	Category 3
Acute Inhalation Toxicity - Vapours	Category 3
Skin corrosion/irritation	Category 1 B
Serious eye damage/eye irritation	Category 1

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Specific target organ systemic toxicity (single exposure)	Category 3
Specific target organ systemic toxicity (repeated exposure)	Category 2

Mutagenicity	Mutagenic category 2
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Physical hazards

Not Hazardous

Hazard Statements

H301 - Toxic if swallowed

H311 - Toxic in contact with skin

H331 - Toxic if inhaled

H314 - Causes severe skin burns and eye damage

H335 - May cause respiratory irritation

H341 - Suspected of causing genetic defects

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

H412 - Harmful to aquatic life with long lasting effects

Precautionary Statements

P301 + P310 - IF SWALLOWED: Immediately call a POISON CENTRE or doctor/physician

P280 - Wear protective gloves/protective clothing/eye protection/face protection

P261 - Avoid breathing dust/fume/gas/mist/vapours/spray

P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

P303 + P361 + P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

European Union



EU Specific Hazard Statements

R-phrases

R34 - Causes burns

R68 - Possible risk of irreversible effects

R48 - Danger of serious damage to health by prolonged exposure

R41 - Risk of serious damage to eyes

R37 - Irritating to respiratory system

R23/24/25 - Toxic by inhalation, in contact with skin and if swallowed

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S phrases

S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice

S28 - After contact with skin, wash immediately with plenty of soap and water

S45 - In case of accident or if you feel unwell, seek medical advice immediately

S61 - Avoid release to the environment. Refer to special instructions/Safety data sheets

S24/25 - Avoid contact with skin and eyes

S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection

Principle Routes of Exposure/

Potential Health effects

eyes

Causes burns. Risk of serious damage to eyes. Corrosive to the eyes and may cause severe damage including blindness.

Skin

Causes burns. Possible risk of irreversible effects. Harmful in contact with skin. Irritating to skin and mucous membranes.

Inhalation

Harmful by inhalation.

Ingestion

Harmful if swallowed. Ingestion causes burns of the upper digestive and respiratory tracts. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.

Specific effects

Carcinogenic effects

Phenol has been classified by the International Agency for Research on Cancer (IARC) as not classifiable as to carcinogenicity to humans (Group 3).

Mutagenic effects

Not applicable

Reproductive toxicity

Not applicable

Sensitisation

Not applicable

Target Organ Effects

Skin
Lungs
Liver
spleen
Kidney

SECTION 3: Composition/information on ingredients

Chemical Name	CAS-No.	EINECS-No.	Weight percent
Phenol	108-95-2	203-632-7	30-60
Thiocyanic acid, compound with guanidine (1:1)	593-84-0	209-812-1	15-40
Ammonium thiocyanate	1762-95-4	217-175-6	7-13

Contact with acids or bleach liberates toxic gases. DO NOT ADD acids or bleach to any liquid wastes containing this product. We recommend handling all chemicals with caution.

SECTION 4: First aid measures

Skin contact

Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Call a doctor immediately.

Eye contact

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Call a doctor immediately.

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Ingestion	Call a doctor or poison control centre immediately. Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person.
Inhalation	Remove to fresh air. Call a doctor or poison control centre immediately.
Notes to Physician	Treat symptomatically.

SECTION 5: Firefighting measures

Suitable extinguishing media	Dry chemical. Carbon dioxide (CO ₂). Water spray. Foam.
Special protective equipment for firefighters	Wear self-contained breathing apparatus and protective suit.

SECTION 6: Accidental release measures

Personal precautions	ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Use personal protection equipment. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas.
Methods for cleaning up	Prevent product from entering drains. Soak up with inert absorbent material. Neutralise with . Pick up and transfer to properly labelled containers.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. Do not allow material to contaminate ground water system.

See Section 12 for more information.

SECTION 7: Handling and storage

Handling	Avoid contact with skin, eyes and clothing. Avoid contact with skin, eyes or clothing. Remove all sources of ignition.
Storage	Keep containers tightly closed in a cool, well-ventilated place. Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity). Protect from sunlight.

SECTION 8: Exposure controls/personal protection

Exposure Limits

Chemical Name	EU OEL (TWA)	EU OEL (STEL)	EU Skin Notation
Phenol 108-95-2	None	None	Skin
Thiocyanic acid, compound with guanidine (1:1) 593-84-0	None	None	None
Ammonium thiocyanate 1762-95-4	None	None	None

Chemical Name	Austria	Belgium (TWA)	Denmark (TWA)	Finland OEL (TWA)
Phenol 108-95-2	2 ppm 8 mg/m ³	2 ppm 8 mg/m ³	1 ppm 4 mg/m ³	20 mg/m ³ 5 ppm
Thiocyanic acid, compound with guanidine (1:1) 593-84-0	None	None	None	None
Ammonium thiocyanate 1762-95-4	None	None	None	None

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Chemical Name	France OEL (VME)	Germany OEL (TWA)	Ireland (TWA)	Italy OEL (TWA)
Phenol 108-95-2	2 ppm 7.8 mg/m ³	2 ppm exposure factor 2 8 mg/m ³ exposure factor 2	2 ppm 8 mg/m ³	2 ppm 7.8 mg/m ³
Thiocyanic acid, compound with guanidine (1:1) 593-84-0	None	None	None	None
Ammonium thiocyanate 1762-95-4	5 mg/m ³	None	5 mg/m ³	None

Chemical Name	Sweden - Occupational Exposure Limits - TLVs (LLVs)	Netherlands OEL (MAC)	Spain OEL (TWA)	United Kingdom
Phenol 108-95-2	1 ppm LLV; 4 mg/m ³ LLV	8 mg/m ³	2 ppm 8 mg/m ³	None
Thiocyanic acid, compound with guanidine (1:1) 593-84-0	None	None	None	None
Ammonium thiocyanate 1762-95-4	2 mg/m ³ LLV (total inhalable dust, as CN)	1 mg/m ³	None	None

Chemical Name	European Union	United Kingdom	France OEL (VME)	Germany OEL (TWA)
Phenol 108-95-2	None	None	2 ppm 7.8 mg/m ³	2 ppm exposure factor 2 8 mg/m ³ exposure factor 2
Thiocyanic acid, compound with guanidine (1:1) 593-84-0	None	None	None	None
Ammonium thiocyanate 1762-95-4	None	None	5 mg/m ³	None

Chemical Name	Italy OEL (TWA)	Portugal	Netherlands OEL (MAC)	Finland OEL (TWA)
Phenol 108-95-2	2 ppm 7.8 mg/m ³	None	8 mg/m ³	20 mg/m ³ 5 ppm
Thiocyanic acid, compound with guanidine (1:1) 593-84-0	None	None	None	None
Ammonium thiocyanate 1762-95-4	None	None	1 mg/m ³	None

Chemical Name	Austria	Denmark	Poland	Switzerland
Phenol 108-95-2	2 ppm 8 mg/m ³	None	None	None
Thiocyanic acid, compound with guanidine (1:1) 593-84-0	None	None	None	None
Ammonium thiocyanate 1762-95-4	None	None	None	None

Chemical Name	Ireland	Norway	Lithuania OEL (TWA)	Spain OEL (TWA)
Phenol 108-95-2	None	None	2 ppm 8 mg/m ³	2 ppm 8 mg/m ³
Thiocyanic acid, compound with guanidine (1:1) 593-84-0	None	None	None	None
Ammonium thiocyanate 1762-95-4	None	None	None	None

Engineering measures

Use in a chemical fume hood.

Personal protective equipment

Personal Protective Equipment requirements are dependent on the user institution's risk assessment and are specific to the risk assessment for each laboratory where this material may be used.

Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment.
Respirator Recommendations, National Institue of Occupational Safety and Health, U.S.	<p>Up to 50 ppm: (APF = 10) Any air-purifying half-mask respirator with organic vapor cartridge(s) in combination with an N95, R95, or P95 filter. The following filters may also be used: N99, R99, P99, N100, R100, P100. (APF = 10) Any supplied-air respirator</p> <p>Up to 125 ppm: (APF = 25) Any supplied-air respirator operated in a continuous-flow mode (APF = 25) Any powered air-purifying respirator with an organic vapor cartridge in combination with a high-efficiency particulate filter.</p> <p>Up to 250 ppm: (APF = 50) Any air-purifying full-facepiece respirator equipped with organic vapor cartridge(s) in combination with an N100, R100, or P100 filter. (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister having an N100, R100, or P100 filter. (APF = 50) Any powered, air-purifying respirator with a tight-fitting facepiece and organic vapor cartridge(s) in combination with a high-efficiency particulate filter (APF = 50) Any self-contained breathing apparatus with a full facepiece (APF = 50) Any supplied-air respirator with a full facepiece</p> <p>Emergency or planned entry into unknown concentrations or IDLH conditions: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode (APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus</p> <p>Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister having an N100, R100, or P100 filter. /Any appropriate escape-type, self-contained breathing apparatus</p>
Hand protection	Impervious gloves. S24 - Avoid contact with skin. S36 - Wear suitable protective clothing.
Eye protection	Tight sealing safety goggles.
Skin and body protection	Impervious clothing.
Hygiene measures	Contaminated work clothing should not be allowed out of the workplace. Avoid contact with skin, eyes or clothing. Handle in accordance with good industrial hygiene and safety practice.
<u>Environmental exposure controls</u>	Prevent product from entering drains.

SECTION 9: Physical and chemical properties

General information

Form	liquid	
Appearance	red, Maroon	
Odour	medicinal, sweet, Tar like	
Boiling point / boiling range	°C No data available	°F No data available
Melting point / melting range	°C No data available	°F No data available
flash point	°C No data available	°F No data available
Autoignition temperature	°C No data available	°F No data available

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Oxidising properties No information available
Water solubility soluble

SECTION 10: Stability and reactivity

Stability Stable under normal conditions.
Materials to avoid Strong oxidising agents. Strong acids. Isocyanates. Heat. Nitriles, Nitrides. Alkaline earth metals. Strong oxidisers, alkali metals and alkaline earth metals may cause fires or explosions.
Hazardous decomposition products toxic gas. Sulphur oxides. Hydrogen cyanide (hydrocyanic acid). Carbon oxides, Nitrogen Oxides.
polymerisation Hazardous polymerisation does not occur.

SECTION 11: Toxicological information

Acute toxicity

Chemical Name	LD50 (oral, rat/mouse)	LD50 (dermal, rat/rabbit)	LC50 (inhalation, rat/mouse)
Phenol	= 317 mg/kg (Rat)	No data available	=316mg/m ³ (Rat)
Thiocyanic acid, compound with guanidine (1:1)	571 mg/kg	2000 mg/kg	5.319 mg/L (4H)
Ammonium thiocyanate	= 500 mg/kg (Rat)	No data available	No data available

Principle Routes of Exposure/ Potential Health effects

eyes Causes burns Risk of serious damage to eyes Corrosive to the eyes and may cause severe damage including blindness
Skin Causes burns Possible risk of irreversible effects Harmful in contact with skin Irritating to skin and mucous membranes
Inhalation Harmful by inhalation
Ingestion Harmful if swallowed Ingestion causes burns of the upper digestive and respiratory tracts Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea
Carcinogenic effects Phenol has been classified by the International Agency for Research on Cancer (IARC) as not classifiable as to carcinogenicity to humans (Group 3).
Mutagenic effects No information available
Reproductive toxicity No information available
Sensitisation No information available
Target Organ Effects Skin Lungs Liver spleen Kidney

SECTION 12: Ecological information

Ecotoxicity Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment
Chronic aquatic toxicity Category 3
Mobility see log Pow
Biodegradation Inherently biodegradable.
Bioaccumulation No information available

Chemical Name	Freshwater Algae Data	Water Flea Data	Freshwater Fish Species Data	Microtox Data	log Pow
Phenol	Desmodesmus subspicatus EC50 187 - 279 mg/L (72 h) Pseudokirchneriella subcapitata EC50 46.42 mg/L (96 h)	Daphnia magna EC50 4.24 - 10.7 mg/L (48 h) Daphnia magna EC50 10.2 - 15.5 mg/L (48 h)			logPow1.47

SECTION 13: Disposal considerations

Dispose of contents/containers in accordance with local regulations.

SECTION 14: Transport information

IATA

Proper shipping name Corrosive liquid, n.o.s. (guanidine thiocyanate-phenol solution).
Hazard Class 8
Subsidiary class None
Packing group II
UN-No 1760

SECTION 15: Regulatory information

International Inventories

Chemical Name	EINECS	ELINCS	ENCS	PICCS
Phenol	Listed	-	Listed	Listed
Thiocyanic acid, compound with guanidine (1:1)	Listed	-	Listed	Listed
Ammonium thiocyanate	Listed	-	Listed	Listed

Chemical Name	AICS	KECL	DSL	NDSL
Phenol	Listed	Listed	Listed	-
Thiocyanic acid, compound with guanidine (1:1)	Listed	-	Listed	-
Ammonium thiocyanate	Listed	Listed	Listed	-

SECTION 16: Other information

Reason for revision SDS sections updated

For research use only. Not intended for human or animal diagnostic or therapeutic uses.

"The above information was acquired by diligent search and/or investigation and the recommendations are based on prudent application of professional judgment. The information shall not be taken as being all inclusive and is to be used only as a guide. All materials and mixtures may present unknown hazards and should be used with caution. Since the Company cannot control the actual methods, volumes, or conditions of use, the Company shall not be held liable for any damages or losses resulting from the handling or from contact with the product as described herein. THE INFORMATION IN THIS SDS DOES NOT CONSTITUTE A WARRENTY, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PUPOSE"

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End of Safety Data Sheet

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