

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Revision Date 05/27/2019

Version 1.3

SECTION 1. Identification

Product identifier

Product number	CX2290
Product name	Cyclohexane GR ACS
CAS-No.	110-82-7

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

Identified uses	Reagent for analysis
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Details of the supplier of the safety data sheet

Company	EMD Millipore Corporation 400 Summit Drive Burlington Massachusetts 01803 United States of America General Inquiries: +1 800-645-5476 Monday to Friday, 9:00 AM to 4:00 PM Eastern Time (GMT-5) MilliporeSigma is a business of Merck KGaA, Darmstadt, Germany.
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Emergency telephone	800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week
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SECTION 2. Hazards identification

GHS Classification

Flammable liquid, Category 2, H225
Skin irritation, Category 2, H315
Specific target organ systemic toxicity - single exposure, Category 3, Central nervous system, H336
Aspiration hazard, Category 1, H304
For the full text of the H-Statements mentioned in this Section, see Section 16.

GHS-Labeling

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Product name

Cyclohexane GR ACS

Hazard pictograms



Signal Word

Danger

Hazard Statements

- H225 Highly flammable liquid and vapor.
- H304 May be fatal if swallowed and enters airways.
- H315 Causes skin irritation.
- H336 May cause drowsiness or dizziness.

Precautionary Statements

- P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
- P233 Keep container tightly closed.
- P240 Ground/bond container and receiving equipment.
- P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment.
- P242 Use only non-sparking tools.
- P243 Take precautionary measures against static discharge.
- P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
- P264 Wash skin thoroughly after handling.
- P271 Use only outdoors or in a well-ventilated area.
- P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
- P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/doctor.
- P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
- P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P312 Call a POISON CENTER/doctor if you feel unwell.
- P321 Specific treatment (see supplemental first aid instructions on this label).
- P331 Do NOT induce vomiting.
- P332 + P313 If skin irritation occurs: Get medical advice/ attention.
- P362 Take off contaminated clothing and wash before reuse.
- P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
- P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
- P403 + P235 Store in a well-ventilated place. Keep cool.
- P405 Store locked up.
- P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards

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None known.

SECTION 3. Composition/information on ingredients

Formula C_6H_{12} (Hill)
Molar mass 84.16 g/mol

Hazardous ingredients

Chemical name (Concentration)

CAS-No.

Cyclohexane (>= 90 % - <= 100 %)

110-82-7

Exact percentages are being withheld as a trade secret.

SECTION 4. First aid measures

Description of first-aid measures

Inhalation

After inhalation: fresh air. Call in physician.

Skin contact

After skin contact: wash off with plenty of water. Remove contaminated clothing.

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

Eye contact

After eye contact: rinse out with plenty of water with the eyelid held wide open. Call in ophthalmologist if necessary. Remove contact lenses.

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

Ingestion

If swallowed Caution Aspiration hazard Keep respiratory tract clear. Call a physician immediately. In case of spontaneous vomiting: Risk of aspiration. Pulmonary failure possible. Call in physician.

Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed

irritant effects, Cough, Nausea, Vomiting, Dizziness, Drowsiness, Stomach/intestinal disorders, gastric pain, respiratory paralysis, somnolence, Unconsciousness, collapse

Indication of any immediate medical attention and special treatment needed

No information available.

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SECTION 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

Carbon dioxide (CO₂), Foam, Dry powder

Water, Foam, Carbon dioxide (CO₂), Dry powder

Unsuitable extinguishing media

For this substance/mixture no limitations of extinguishing agents are given.

Special hazards arising from the substance or mixture

Combustible.

Vapors are heavier than air and may spread along floors.

Forms explosive mixtures with air at ambient temperatures.

Pay attention to flashback.

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

Advice for firefighters

Special protective equipment for fire-fighters

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

Cool closed containers exposed to fire with water spray. Prevent fire extinguishing water from contaminating surface water or the ground water system.

Remove container from danger zone and cool with water. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapors, 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.

Environmental precautions

Do not let product enter drains. Risk of explosion.

Methods and materials for containment and cleaning up

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Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

SECTION 7. Handling and storage

Precautions for safe handling

Work under hood. Do not inhale substance/mixture. Avoid generation of vapors/aerosols.

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.

Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition.

Store at room temperature.

SECTION 8. Exposure controls/personal protection

Exposure limit(s)

Components

Basis	Value	Threshold limits	Remarks
<i>Cyclohexane 110-82-7</i>			
ACGIH	Time Weighted Average (TWA):	100 ppm	
NIOSH/GUIDE	Recommended exposure limit (REL):	300 ppm 1,050 mg/m ³	
OSHA_TRANS	PEL:	300 ppm 1,050 mg/m ³	
Z1A	Time Weighted Average (TWA):	300 ppm 1,050 mg/m ³	

Engineering measures

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

Individual protection measures

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled. The chemical resistance of the protective equipment should be inquired at the respective supplier.

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Hygiene measures

Immediately change contaminated clothing. Apply skin- protective barrier cream.
Wash hands and face after working with substance.

Eye/face protection

Safety glasses

Hand protection

full contact:

Glove material: Nitrile rubber
Glove thickness: 0.40 mm
Break through time: > 480 min

splash contact:

Glove material: Nitrile rubber
Glove thickness: 0.11 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 730 Camatril® -Velours (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 and supplied by us as well as to the purpose specified by us. 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 vapors/aerosols are generated.

Recommended Filter type: Filter A (acc. to DIN 3181) for vapors of organic compounds

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are performed according to the instructions of the producer.

These measures have to be properly documented.

SECTION 9. Physical and chemical properties

Physical state	liquid
Color	colorless
Odor	sweet

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Odor Threshold	0.5 ppm
pH	Not applicable
Melting point	43.7 °F (6.5 °C)
Boiling point/boiling range	178 °F (81 °C) at 1,013 hPa
Flash point	-0.40 °F (-18 °C) Method: DIN 51755 Part 1
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	1.2 %(V)
Upper explosion limit	8.3 %(V)
Vapor pressure	124 hPa at 75 °F (24 °C)
Relative vapor density	2.9
Density	0.78 g/cm ³ at 68 °F (20 °C)
Relative density	No information available.
Water solubility	0.05 g/l at 68 °F (20 °C)
Partition coefficient: n-octanol/water	log Pow: 3.44 (25 °C) (experimental) Bioaccumulation is not expected.
Autoignition temperature	No information available.
Decomposition temperature	No information available.
Viscosity, dynamic	0.98 mPa.s at 68 °F (20 °C)

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Explosive properties	Not classified as explosive.
Oxidizing properties	none
Ignition temperature	500 °F (260 °C)
Viscosity, kinematic	1.26 mm ² /s at 68 °F (20 °C)

SECTION 10. Stability and reactivity

Reactivity

Vapors may form explosive mixture with air.

Chemical stability

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

Possibility of hazardous reactions

Risk of explosion with:
nitrogen dioxide

Risk of ignition or formation of inflammable gases or vapors with:
Strong oxidizing agents

Conditions to avoid

Warming.

Incompatible materials

rubber, various plastics

Hazardous decomposition products

no information available

SECTION 11. Toxicological information

Information on toxicological effects

Likely route of exposure

Inhalation, Eye contact, Skin contact

Target Organs

Eyes

Skin

Respiratory system

Central nervous system

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Acute oral toxicity

LD50 Rat: > 5,000 mg/kg
OECD Test Guideline 401

Symptoms: gastric pain, Stomach/intestinal disorders

Acute inhalation toxicity

LC50 Rat: > 33.88 mg/l; 4 h ; vapor
OECD Test Guideline 403

Symptoms: Possible damages:, Irritation symptoms in the respiratory tract.,
Inhalation may lead to the formation of oedemas in the respiratory tract.

Acute dermal toxicity

LD50 Rabbit: > 2,000 mg/kg
OECD Test Guideline 402

Skin irritation

Causes skin irritation.

Eye irritation

Rabbit
Result: No eye irritation
OECD Test Guideline 405

Sensitization

Buehler Test Guinea pig
Result: Does not cause skin sensitization.
Method: OECD Test Guideline 406

Genotoxicity in vivo

Chromosome aberration test
Rat
Result: negative
Method: OECD Test Guideline 475

Genotoxicity in vitro

Ames test
Salmonella typhimurium
Result: negative
(National Toxicology Program)

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In vitro mammalian cell gene mutation test
MOUSE LYMPHOMA TEST
Result: negative
(ECHA)

Teratogenicity

Application Route: Inhalation
Rat
Method: OECD Test Guideline 414

Application Route: Inhalation
Rabbit
Method: OECD Test Guideline 414

Specific target organ systemic toxicity - single exposure

May cause drowsiness or dizziness.
Target Organs: Central nervous system

Specific target organ systemic toxicity - repeated exposure

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Aspiration hazard

Aspiration hazard, Aspiration may cause pulmonary edema and pneumonitis.

Carcinogenicity

IARC	No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
OSHA	No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.
NTP	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
ACGIH	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

Further information

After uptake of large quantities:
Cough, Nausea, Vomiting, Dizziness, respiratory paralysis, Unconsciousness, collapse
Damage to:
Lungs

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Other dangerous properties can not be excluded.
Handle in accordance with good industrial hygiene and safety practice.

SECTION 12. Ecological information

Ecotoxicity

Toxicity to fish

flow-through test LC50 Pimephales promelas (fathead minnow): 4.53 mg/l; 96 h

Analytical monitoring: yes

OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates

static test EC50 Daphnia magna (Water flea): 0.9 mg/l; 48 h

Analytical monitoring: yes

OECD Test Guideline 202

Toxicity to algae

EC50 Pseudokirchneriella subcapitata (green algae): 3.4 mg/l; 72 h

Analytical monitoring: yes

OECD Test Guideline 201

Toxicity to bacteria

IC50 Bacteria: 29 mg/l; 15 h (ECHA)

Persistence and degradability

Biodegradability

77 %; 28 d; aerobic

OECD Test Guideline 301F

Readily biodegradable.

Theoretical oxygen demand (ThOD)

3,425 mg/g

(IUCLID)

Bioaccumulative potential

Partition coefficient: n-octanol/water

log Pow: 3.44 (25 °C)

(experimental)

Bioaccumulation is not expected.

Mobility in soil

No information available.

Other adverse effects

Henry constant

19600 Pa·m³/mol

(IUCLID) Distribution preferentially in air.

Additional ecological information

Biological effects:

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Endangers drinking-water supplies if allowed to enter soil and/or waters in large quantities.
Change in the flavor characteristics of fish protein.
Discharge into the environment must be avoided.

SECTION 13. Disposal considerations

The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

SECTION 14. Transport information

Land transport (DOT)

UN number UN 1145
Proper shipping name CYCLOHEXANE
Class 3
Packing group II
Environmentally hazardous --

Air transport (IATA)

UN number UN 1145
Proper shipping name CYCLOHEXANE
Class 3
Packing group II
Environmentally hazardous --
Special precautions for user no

Sea transport (IMDG)

UN number UN 1145
Proper shipping name CYCLOHEXANE
Class 3
Packing group II
Environmentally hazardous --

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Special precautions for user yes
EmS F-E S-D

SECTION 15. Regulatory information

United States of America

SARA 313

The following components are subject to reporting levels established by SARA Title III, Section 313:

Components

Cyclohexane	110-82-7	100 %
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SARA 302

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

Clean Water Act

The following Hazardous Substances are listed under the U.S. CleanWater Act, Section 311, Table 116.4A:

Components

Cyclohexane

The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

Components

Cyclohexane

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

DEA List I

Not listed

DEA List II

Not listed

US State Regulations

Massachusetts Right To Know

Components

Cyclohexane

Pennsylvania Right To Know

Components

Cyclohexane

New Jersey Right To Know

Components

Cyclohexane

California Prop 65 Components

This product does not contain any chemicals known to the State of California to cause

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cancer, birth, or any other reproductive defects.

Notification status

TSCA: All components of the product are listed in the TSCA-inventory.
DSL: All components of this product are on the Canadian DSL

SECTION 16. Other information

Training advice

Provide adequate information, instruction and training for operators.

Labeling

Hazard pictograms



Signal Word

Danger

Hazard Statements

H225 Highly flammable liquid and vapor.
H304 May be fatal if swallowed and enters airways.
H315 Causes skin irritation.
H336 May cause drowsiness or dizziness.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary Statements

Prevention

P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P240 Ground/bond container and receiving equipment.
P273 Avoid release to the environment.

Response

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P313 Get medical advice/ attention.

Storage

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

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

H225	Highly flammable liquid and vapor.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H336	May cause drowsiness or dizziness.

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.

Revision Date 05/27/2019

The branding on the header and/or footer of this document may temporarily not visually match the product purchased as we transition our branding. However, all of the information in the document regarding the product remains unchanged and matches the product ordered. For further information please contact mlsbranding@sial.com.

The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to appropriate safety precautions. It does not represent a warranty of any product properties and we assume no liability for any loss or injury which may result from the use of this information. Users should conduct their own investigations to determine the suitability of the information.

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