

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Revision Date 28.11.2018

Version 5.5

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

1.1 Product identifier

Catalogue No. 821101

Product name N,N,N',N'-Tetramethyl-1,4-phenylenediamine for synthesis

REACH Registration Number A registration number is not available for this substance as the substance or its use are exempted from registration according to Article 2 REACH Regulation (EC) No 1907/2006, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

CAS-No. 100-22-1

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

Identified uses Chemical for synthesis
For additional information on uses please refer to the Merck Chemicals portal (www.merckgroup.com).

1.3 Details of the supplier of the safety data sheet

Company Merck KGaA * 64271 Darmstadt * Germany * Phone:+49 6151 72-0

Responsible Department LS-QHC * e-mail: prodsafe@merckgroup.com

1.4 Emergency telephone number Please contact the regional company representation in your country.

SECTION 2. Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

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Acute toxicity, Category 4, Oral, H302

Acute toxicity, Category 4, Inhalation, H332

Acute toxicity, Category 4, Dermal, H312

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

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms



Signal word

Warning

Hazard statements

H302 + H312 + H332 Harmful if swallowed, in contact with skin or if inhaled.

Precautionary statements

Response

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

Reduced labelling (≤ 125 ml)

Hazard pictograms



Signal word

Warning

Index-No. 612-032-00-8

2.3 Other hazards

None known.

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SECTION 3. Composition/information on ingredients

3.1 Substance

| | | |
|------------|---|---|
| Formula | C ₆ H ₄ -1,4-[N(CH ₃) ₂] ₂ | C ₁₀ H ₁₆ N ₂ (Hill) |
| Index-No. | 612-032-00-8 | |
| EC-No. | 202-831-6 | |
| Molar mass | 164,24 g/mol | |

Hazardous components (REGULATION (EC) No 1272/2008)

Chemical name (Concentration)

| CAS-No. | Registration number | Classification |
|--|---------------------|----------------|
| N,N,N',N'-tetramethyl-p-phenylenediamine (<= 100 %) | | |
| 100-22-1 | *) | |

Acute toxicity, Category 4, H302

Acute toxicity, Category 4, H332

Acute toxicity, Category 4, H312

*) A registration number is not available for this substance as the substance or its use are exempted from registration according to Article 2 REACH Regulation (EC) No 1907/2006, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

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

3.2 Mixture

Not applicable

SECTION 4. First aid measures

4.1 Description of first aid measures

After inhalation: fresh air. If breathing stops: mouth-to-mouth breathing or artificial respiration.

Oxygen if necessary. Immediately call in physician.

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

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

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After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

The following applies to aromatic amines in general: systemic effect: methaemoglobinaemia with headache, cardiac dysrhythmia, drop in blood pressure, dyspnoea, and spasms, principal symptom: cyanosis (blue discolouration of the blood).

irritant effects, Cough, Shortness of breath, Nausea, Vomiting

4.3 Indication of any immediate medical attention and special treatment needed

No information available.

SECTION 5. Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Water, Foam, Carbon dioxide (CO₂), 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

Combustible.

Vapours are heavier than air and may spread along floors.

Forms explosive mixtures with air on intense heating.

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

Fire may cause evolution of:

nitrogen oxides

5.3 Advice for firefighters

Special protective equipment 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.

Further information

Suppress (knock down) gases/vapours/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

6.1 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.

6.2 Environmental precautions

Do not let product enter drains.

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

6.4 Reference to other sections

Indications about waste treatment see section 13.

SECTION 7. Handling and storage

7.1 Precautions for safe handling

Advice on safe handling

Observe label precautions.

Work under hood. Do not inhale substance/mixture.

Hygiene measures

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions

Tightly closed. Dry. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorised persons.

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Recommended storage temperature see product label.

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

8.2 Exposure controls

Engineering measures

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

See section 7.1.

Individual protection measures

Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of the hazardous substances handled. The chemical resistance of the protective equipment should be enquired at the respective supplier.

Eye/face protection

Safety glasses

Hand protection

full contact:

| | |
|---------------------|----------------|
| Glove material: | Nitrile rubber |
| Glove thickness: | 0,11 mm |
| Break through time: | > 480 min |

splash contact:

| | |
|---------------------|----------------|
| Glove material: | Nitrile rubber |
| Glove thickness: | 0,11 mm |
| Break through time: | > 480 min |

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The protective gloves to be used must comply with the specifications of EC Directive 89/686/EEC and the related standard EN374, for example KCL 741 Dermatril® L (full contact), KCL 741 Dermatril® L (splash contact).

The breakthrough times stated above were determined by KCL in laboratory tests acc. to EN374 with samples of the recommended glove types.

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 EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Other protective equipment

protective clothing

Respiratory protection

required when dusts are generated.

Recommended Filter type: Filter P 2 (acc. to DIN 3181) for solid and liquid particles of harmful substances

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.

Environmental exposure controls

Do not let product enter drains.

SECTION 9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

| | |
|-----------------|---------------------------|
| Form | Crystalline product |
| Colour | light pink |
| Odour | No strong odour known. |
| Odour Threshold | No information available. |

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| | |
|--|---|
| pH | No information available. |
| Melting point/range | 48 - 50 °C |
| Boiling point | No information available. |
| Flash point | > 112 °C |
| Evaporation rate | No information available. |
| Flammability (solid, gas) | No information available. |
| Lower explosion limit | No information available. |
| Upper explosion limit | No information available. |
| Vapour pressure | No information available. |
| Relative vapour density | No information available. |
| Density | No information available. |
| Relative density | No information available. |
| Water solubility | at 20 °C slightly soluble |
| Partition coefficient: n-octanol/water | log Pow: 2,35 (calculated) Bioaccumulation is not expected. |
| Auto-ignition temperature | No information available. |
| Decomposition temperature | No information available. |

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| | |
|---------------|--|
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| Product name | N,N,N',N'-Tetramethyl-1,4-phenylenediamine for synthesis |

| | |
|----------------------|------------------------------|
| Viscosity, dynamic | No information available. |
| Explosive properties | Not classified as explosive. |
| Oxidizing properties | none |

9.2 Other data

none

SECTION 10. Stability and reactivity

10.1 Reactivity

Forms explosive mixtures with air on intense heating.

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.

10.2 Chemical stability

sensitive to moisture

Sensitive to air.

10.3 Possibility of hazardous reactions

Violent reactions possible with:

Strong oxidizing agents, acid halides, Acid anhydrides, acids

10.4 Conditions to avoid

Strong heating.

10.5 Incompatible materials

no information available

10.6 Hazardous decomposition products

in the event of fire: See section 5.

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SECTION 11. Toxicological information

11.1 Information on toxicological effects

Acute oral toxicity

LDLO Rat: 500 mg/kg

(RTECS)

Acute toxicity estimate: 500,1 mg/kg

Expert judgement

Symptoms: Nausea, Vomiting

Acute inhalation toxicity

Symptoms: Irritation symptoms in the respiratory tract., Cough, Shortness of breath

Acute toxicity estimate: 1,6 mg/l; dust/mist

Expert judgement

Acute dermal toxicity

Acute toxicity estimate : 1.100,1 mg/kg

Expert judgement

Skin irritation

slight irritation

Eye irritation

slight irritation

Sensitisation

Sensitisation possible in predisposed persons.

Germ cell mutagenicity

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Genotoxicity in vitro

Ames test

Salmonella typhimurium

Result: positive

Carcinogenicity

This information is not available.

Reproductive toxicity

This information is not available.

Teratogenicity

This information is not available.

Specific target organ toxicity - single exposure

This information is not available.

Specific target organ toxicity - repeated exposure

This information is not available.

Aspiration hazard

This information is not available.

11.2 Further information

Absorption of large quantities may result in damage of the following:

Kidney

The following applies to aromatic amines in general: systemic effect: methaemoglobinaemia with headache, cardiac dysrhythmia, drop in blood pressure, dyspnoea, and spasms, principal symptom: cyanosis (blue discolouration of the blood).

Other dangerous properties can not be excluded.

Handle in accordance with good industrial hygiene and safety practice.

SECTION 12. Ecological information

12.1 Toxicity

No information available.

12.2 Persistence and degradability

No information available.

12.3 Bioaccumulative potential

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Partition coefficient: n-octanol/water

log Pow: 2,35
(calculated)

Bioaccumulation is not expected.

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted.

12.6 Other adverse effects

Discharge into the environment must be avoided.

SECTION 13. Disposal considerations

Waste treatment methods

See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14. Transport information

Land transport (ADR/RID)

| | |
|-----------------------------------|--|
| 14.1 UN number | UN 2811 |
| 14.2 Proper shipping name | TOXIC SOLID, ORGANIC, N.O.S. (N,N,N,N-TETRAMETHYL-1,4-PHENYLENE DIAMINE) |
| 14.3 Class | 6.1 |
| 14.4 Packing group | III |
| 14.5 Environmentally hazardous | -- |
| 14.6 Special precautions for user | yes |
| Tunnel restriction code | E |

Inland waterway transport (ADN)

Not relevant

Air transport (IATA)

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14.3 Class 6.1
14.4 Packing group III
14.5 Environmentally hazardous --
14.6 Special precautions for user no

Sea transport (IMDG)

14.1 UN number UN 2811
14.2 Proper shipping name TOXIC SOLID, ORGANIC, N.O.S. (N,N,N,N-TETRAMETHYL-1,4-PHENYLENE DIAMINE)
14.3 Class 6.1
14.4 Packing group III
14.5 Environmentally hazardous --
14.6 Special precautions for user yes

EmS F-A S-A

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not relevant

SECTION 15. Regulatory information

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

EU regulations

Major Accident Hazard SEVESO III
Legislation Not applicable

Occupational restrictions Take note of Dir 94/33/EC on the protection of young people at work. Observe work restrictions regarding maternity protection in accordance to Dir 92/85/EEC or stricter national regulations where applicable.

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Regulation (EC) No 1005/2009 on substances that deplete the ozone layer not regulated

Regulation (EC) No 850/2004 of the European Parliament and of the Council of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC not regulated

Substances of very high concern (SVHC) This product does not contain substances of very high concern according to Regulation (EC) No 1907/2006 (REACH), Article 57 above the respective regulatory concentration limit of ≥ 0.1 % (w/w).

National legislation

Storage class 6.1C

15.2 Chemical safety assessment

For this product a chemical safety assessment was not carried out.

SECTION 16. Other information

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

H302 Harmful if swallowed.
H312 Harmful in contact with skin.
H332 Harmful if inhaled.

Training advice

Provide adequate information, instruction and training for operators.

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Labelling

Hazard pictograms



Signal word

Warning

Hazard statements

H302 + H312 + H332 Harmful if swallowed, in contact with skin or if inhaled.

Precautionary statements

Response

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

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.

Regional representation

This information is given on the authorised Safety Data Sheet for your country.

The information contained herein is based on the present state of our knowledge. It characterises the product with regard to the appropriate safety precautions. It does not represent a guarantee of any properties of the product.