



# MATERIAL SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Revision Date 08/23/2013

Version 1.2

## SECTION 1. Identification

### Product identifier

Product number 108380  
Product name 2,3,5-Triphenyltetrazolium chloride for microbiology

### Relevant identified uses of the substance or mixture and uses advised against

Identified uses Biochemical research/analysis

### Details of the supplier of the safety data sheet

Company EMD Millipore Corporation | 290 Concord Road, Billerica, MA 01821, United States of America | SDS Phone Support: +1-978-715-1335 | General Inquiries: +1-978-715-4321 | Monday to Friday, 9:00 AM to 4:00 PM Eastern Time (GMT-5)

Emergency telephone 800-424-9300 CHEMTREC (USA)  
+1-703-527-3887 CHEMTREC (International)  
24 Hours/day; 7 Days/week

## SECTION 2. Hazards identification

### GHS Classification

Flammable solid, Category 1, H228

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

### GHS-Labeling

*Hazard pictograms*



*Signal Word*  
Danger

*Hazard Statements*  
H228 Flammable solid

*Precautionary Statements*  
P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

### OSHA Hazards

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR

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1910.1200).

**Other hazards**

None known.

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**SECTION 3. Composition/information on ingredients**

Chemical nature Mixture of inorganic and organic compounds

**Hazardous ingredients**

*Chemical Name (Concentration)*

CAS-No.

*ethanol* ( $\geq 1\%$  -  $< 5\%$ )

64-17-5

*ammonium chloride* ( $\geq 1\%$  -  $< 5\%$ )

12125-02-9

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**SECTION 4. First aid measures**

**Description of first-aid measures**

*Inhalation*

After inhalation: fresh air.

*Skin contact*

After skin contact: wash off with plenty of water. Remove contaminated clothing.

*Eye contact*

After eye contact: rinse out with plenty of water.

*Ingestion*

After swallowing: make victim drink water (two glasses at most). Consult doctor if feeling unwell.

Never give anything by mouth to an unconscious person.

**Most important symptoms and effects, both acute and delayed**

irritant effects

**Indication of any immediate medical attention and special treatment needed**

No information available.

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**SECTION 5. Fire-fighting measures**

**Extinguishing media**

*Suitable extinguishing media*

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

*Unsuitable extinguishing media*

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

**Special hazards arising from the substance or mixture**

Pay attention to flashback.

Fire may cause evolution of:

Hydrogen chloride gas, nitrogen oxides

**Advice for firefighters**

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### *Special protective equipment for fire-fighters*

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

### *Further information*

Remove container from danger zone and cool with water. Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

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## **SECTION 6. Accidental release measures**

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

Advice for non-emergency personnel: Avoid inhalation of dusts. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders:

Protective equipment see section 8.

### **Environmental precautions**

Do not let product enter drains. Risk of explosion.

### **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 dry. Dispose of properly. Clean up affected area. Avoid generation of dusts.

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## **SECTION 7. Handling and storage**

### **Precautions for safe handling**

Observe label precautions.

### *Advice on protection against fire and explosion*

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

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

Protected from light. Dry.

Tightly closed. Keep away from heat and sources of ignition.

Store at +5°C to +30°C (+41°F to +86°F).

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**SECTION 8. Exposure controls/personal protection**

**Exposure limit(s)**

*Ingredients*

Basis	Value	Threshold limits	Remarks
<i>ethanol 64-17-5</i>			
ACGIH	Short Term Exposure Limit (STEL):	1,000 ppm	
NIOSH/GUIDE	Recommended exposure limit (REL):	1,000 ppm 1,900 mg/m <sup>3</sup>	
OSHA_TRANS	PEL:	1,000 ppm 1,900 mg/m <sup>3</sup>	
Z1A	Time Weighted Average (TWA):	1,000 ppm 1,900 mg/m <sup>3</sup>	
<i>ammonium chloride 12125-02-9</i>			
ACGIH	Time Weighted Average (TWA):	10 mg/m <sup>3</sup>	Form of exposure: Fume.
	Short Term Exposure Limit (STEL):	20 mg/m <sup>3</sup>	Form of exposure: Fume.
NIOSH/GUIDE	Recommended exposure limit (REL):	10 mg/m <sup>3</sup>	Form of exposure: Fume.
	Short Term Exposure Limit (STEL):	20 mg/m <sup>3</sup>	Form of exposure: Fume.
Z1A	Time Weighted Average (TWA):	10 mg/m <sup>3</sup>	Form of exposure: Fume.
	Short Term Exposure Limit (STEL):	20 mg/m <sup>3</sup>	Form of exposure: Fume.

**Engineering measures**

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

**Individual protection measures**

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled. The chemical resistance of the protective equipment should be inquired at the respective supplier.

*Hygiene measures*

Immediately change contaminated clothing. Apply skin- protective barrier cream. Wash hands and face after working with substance.

*Eye/face protection*

Safety glasses

*Hand protection*

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

*Other protective equipment:*

Flame retardant antistatic protective clothing

*Respiratory protection*

required when dusts are generated.

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Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

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## SECTION 9. Physical and chemical properties

Physical state	solid
Color	light yellow
Odor	odorless
Odor Threshold	No information available.
pH	ca. 3.7 at 10 g/l 68 °F (20 °C)
Melting point	243 °C (decomposition)
Boiling point	No information available.
Flash point	No information available.
Evaporation rate	No information available.
Flammability (solid, gas)	The substance or mixture is a flammable solid with the category 1.
Lower explosion limit	No information available.
Upper explosion limit	No information available.
Vapor pressure	No information available.
Relative vapor density	No information available.
Relative density	No information available.
Water solubility	ca. 150 g/l at 77 °F (25 °C)
Partition coefficient: n-octanol/water	No information available.
Autoignition temperature	No information available.
Decomposition temperature	No information available.
Viscosity, dynamic	No information available.

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Explosive properties                      No information available.

Bulk density                                ca.230 kg/m<sup>3</sup>

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**SECTION 10. Stability and reactivity**

**Reactivity**

The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed.

**Chemical stability**

Sensitivity to light

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

**Possibility of hazardous reactions**

no information available

**Conditions to avoid**

Warming.

**Incompatible materials**

no information available

**Hazardous decomposition products**

in the event of fire: See section 5.

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**SECTION 11. Toxicological information**

**Information on toxicological effects**

*Likely route of exposure*

Eye contact, Skin contact, Ingestion

*Target Organs*

Eyes

Skin

Respiratory system

Central nervous system

Liver

Blood

reproductive system

*Eye irritation*

Possible damages:

slight irritation

*Carcinogenicity*

Carcinogen classifications of IARC, NTP, California proposition 65 for Ethanol CAS 64-17-5 apply to beverage use only. This product is NOT intended for this use.

*Specific target organ systemic toxicity - single exposure*

The substance or mixture is not classified as specific target organ toxicant, single exposure.

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### *Specific target organ systemic toxicity - repeated exposure*

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

### *Aspiration hazard*

Regarding the available data the classification criteria are not fulfilled.

## **Carcinogenicity**

IARC	No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
OSHA	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
NTP	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
ACGIH	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

## **Further information**

Quantitative data on the toxicity of this product are not available.

Further data:

Handle in accordance with good industrial hygiene and safety practice.

## **Ingredients**

### *ethanol*

#### *Acute oral toxicity*

LD50 rat: 6,200 mg/kg (IUCLID)

#### *Acute inhalation toxicity*

LC50 rat: 95.6 mg/l; 4 h (RTECS)

#### *Skin irritation*

rabbit

Result: No irritation

OECD Test Guideline 404

#### *Sensitization*

Sensitization test (Magnusson and Kligman):

Result: negative

(IUCLID)

#### *Germ cell mutagenicity*

##### *Genotoxicity in vitro*

Ames test

Salmonella typhimurium

Result: negative

(National Toxicology Program)

### *ammonium chloride*

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#### *Acute oral toxicity*

LD50 rat: 1,410 mg/kg (External MSDS)

#### *Skin irritation*

rabbit

Result: No irritation

(External MSDS)

#### *Eye irritation*

rabbit

Result: Eye irritation

(External MSDS)

#### *Sensitization*

In animal experiments:

Result: negative

(External MSDS)

#### *Germ cell mutagenicity*

##### *Genotoxicity in vitro*

Mutagenicity (mammal cell test): micronucleus.

Result: negative

(IUCLID)

#### Ames test

Result: negative

(IUCLID)

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## SECTION 12. Ecological information

### Ecotoxicity

No information available.

### Persistence and degradability

No information available.

### Bioaccumulative potential

No information available.

### Mobility in soil

No information available.

#### *Additional ecological information*

We have no quantitative data concerning the ecological effects of this product.

Further information on ecology

Discharge into the environment must be avoided.

## Ingredients

### *ethanol*

#### *Toxicity to fish*

LC50 *Leuciscus idus* (Golden orfe): 8,140 mg/l; 48 h (IUCLID)

#### *Toxicity to daphnia and other aquatic invertebrates*

EC5 *E. sulcatum*: 65 mg/l; 72 h (Lit.)

EC50 *Daphnia magna* (Water flea): 9,268 - 14,221 mg/l; 48 h (IUCLID)

#### *Toxicity to algae*

IC5 *Scenedesmus quadricauda* (Green algae): 5,000 mg/l; 7 d (Lit.)

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### *Toxicity to bacteria*

EC50 *Pseudomonas putida*: 6,500 mg/l; 16 h (IUCLID)

### *Biodegradability*

94 %

OECD Test Guideline 301E

Readily biodegradable.

### *Biochemical Oxygen Demand (BOD)*

930 - 1,670 mg/g (5 d)

(Lit.)

### *Theoretical oxygen demand (ThOD)*

2,100 mg/g

(Lit.)

### *Ratio COD/ThBOD*

90 %

(Lit.)

Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

## *ammonium chloride*

### *Toxicity to fish*

LC50 *Cyprinus carpio* (Carp): 209 mg/l; 96 h (IUCLID)

### *Toxicity to daphnia and other aquatic invertebrates*

EC50 *Daphnia magna* (Water flea): > 100 mg/l; 48 h (Lit.)

### *Biodegradability*

The methods for determining the biological degradability are not applicable to inorganic substances.

Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

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## SECTION 13. Disposal considerations

The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

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## SECTION 14. Transport information

### Land transport (DOT)

**UN number** UN 1325  
**Proper shipping name** FLAMMABLE SOLID, ORGANIC, N.O.S. (2,3,5-TRIPHENYLTETRAZOLIUM CHLORIDE)  
**Class** 4.1  
**Packing group** II  
**Environmentally hazardous** --

### Air transport (IATA)

**UN number** UN 1325  
**Proper shipping name** FLAMMABLE SOLID, ORGANIC, N.O.S. (2,3,5-TRIPHENYLTETRAZOLIUM CHLORIDE)  
**Class** 4.1  
**Packing group** II  
**Environmentally hazardous** --  
**Special precautions for user** no

### Sea transport (IMDG)

**UN number** UN 1325  
**Proper shipping name** FLAMMABLE SOLID, ORGANIC, N.O.S. (2,3,5-TRIPHENYLTETRAZOLIUM CHLORIDE)  
**Class** 4.1  
**Packing group** II  
**Environmentally hazardous** --  
**Special precautions for user** yes  
**EmS** F-A S-G

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## SECTION 15. Regulatory information

### United States of America

#### OSHA Hazards

Flammable Solid  
Target organ effects  
Harmful if swallowed.  
Eye irritant

This information is based on 29 CFR 1910.1200 criteria prior to adoption of the GHS, and may deviate from the GHS information on the label and in section 2.

#### SARA 311/312 Hazards

Fire Hazard  
Acute Health Hazard  
Chronic Health Hazard

#### SARA 313

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The following components are subject to reporting levels established by SARA Title III, Section 313:

*Ingredients*

ammonium chloride

12125-02-9

**SARA 302**

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

**Clean Water Act**

The following Hazardous Substances are listed under the U.S. CleanWater Act, Section 311, Table 116.4A:

*Ingredients*

ammonium chloride

The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

*Ingredients*

ammonium chloride

**DEA List I**

Not listed

**DEA List II**

Not listed

**US State Regulations**

**Massachusetts Right To Know**

*Ingredients*

ethanol

ammonium chloride

**Pennsylvania Right To Know**

*Ingredients*

2,3,5-triphenyltetrazolium chloride

ethanol

ammonium chloride

**New Jersey Right To Know**

*Ingredients*

2,3,5-triphenyltetrazolium chloride

ethanol

ammonium chloride

**California Prop 65 Components**

WARNING: This product contains a chemical known in the State of California to cause birth defects or other reproductive harm.

*Ingredients*

ethanol

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**Notification status**

TSCA: All components of the product are listed in the TSCA-inventory.

DSL: All components of this product are on the Canadian DSL.

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**SECTION 16. Other information**

**Training advice**

Provide adequate information, instruction and training for operators.

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

H228 Flammable solid

**Key or legend to abbreviations and acronyms used in the safety data sheet**

Used abbreviations and acronyms can be looked up at [www.wikipedia.org](http://www.wikipedia.org).

Revision Date 08/23/2013

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The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to appropriate safety precautions. It does not represent a warranty of any product properties and we assume no liability for any loss or injury which may result from the use of this information. Users should conduct their own investigations to determine the suitability of the information.

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