Safety Data Sheet (SDS)

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

SKYDMCD

Date of issue: 2020-03-06 **Revision date: Not applicable** **Version: R0001.0001**

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

1.1. Product identifier

Substance name	: Dimethyl 1,4-cyclohexanedicarboxylate
EC No.	: 202-347-5
REACH Registration No.	: 05-2114318368-46-0000
CAS No.	: 94-60-0

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

1.2.1. Relevant identified uses

- Polyester Resin for Coatings etc.

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]

- Skin corrosion/irritation : Category2, H315
- Serious eye damage/irritation : Category2, H319
- Chronic aquatic toxicity : Category3, H412

2.2. Label elements

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

*** Hazard Pictogram(s)**

*** Signal word** : Warning

*** Hazard statement(s)**

- H315 Causes skin irritation
- H319 Causes serious eye irritation
- H412 Harmful to aquatic life with long lasting effects

*** Precautionary statement(s)**

1) Prevention

- P264 Wash hands thoroughly after handling.
- P273 Avoid release to the environment.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.

2) Response

- P302+P352 IF ON SKIN: Wash with plenty of soap and 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.
- P321 Specific treatment
- P332+P313 If skin irritation occurs: Get medical advice/attention.
- P337+P313 If eye irritation persists: Get medical advice/attention.
- P362 Take off contaminated clothing and wash before reuse.

3) Storage

- Not applicable

4) Disposal

- P501 Dispose of contents/container in accordance with local/regional/national/international regulation

*** 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]
Dimethyl 1,4-cyclohexanedicarboxylate	202-347-5	94-60-0	05-2114318368-46-0000	≥ 96	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.
- Go to the hospital immediately if symptoms(flare, irritate) occur.
- Wash thoroughly after handling.

Eye contact

- Do not rub your eyes.
- Immediately flush eyes with plenty of water for at least 15 minutes and call a doctor/physician.
- Go to the hospital immediately if symptoms(flare, irritate) occur.
- 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

- In case of conflagration, use automatic fire sprinkler. Major fire may require withdrawal, allowing the object itself to burn.
- Avoid inhalation of materials or combustion by-products.
- 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.
- Vapor or gas is burned at distant ignition sources can be spread quickly.

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

- Wear proper personal protective apparatus as indicated in Section 8 and avoid skin contact and inhalation.
- Do not touch spilled material. Stop leak if you can do it without risk.
- Remove all sources of ignition.
- Handle the damaged containers or spilled material after wearing appropriate protective equipment
- Do not direct water at spill or source of leak.
- 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.
- Control personal contact by using protective equipment.
- Clear area of personnel and move up wind.

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 leak: sand or other non-combustible material, please let use absorption.
- Wipe off the solvent.
- Dike for later disposal.

- Prevent the influx to waterways, sewers, basements or confined spaces.

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 direct physical contact.
- Since emptied containers retain product residue(vapor, liquid, solid) follow all MSDS and label warnings even after container is emptied.
- Comply with all applicable laws and regulations for handling
- Dealing only with a well-ventilated place.
- Do not inhale the steam prolonged or repeated.

7.2. Conditions for safe storage, including any incompatibilities

- Store according to current laws and regulations
- Do not apply any physical shock to container.
- Avoid direct sunlight.
- Please pay attention to incompatibilities materials and conditions to avoid.
- Prevent static electricity and keep away from combustible materials or heat sources.
- Collected them in sealed containers.
- Store away from water and sewer.

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.
- Any chemical cartridge respirator with organic vapor cartridge(s).
- Any chemical cartridge respirator with a full facepiece and organic vaporcartridge(s).
- Any air-purifying respirator with a full facepiece and an organic vapor canister.
- 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.
- Under conditions of frequent use or heavy exposure, Respiratory protection may be needed.

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)	Liquid
Appearance(Color)	Colorless
Odor	Sweet odor
Odor threshold	Not available
pH	Neutral
Melting point/Freezing point	17~ 25℃
Initial boiling point and boiling range	265 ℃
Flash point	135 ℃
Evaporation rate	Not available
Flammability(solid, gas)	Not available
Upper/Lower Flammability or explosive limits	LEL 3.2 mg/L
Vapour pressure	6.6mmHg(at 140℃)
Vapour density	5.0 (Air=1)
Relative density	1.1(ASTM D1298-99, 15/at 4℃, Water=1)
Solubility	Soluble
Partition coefficient of n-octanol/water	Not available
Autoignition temperature	393℃ (Method used: ASTM D-2155)
Decomposition temperature	Not available
Viscosity	Not available
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

- Non-combustible, substance itself does not burn but may decompose upon heating, then produce corrosive and/or toxic fumes

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.

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

- [Dimethyl 1,4-cyclohexanedicarboxylate] : LD50 2812 ㎎/㎏ Rat (OECD Guideline 401)

- Dermal

- Not available

- Inhalation

- [Dimethyl 1,4-cyclohexanedicarboxylate] : Mist LC50 >5 ㎎/ℓ 4 hr Rat (OECD Guideline 436)

11.2. Skin corrosion/irritation

- [Dimethyl 1,4-cyclohexanedicarboxylate] : As a result of skin irritation test with guinea pig, slightly irritating was observed. (ECHA)

11.3. Serious eye damage/irritation

- [Dimethyl 1,4-cyclohexanedicarboxylate] : The result of rabbit eye irritation test with structural analogue(1,4 - cyclohexane dicarboxylic acid) is that irritation reaction was observed from 1 of 3 eya after 24hr, irritation was accompanied by moderate corneal opacity, and positive adnexa and corneal staining was observed in 3 of 3 eye after 24, 48hr. Eye irritant by skin irritant (ECHA)

11.4. Respiratory sensitization

- Not available

11.5. Skin sensitization

- [Dimethyl 1,4-cyclohexanedicarboxylate] : Guinea pig, not sensitising (HSDB)

11.6. Germ cell mutagenicity

- [Dimethyl 1,4-cyclohexanedicarboxylate] : in Vitro, Ames tesst TA1535, TA1537, TA1538, TA98, TA100 : negative (OECD Guideline 471 (Bacterial Reverse Mutation Assay))

11.7. Carcinogenicity

- IARC

- Not available

- OSHA

- Not available

- ACGIH

- Not available

- NTP

- Not available

- EU CLP

- Not available

11.8. Reproductive toxicity

- [Dimethyl 1,4-cyclohexanedicarboxylate] : In a reproductive/developmental toxicity screening study using dimethyl 1,4-cyclohexanedicarboxylate, a no-effect-level (NOEL) of 1124 mg/kg was determined, and no test article-related effects on reproductive performance of the parental females or effects on survival and development of the F1 offspring were observed. Based upon these findings, DMCD does not satisfy the criteria for classification according to EU Classification, Labelling and Packaging of Substances and Mixtures (CLP) Regulation (EC) No. 1272/2008 or UN Globally Harmonized System of Classification and Labelling of Chemicals (GHS). In a pre-natal developmental toxicity study using dimethyl 1,4 -cyclohexanedicarboxylate, a NOAEL of 1000 mg/kg/day was found for developmental effects, the highest dose tested. Based on these findings,DMCD does not satisfy the criteria for classification according to EU Classification, Labelling and Packaging of Substances and Mixtures (CLP) Regulation (EC) No. 1272/2008 or UN Globally Harmonized System of Classification and Labelling of Chemicals (GHS). (ECHA)

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

- [Dimethyl 1,4-cyclohexanedicarboxylate] : LC50 = 23 ㎎/ℓ 96 hr Pimephales promelas (e-ChemPortal;HPVIS)

12.1.2. Invertebrate

- [Dimethyl 1,4-cyclohexanedicarboxylate] : EC50 = 100 ㎎/ℓ 48 hr Daphnia magna (e-ChemPortal;HSNO CCID)

12.1.3. Algae

- [Dimethyl 1,4-cyclohexanedicarboxylate] : EC50 = 124.6 ㎎/ℓ 72 hr Selenastrum capricornutum (e-ChemPortal;HSNO CCID)

12.2. Persistence and degradability

12.2.1. Persistence

- [Dimethyl 1,4-cyclohexanedicarboxylate] : 2.29 log Kow (30°C)

12.2.2. Degradability

- Not available

12.3. Bioaccumulative potential

12.3.1. Bioaccumulation

- [Dimethyl 1,4-cyclohexanedicarboxylate] : BCF = 2.19 ~ 10.6 (Estimate)

12.3.2. Biodegradability

- [Dimethyl 1,4-cyclohexanedicarboxylate] : non-degradable, not degraded and has a high potential to accumulate in vivo

12.4. Mobility in soil

- [Dimethyl 1,4-cyclohexanedicarboxylate] : Koc = 30.96 (Estimates)

12.5. Results of PBT and vPvB assessment

- Not available

12.6. Other adverse effects

- Harmful to aquatic life with long lasting effects

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
- Will be pre-processed by the separation of oil and water.
- 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)

- Not applicable

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

- Not applicable

14.1.3. UN No. (ICAO)

- Not applicable

14.2. UN proper shipping name

- Not applicable

14.3. Transport hazard class(es)

14.3.1. ADR/RID/ADN Class

- Not applicable

14.3.2. ADR/RID/ADN Class

- Not available

14.3.3. ADR Label No.

- Not applicable

14.3.4. IMDG Class

- Not applicable

14.3.5. ICAO Class/Division

- Not applicable

14.3.6. Transport Labels

- Not applicable

14.4. Packing group

14.4.1. ADR/RID/ADN Packing group

- Not applicable

14.4.2. IMDG Packing group

- Not applicable

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.
- EmS FIRE SCHEDULE : Not available
- EmS SPILLAGE SCHEDULE : Not available
- Air transport(IATA): Not subject to IATA regulations.

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).