

**SAFETY DATA SHEET**

according to Regulation (EC) No. 1907/2006

Version 8.5

Revision Date 26.02.2024

Print Date 28.08.2024

GENERIC EU MSDS - NO COUNTRY SPECIFIC DATA - NO OEL DATA

**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1 Product identifiers**

Product name : Toluene LiChrosolv

Product Number : 6.08327

Catalogue No. : 593110

Brand : Millipore

Index-No. : 601-021-00-3

REACH No. : 01-2119471310-51-XXXX

CAS-No. : 108-88-3

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

Identified uses : Chemical production

**1.3 Details of the supplier of the safety data sheet**

Company : Sigma-Aldrich Chemical Pvt Limited  
Industrial Area, Anekal Taluka  
Plot No 12,  
12 Bommasandra - Jigani Link Road  
560100 BANGALORE  
INDIA

**1.4 Emergency telephone**

Emergency Phone # : 000 800 1007 141 (CHEMTREC)

**SECTION 2: Hazards identification****2.1 Classification of the substance or mixture**

Flammable liquids, (Category 2) H225: Highly flammable liquid and vapor.

Skin irritation, (Category 2) H315: Causes skin irritation.

Reproductive toxicity, (Category 2) H361d: Suspected of damaging the unborn child.

Specific target organ toxicity - H336: May cause drowsiness or dizziness.



single exposure, (Category 3),  
Central nervous system

Specific target organ toxicity -  
repeated exposure, (Category 2),  
Central nervous system

H373: May cause damage to organs  
through prolonged or repeated exposure if  
inhaled.

Aspiration hazard, (Category 1)

H304: May be fatal if swallowed and enters  
airways.

Long-term (chronic) aquatic  
hazard, (Category 3)

H412: Harmful to aquatic life with long  
lasting effects.

## 2.2 Label elements

### Labelling according Regulation (EC) No 1272/2008

Pictogram



Signal Word

Danger

Hazard Statements

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.

H361d

Suspected of damaging the unborn child.

H373

May cause damage to organs (Central nervous system) through  
prolonged or repeated exposure if inhaled.

H412

Harmful to aquatic life with long lasting effects.

Precautionary Statements

P202

Do not handle until all safety precautions have been read and  
understood.

P210

Keep away from heat, hot surfaces, sparks, open flames and  
other ignition sources. No smoking.

P273

Avoid release to the environment.

P301 + P310

IF SWALLOWED: Immediately call a POISON CENTER/ doctor.

P303 + P361 + P353

IF ON SKIN (or hair): Take off immediately all contaminated  
clothing. Rinse skin with water.

P331

Do NOT induce vomiting.

Supplemental Hazard  
Statements

none

### Reduced Labeling (<= 125 ml)

Pictogram



Signal Word

Danger

Hazard Statements

H304

May be fatal if swallowed and enters airways.



|                                       |   |
|---------------------------------------|---|
| H412                                  | Harmful to aquatic life with long lasting effects.                        |
| H361d                                 | Suspected of damaging the unborn child.                                   |
| <b>Precautionary Statements</b>       |   |
| P202                                  | Do not handle until all safety precautions have been read and understood. |
| P301 + P310                           | IF SWALLOWED: Immediately call a POISON CENTER/ doctor.                   |
| P331                                  | Do NOT induce vomiting.   |
| <b>Supplemental Hazard Statements</b> | none  |

### 2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Ecological information:

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information:

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

## SECTION 3: Composition/information on ingredients

### 3.1 Substances

|                  |                                 |
|------------------|---------------------------------|
| Formula          | : C <sub>7</sub> H <sub>8</sub> |
| Molecular weight | : 92,14 g/mol                   |
| CAS-No.          | : 108-88-3                      |
| EC-No.           | : 203-625-9                     |
| Index-No.        | : 601-021-00-3                  |

| Component      |              | Classification   | Concentration |
|----------------|--------------|--|---------------|
| <b>Toluene</b> |              |  |               |
| CAS-No.        | 108-88-3     | Flam. Liq. 2; Skin Irrit. 2; Repr. 2; STOT SE 3; STOT RE 2; Asp. Tox. 1; Aquatic Chronic 3; H225, H315, H361d, H336, H373, H304, H412<br>Concentration limits:<br>20 %: STOT SE 3, H336; | <= 100 %      |
| EC-No.         | 203-625-9    |  |               |
| Index-No.      | 601-021-00-3 |  |               |

For the full text of the H-Statements mentioned in this Section, see Section 16.



---

## SECTION 4: First aid measures

### 4.1 Description of first-aid measures

#### General advice

Show this material safety data sheet to the doctor in attendance.

#### If inhaled

After inhalation: fresh air. Call in physician.

#### In case of skin contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Consult a physician.

#### In case of eye contact

After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.

#### If swallowed

After swallowing: caution if victim vomits. Risk of aspiration! Keep airways free. Pulmonary failure possible after aspiration of vomit. Call a physician immediately.

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

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

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

No data available

---

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

#### Suitable extinguishing media

Foam Carbon dioxide (CO<sub>2</sub>) Dry powder

#### Unsuitable extinguishing media

For this substance/mixture no limitations of extinguishing agents are given.

### 5.2 Special hazards arising from the substance or mixture

Carbon oxides

Combustible.

Pay attention to flashback.

Vapors are heavier than air and may spread along floors.

Development of hazardous combustion gases or vapours possible in the event of fire.

Forms explosive mixtures with air at ambient temperatures.

### 5.3 Advice for firefighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

### 5.4 Further information

Remove container from danger zone and cool with water. Prevent fire extinguishing water from contaminating surface water or the ground water system.



---

## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition. Evacuate the danger area, observe emergency procedures, consult an expert. For personal protection see section 8.

### 6.2 Environmental precautions

Do not let product enter drains. Risk of explosion.

### 6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

### 6.4 Reference to other sections

For disposal see section 13.

---

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

#### Advice on safe handling

Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.

#### Advice on protection against fire and explosion

Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

#### Hygiene measures

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance. For precautions see section 2.2.

### 7.2 Conditions for safe storage, including any incompatibilities

#### Storage conditions

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

Recommended storage temperature see product label.

#### Storage class

Storage class (TRGS 510): 3: Flammable liquids

### 7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated



## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

#### Ingredients with workplace control parameters

##### Derived No Effect Level (DNEL)

| Application Area | Routes of exposure | Health effect              | Value                  |
|------------------|--------------------|----------------------------|------------------------|
| Workers          | Inhalation         | Acute systemic effects     | 384 mg/m <sup>3</sup>  |
| Workers          | Inhalation         | Acute local effects        | 384 mg/m <sup>3</sup>  |
| Workers          | Skin contact       | Long-term systemic effects | 384mg/kg BW/d          |
| Workers          | Inhalation         | Long-term systemic effects | 192 mg/m <sup>3</sup>  |
| Workers          | Inhalation         | Long-term local effects    | 192 mg/m <sup>3</sup>  |
| Consumers        | Inhalation         | Acute systemic effects     | 226 mg/m <sup>3</sup>  |
| Consumers        | Inhalation         | Acute local effects        | 226 mg/m <sup>3</sup>  |
| Consumers        | Skin contact       | Long-term systemic effects | 226mg/kg BW/d          |
| Consumers        | Inhalation         | Long-term systemic effects | 56,5 mg/m <sup>3</sup> |
| Consumers        | Ingestion          | Long-term systemic effects | 8,13mg/kg BW/d         |

##### Predicted No Effect Concentration (PNEC)

| Compartment                  | Value       |
|------------------------------|-------------|
| Soil                         | 2,89 mg/kg  |
| Sea water                    | 0,68 mg/l   |
| Fresh water                  | 0,68 mg/l   |
| Sea sediment                 | 16,39 mg/kg |
| Fresh water sediment         | 16,39 mg/kg |
| Sewage treatment plant       | 13,61 mg/l  |
| Aquatic intermittent release | 0,68 mg/l   |

### 8.2 Exposure controls

#### Personal protective equipment

##### Eye/face protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

##### Skin protection

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: [www.kcl.de](http://www.kcl.de)).

Full contact

Material: Viton®

Minimum layer thickness: 0,7 mm

Break through time: 480 min

Material tested: Vitoject® (KCL 890 / Aldrich Z677698, Size M)

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other



substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: [www.kcl.de](http://www.kcl.de)).

Splash contact

Material: Viton®

Minimum layer thickness: 0,7 mm

Break through time: 480 min

Material tested: Vitoject® (KCL 890 / Aldrich Z677698, Size M)

### **Body Protection**

Flame retardant antistatic protective clothing.

### **Respiratory protection**

Recommended Filter type: Filter A (acc. to DIN 3181) for vapours of organic compounds

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer.

These measures have to be properly documented.

### **Control of environmental exposure**

Do not let product enter drains. Risk of explosion.

---

## **SECTION 9: Physical and chemical properties**

### **9.1 Information on basic physical and chemical properties**

|   |  |
|---|--|
| a) Physical state                               | liquid   |
| b) Color  | colorless  |
| c) Odor   | benzene-like   |
| d) Melting point/freezing point                 | Melting point/range: -95 - -93 °C  |
| e) Initial boiling point and boiling range      | 110,6 °C at 1.013 hPa  |
| f) Flammability (solid, gas)                    | No data available  |
| g) Upper/lower flammability or explosive limits | Upper explosion limit: 7,1 %(V)<br>Lower explosion limit: 1,2 %(V)                 |
| h) Flash point                                  | 4,4 °C - closed cup  |
| i) Autoignition temperature                     | No data available  |
| j) Decomposition temperature                    | No data available  |
| k) pH   | Not applicable   |
| l) Viscosity                                    | Viscosity, kinematic: No data available<br>Viscosity, dynamic: 0,56 mPa.s at 25 °C |



- |  |   |
|--|---|
| m) Water solubility                          | 0,58 g/l at 25 °C - partly soluble                        |
| n) Partition coefficient:<br>n-octanol/water | log Pow: 2,73 at 20 °C - Bioaccumulation is not expected. |
| o) Vapor pressure                            | 30,88 hPa at 21,1 °C                                      |
| p) Density                                   | 0,87 g/cm <sup>3</sup> at 20 °C                           |
| Relative density                             | No data available   |
| q) Relative vapor<br>density                 | No data available   |
| r) Particle<br>characteristics               | No data available   |
|  |   |
| s) Explosive properties                      | No data available   |
| t) Oxidizing properties                      | none  |

## 9.2 Other safety information

|                           |                                 |
|---------------------------|---------------------------------|
| Conductivity              | < 0,01 µS/cm                    |
| Surface tension           | 27,73 mN/m at 0,516g/l at 25 °C |
| Relative vapor<br>density | 3,18                            |

---

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

Vapors may form explosive mixture with air.  
Vapors may form explosive mixture with air.

### 10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .  
The product is chemically stable under standard ambient conditions (room temperature) .

### 10.3 Possibility of hazardous reactions

Risk of explosion with:  
fuming sulfuric acid  
Nitric acid  
silver  
perchlorates  
nitrogen dioxide  
nonmetallic halides  
halogen-halogen compounds  
uranium hexafluoride  
organic nitro compounds  
Violent reactions possible with:  
Strong acids  
Strong oxidizing agents  
sulfur  
with





Heat.

#### 10.4 Conditions to avoid

Warming.  
Warming.

#### 10.5 Incompatible materials

No data available

#### 10.6 Hazardous decomposition products

In the event of fire: see section 5

---

### SECTION 11: Toxicological information

#### 11.1 Information on toxicological effects

##### Acute toxicity

LD50 Oral - Rat - male - 5.580 mg/kg  
(Directive 67/548/EEC, Annex V, B.1.)  
LC50 Inhalation - Rat - male - 4 h - 25,7 mg/l - vapor

(OECD Test Guideline 403)

LD50 Dermal - Rabbit - male - > 5.000 mg/kg

Remarks: (ECHA)

##### Skin corrosion/irritation

Skin - Rabbit

Result: irritating - 4 h

(Regulation (EC) No. 440/2008, Annex, B.4)

##### Serious eye damage/eye irritation

Eyes - Rabbit

Result: No eye irritation

(OECD Test Guideline 405)

##### Respiratory or skin sensitization

Maximization Test - Guinea pig

Result: negative

(Regulation (EC) No. 440/2008, Annex, B.6)

##### Germ cell mutagenicity

Test Type: In vitro mammalian cell gene mutation test

Test system: Mouse lymphoma test

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 476

Result: negative

Test Type: Ames test

Test system: *S. typhimurium*

Metabolic activation: with and without metabolic activation

Method: Regulation (EC) No. 440/2008, Annex, B.13/14 (Ames test)

Result: negative

Test Type: Chromosome aberration test

Species: Rat

Millipore- 6.08327

Page 9 of 14

The life science business of Merck operates as MilliporeSigma in the US and Canada



Cell type: Bone marrow  
Application Route: Intraperitoneal

Result: negative  
Remarks: (ECHA)

**Carcinogenicity**  
No data available

**Reproductive toxicity**  
Suspected of damaging the unborn child.

**Specific target organ toxicity - single exposure**  
Inhalation - May cause drowsiness or dizziness. - Central nervous system  
Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

**Specific target organ toxicity - repeated exposure**  
Inhalation - May cause damage to organs through prolonged or repeated exposure.  
- Central nervous system  
Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

**Aspiration hazard**  
Aspiration may cause pulmonary edema and pneumonitis.

## 11.2 Additional Information

### Endocrine disrupting properties

#### Product:

Assessment

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Repeated dose toxicity - Rat - male and female - Oral - 13 Weeks - NOAEL (No observed adverse effect level) - 625 mg/kg - LOAEL (Lowest observed adverse effect level) - 1.250 mg/kg

Drowsiness, irritant effects, Dizziness, Convulsions, Headache, Nausea, Vomiting, Circulatory collapse, somnolence, inebriation, Unconsciousness, respiratory arrest, CNS disorders, respiratory paralysis, death  
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

---

## SECTION 12: Ecological information

### 12.1 Toxicity

|                  |  |
|------------------|--|
| Toxicity to fish | flow-through test LC50 - Oncorhynchus kisutch (coho salmon) - 5,5 mg/l - 96 h<br>Remarks: (ECHA) |
|------------------|--|



|   |   |
|---|---|
| Toxicity to daphnia and other aquatic invertebrates                   | EC50 - Ceriodaphnia dubia (water flea) - 3,78 mg/l - 48 h (US-EPA)                                |
| Toxicity to bacteria  | static test EC50 - Bacteria - 84 mg/l - 24 h<br>Remarks: (ECHA)                                   |
| Toxicity to fish(Chronic toxicity)                                    | flow-through test NOEC - Oncorhynchus kisutch (coho salmon) - 1,39 mg/l - 40 d<br>Remarks: (ECHA) |
| Toxicity to daphnia and other aquatic invertebrates(Chronic toxicity) | NOEC - Ceriodaphnia dubia (water flea) - 0,74 mg/l - 7 d (US-EPA)                                 |

## 12.2 Persistence and degradability

|                  |  |
|------------------|--|
| Biodegradability | aerobic - Exposure time 20 d<br>Result: 86 % - Readily biodegradable.<br>Remarks: (IUCLID) |
|------------------|--|

## 12.3 Bioaccumulative potential

|                 |  |
|-----------------|--|
| Bioaccumulation | Leuciscus idus (Golden orfe) - 3 d<br>- 0,05 mg/l(Toluene) |
|                 | Bioconcentration factor (BCF): 90                          |

## 12.4 Mobility in soil

No data available

## 12.5 Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

## 12.6 Endocrine disrupting properties

### Product:

|            |   |
|------------|---|
| Assessment | : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher. |
|------------|---|

## 12.7 Other adverse effects

No data available



---

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

No data available

---

## SECTION 14: Transport information

### 14.1 UN number

ADR/RID: 1294

IMDG: 1294

IATA: 1294

### 14.2 UN proper shipping name

ADR/RID: TOLUENE

IMDG: TOLUENE

IATA: Toluene

### 14.3 Transport hazard class(es)

ADR/RID: 3

IMDG: 3

IATA: 3

### 14.4 Packaging group

ADR/RID: II

IMDG: II

IATA: II

### 14.5 Environmental hazards

ADR/RID: no

IMDG Marine pollutant: no

IATA: no

### 14.6 Special precautions for user

Tunnel restriction code : (D/E)

Further information : No data available

---

## SECTION 15: Regulatory information

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

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

#### Authorisations and/or restrictions on use

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII) : Toluene

#### National legislation

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances. P5c FLAMMABLE LIQUIDS

#### Other regulations

Observe work restrictions regarding maternity protection in accordance to Dir 92/85/EEC or stricter national regulations where applicable.

Take note of Dir 94/33/EC on the protection of young people at work.



## 15.2 Chemical Safety Assessment

A Chemical Safety Assessment has been carried out for this substance.

---

### SECTION 16: Other information

#### Full text of H-Statements

|       |   |
|-------|---|
| 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.  |
| H361d | Suspected of damaging the unborn child.                                       |
| H373  | May cause damage to organs through prolonged or repeated exposure if inhaled. |
| H412  | Harmful to aquatic life with long lasting effects.                            |

#### Full text of other abbreviations

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative



**Further information**

The information is believed to be correct but is not exhaustive and will be used solely as a guideline, which is based on current knowledge of the chemical substance or mixture and is applicable to appropriate safety precautions for the product. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See [www.sigma-aldrich.com](http://www.sigma-aldrich.com) and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

Copyright 2020 Sigma-Aldrich Co. LLC. License granted to make unlimited paper copies for internal use only.

The branding on the header and/or footer of this document may temporarily not visually match the product purchased as we transition our branding. However, all of the information in the document regarding the product remains unchanged and matches the product ordered. For further information please contact [mlsbranding@sial.com](mailto:mlsbranding@sial.com).

