

# SAFETY DATA SHEET

**Date Printed:**

**Version:** 9

**Revision date:** June 23, 2023

**Regulation:** In accordance with Commission Regulation (EU) 2020/878

## 1. IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY

### 1.1 Product identifier

**1.1.1 Product name:** Eco-DEHCH

**1.1.2. EC No.:** 283-829-2

**1.1.3. REACH Registration No.:** 01-2119987572-24-0000

**1.1.4. CAS No.:** 84731-70-4

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

**1.2.1 Identified Uses:** Not available

**1.2.2. Recommended use:** Chemical additive of PVC, plastic, rubber, ink, glue, paint, lubricant

**1.2.3. Restrictions on use:** Do not use for purposes other than those recommended.

### 1.3 Details of the supplier of the safety data sheet

#### 1.3.1 Manufacturer

Company name: Hanwha Solutions Co, Ltd.

Address: Ulsan plant, Hanwha Solutions Co, Ltd., 22, Yongyeon-ro 230beon-gil, Nam-gu, Ulsan, Korea

Prepared by: Production of plasticizer team(3<sup>rd</sup> Ulsan plant)

Contact Telephone: +82-52-279-1024

#### 1.3.2 Supplier&Distributor

Company name: Hanwha Solutions Co, Ltd.

Address: Hanwha Bldg., Janggyo-dong, Jung-gu, Seoul, Korea

Prepared by: PSR/Plasticizer Sales Team

Contact Telephone: +82-2-729-5051

**1.3.3. Fax:** +82-2-729-5057

### 1.4 Emergency telephone number

**1.4.1. Emergency Telephone:** +82-2-729-5051

## 2. Hazard(s) identification

### 2.1 Classification of the substance or mixture

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

#### Physical / Chemical Hazards:

Classification according to Regulation (EC) 1272/2008 (CLP): Not classified

#### Health Hazards:

Classification according to Regulation (EC) 1272/2008 (CLP): Not classified

#### Environmental Hazards:

Classification according to Regulation (EC) 1272/2008 (CLP): Not classified

### 2.2 Label elements

**Hazard pictograms:** Not applicable

**Signal word:** Not applicable

**Hazard statements:** Not applicable

**Additional precautionary statements:** Not applicable

**Precautionary statements:**

- **Precaution** : Not applicable

- **Response**: Not applicable

- **Storage:** Not applicable
- **Disposal:** Not applicable

### 2.3 Other hazards

- **Additional precautionary statements:** Not applicable
- **National Fire Protection Association (NFPA)**
  - Health:** Not available
  - Flammability:** Not available
  - Reactivity:** Not available

## 3. Composition/information on ingredients

Component	CAS No.	EC No.	Conc. /%	Classification according to 1272/2008/EEC	SCL/ M-factor/ ATE	Registration No.
Bis(2-ethylhexyl) cyclohexane-1,4-dicarboxylate	84731-70-4	283-829-2	≥ 98	Not classified	-	01-2119987572-24-0000
Bis(2-ethylhexyl) terephthalate	6422-86-2	229-176-9	< 1	Not classified	-	01-2119446265-39-0000
Other Cyclohexane ester	-	-	< 1	-	-	-

## 4. First-aid measures

### 4.1 Description of first aid measures

#### 4.1.1. General information:

- Clean body thoroughly.

#### 4.1.2. Following inhalation:

- Specific medical treatment is urgent.
- Move victim to fresh air.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.

#### 4.1.3. Following skin contact:

- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Remove and isolate contaminated clothing and shoes.
- Get immediate medical advice/attention.

#### 4.1.4. Following eye contact

- In case of contact with substance, immediately flush eyes with running water at least 20 minutes.

#### 4.1.5. Following ingestion

- Do not let him/her eat anything, if unconscious.
- Get medical advice/attention.

#### 4.1.6. Self-protection of the first aider:

- First aider: Pay attention to self-protection.

### 4.2 Most important symptoms and effects, both acute and delay Acute effects:

- None known

### 4.3 Indication of immediate medical attention and notes for physician

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

## 5. Fire-fighting measures

### 5.1 Extinguishing media

- **Suitable extinguisher:** Use dry sand, dry fire extinguisher, water spray, normal foam, Carbon Dioxide, when fighting fires involving this material.
- **Unsuitable extinguisher:** High Pressure Water Jet.

### 5.2 Special hazards arising from the substance or mixture

- 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.
- If inhaled, may be harmful.

### 5.3 Advice for firefighters

- Move containers from fire area if you can do it without risk.
- Some may be transported hot.
- Runoff from fire control may cause pollution.
- Contact with substance may cause severe burns to skin and eyes.
- Dike fire-control water for later disposal; do not scatter the material.

## 6. Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

#### 6.1.1 For non-emergency personnel

- Stop leak if you can do it without risk.
- Do not touch or walk through spilled material.

#### 6.1.2 For emergency responders

- Eliminate all ignition sources.
- Ventilate the area.
- For further information refer to section 8.2.

### 6.2 Environmental precautions

- Prevent entry into waterways, sewers, basements or confined areas.

### 6.3 The methods of purification and removal

- Small Spill; Flush area with flooding quantities of water. And take up with sand or other non-combustible absorbent material and place into containers for later disposal.
- Large Spill; Dike far ahead of liquid spill for later disposal.
- With clean shovel place material into clean, dry container and cover loosely; move containers from spill area.

### 6.4 Reference to other sections

- If appropriate, Section 8 and 13 shall be referred to.

## 7. Handling and storage

### 7.1 Precautions for safe handling

- Wash your hands thoroughly after handling.
- Please work with reference to engineering controls and personal protective equipment.
- Be careful to high temperature.

### 7.2 Conditions for safe storage, including any incompatibilities

- Store in a closed container.
- Store in cool and dry place.

### 7.3 Specific end use(s)

- Recommendations shall relate to the identified use(s) referred to in subsection 1.2 and be detailed and operational.

## 8. Exposure controls/personal protection

### 8.1 Control parameters

#### Occupational Exposure limits

- o **EU regulation:** Not available
- o **U.S regulation:** Not available
- o **ACGIH:** Not available
- o **Biological exposure index:** Not available
- o **Other:** Not available
- o **DNELs, PNECs:**

Exposure route of relevance	DNELs, DMELs, PNECs											
	Industrial				Professional				Consumer			
	Long term, Local effects	Long term, systemic effects	Short term, local effects	Short term, systemic effects	Long term, Local effects	Long term, systemic effects	Short term, local effects	Short term, systemic effects	Long term, Local effects	Long term, systemic effects	Short term, local effects	Short term, systemic effects
Human: oral (mg/kg bw/day)	-	-	-	-	-	-	-	-	-	5	-	-
Human: inhalation (mg/m <sup>3</sup> )	-	35.3	-	-	-	-	-	-	-	8.7	-	-
Human: dermal (mg/kg bw/day)	-	10	-	-	-	-	-	-	-	5	-	-
Environment: water	100 µg/L (Fresh water), 10 µg/L (Marine water)											
Environment: air	-											
Environment: soil	85.07 mg/kg soil dw											
Environment: Sediment	426.62 mg/kg sediment dw (fresh water), 42.66 mg/kg sediment dw (marine water)											
Environment: STP	100 mg/L											
Environment: Predators	222 mg/kg food											

### 8.2 Exposure controls

#### Appropriate engineering controls

- Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

#### Individual protection measures, such as personal protective equipment

##### Respiratory protection

- Follow the European Standard EN149. Use a European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

##### Eye protection

- Wear safety goggles as follow if eye irritation or other disorder occur.
  - ; In case of gaseous state organic material: enclosed safety goggles
  - ; In case of vapour state organic material: safety goggles or breathable safety goggles

- ; In case of particulate material: breathable safety goggles  
 - An eye wash unit and safety shower station should be available nearby work place.

**Hand protection**

- Wear appropriate protective gloves by considering physical and chemical properties of chemicals.

**Body protection**

- Wear appropriate protective clothing by considering physical and chemical properties of chemicals.

**Thermal hazards:**

- If appropriate, Section 5.3 shall be referred to.

**Environmental exposure controls:** Not available

## 9. Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

**Appearance**

<b>Description:</b>	Liquid
<b>Color:</b>	Colorless
<b>Odor:</b>	Odorless
<b>Odor threshold:</b>	Not available
<b>pH:</b>	6.19 (CIPAC MT 75.3)
<b>Melting point/freezing point:</b>	-40.7 °C
<b>Initial boiling point and boiling range:</b>	406.4 °C
<b>Flash point:</b>	212°C (Cleveland open cup)
<b>Evaporation rate:</b>	Not available
<b>Flammability (solid, gas):</b>	Not applicable
<b>Upper/lower flammability or explosive limits:</b>	Not available
<b>Vapor pressure:</b>	< 1.5mmHg (50 °C)
<b>Vapor density:</b>	Not available
<b>Relative density</b>	0.956 (20 °C)
<b>Solubility in water:</b>	Insoluble
<b>Partition coefficient: n-octanol/water:</b>	logKow ≥ 6.2
<b>Auto-ignition temperature:</b>	Not available
<b>Decomposition temperature</b>	Not available
<b>Dynamic viscosity:</b>	30-45 mPa.s (20 °C)
<b>Explosive properties:</b>	Not available
<b>Oxidizing properties:</b>	Not available
<b>Molecular weight:</b>	396.6mol/g

**9.2 Other information:** Not available

## 10. Stability and reactivity

### 10.1 Reactivity

- Not available

### 10.2 Chemical stability

- If inhaled, may be harmful.

### 10.3 Possibility of hazardous reactions

- Fire may produce irritating and/or toxic gases.

### 10.4 Conditions to avoid:

- Keep away from heat/sparks or flames.

**10.5 Incompatible materials:**

- Combustion materials

**10.6 Hazardous decomposition products:**

- Irritating, Toxic gases

**11. Toxicological information**

11.1 Information on toxicological effects	
(a) Acute toxicity	Not classified
Oral	Not classified
	Rat(female), LD <sub>50</sub> >2,000 mg/kg bw (OECD TG 403, GLP)
Dermal	Not classified
	Rat(female), LD <sub>50</sub> >2,000 mg/kg bw (OECD TG 402, GLP)
Inhalation	Not available
(b) Skin Corrosion/ Irritation	Not classified
	The test substance induced no dermal irritation when applied to male New Zealand white rabbits and was therefore considered a non-irritant. In addition, there was no mortality and no treatment-related clinical signs were observed. (erythema score=0, edema score=0) (OECD TG 404, GLP)
(c) Serious Eye Damage/ Irritation	Not classified
	The test item was considered to be non-irritating to eyes in three New Zealand white rabbits. (cornea score=0, iris score=0, conjunctivae score=0, chemosis score=0) (OECD TG 405, GLP)
(d) Respiratory sensitization	Not available
(e) Skin Sensitization	Not classified
	The highest concentration of the test item (100 %) induced no skin irritation was used in the patch exposure for second induction and challenge. (OECD TG 406, GLP)
(f) Carcinogenicity	Not classified
	- IARC, ACGIH, NTP, OSHA, EU CLP 1272/2008: Not listed
(g) Mutagenicity	Not classified
	<i>in vitro</i> : Mammalian Chromosome Aberration Test(OECD TG 473, GLP), Bacterial Reverse Mutation Test(OECD TG 471, GLP): with/without metabolic activation : Negative <i>in vivo</i> : Mouse, Mammalian Erythrocyte Micronucleus Test(OECD TG 474, GLP): Negative
(h) Reproductive toxicity	Not classified
	- Rats dosed by oral gavage during organogenesis at dose levels of 100, 300 and 1,000 mg/kg bw/day did not result in any toxicologically significant effects at any dose level. (OECD TG 414, GLP) - No treatment-related clinical signs and death of SD rats in two generations was found at dose level of 0, 40, 200 and 1,000mg/kg.day by gavage. NOAEL is considered to be 1,000 mg/kg.day (OECD TG 416, GLP)
(i) Specific target organ toxicity (single exposure)	Not available

(j) Specific target organ toxicity (repeat exposure)	Not available
(k) Aspiration Hazard	Not available
11.2 Information on other hazards	
11.2.1 Endocrine disrupting properties	Not available
11.2.2 Other information	Not available

## 12. Ecological information

12.1 Toxicity	
Acute toxicity	Not classified
	Fish: <i>Oryzias latipes</i> , LC <sub>50</sub> (96h) >100 mg/L semi-static (OECD TG 203, GLP) Invertebrate: <i>Daphnia magna</i> , EC <sub>50</sub> (48h) >0.17 mg/L (OECD TG 202, GLP) Algae: <i>Pseudokirchneriella subcapitata</i> , EC <sub>50</sub> (72h) >0.27 mg/L static (OECD TG 201, GLP)
Chronic toxicity	Fish: <i>Danio rerio</i> (previous name : <i>Brachydanio rerio</i> ), 28days NOEC > 10 mg/L (OECD TG 215, GLP) <i>Oryzias latipes</i> , NOEC > 0.0657mg/L (OECD TG 210, GLP)
12.2 Persistence and degradability	Persistence: - High persistency (log Kow is more than 4 estimated.) (LogKow ≥ 6.2) Degradability: - Bis(2-ethylhexyl) cyclohexane-1,4-dicarboxylate: 0.487 day
12.3 Bioaccumulative potential	Bioaccumulation: Bioaccumulation is expected to be low according to the BCF <500 (BCF = 9) (OECD TG 305, GLP) Biodegradation: As not well-biodegraded, it is expected to have high accumulation potential in living organisms (54.1% biodegradation was observed after 28 days) (OECD TG 301 C, GLP)
12.4 Mobility in soil	High potency of mobility to soil. (logKoc ≥5.63 (Estimated), 40°C) (OECD TG 121, GLP)
12.5 Results of PBT and vPvB assessment	Bis(2-ethylhexyl) cyclohexane-1,4-dicarboxylate is not PBT / vPvB.
12.6 Endocrine disrupting properties	Not available
12.7 Other adverse effects	Not available
12.8 Additional information	Not available

## 13. Disposal considerations

### 13.1 Waste treatment methods

- Waste must be disposed of in accordance with federal, state and local environmental control regulation.

#### 13.1.1 Product/Packaging disposal:

- Consider the required attentions in accordance with waste treatment management regulation.

#### 13.1.2 Waste treatment-relevant information:

- Waste must be disposed of in accordance with directive 2008/98/EC.

#### 13.1.3 Sewage disposal-relevant information:

- Release to the environment or sewage system is prohibited. Must be treated as hazardous waste.

#### 13.1.4 Other disposal recommendations: Not available

### 14. Transport information

**14.1 UN No.:** Not applicable

**14.2 UN Proper shipping name:** Not applicable

**14.3 Transport Hazard classes:**

ADR: Not applicable

IMDG: Not applicable

ICAO/IATA: Not applicable

RID: Not applicable

**14.4 Packing group:** Not applicable

**14.5 Environmental hazards:** Not applicable

**14.6 Special precautions for user :**

in case of fire: Not applicable

in case of leakage: Not applicable

**14.7 Transport in bulk according to Annex II of Marpol and the IBC Code:** Not applicable

### 15. Regulatory information

**15.1 Safety, health and environmental regulation/legislation specific for mixture**

**EU Regulatory Information**

**EU classification**

**EU 1272/2008(CLP)**

**Classification:** Not classified

**Risk phrases:** Not classified

**Safety phrases:** Not classified

**EU SVHC list:** Not regulated

**EU Authorization list:** Not regulated

**EU Restriction list:** Not regulated

**Waste Framework Directive 2008/98/EC:** Not regulated

**Foreign Inventory Status**

- Korea management information: Existing Chemical Substance : Present (2013-3-5632)

- Canada management information: Domestic Substances List (DSL): Listed (2019-09-04)

**15.2 Chemical safety assessment:** Not available

### 16. Other information

**Product safety data sheet for prepared in accordance with Commission Regulation (EU) 2020/878**

**16.1 Indication of changes:**

Preparation date: May 18, 2017

Version: 9

Revision date: June 23, 2023

**16.2 Key literature reference and sources for data:**

○ National chemicals information systems; <http://ncis.nier.go.kr>

○ TSCA; [http://iaspub.epa.gov/sor\\_internet/registry/substreg/searchandretrieve/searchbylist/search.do](http://iaspub.epa.gov/sor_internet/registry/substreg/searchandretrieve/searchbylist/search.do)

○ EU Regulation 1272/2008



- TOMES;LOLI ; <http://csi.micromedex.com/fraMain.asp?Mnu=0>
- UN Recommendations on the transport of dangerous goods 17<sup>th</sup>
- IARC Monographs on the Evaluation of Carcinogenic Risks to Humans; <http://monographs.iarc.fr>
- ECHA CHEM; <http://echa.europa.eu/web/guest/information-on-chemicals/registered-substances>
- EPA; <http://www.epa.gov/iris>
- EPISUITE Program ver.4.1
- National Emergency Management Agency-Korea dangerous material inventory management system; <http://hazmat.mpss.kfi.or.kr/material.do>
- Waste Control Act enforcement regulation attached [1]
- EPISUITE Program ver.4.1

### 16.3 Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008(CLP):

Classification according to Regulation (EC) 1272/2008 (CLP)	Classification procedure
-	-

### 16.4 Abbreviations

ACGIH: American Conference of Governmental Industrial hygienists

NIOSH: The National Institute for Occupational Safety and Health

OSHA: Occupational Safety & Health Administration

IARC: International Agency for Research on Cancer

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

IMDG: International Maritime Dangerous Goods

ICAO/IATA: International Civil Aviation Organization/ International Air Transport Association

RID: Regulations Concerning the International Transport of Dangerous Goods by Rail

SCL: Specific concentration limit

M-factor: Multiplication factor

ATE: Acute toxicity estimate

### 16.5 Other

- Product should be handled, stored, and used in accordance with the generally accepted industrial hygiene practices and in conformity with all the applicable legal regulations.
- The information provided herein is based on the knowledge possessed at this present time from the view point of safety requirements.
- It should, therefore, not be construed as guaranteeing specific properties.