

Safety Data Sheet (SDS)

According to Regulation (EC) No 1907/2006 (REACH), Annex II(COMMISSION REGULATION (EU) No 2015/830)

SKYCHDM

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Version: R0001.0001

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Substance name : 1,4-Cyclohexanedimethanol
 EC No. : 203-268-9
 REACH Registration No. : 01-2119448337-34-0001
 CAS No. : 105-08-8

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

1.2.1. Relevant identified uses

- Polyester varnish, PET Bottle, Engineering Plastics ect.

1.2.2. Uses advised against

- Use for recommended use only.

1.3. Details of the supplier of the safety data sheet

Manufacturer/Supplier : SK Chemicals Co., Ltd
 Address : 718, Cheoyong-ro, Nam-gu, Ulsan, Republic of Korea 44784
 Telephone : +82-2-2008-2611

1.4. Emergency telephone number

EU-wide emergency number : 112

See section 16.6 for the list of telephone number of National Helpdesks in the European Economic Area.

SECTION 2: HAZARD IDENTIFICATION

2.1. Classification of the substance/mixture

2.1.1. Classification according to Regulation (EC) No 1272/2008 [CLP]

- Serious eye damage/irritation : Category1, H318

2.2. Label elements

2.2.1. Labelling according to Regulation (EC) No 1272/2008 [CLP]

* Hazard Pictogram(s)



* Signal word : Danger

* Hazard statement(s)

- H318 Causes serious eye damage

* Precautionary statement(s)

1) Prevention

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

2) 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.

- P310 Immediately call a POISON CENTER or doctor/physician.

3) Storage

- Not applicable

4) Disposal

- Not applicable

*** Indication of danger**

- Not available

2.3. Other hazards

- Not available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS**3.1. Substances**

Name	EC No.	CAS No.	REACH registration No.	% [weight]	Classification [1272/2008/EC]
1,4-Cyclohexanedimethanol	203-268-9	105-08-8	01-2119448337-34-0001	≥99.9	Not classified

3.2. Mixtures

- Not applicable

SECTION 4: FIRST AID MEASURES**4.1. Description of first aid measures****General**

- No general information.

Inhalation

- When exposed to large amounts of steam and mist, move to fresh air.
- Take specific treatment if needed.

Skin contact

- Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- Wash contaminated clothing thoroughly before re-using.

Eye contact

- Do not rub your eyes.
- Immediately flush eyes with plenty of water for at least 15 minutes and call a doctor/physician.
- Get medical attention immediately.
- Remove contact lenses if worn.

Ingestion

- Please be advised by doctor whether induction of vomit is demanded or not.
- Rinse your mouth with water immediately.

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

- Not available

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

- Notify medical personnel of contaminated situations and have them take appropriate protective measures.

SECTION 5: FIREFIGHTING MEASURES**5.1. Extinguishing media****Suitable extinguishing media**

- Dry sand, dry chemical, alcohol-resistant foam, water spray, regular foam, CO₂
- Large fire : water spray, regular foam

Unsuitable extinguishing media

- Avoid use of water jet for extinguishing

5.2. Special hazards arising from the substance or mixture**Hazardous combustion products**

- May be ignited by heat, sparks or flames.
- Containers may explode when heated.
- Some of these materials may burn, but none ignite readily.
- Fire will produce irritating and/or toxic gases(CO, CO₂).
- If inhaled, may be harmful.

- Some fluids may cause dizziness and suffocation through the vapor.

5.3. Advice for firefighters

- Move containers from fire area, if you can do without the risk.
- In case of conflagration, use automatic fire sprinkler. Major fire may require withdrawal, allowing the object itself to burn.
- Do not approach the tank surrounded by fire until it is extinguished.
- Use appropriate extinguishing measure suitable for surrounding fire.
- Wear appropriate protective equipment.
- Keep containers cool with water spray.
- Use fire fighting procedures suitable for surrounding area.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal Precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

- Protective equipment: Wear proper protective equipment.
- Emergency procedures: Not applicable
- If required, notify relevant authorities according to all applicable regulations.

6.1.2. For emergency responders

- Ventilate closed spaces before entering.
- Do not touch spilled material. Stop leak if you can do it without risk.
- Move container to safe area from the leak area.
- Remove all sources of ignition.
- Avoid skin contact and inhalation.

6.2. Environmental precautions

- Prevent runoff and contact with waterways, drains or sewers.
- If large amounts have been spilled, inform the relevant authorities.
- Avoid dispersal of spilt material and runoff and contact with waterways, drains and sewers. If large spills, advise emergency services.

6.3. Methods and material for containment and cleaning up

6.3.1. For containment

- Clear spills immediately
- Clean up all spills immediately.
- Clear area of personnel and move up wind.
- No smoking, flame or ignition sources.

6.3.2. For cleaning up

- Large spill : Stay upwind and keep out of low areas. Dike for later disposal.
- Notify the central and local government if the emission reach the standard threshold.
- Disposal of waste shall be in compliance with the Wastes Control Act
- Appropriate container for disposal of spilled material collected.
- Small liquid state spills: Appropriate container for disposal of spilled material collected.
- Put the spilled material in an appropriate containers and clean the contaminated area

6.3.3. Other information

- Slippery when spilt.

6.4. Reference to other sections

- See Section 7 for information on safe handling.
- See Section 8 for information on personal protection equipment.
- See Section 13 for information on disposal.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

- Avoid contact with incompatible materials.
- Comply with all applicable laws and regulations for handling
- Refer to Engineering controls and personal protective equipment.

- Operators should wear antistatic footwear and clothing.

7.2. Conditions for safe storage, including any incompatibilities

- Do not apply direct heat.
- Avoid direct sunlight.
- Please pay attention to incompatibilities materials and conditions to avoid.
- No open fire.
- Prevent static electricity and keep away from combustible materials or heat sources.
- Collected them in sealed containers.

7.3. Specific end use(s)

- See Section 1 for information on 1.2 Relevant identified uses.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

8.1.1. Occupational exposure limits

European Union (EU) Commission Directive 2006/15/EC (IOELVs)

- Not available

European Union (EU) Commission Directive 2006/15/EC (IOELVs) - Skin

- Not available

Greece Occupational Exposure Limits

- Not available

Netherlands Occupational Exposure Limits

- Not available

Denmark Indicative List of Organic Solvents

- Not available

Denmark List of Limit Values for Dust

- Not available

Latvia Occupational Exposure Limit Values (OELV) for Chemical Substances in the Work Environment AtmbExcel Air & Hydraulics⁹

- Not available

Latvia Carcinogens and their Occupational Exposure Limit Values (OELV)

- Not available

Bulgaria Occupational Exposure Limits

- Not available

Bulgaria Limit values for the chemical agents in the air at the working environment

- Not available

Sweden Occupational Exposure Limit Values

- Not available

Sweden Occupational Exposure Limit Values and Measures against Air Contaminants

- Not available

Spain Changes Proposed for Occupational Limit Values

- Not available

Spain Occupational Exposure Limit for Chemical Agents

- Not available

Slovak Republic Highest Admissible Exposure Limits

- Not available

Slovak Republic Highest Admissible Exposure Limits - Solid aerosols predominately with fibrogenic effect

- Not available

Slovak Republic Highest Admissible Exposure Limits - Solid aerosols with possible fibrogenic effect

- Not available

Slovak Republic Highest Admissible Exposure Limits - Solid aerosols predominately with nonspecific effect

- Not available

Ireland Occupational Exposure Limits

- Not available

UK Workplace Exposure Limits (WELs)

- Not available

Austria Technical Exposure Limits (TRK Values)

- Not available

Austria Occupational Exposure Limits - Maximum Workplace Concentrations (MAK)

- Not available

Italy Occupational Exposure Limits

- Not available

Czech Republic Occupational Exposure Limits (PEL and NPK-P)

- Not available

Czech Republic Occupational Exposure Limits - Dusts predominately with fibrogenic effect

- Not available

Czech Republic Occupational Exposure Limits - Dusts with possible fibrogenic effect

- Not available

Czech Republic Occupational Exposure Limits - Dusts predominately with nonspecific effect

- Not available

Czech Republic Occupational Exposure Limits - Dusts predominately with irritating effect

- Not available

Czech Republic Occupational Exposure Limits - Mineral fibrous dusts

- Not available

Poland Workplace Maximum Allowable Concentration - Dust

- Not available

Poland Workplace Maximum Allowable Concentration

- Not available

France Threshold Limit Values for Occupational Exposure - VLE/VME

- Not available

Finland Occupational Exposure Levels - Concentrations Known to be Harmful

- Not available

Hungary Occupational Exposure Limits

- Not available

8.1.2. Recommended Monitoring Procedures

- Personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

8.1.3. DNEL/PNEC - Values

- Not available

8.2. Exposure controls**8.2.1. Appropriate engineering controls**

- Business owner is recommended to maintain below recommended exposure limits for the working place with general exhaust of gas/vapour/mist/fume.

8.2.2. Individual protection measures, such as personal protective equipment**Hand protection**

- Wear appropriate glove.

Eye protection

- Wear primary eye protection such as splash resistant safety goggles with a secondary protection face shield.
- Provide an emergency eye wash station and quick drench shower in the immediate work area.

Respiratory Protection

- Respiratory protection is ranked in order from minimum to maximum.
- Consider warning properties before use.
- Under conditions of frequent use or heavy exposure, Respiratory protection may be needed.
- Dust, mist, fume-purifying respiratory protection
- Air-purifying respirator with high-efficiency particulate filtering
- Any respiratory protection with a electromotion fan(for dust, mist, fume-purifying)
- Self-contained breathing apparatus with a corpuscle filter of high efficiency
- For Unknown Concentration or Immediately Dangerous to Life or Health : Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply. Any self-contained breathing apparatus with a full facepiece.

Skin protection

- Wear appropriate clothing.

8.2.3 Environmental exposure controls

- Do not let product enter drains. For ecological information refer to section 12.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**9.1. Information on basic physical and chemical properties**

Appearance(State)	Solid(Wax) (at 20°C and 101.3 kPa)
Appearance(Color)	White
Odor	Not available
Odor threshold	Not available
pH	Neutral
Melting point/Freezing point	41~ 61°C (106 ~ 142°F)
Initial boiling point and boiling range	283 °C
Flash point	172 °C (Method used: COC.)
Evaporation rate	Not available
Flammability(solid, gas)	Not available
Upper/Lower Flammability or explosive limits	44 / 5.5 %
Vapour pressure	50mmHg(at 197°C), 20mmHg(at 176°C)
Vapour density	5.0 (Air=1)
Relative density	1.047(ASTM D1298-99, 15/at 4°C, Water=1)
Solubility	Soluble
Partition coefficient of n-octanol/water	Not available
Autoignition temperature	307°C (Method used: ASTM D-2155)
Decomposition temperature	Not available
Viscosity	877 cP (at 50°C, Overcooling liquid)
Explosive properties	Not available
Oxidising properties	Not available

9.2. Other information

- Not available

SECTION 10: STABILITY AND REACTIVITY**10.1. Reactivity**

- Some of these materials may burn, but none ignite readily.

10.2. Chemical Stability

- This material is stable under recommended storage and handling conditions.

10.3. Possibility of hazardous reactions

- Containers may explode when heated.
- Fire may produce irritating and/or toxic gases.
- Inhalation of material may be harmful.
- Some liquids produce vapors that may cause dizziness or suffocation.

10.4. Conditions to avoid

- Avoid heat, sparks or flames.
- Avoid : Accumulation of electrostatic charges, Heating, Flames and hot surfaces

10.5. Incompatible materials

- Combustibles, toxic gases (incompatible substances), reducing agents

10.6. Hazardous decomposition products

- Material may produce irritating and highly toxic gases from decomposition by heat and combustion during burning.
- Corrosive and/or toxic fume

SECTION 11: TOXICOLOGICAL INFORMATION**11.1. Acute toxicity**

- **Oral**
 - [1,4-Cyclohexanedimethanol] : LD50 3200 ~ 6400 mg/kg Rat (OECD SIDS)
- **Dermal**

- Not available

- Inhalation

- Not available

11.2. Skin corrosion/irritation

- Not available

11.3. Serious eye damage/irritation

- [1,4-Cyclohexanedimethanol] : Rabbit, irreversible effects on the eye (OECD Guideline 405) (ECHA)

11.4. Respiratory sensitization

- Not available

11.5. Skin sensitization

- [1,4-Cyclohexanedimethanol] : Guinea pig, no considered to have the potential to cause skin sensitization. (OECD Guideline 406) (ECHA)

11.6. Germ cell mutagenicity

- [1,4-Cyclohexanedimethanol] : As a result of mutagenicity test(in vitro Ames test(OECD Guideline 471), in vivo Chromosomal aberration test(OECD Guideline 475), in vivo Erythrocyte micronucleus test(OECD Guideline 474)), Negative (ECHA)

11.7. Carcinogenicity

- IARC

- Not available

- OSHA

- Not available

- ACGIH

- Not available

- NTP

- Not available

- EU CLP

- Not available

11.8. Reproductive toxicity

- Not available

11.9. Specific target organ toxicity(single exposure):

- Not available

11.10. Specific target organ toxicity(repeated exposure):

- Not available

11.11. Aspiration hazard

- Not available

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

12.1.1. Fish

- [1,4-Cyclohexanedimethanol] : LC50 = 322.413 mg/l 96 hr (Estimate)

12.1.2. Invertebrate

- [1,4-Cyclohexanedimethanol] : LC50 = 333.513 mg/l 48 hr (Estimate)

12.1.3. Algae

- [1,4-Cyclohexanedimethanol] : EC50 = 202.471 mg/l 96 hr (Estimate)

12.2. Persistence and degradability

12.2.1. Persistence

- [1,4-Cyclohexanedimethanol] : log Kow = 1.49 (Estimate)

12.2.2. Degradability

- Not available

12.3. Bioaccumulative potential

12.3.1. Bioaccumulation

- Not available

12.3.2. Biodegradability

- Not available

12.4. Mobility in soil

- Not available

12.5. Results of PBT and vPvB assessment

- Not available

12.6. Other adverse effects

- Not available

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

- Stabilization and minimization treatment by incineration or similar method can be applied, if more than two kinds of designated wastes are in mixture state and it is impractical to separate them
- Oil water separation technology shall be applied as pre-waste treatment if it is applicable
- It shall be treated by incineration
- Anyone with business license number who generates industrial wastes shall treat the waste by him/herself or by entrusting to the legal entities who treat the wastes, recycle the wastes of others or install and operate the waste treatment facilities according to the Wastes Control Act
- Dispose of waste in accordance with all applicable laws and regulations.

SECTION 14: TRANSPORT INFORMATION

14.1. UN No.

14.1.1. UN No. (ADR/RID/ADN)

- 3257

14.1.2. UN No. (IMDG CODE/IATA DGR)

- 3257

14.1.3. UN No. (ICAO)

- 3257

14.2. UN proper shipping name

- ELEVATED TEMPERATURE LIQUID, N.O.S. (1,4-cyclohexanedimethanol)

14.3. Transport hazard class(es)

14.3.1. ADR/RID/ADN Class

- 9

14.3.2. ADR/RID/ADN Class

- UN 3257 ELEVATED TEMPERATURE LIQUID, N.O.S., 9 III

14.3.3. ADR Label No.

- 9

14.3.4. IMDG Class

- 9

14.3.5. ICAO Class/Division

- 9

14.3.6. Transport Labels



14.4. Packing group

14.4.1. ADR/RID/ADN Packing group

- III

14.4.2. IMDG Packing group

- III

14.4.3. ICAO Packing group

- Not available

14.5. Environmental hazards

- Not applicable

14.6. Special precautions for user

- Local transport follows in accordance with Dangerous goods Safety Management Law.
- Package and transport follow in accordance with Department of Transportation (DOT) and other regulatory agency requirements.
- In IATA, Class Forbidden on aircraft when liquid is offered for transport or is transported at or above 100°C and below its flash point; otherwise, not regulated.
- EmS FIRE SCHEDULE : F-A (General fire schedule)
- EmS SPILLAGE SCHEDULE : S-P (Substances dangerous when wet (collectable articles))
- Emergency Action Code : 2Y
- Hazard No.(ADR) : 99
- Tunnel Restriction Code : 3 (D)

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

- Not applicable

SECTION 15: REGULATORY INFORMATION

15.1. Safety, health and environmental regulation / legislation specific for the substance or mixture

15.1.1. Europe regulatory

15.1.1.1 REACH Restricted substance under REACH

- Not applicable

15.1.1.2 REACH Substances subject to authorization under REACH

- Not applicable

15.1.1.3 REACH SVHC

- Not applicable

15.1.1.4 Europe PBT

- Not applicable

15.1.1.5 European Union (EU) Transport of Dangerous Goods by Road - Dangerous Goods List

- Not applicable

15.2. Chemical Safety Assessment

- Not conducted

SECTION 16: OTHER INFORMATION

16.1. Indication of changes

- The Safety Data Sheet has been reviewed and the data therein were revised and laid out according the requirements of the Commission Regulation (EC) No. 1907/2006

16.2. Abbreviations and acronyms

- 1272/2008 CLP : Classification, Labelling and Packaging regulation.
- REACH : Registration, Evaluation and authorisation of chemical substances.
- DNEL : Derive no effects level
- PNEC : Predicted no effect concentration

16.3. Key literature references and sources for data

- This Safety Data Sheet was compiled with data and information from the following sources: RTECS, ECOSAR, HSDB, SIDS SIAP, ChemWATCH, CESAR, Chemical DB

16.4. Classification procedure

- The mixture classification has been derived based on the classification of the individual components in accordance with the rules set out in Regulation (EC) No 1272/2008 (CLP) as well as the translation tables in Annex VII to the same regulation.

16.5. Training advice

- Not applicable

16.6. Further information

- The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

- This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only.

- It should not therefore be construed as guaranteeing any specific property of the product.

- Contact National Helpdesks, List of Telephone Numbers : AUSTRIA (Vienna Wien) +43 1 515 61 0, BELGIUM (Brussels Bruxelles) +32 070 245 245, BULGARIA (Sofia) +359 2 9888 205, Croatia +385 1 2348 342 CZECH REPUBLIC (Prague Praha) +420 224 919 293 or +420 224 915 402, DENMARK (Copenhagen) 82 12 12 12, ESTONIA (Tallinn) 112, FINLAND (Helsinki) +358 9 471 977, FRANCE (Paris) +33 1 45 42 59 59, GERMANY (Berlin) +49 30 19240, GREECE (Athens Athinai) +30 210 77 93 777, HUNGARY (Budapest) +36 80 201 199, ICELAND (Reykjavik) +354 543 2222 or 112, IRELAND (Dublin) +353 1 8379964 or +353 1 809 2166, ITALY (Rome) +39 06 305 4343, LATVIA (Riga) 112 or +371 6704 2473, LITHUANIA (Vilnius) +370 5 236 20 52 or +370 687 53378, Luxembourg +352 70 245 245, MALTA +356 2122 4071, NETHERLANDS (Bilthoven) +31 30 274 88 88, NORWAY (Oslo) 22 591300, POLAND (Gdansk) +48 58301 65 16 or +48 58 349 2831, PORTUGAL (Lisbon Lisboa) 808 250 143, ROMANIA (Bucharest) +40 21 3183606 SLOVAKIA (Bratislava) +421 2 54 77 4166, SLOVENIA (Ljubljana) + 386 41 650 500, SPAIN +34 91 562 04 20(spanish language) or +34 91 768 98 00(You can request to be served in English), SWEDEN (Stockholm) 112 or +46 10 456 6700 (mon-fri 9.00-17.00), UNITED KINGDOM (London) 112 or 0845 4647 (NHS Direct).