

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Revision Date 16.03.2017

Version 17.2

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

1.1 Product identifier

Catalogue No. 803226

Product name 1,4-Dichlorobenzene 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. 106-46-7

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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Catalogue No.	803226
Product name	1,4-Dichlorobenzene for synthesis

Eye irritation, Category 2, H319

Carcinogenicity, Category 2, H351

Acute aquatic toxicity, Category 1, H400

Chronic aquatic toxicity, Category 1, H410

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

H319 Causes serious eye irritation.

H351 Suspected of causing cancer.

H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention

P273 Avoid release to the environment.

Response

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.

Reduced labelling (≤ 125 ml)

Hazard pictograms



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Catalogue No. 803226
Product name 1,4-Dichlorobenzene for synthesis

Signal word

Warning

Hazard statements

H351 Suspected of causing cancer.

Precautionary statements

P308 + P313 IF exposed or concerned: Get medical advice/ attention.

Index-No. 602-035-00-2

2.3 Other hazards

None known.

SECTION 3. Composition/information on ingredients

3.1 Substance

Formula	1,4-(Cl) ₂ C ₆ H ₄	C ₆ H ₄ Cl ₂ (Hill)
Index-No.	602-035-00-2	
EC-No.	203-400-5	
Molar mass	147 g/mol	

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

Chemical name (Concentration)

CAS-No.	Registration number	Classification
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1,4-dichlorobenzene (<= 100 %)

106-46-7 *)

Eye irritation, Category 2, H319

Carcinogenicity, Category 2, H351

Acute aquatic toxicity, Category 1, H400

Chronic aquatic toxicity, Category 1, H410

*) 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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3.2 Mixture

Not applicable

SECTION 4. First aid measures

4.1 Description of first aid measures

After inhalation: fresh air. 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. Call in ophthalmologist.

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

irritant effects, Cough, Shortness of breath, Dizziness, Nausea, Vomiting, cardiovascular disorders, Headache, Tiredness

4.3 Indication of any immediate medical attention and special treatment needed

Laxative: Sodium sulfate (1 tablespoon/1/4 l water).

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.

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Fire may cause evolution of:
Hydrogen chloride gas

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.

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. 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.

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

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Product name	1,4-Dichlorobenzene for synthesis

Advice on safe handling

Work under hood. Do not inhale substance/mixture.

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.

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 aluminium, tin, or zinc containers.

Storage conditions

Tightly closed. Dry.

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.

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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

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

Flame retardant antistatic protective clothing.

Respiratory protection

required when dusts are generated.

Recommended Filter type: Filter A-(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.

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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	crystals
Colour	white
Odour	ether-like
Odour Threshold	No information available.
pH	7 at 0,06 g/l 20 °C
Melting point	52 - 54 °C
Boiling point/boiling range	173 - 175 °C at 1.013 hPa
Flash point	66 °C Method: c.c.
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	1,7 %(V)
Upper explosion limit	5,9 %(V)

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Product name	1,4-Dichlorobenzene for synthesis

Vapour pressure	0,8 hPa at 20 °C
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	3,2 hPa at 30 °C
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Relative vapour density	No information available.
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Density	1,23 g/cm ³ at 70 °C
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Relative density	No information available.
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Water solubility	ca.0,08 g/l at 25 °C
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Partition coefficient: n-octanol/water	log Pow: 3,44 (experimental) (Lit.) Bioaccumulation is not expected.
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Auto-ignition temperature	No information available.
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Decomposition temperature	> 480 °C
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Viscosity, dynamic	0,73 mPa.s at 70 °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	> 500 °C
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Product name	1,4-Dichlorobenzene for synthesis

Bulk density	800 kg/m ³
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SECTION 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

sensitive to moisture

10.3 Possibility of hazardous reactions

Exothermic reaction with:

Alkali metals, Alkaline earth metals, Oxidizing agents, Nitric acid

Risk of explosion with:

Nitric acid, with, sulphuric acid

10.4 Conditions to avoid

Strong heating.

10.5 Incompatible materials

Aluminium

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

LD50 Rat: > 2.000 mg/kg

OECD Test Guideline 401

Symptoms: Irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract.

Acute inhalation toxicity

LC50 Rat: > 5,07 mg/l; 4 h ; vapour

OECD Test Guideline 403

Symptoms: Possible damages:, mucosal irritations

Acute dermal toxicity

LD50 Rat: > 2.000 mg/kg

OECD Test Guideline 402

absorption

Skin irritation

Rabbit

Result: No skin irritation

OECD Test Guideline 404

Eye irritation

Causes serious eye irritation.

Sensitisation

Maximisation Test Guinea pig

Result: negative

Method: OECD Test Guideline 406

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Catalogue No.	803226
Product name	1,4-Dichlorobenzene for synthesis

Germ cell mutagenicity

Genotoxicity in vivo

Micronucleus test

Mouse

male and female

Oral

Bone marrow

Result: negative

(ECHA)

Genotoxicity in vitro

Ames test

Salmonella typhimurium

Result: negative

(National Toxicology Program)

Ames test

Salmonella typhimurium

Result: negative

Method: OECD Test Guideline 471

Carcinogenicity

This information is not available.

Reproductive toxicity

Application Route: Oral

Rat

Method: OECD Test Guideline 416

Teratogenicity

This information is not available.

CMR effects

Carcinogenicity:

Suspected of causing cancer.

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Product name	1,4-Dichlorobenzene for synthesis

Specific target organ toxicity - single exposure

This information is not available.

Specific target organ toxicity - repeated exposure

This information is not available.

Repeated dose toxicity

Rat

male and female

Inhalation

vapour

NOAEL: 450,8 mg/l

OECD Test Guideline 453

Target Organs: Kidney, Liver

Aspiration hazard

This information is not available.

11.2 Further information

Systemic effects:

Nausea, Vomiting, Dizziness, Headache, Tiredness, Shortness of breath, cardiovascular disorders, Changes in the blood count

Chronic uptake results in damage of:

Liver, Kidney, Central nervous system

Other dangerous properties can not be excluded.

This substance should be handled with particular care.

SECTION 12. Ecological information

12.1 Toxicity

Toxicity to fish

semi-static test LC50 *Oncorhynchus mykiss* (rainbow trout): 1,12 mg/l; 96 h

Analytical monitoring: yes

US-EPA

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Product name	1,4-Dichlorobenzene for synthesis

Toxicity to daphnia and other aquatic invertebrates

static test EC50 Daphnia magna (Water flea): 0,7 mg/l; 48 h

Analytical monitoring: yes
(ECHA)

Toxicity to algae

static test EC50 Pseudokirchneriella subcapitata (green algae): 1,6 mg/l; 96 h

Analytical monitoring: yes
US-EPA

static test NOEC Pseudokirchneriella subcapitata (green algae): 0,57 mg/l; 96 h

Analytical monitoring: yes
US-EPA

Toxicity to bacteria

static test IC50 Bacteria: 86 mg/l; 48 h
ISO 8192

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)

semi-static test NOEC Daphnia magna (Water flea): 0,22 mg/l; 28 d
Analytical monitoring: yes

(ECHA)

12.2 Persistence and degradability

Biodegradability

20 %; 20 d

OECD Test Guideline 302B

Not readily eliminated from water.

12.3 Bioaccumulative potential

Partition coefficient: n-octanol/water

log Pow: 3,44

(experimental)

(Lit.) Bioaccumulation is not expected.

12.4 Mobility in soil

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Product name 1,4-Dichlorobenzene for synthesis

Distribution among environmental compartments

Adsorption/Soil

log K_{oc}: 2,79

(experimental)

Moderately mobile in soils

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 3077

14.2 Proper shipping name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID,
N.O.S. (1,4-DICHLOROBENZENE)

14.3 Class 9

14.4 Packing group III

14.5 Environmentally hazardous yes

14.6 Special precautions for user yes

Tunnel restriction code E

Packages smaller than or equal to 5 kg / L , not dangerous goods of Class 9

Inland waterway transport (ADN)

Not relevant

Air transport (IATA)

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Catalogue No.	803226
Product name	1,4-Dichlorobenzene for synthesis

14.1 UN number	UN 3077
14.2 Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (1,4-DICHLOROBENZENE)
14.3 Class	9
14.4 Packing group	III
14.5 Environmentally hazardous	yes
14.6 Special precautions for user	no

Packages smaller than or equal to 5 kg / L , not dangerous goods of Class 9

Sea transport (IMDG)

14.1 UN number	UN 3077
14.2 Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (1,4-DICHLOROBENZENE)
14.3 Class	9
14.4 Packing group	III
14.5 Environmentally hazardous	yes
14.6 Special precautions for user	yes

EmS	F-A S-F
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Packages smaller than or equal to 5 kg / L , not dangerous goods of Class 9

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	ENVIRONMENTAL HAZARDS
	E1
	Quantity 1: 100 t
	Quantity 2: 200 t

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Product name	1,4-Dichlorobenzene for synthesis

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
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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
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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).
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National legislation

Storage class	10 - 13
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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.

H319	Causes serious eye irritation.
H351	Suspected of causing cancer.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

Training advice

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according to Regulation (EC) No. 1907/2006

Catalogue No. 803226
Product name 1,4-Dichlorobenzene for synthesis

Provide adequate information, instruction and training for operators.

Labelling

Hazard pictograms



Signal word

Warning

Hazard statements

H319 Causes serious eye irritation.

H351 Suspected of causing cancer.

H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention

P273 Avoid release to the environment.

Response

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.

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.

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Product name	1,4-Dichlorobenzene for synthesis

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.