

Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date 14.07.2010

Revision: 12.05.2009

1 Identification of substance

Product details

Trade name

1,4-Cyclohexadiene

Stock number:

L07337

Manufacturer/Supplier:

Alfa Aesar GmbH & Co.KG
Benzstrasse 3
D-76185 Karlsruhe / GermanyE-mail: gcat@matthey.com
www.alfa-chemcat.com

Informing department:

Product safety department.

Emergency information:

Giftnotruf Universität Mainz / Poison Information Center Mainz
www.giftinfo.uni-mainz.de Telefon: +49(0)6131/19240

2 Hazards identification

Hazard designation:

T Toxic
F Highly flammable

Information pertaining to particular dangers for man and environment

R 45 May cause cancer.
 R 46 May cause heritable genetic damage.
 R 11 Highly flammable.
 R 48/20/21/22 Also harmful: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.
 R 65 Harmful: may cause lung damage if swallowed.

GHS label elements

**Danger**

H225 - Highly flammable liquid and vapour.

**Danger**

H350 - May cause cancer.
 H304 - May be fatal if swallowed and enters airways.
 H373 - May cause damage to organs through prolonged or repeated exposure.
 P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
 P241 Use explosion-proof electrical/ventilating/lighting/equipment.
 P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
 P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
 P405 Store locked up.
 P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Prevention:

Response:

Storage:

Disposal:

3 Composition/information on ingredients

Chemical characterization:

Designation: (CAS#)

1,4-Cyclohexadiene (CAS# 628-41-1): <99.9%
Benzene (CAS# 71-43-2): >0.1%

Identification number(s):

EINECS Number:

211-043-1

4 First aid measures

After inhalation

Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist. Seek immediate medical advice.

After skin contact

Instantly wash with water and soap and rinse thoroughly. Seek immediate medical advice.

After eye contact

Rinse opened eye for several minutes under running water. Then consult doctor.

After swallowing

Seek immediate medical advice.

5 Fire fighting measures

Suitable extinguishing agents

CO2, sand, extinguishing powder. Do not use water.

For safety reasons unsuitable extinguishing agents

Water.

Special hazards caused by the material, its products of combustion or flue gases:

Can be released in case of fire:
 Carbon monoxide and carbon dioxide
 Wear self-contained breathing apparatus.
 Wear full protective suit.

Protective equipment:

6 Accidental release measures

Person-related safety precautions:

Wear protective equipment. Keep unprotected persons away.

Measures for environmental protection:

Measures for cleaning/collecting:

Ensure adequate ventilation
 Keep away from ignition sources
 Do not allow material to be released to the environment without proper governmental permits.
 Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
 Dispose of contaminated material as waste according to item 13.
 Ensure adequate ventilation.
 Keep away from ignition sources.
 See Section 7 for information on safe handling
 See section 8 for information on personal protection equipment.
 See Section 13 for information on disposal.

Additional information:

7 Handling and storage

Handling

Information for safe handling:

Keep containers tightly sealed.
 Ensure good ventilation/exhaustion at the workplace.
 Open and handle container with care.

Information about protection against explosions and fires:

Keep ignition sources away - Do not smoke.
 Protect against electrostatic charges.
 Fumes can combine with air to form an explosive mixture.

Storage

Requirements to be met by storerooms and containers:

Refrigerate

Information about storage in one common storage facility:

Do not store together with oxidizing and acidic materials.
 Store in the dark.
 Protect from heat.

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Further information about storage conditions:

Keep container tightly sealed.
Protect from the effects of light.
Store in a locked cabinet or with access restricted to technical experts or their assistants.
Refrigerate

8 Exposure controls and personal protection**Additional information about design of technical systems:**

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

Components with critical values that require monitoring at the workplace:

Benzene				
	mg/m ³	ml/m ³		
ACGIH	TLV short term	1.6	0.5	
ACGIH	TLV long term	8	2.5	
B	VME	1,6	0,5	
CH	MAK	3,2	1	
D	TRGS 900	3,2	1	
DK	GV	16	5	
F	VME	16	5	
GB	MEL	16	5	
I	VME	1,6	0,5	
N	TLV	3	1	
NL	MAC-TGG	30	10	
P	VME	1,6	0,5	
S	NGV	1,5	0,5	
SF	HTP	16		
USA	PEL short term	3	1 ppm	
USA	PEL long term	15	5 ppm	
No data				

Additional information:**Personal protective equipment****General protective and hygienic measures**

The usual precautionary measures should be adhered to in handling the chemicals.
Keep away from foodstuffs, beverages and food.
Instantly remove any soiled and impregnated garments.
Wash hands during breaks and at the end of the work.
Store protective clothing separately.
Use breathing protection with high concentrations.
Check protective gloves prior to each use for their proper condition.
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
Impervious gloves
Not determined
Safety glasses
Face protection
Protective work clothing.

Breathing equipment:**Protection of hands:****Material of gloves****Penetration time of glove material****Eye protection:****Body protection:****9 Physical and chemical properties:****General Information**

Form:	Liquid
Colour:	Colourless
Smell:	Pungent

Change in condition

Melting point/Melting range:	Not determined
Boiling point/Boiling range:	88-90°C
Sublimation temperature / start:	Not determined

Flash point: -6°C**Ignition temperature:** Not determined**Decomposition temperature:** Not determined**Critical values for explosion:**

Lower:	Not determined
Upper:	Not determined

Steam pressure: Not determined**Density at 20°C** 0.851 g/cm³**Solubility in / Miscibility with Water:** Not miscible or difficult to mix**10 Stability and reactivity****Thermal decomposition / conditions to be avoided:**

No decomposition if used and stored according to specifications.
Danger of containers bursting upon heating.
Depletion of inhibitor.

Stable until:**Materials to be avoided:**

Acids
Oxidizing agents
Heat
Ultraviolet radiation
Free radical initiators
Danger of polymerisation
Spontaneous polymerisation can be caused in unstabilised product e.g. by ambient heat

Dangerous reactions:**Dangerous products of decomposition:****Additional information:**

Carbon monoxide and carbon dioxide
Unless inhibited, the product can polymerize resulting in a temperature and pressure increase that may rupture the container.

11 Toxicological information**Acute toxicity:****Primary irritant effect:****on the skin:****on the eye:****Sensitization:****Additional toxicological information:**

May cause irritation
May cause irritation
No sensitizing effect known.
To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

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EPA-K: Known human carcinogens.
 IARC-1: Carcinogenic to humans: sufficient evidence of carcinogenicity.
 NTP-1: Known to be carcinogenic: sufficient evidence from human studies.
 Carcinogen as defined by OSHA.
 ACGIH A1: Confirmed human carcinogen: Agent is carcinogenic to humans based on epidemiologic studies of, or convincing clinical evidence in, exposed humans.

12 Ecological information:

Additional ecological information:
General notes:

Water hazard class 1 (Self-assessment): slightly hazardous for water.
 Do not allow undiluted product or large quantities of it to reach ground water, water bodies or sewage system.
 Do not allow material to be released to the environment without proper governmental permits.

13 Disposal considerations

Product:
Recommendation

Consult state, local or national regulations for proper disposal.
 Hand over to disposers of hazardous waste.
 Must be specially treated under adherence to official regulations.

Uncleaned packagings:
Recommendation:

Disposal must be made according to official regulations.

14 Transport information

Land transport ADR/RID and GGVS/GGVE (cross-border/domestic)



ADR/RID-GGVS/E Class: 3 (F1) Flammable liquids.
Kemler Number: 30
UN-Number: 3295
Packaging group: II
Label: 3
Designation of goods: 3295 HYDROCARBONS, LIQUID, N.O.S. (vapor pressure at 50°C at most 110 kPa)
Limited quantities (LQ) LQ4
Transport category 2
Tunnel restriction code D/E

Maritime transport IMDG/GGVSea:



IMDG/GGVSea Class: 3
UN Number: 3295
Label: 3
Packaging group: II
EMS Number: F-E, S-D
Marine pollutant: No
Correct technical name: HYDROCARBONS, LIQUID, N.O.S.

Air transport ICAO-TI and IATA-DGR:



ICAO/IATA Class: 3
UN/ID Number: 3295
Label: 3
Packaging group: II
Correct technical name: HYDROCARBONS, LIQUID, N.O.S.

UN "Model Regulation":

UN3295, HYDROCARBONS, LIQUID, N.O.S., 3, II

15 Regulatory information

Designation according to EC guidelines:

Code letter and hazard designation of product:



T Toxic
 F Highly flammable

Risk phrases:

45 May cause cancer.
 46 May cause heritable genetic damage.
 11 Highly flammable.
 48/20/21/22 Also harmful: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.
 65 Harmful: may cause lung damage if swallowed.

Safety phrases:

53 Avoid exposure - obtain special instructions before use.
 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

National regulations**Information about limitation of use:**

Employment restrictions concerning young persons must be observed.
 For use only by technically qualified individuals.

Water hazard class:

Water hazard class 1 (Self-assessment): slightly hazardous for water.

16 Other information:

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Department issuing data specification sheet: Health, Safety and Environmental Department.**Contact:** Zachariah Holt**Abbreviations and acronyms:** ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

IMDG: International Maritime Code for Dangerous Goods

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IATA: International Air Transport Association
IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)
ICAO: International Civil Aviation Organization
ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)

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