

Safety Data Sheet

according to Regulation (EC) No 1907/2006 (REACH)
Classifications according to Regulation (EC) No 1272/2008.
Printdate 13 May 2025

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product name:

4,4'-MDI

1.1. Catalog No.:

692503

1.2. Relevant identified uses of the substance or mixture

Identified: Laboratory chemical
uses: R&D

1.3. Uses advised against:

HPC Standards GmbH
Am Wieseneck 7

04451 Cunnersdorf
Deutschland

Tel. +49 34291 3372-36
Fax. +49 34291 3372-39
contact@hpc-standards.com

1.4. Emergency telephone number

HPC Standards Tel. +49 34291 3372-36
This number is only available during office hours.

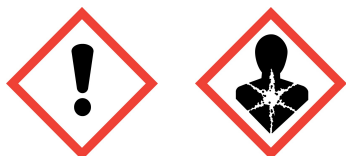
2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Acute toxicity, (Category 4) H332: Harmful if inhaled.
Skin irritation, (Category 2) H315: Causes skin irritation.
Eye irritation, (Category 2) H319: Causes serious eye irritation.
Respiratory sensitization, (Category 1) H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Skin sensitization, (Category 1) H317: May cause an allergic skin reaction.
Carcinogenicity, (Category 2) H351: Suspected of causing cancer.
Specific target organ toxicity - single exposure, (Category 3), Respiratory system
H335: May cause respiratory irritation.
Specific target organ toxicity - repeated exposure, (Category 2), Respiratory system
H373: May cause damage to organs through prolonged or repeated exposure if inhaled

2.2. Label elements

2.2.1. Pictogram



2.2.2.

Signal Word Danger

Hazard Statements

H315 Causes skin irritation.

H317 May cause an allergic skin reaction.

H319 Causes serious eye irritation.

H332 Harmful if inhaled.

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

H335 May cause respiratory irritation.

H351 Suspected of causing cancer.

H373 May cause damage to organs (Respiratory system) through prolonged or repeated exposure if inhaled.

Precautionary Statements

P202 Do not handle until all safety precautions have been read and understood.

P260 Do not breathe dust.

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

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

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 + P313 IF exposed or concerned: Get medical advice/ attention.

Supplemental Hazard Statements

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.
Lachrymator.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Synonyms : 4,4'-MDI

Bis(4-isocyanatophenyl)methane

Formula : C₁₅H₁₀N₂O₂

Molecular weight : 250,25 g/mol

CAS-No. : 101-68-8

EC-No. : 202-966-0

Index-No. : 615-005-00-9

Classification

Acute Tox. 4; Skin Irrit. 2;

Eye Irrit. 2; Resp. Sens. 1;

Skin Sens. 1; Carc. 2;

STOT SE 3; STOT RE 2;

H332, H315, H319, H334,

H317, H351, H335, H373

Concentration limits:

>= 5 %: Eye Irrit. 2,

H319; >= 5 %: STOT SE

3, H335; >= 5 %: Skin

Irrit. 2, H315; >= 0,1 %:

Resp. Sens. 1, H334;

3.1.1. Formula

C15H10N2O2

3.1.2. Molecular Weight (g/mol)

250.25

3.1.3. CAS-No.

101-68-8

4. FIRST AID MEASURES

4.1 Description of first-aid measures

General advice

First aiders need to protect themselves. Show this material safety data sheet to the doctor in attendance.

If inhaled

After inhalation: fresh air. Immediately call in physician. If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

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

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

5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media
Carbon dioxide (CO₂) Dry powder
Unsuitable extinguishing media
Foam Water

5.2 Special hazards arising from the substance or mixture

Carbon oxides
Nitrogen oxides (NO_x)
Combustible.
Vapors 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.

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

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

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.
For personal protection 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 carefully. Dispose of properly. Clean up affected area.
Avoid generation of dusts.

6.4 Reference to other sections

For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Advice on safe handling
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.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions

Tightly closed. Dry. Keep locked up or in an area accessible only to qualified or authorized persons.

Storage stability/Recommended storage temperature

-20 °C

Handle and store under inert gas. Moisture sensitive. Heat sensitive.

Storage class

Storage class (TRGS 510): 11: Combustible Solids

7.3 Specific end use(s)

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

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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

Splash contact

Material: butyl-rubber

Minimum layer thickness: 0,7 mm

Break through time: 120 min

Body Protection

protective clothing

Respiratory protection

Recommended Filter type: Filter B-(P3)

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

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a) Physical state crystalline

b) Color white

c) Odor No data available

d) Melting

point/freezing point

Melting point/range: 38 - 42 °C - lit.

e) Initial boiling point

and boiling range

200 °C at 7 hPa - lit.

f) Flammability (solid,
gas)

No data available

g) Upper/lower

flammability or

explosive limits

No data available

h) Flash point 211 °C - closed cup - Regulation (EC) No. 440/2008, Annex, A.9

i) Autoignition

temperature

> 601 °C
at 1.013 hPa
j) Decomposition temperature
No data available
k) pH No data available
l) Viscosity Viscosity, kinematic: No data available
Viscosity, dynamic: No data available
m) Water solubility No data available
n) Partition coefficient:
n-octanol/water
log Pow: 4,51 at 22 °C - Potential bioaccumulation
o) Vapor pressure No data available
p) Density 1,18 g/mL at 25 °C - lit.
Relative density 1,32 at 20 °C
q) Relative vapor density
r) Particle characteristics
No data available
s) Explosive properties No data available
t) Oxidizing properties none

9.2 Other safety information

No data available

10. STABILITY AND REACTIVITY

10.1 Reactivity

Forms explosive mixtures with air on intense heating.

A range from approx. 15 Kelvin below the flash point is to be rated as critical.

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

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

10.3 Possibility of hazardous reactions

Violent reactions possible with:

Water
alkalines
Alcohols
Amines
acids

10.4 Conditions to avoid

Strong heating.

10.5 Incompatible materials

nonferrous metals, Copper, Copper alloys, Mild steel, Zinc

10.6 Hazardous decomposition products

In the event of fire: see section 5

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

LD50 Oral - Rat - 4.130 mg/kg

Remarks: (RTECS)

Acute toxicity estimate Inhalation - 4 h - 1,5 mg/l - dust/mist
(Expert judgment)

Inhalation: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

LD50 Dermal - Rabbit - > 9.000 mg/kg

Remarks: (External MSDS)

Skin corrosion/irritation

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Serious eye damage/eye irritation

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Respiratory or skin sensitization

Sensitisation test: - Guinea pig

Result: positive

Remarks: (HSDB)

Germ cell mutagenicity

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

Test Type: Ames test

Test system: S. typhimurium

Metabolic activation: with and without metabolic activation

Method: Directive 67/548/EEC, Annex V, B.13.

Result: negative

Test Type: In vivo micronucleus test

Species: Rat

Application Route: Inhalation

Method: Mutagenicity (micronucleus test)

Result: negative

Carcinogenicity

Suspected of causing cancer.

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

Inhalation - May cause respiratory irritation. - Respiratory 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.

- Respiratory system

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Aspiration hazard

No data available

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

RTECS: NQ9350000

Cough, Shortness of breath, Headache, Nausea, Vomiting, Pulmonary edema. Effects may be delayed.

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

12. ECOLOGICAL INFORMATION

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

No data available

14. TRANSPORT INFORMATION

14.1 UN number

ADR/RID: - IMDG: - IATA: -

14.2 UN proper shipping name

ADR/RID: Not dangerous goods
IMDG: Not dangerous goods
IATA: Not dangerous goods

14.3 Transport hazard class(es)

ADR/RID: - IMDG: - IATA: -

14.4 Packaging group

ADR/RID: - IMDG: - IATA: -

14.5 Environmental hazards

ADR/RID: no IMDG Marine pollutant: no IATA: no

14.6 Special precautions for user

No data available

Further information

Not classified as dangerous in the meaning of transport regulations.

15. REGULATORY INFORMATION

16. OTHER INFORMATION

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. For lab use only!