

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Revision Date 26.09.2016

Version 8.3

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

### 1.1 Product identifier

Catalogue No.	822033
Product name	Dimethylamine (40% aqueous solution) for synthesis
REACH Registration Number	This product is a mixture. REACH Registration Number see section 3.

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

Identified uses	Chemical for synthesis Intermediate for use under strictly controlled conditions For additional information on uses please refer to the Merck Chemicals portal ( <a href="http://www.merckgroup.com">www.merckgroup.com</a> ).
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### 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: <a href="mailto:prodsafe@merckgroup.com">prodsafe@merckgroup.com</a>

1.4 Emergency telephone number	Please contact the regional company representation in your country.
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## SECTION 2. Hazards identification

### 2.1 Classification of the substance or mixture

**Classification (REGULATION (EC) No 1272/2008)**

Flammable liquid, Category 2, H225  
Acute toxicity, Category 4, Oral, H302  
Skin corrosion, Category 1B, H314  
Specific target organ toxicity - single exposure, Category 3, Respiratory system, H335  
For the full text of the H-Statements mentioned in this Section, see Section 16.

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## 2.2 Label elements

### Labelling (REGULATION (EC) No 1272/2008)

#### *Hazard pictograms*



#### *Signal word*

Danger

#### *Hazard statements*

H225 Highly flammable liquid and vapour.

H302 Harmful if swallowed.

H314 Causes severe skin burns and eye damage.

H335 May cause respiratory irritation.

#### *Precautionary statements*

##### Prevention

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P240 Ground/bond container and receiving equipment.

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

##### Response

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

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

P308 + P310 IF exposed or concerned: immediately call a POISON CENTER or doctor/ physician.

##### Storage

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

### Reduced labelling (≤125 ml)

#### *Hazard pictograms*



#### *Signal word*

Danger

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*Hazard statements*

H314 Causes severe skin burns and eye damage.

*Precautionary statements*

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

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

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

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

P308 + P310 IF exposed or concerned: immediately call a POISON CENTER or doctor/ physician.

Contains: dimethylamine in solution

**2.3 Other hazards**

None known.

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

Chemical nature Aqueous solution

**3.1 Substance**

Not applicable

**3.2 Mixture**

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

*Chemical Name (Concentration)*

CAS-No. Registration number Classification

dimethylamine in solution ( $\geq 25\%$  -  $< 50\%$ )

124-40-3 \*)

Gases under pressure, Dissolved gas, H280

Flammable liquid, Category 1, H224

Acute toxicity, Category 4, H302

Acute toxicity, Category 4, H332

Skin corrosion, Category 1B, H314

\*) 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.

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## SECTION 4. First aid measures

### 4.1 Description of first aid measures

#### *General advice*

First aider needs to protect himself.

After inhalation: fresh air. Call in physician.

After skin contact: wash off with plenty of water. Remove contaminated clothing. Call a physician immediately.

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist.

After swallowing: make victim drink water (two glasses at most), avoid vomiting (risk of perforation). Call a physician immediately. Do not attempt to neutralise.

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

Irritation and corrosion, Cough, Shortness of breath

Risk of blindness!

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

No information available.

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## SECTION 5. Firefighting measures

### 5.1 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.

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

Combustible.

Pay attention to flashback.

Vapours 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.

Fire may cause evolution of:

nitrogen oxides

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### 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*

Remove container from danger zone and cool with water. 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: Do not breathe vapours, 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.

Advice for emergency responders:

Protective equipment 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 with liquid-absorbent and neutralising material (e.g. Chemizorb® OH<sup>-</sup>, Merck Art. No. 101596). Dispose of properly. Clean up affected area.

### 6.4 Reference to other sections

Indications about waste treatment see section 13.

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## SECTION 7. Handling and storage

### 7.1 Precautions for safe handling

*Advice on 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.

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*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**

*Requirements for storage areas and containers*

No metal containers.

*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.

**7.3 Specific end use(s)**

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

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

**8.1 Control parameters**

**8.2 Exposure controls**

The product is registered for use under strictly controlled conditions as defined in Article 18(4) of Regulation (EC) No. 1907/2006 (REACH) and must therefore be handled as such. Refer to the industry guidance prepared by Concawe, Cefic and EFCG for advice on the confirmation of strictly controlled conditions

**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*

Tightly fitting safety goggles

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*Hand protection*

full contact:

Glove material:	butyl-rubber
Glove thickness:	0,7 mm
Break through time:	> 480 min

splash contact:

Glove material:	Nitrile rubber
Glove thickness:	0,40 mm
Break through time:	> 30 min

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 898 Butoject® (full contact), KCL 730 Camatril® -Velours (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](http://www.kcl.de)).

*Other protective equipment*

Flame retardant antistatic protective clothing.

*Respiratory protection*

required when vapours/aerosols are generated.

Recommended Filter type: Filter K (acc. to DIN 3181) for NH<sub>3</sub>

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.

Risk of explosion.

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**SECTION 9. Physical and chemical properties**

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

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Form	liquid
Colour	colourless
Odour	amine-like
Odour Threshold	No information available.
pH	14
Melting point	-38 °C
Boiling point	No information available.
Flash point	-18,5 °C Method: DIN 51755 Part 1
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	2,6 %(V)
Upper explosion limit	12,3 %(V)
Vapour pressure	263 hPa at 20 °C
Relative vapour density	1,55
Density	0,89 g/cm <sup>3</sup> at 20 °C
Relative density	No information available.
Water solubility	at 20 °C soluble



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Partition coefficient: n-octanol/water	log Pow: -0,27 Bioaccumulation is not expected. (External MSDS)
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Auto-ignition temperature	No information available.
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Decomposition temperature	No information available.
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Viscosity, dynamic	3,49 mPa.s at 20 °C
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Explosive properties	Not classified as explosive.
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Oxidizing properties	none
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## 9.2 Other data

Ignition temperature	415 °C Method: DIN 51794
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## SECTION 10. Stability and reactivity

### 10.1 Reactivity

Vapours may form explosive mixture with air.

### 10.2 Chemical stability

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

### 10.3 Possibility of hazardous reactions

Exothermic reaction with:

Risk of ignition or formation of inflammable gases or vapours with:

Oxidizing agents, Metals, halogens, Acid anhydrides, Aldehydes, Alcohols, acids

Risk of explosion with:

Mercury

Caution! In contact with nitrites, nitrates, nitrous acid possible liberation of nitrosamines!

### 10.4 Conditions to avoid

Warming.

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### 10.5 Incompatible materials

Copper, Zinc, Tin

### 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

#### Mixture

##### *Acute oral toxicity*

LD50 Rat: ca. 1.000 mg/kg

(Test in mixture) (External MSDS)

Symptoms: If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the oesophagus and the stomach.

absorption

##### *Acute inhalation toxicity*

Acute toxicity estimate: > 20 mg/l; vapour

Calculation method

Symptoms: mucosal irritations, Cough, Shortness of breath, Possible damages:, Lung oedema, damage of respiratory tract

Acute toxicity estimate: > 20 mg/l; 4 h ; vapour

Calculation method

##### *Acute dermal toxicity*

LD50 Rat: 3.900 mg/kg

(Test in mixture) (External MSDS)

##### *Skin irritation*

Mixture causes burns.

##### *Eye irritation*

Rabbit

Result: Causes burns.

(Test in mixture) (ECHA)

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Mixture causes serious eye damage. Risk of blindness!

*Sensitisation*

This information is not available.

*Germ cell mutagenicity*

*Genotoxicity in vitro*

Ames test

Result: negative

(External MSDS)

*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*

May cause respiratory irritation.

*Specific target organ toxicity - repeated exposure*

This information is not available.

*Aspiration hazard*

This information is not available.

## 11.2 Further information

Under given conditions, contact with nitrites or nitric acid can lead to the formation of nitrosamines, which have shown themselves to be carcinogenic in animal experiments.

Other dangerous properties can not be excluded.

Handle in accordance with good industrial hygiene and safety practice.

## Components

*dimethylamine in solution*

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*Acute oral toxicity*

Acute toxicity estimate: 500,1 mg/kg

Expert judgement

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**SECTION 12. Ecological information**

**Mixture**

**12.1 Toxicity**

*Toxicity to fish*

LC50 Oncorhynchus mykiss (rainbow trout): 17 mg/l; 96 h

(Test in mixture) (ECHA)

*Toxicity to daphnia and other aquatic invertebrates*

static test EC50 Daphnia magna (Water flea): 88,7 mg/l; 48 h

(Test in mixture) (IUCLID)

*Toxicity to algae*

static test EC50 Selenastrum capricornutum (green algae): 9 mg/l; 96 h

(Test in mixture) (ECHA)

*Toxicity to bacteria*

EC0 Pseudomonas putida: 1.000 mg/l; 16 h

(Test in mixture) (Lit.)

EC50 Photobacterium phosphoreum: 26,8 mg/l; 15 min

(Test in mixture) (External MSDS)

*Toxicity to fish (Chronic toxicity)*

flow-through test NOEC Oncorhynchus mykiss (rainbow trout):  $\geq 20$  mg/l; 30 d

(Test in mixture) (ECHA)

**12.2 Persistence and degradability**

*Biodegradability*

51 %; 14 d; aerobic

OECD Test Guideline 301C

(Test in mixture)

Readily biodegradable

**12.3 Bioaccumulative potential**

*Partition coefficient: n-octanol/water*

log Pow: -0,27

Bioaccumulation is not expected. (External MSDS)

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#### 12.4 Mobility in soil

No information available.

#### 12.5 Results of PBT and vPvB assessment

Substance(s) in the mixture do(es) not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII, or a PBT/vPvB assessment was not conducted.

#### 12.6 Other adverse effects

*Additional ecological information*

Discharge into the environment must be avoided.

#### Components

*dimethylamine in solution*

*Toxicity to fish*

LC50 *Poecilia reticulata* (guppy): 210 mg/l; 96 h

OECD Test Guideline 203

LC50 *Oncorhynchus mykiss* (rainbow trout): 17 mg/l; 96 h

(40% solution) (ECHA)

*Toxicity to daphnia and other aquatic invertebrates*

static test EC50 *Daphnia magna* (Water flea): 88,7 mg/l; 48 h

(40% solution) (IUCLID)

*Toxicity to algae*

static test EC50 *Selenastrum capricornutum* (green algae): 9 mg/l; 96 h

(40% solution) (ECHA)

*Toxicity to bacteria*

EC0 *Pseudomonas putida*: 1.000 mg/l; 16 h

(40% solution) (Lit.)

*Toxicity to fish (Chronic toxicity)*

flow-through test NOEC *Oncorhynchus mykiss* (rainbow trout):  $\geq 20$  mg/l; 30 d

(40% solution) (ECHA)

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**SECTION 13. Disposal considerations**

*Waste treatment methods*

See [www.retrologistik.com](http://www.retrologistik.com) for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

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**SECTION 14. Transport information**

**Land transport (ADR/RID)**

14.1 UN number	UN 1160
14.2 Proper shipping name	DIMETHYLAMINE AQUEOUS SOLUTION
14.3 Class	3 (8)
14.4 Packing group	II
14.5 Environmentally hazardous	--
14.6 Special precautions for user	yes
Tunnel restriction code	D/E

**Inland waterway transport (ADN)**

Not relevant

**Air transport (IATA)**

14.1 UN number	UN 1160
14.2 Proper shipping name	DIMETHYLAMINE AQUEOUS SOLUTION
14.3 Class	3 (8)
14.4 Packing group	II
14.5 Environmentally hazardous	--
14.6 Special precautions for user	no

**Sea transport (IMDG)**

14.1 UN number	UN 1160
14.2 Proper shipping name	DIMETHYLAMINE AQUEOUS SOLUTION
14.3 Class	3 (8)
14.4 Packing group	II
14.5 Environmentally hazardous	--

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**14.6 Special precautions for user** yes

EmS F-E S-C

**14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

Not relevant

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**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 FLAMMABLE LIQUIDS

P5c

Quantity 1: 5.000 t

Quantity 2: 50.000 t

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.

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  $\geq 0.1$  % (w/w).

*National legislation*

Storage class 3

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## 15.2 Chemical Safety Assessment

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

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## SECTION 16. Other information

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

H224	Extremely flammable liquid and vapour.
H225	Highly flammable liquid and vapour.
H280	Contains gas under pressure; may explode if heated.
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.

### Training advice

Provide adequate information, instruction and training for operators.

### Labelling

#### Hazard pictograms



#### Signal word

Danger

#### Hazard statements

H225 Highly flammable liquid and vapour.

H302 Harmful if swallowed.

H314 Causes severe skin burns and eye damage.

H335 May cause respiratory irritation.

#### Precautionary statements

##### Prevention

P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.

P240 Ground/bond container and receiving equipment.

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



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**Response**

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

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

P308 + P310 IF exposed or concerned: immediately call a POISON CENTER or doctor/ physician.

**Storage**

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

Contains: dimethylamine in solution

**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).

**Regional representation**

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

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*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.*