

SAFETY DATA SHEET

Date Printed: March 6, 2018

Version: 3

Revision date: March 7, 2018

Regulation: In accordance with Commission Regulation (EU) CLP 1272/2008

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.: Confidential

1.1.3. (Pre)REACH Registration No.: -

1.1.4. CAS No.: Confidential

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 Chemical Co, Ltd.

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

Prepared by: Production of plasticizer team(3rd Ulsan plant)

Contact Telephone: +82-52-279-1023

1.3.2 Supplier&Distributor

Company name: Hanwha Chemical Co, Ltd.

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

Prepared by: Sales of plasticizer team

Contact Telephone: +82-2-729-2676

1.3.3. Fax: +82-2-729-5347

1.4 Emergency telephone number

1.4.1. Emergency Telephone: +82-2-729-1056

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

- **Treatment:** 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	(Pre) Registration No.
Bis(2-ethylhexyl) cyclohexane-1,4-dicarboxylate	84731-70-4	283-829-2	> 99	Not classified	01-2119987572-24-0000

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

- Eliminate all ignition sources.
- Stop leak if you can do it without risk.
- Ventilate the area.
- Do not touch or walk through spilled material.

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.

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.

8. Exposure controls/personal protection

8.1 Control parameters

<Bis(2-ethylhexyl) cyclohexane-1,4-dicarboxylate>

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 ³)	-	35.3	-	-	-	-	-	-	-	8.7	-	-
Human: dermal (mg/kg bw/day)	-	10	-	-	-	-	-	-	-	5	-	-
Environment: water	100 µg/L (Freshwater), 10 µg/L (Marine water)											
Environment: air	-											
Environment: soil	85.07 mg/kg soil dw											
Environment: Sediment	426.62 mg/kg sediment dw (freshwater), 42.66 mg/kg sediment dw (marine water)											
Environment: STP	100 mg/L											
Environment: Predators	222 mg/kg food											

<Bis(2-ethylhexyl) terephthalate>

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)	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	3.95	⋮	⋮
Human: inhalation (mg/m ³)	⋮	23.2	⋮	⋮	⋮	⋮	⋮	⋮	⋮	6.86	⋮	⋮
Human: dermal (mg/kg bw/day)	⋮	6.58	⋮	⋮	⋮	⋮	⋮	⋮	⋮	3.95	⋮	⋮
Environment: water	80 ng/L (Freshwater), 8 ng/L (Marine water)											
Environment: air	⋮											
Environment: soil	15 µg/kg soil dw											

Environment: sediment	8.28 mg/kg sediment dw (freshwater), 828 µg/kg sediment dw (marine water)
Environment: STP	1 mg/L
Environment: Predators	52.7 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.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Description:	Liquid
Color:	colorless
Odor:	odorless
Odor threshold:	Not available
pH:	7
Melting point/freezing point:	-40.7 °C
Initial boiling point and boiling range:	406.4 °C
Flash point:	217 °C (Cleveland opencup)
Evaporation rate:	Not available
Flammability (solid, gas):	Not applicable
Upper/lower flammability or explosive limits:	Not available
Vapor pressure:	< 1.5mmHg (50 °C)
Vapor density:	Not available
Relative density	0.954 (20 °C)
Solubility(ies):	Insoluble
Partition coefficient: n-octanol/water:	logKow ≥ 6.2
Auto-ignition temperature:	Not available
Decomposition temperature	Not available
Viscosity:	44.2 cP (20 °C)

Explosive properties: Not available
Oxidizing properties: Not available
Molecular weight: 396.6mol/g

10. Stability and reactivity

10.1 Reactivity/Chemical stability/Possibility of hazardous reactions:

- Fire may produce irritating and/or toxic gases.
- If inhaled, may be harmful.

10.2 Conditions to avoid:

- Keep away from heat/sparks or flames.

10.3 Incompatible materials:

- Combustion materials

10.4 Hazardous decomposition products: Irritating, Toxic gases

11. Toxicological information

11.1 Information on toxicological effects	
(a) Acute toxicity	Not classified
Oral	Not classified
	- Bis(2-ethylhexyl) cyclohexane-1,4-dicarboxylate: Rat(female), LD ₅₀ >2,000 mg/kg bw (OECD TG 423, GLP)
Dermal	Not classified
	- Bis(2-ethylhexyl) cyclohexane-1,4-dicarboxylate: Rat(female), LD ₅₀ >2,000 mg/kg bw (OECD TG 402, GLP)
Inhalation	Not available
(b) Skin Corrosion/ Irritation	Not classified
	- Bis(2-ethylhexyl) cyclohexane-1,4-dicarboxylate: 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
	- Bis(2-ethylhexyl) cyclohexane-1,4-dicarboxylate: 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
	- Bis(2-ethylhexyl) cyclohexane-1,4-dicarboxylate: 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 <Bis(2-ethylhexyl) cyclohexane-1,4-dicarboxylate> <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 - Bis(2-ethylhexyl) cyclohexane-1,4-dicarboxylate: Rats dosed by oral gavage during organogenesis at dose levels of 100, 300 and 1000 mg/kg bw/day did not result in any toxicologically significant effects at any dose level. (OECD TG 414, GLP)
(i) Specific target organ toxicity (single exposure)	Not available
(j) Specific target organ toxicity (repeat exposure)	Not available
(k) Aspiration Hazard	Not available

12. Ecological information

12.1 Toxicity	
Acute toxicity	Not classified <Bis(2-ethylhexyl) cyclohexane-1,4-dicarboxylate> Fish: <i>Oryzias latipes</i> , LC ₅₀ (96h) >100 mg/L semi-static (OECD TG 203, GLP) Invertebrate: <i>Daphnia magna</i> , EC ₅₀ (48h) >0.17 mg/L (OECD TG 202, GLP) Algae: <i>Pseudokirchneriella subcapitata</i> , EC ₅₀ (72h) >0.27 mg/L static (OECD TG 201, GLP)
Chronic toxicity	Not available
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: 0.487day
12.3 Bio-accumulative potential	Bioaccumulation: - Bis(2-ethylhexyl) cyclohexane-1,4-dicarboxylate: Bioaccumulation is expected to be low according to the BCF <500 (BCF = 9) (OECD TG 305, GLP) Biodegradation:

	- Bis(2-ethylhexyl) cyclohexane-1,4-dicarboxylate: 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	- Bis(2-ethylhexyl) cyclohexane-1,4-dicarboxylate: High potency of mobility to soil. (logKoc \geq 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 Hazardous to the ozone layer	Not classified
12.7 Other adverse effects	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

15. Regulatory information

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

< Bis(2-ethylhexyl) cyclohexane-1,4-dicarboxylate >

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)
- Japan management information: Existing and New Chemical Substances (ENCS): Present ((3)-2435))
- China management information: Inventory of Existing Chemical Substances (IECSC): Not regulated
- Australia management information: Australian Inventory Inventory of Chemical Substances (AICS): Not regulated
- Canada management information: Domestic Substances List (DSL): Not regulated
- New Zealand management information: New Zealand Inventory of Chemicals (NZIoC): Not regulated
- Philippines management information: Philippine Inventory of Chemicals and Chemical Substances (PICCS): Not regulated

15.2 Chemical safety assessment: Not available

16. Other information

Product safety data sheet for prepared in accordance with Regulation (EU) 1272/2008

16.1 Indication of changes:

Preparation date: May 18, 2017

Version: 3

Revision date: March 7, 2018

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
- EU Regulation 1272/2008
- TOMES;LOLI ; <http://csi.micromedex.com/fraMain.asp?Mnu=0>
- UN Recommendations on the transport of dangerous goods 17th
- 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
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eco-DEHCH

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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

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.