

SAFETY DATA SHEET

Date Printed: January 20, 2020

Version: 3

Revision date: January 20, 2020

Regulation: According to Regulation 2012 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

1. Identification

1.1 Product identifier

1.1.1 Product name: SP-390

1.1.2 Other means of identification: Bis(2-ethylhexyl) terephthalate

1.2 Recommended use of the chemical and restrictions on use

1.2.1 Recommended use: It is also used for PVC, plastic, rubber, ink, glue, paint and additives such as lubricant.

1.2.2. 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(Hwangseong-dong), Nam-gu, Ulsan, Korea

Prepared by: Plasticizers Production Team

Contact Telephone (Ulsan plant) +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: PLS Sales Team

Contact Telephone: +82-2-729-2990 (Sales) / +82-52-279-1024 (Plant)

1.4 Emergency phone number

Emergency phone: +82-2-729-2990

2. Hazard(s) identification

2.1 Classification of the substance or mixture

According to Regulation 2012 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

Physical / Chemical Hazards: Not classified

Health Hazards: Not classified

Environmental Hazards: Not classified

2.2 Label elements, including precautionary statements

o **Pictogram and symbol:** Not applicable

o **Signal word:** Not applicable

o **Hazard statements:** Not applicable

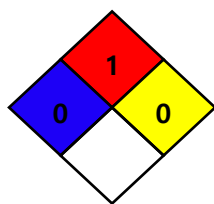
o **Precautionary statements:** Not applicable

o **Treatment statements:** Not applicable

o **Storage statements:** Not applicable

o **Waste statements:** Not applicable

2.3 Other hazard information not included in hazard classification (NFPA)



- Health: 0
- Flammability: 1
- Reactivity: 0
- Specific hazard: -

3. Composition/information on ingredients

Component	Common name and synonyms	CAS No.	Conc. / %
Diocyl terephthalate	Bis(2-ethylhexyl) terephthalate	6422-86-2	100

4. First aid measures

4.1 Description of first aid measures

Eye contact

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

Skin contact

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

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.

Ingestion

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

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 Suitable (and unsuitable) Extinguishing media

- Suitable extinguishing media: Dry sand, Dry chmical powder, alcohol-resistant foam, water spray, CO₂, regular foam, carbon oxides(CO, CO₂)
- Unsuitable extinguishing media: High pressure water streams

5.2 Specific hazards arising from the chemical

- Thermal decomposition products: Irritating, corrosive or toxic gases
- May be ignited by heat, sparks or flames.
- Containers may explode when heated.
- Some of these materials may burn, but none ignite readily.
- If inhaled, may be harmful.

5.3 Special protective equipment and precautions for fire-fighters

- Wear full protective firefighting gear including self-contained breathing apparatus (SCBA) for protection against possible exposure.
- The fire suppression is not fully protectable from the hazard.
- Dike fire-control water for later disposal; do not scatter the material.
- Move containers from fire area if you can do it without risk.
- Fire involving Tanks; Cool containers with flooding quantities of water until well after fire is out.
- Fire involving Tanks; Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- Fire involving Tanks; Always stay away from tanks engulfed in fire.

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.
- Prevent dust cloud.

6.2 Environmental precautions and protective procedures

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

6.3 The methods of purification and removal

- Small Spill; Take up with sand or other non-combustible absorbent material and place into containers for later disposal.
- Prevent dust cloud.
- 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 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

- Keep container tightly closed.
- Keep in a dry, cool place.
- Away from open flame and oxidizing agents.
- Protect from heat and direct sunlight.
- Never cut, drill, weld or grind on or near this container.

8. Exposure controls/personal protection

8.1 Occupational Exposure limits

- **Korea regulation:** Not applicable
- **ACGIH:** Not applicable
- **Biological exposure index:** Not applicable
- **OSHA:** Not applicable

- NIOSH: Not applicable
- **Biological exposure index:** Not applicable
- **EU regulation:** Not applicable

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

- Wear NIOSH approved full or half face piece (with goggles) respiratory protective equipment when necessary.
- If risk of overexposure exists, wear an approved respirator.

Eye protection

- Wear enclosed safety goggles to protect from gaseous state organic material causing eye irritation or other disorder.
- An eye wash unit and safety shower station should be available nearby work place.

Hand protection

- Wear appropriate protective gloves (rubber glove (exclude PVC)) by considering physical and chemical properties of chemicals.

Body protection

- Wear appropriate protective clothing (rubber clothing (exclude PVC)) 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:	Mild
Odor threshold:	Not available
pH:	6~7
Melting point/freezing point:	< -48 °C
Initial boiling point and boiling range:	400 °C
Flash point:	222 °C (Cleveland open cup)
Evaporation rate:	Not available
Flammability (solid, gas):	Not applicable
Upper/lower flammability or explosive limits:	Not applicable
Vapor pressure:	2.14X10 ⁻⁵ mmHg (25 °C)
Vapor density:	13.5(air = 1)
Solubility:	0.0004 mg/l (25°C)
Solubility in organic solvents:	Not available
Specific gravity:	0.98 g/cm ³ (20 °C)
Partition coefficient: n-octanol/water:	Log Kow=8.39
Auto ignition temperature:	387 °C (98 kPa)
Decomposition temperature:	Not available
Viscosity:	65.8 mPa-s (dynamic) at 25 °C
Molecular weight:	390.557

“NOTE: The physical data presented above are typical values and should not be construed as a specification”

10. Stability and reactivity

10.1 Reactivity/Chemical stability/Possibility of hazardous reactions:

- Stable at normal temperature and pressure.
- Fire may produce irritating and/or toxic gases.
- If inhaled, may be harmful.

10.2 Conditions to avoid:

- Heat, sparks or flames, other sources of ignition

10.3 Incompatible materials:

- Combustibles, Oxidizing solids, oxidizing liquid, oxidizing materials

10.4 Hazardous decomposition products:

- Irritating and/or toxic gases, carbon oxides(CO, CO₂)

11. Toxicological information

Information on toxicological effects	
(a) Acute toxicity	
Oral	Not classified
	Rat, LD ₅₀ > 5,000 mg/kg (TSCA FHSA Regulations, GLP)
Dermal	Not classified
	Guinea pig, LD ₅₀ = 19,670 mg/kg
Inhalation	Not available
(b) Skin Corrosion/ Irritation	Not classified
	- In a skin irritation/corrosion study, skin irritation was not observed. (erythema score=0, edema score=0) (OECD TG 404, GLP)
(c) Serious Eye Damage/ Irritation	Not classified
	In an acute ocular irritation study, DOTP may cause slight transient ocular irritation. The effects were fully reversible within 72hours. (OECD TG 405, GLP)
(d) Respiratory sensitization	Not available
(e) Skin Sensitization	Not classified
	In a dermal sensitization study, DOTP was found to be non-irritating. Only slight erythema was observed for one to seven subjects at any given time during the induction phase of the study and for only one subject during the challenge phase of the study. DOTP did not elicit contact dermal sensitization in any individual completing the study. (GLP)
(f) Carcinogenicity	Not classified
	IARC, NTP, OSHA, ACGIH, EU CLP: Not listed

(g) Mutagenicity	Not classified
	- <i>In vitro</i> : In an Ames reverse gene mutation assay in bacteria (<i>S. typhimurium</i> TA) (OECD TG 471, GLP), In a mammalian cell cytogenetics assay (Chinese hamster Ovary (CHO)) (OECD TG 473, GLP), In a mammalian cell gene mutation assay (Chinese hamster Ovary (CHO)) (OECD TG 476, GLP) (with and without Metabolic activation): negative - <i>In vivo</i> : Not available
(h) Reproductive toxicity	Not classified
	There were no adverse effects on mating performance, fertility, or reproductive organs in a 2-generation study in which 30 rats/sex/group/generation were exposed to DOTP at dose concentrations of 0, 3,000, 6,000, and 10,000 ppm. (reproductive toxicity: 10,000 ppm / parental toxicity: 3,000 ppm / neonatal toxicity: 3,000 ppm) (OECD TG 416, GLP)
(i) Specific target organ toxicity (single exposure)	Not classified
	In an acute oral toxicity study, Clinical abnormalities were limited to oily, unkempt inguinal hair for all animals on Days 1 and 2 of the study, and yellow discolored inguinal hair for two female rats on Day 1. No other clinical abnormalities were noted throughout the study. All rats gained weight over the 14-day observation period. (LD ₅₀ > 5,000 mg/kg bw) (TSCA FHSA Regulations, GLP)
(j) Specific target organ toxicity (repeat exposure)	Not classified
	In a subchronic dietary toxicity study, di (2-ethylhexyl) terephthalate was administered to 20 rats/sex/group at target concentrations of 0, 0.1, 0.5, and 1.0% continuously for 90 days. Toxicity related to the administration of di (2-ethylhexyl) terephthalate was limited to minor effects on red blood cell formation, and enlargement of the liver in both sexes at a dose concentration of 1.0%. There were no corresponding functional changes in the liver, no gross or microscopic liver changes, and no adverse effects on any clinical chemistry parameters that would indicate liver damage. (NOEL=0.5%, male: 277mg/kg bw/day, female: 309mg/kg bw/day) (GLP)
(k) Aspiration Hazard	Not available

12. Ecological information

12.1 Toxicity	
Acute toxicity	Not classified
	Fish: 96 hr LC ₅₀ (<i>Pimephales promelas</i>) > 984 mg/L (OECD TG 203) 7 d LC ₅₀ (<i>Salmo gairdneri</i>) > 0.25 mg/L (GLP) Invertebrate: 48 hr EC ₅₀ (<i>Daphnia magna</i>) > 0.0014 mg/L (OECD TG 202, GLP) Algae: 72 hr EC ₅₀ (<i>Selenastrum capricornutum</i>) > 0.86 mg/L (OECD TG 201, GLP)
Chronic toxicity	Not classified
	Fish: 60 day NOEC (<i>Oncorhynchus mykiss</i>) ≥ 0.28 mg/L (GLP) Invertebrate: 21 day NOEC (<i>Daphnia magna</i>) ≥ 0.00076 mg/L (OECD TG 211, GLP) 21 day EC ₅₀ (<i>Daphnia magna</i>) > 0.00076 mg/L (OECD TG 211, GLP) Algae: 72hr-NOEC ≥ 0.86 mg/L (<i>Selenastrum capricornutum</i> (new name: <i>Pseudokirchnerella subcapitata</i>))
12.2 Persistence and degradability	Persistence: High persistency (log Kow is more than 4 estimated.) (Log Kow = 8.39) (Estimated)

	Degradability: The atmospheric photodegradation half-life is 0.487days (5.84 daylight hours)
12.3 Bioaccumulative potential	Bioaccumulation: Bioaccumulation is expected to be low according to the BCF < 500 (BCF = 393) (Estimated) Biodegradation: As well-biodegraded, it is expected to have low accumulation potential in living organisms (73.05% biodegradation was observed after 28 day)
12.4 Mobility in soil	High potency of mobility to soil. (Koc = 3981072) (Estimated)
12.5 Hazardous to the ozone layer	Not classified
12.6 Other adverse effects	Not available

13. Disposal considerations

13.1 Disposal method

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

13.2 Disposal precaution

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

14. Transport information

14.1 UN No.: Not applicable

14.2 UN Proper shipping name: Not applicable

14.3 Transport Hazard class:

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 Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code): Not applicable

14.7 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 the substance or mixture USA Regulatory Information

TSCA (Toxic Substances Control Act): Section 8(b) inventory (Present)

Proposition 65: Not applicable

OSHA Regulation: Not regulated

CERCLA Regulation: Not regulated

SARA 311/312 Hazard classes: Not regulated

SARA 302 Regulation: Not regulated

SARA 304 Regulation: Not regulated

SARA 313 Regulation: Not regulated

Foreign Regulatory Information

Substance of Rotterdam Protocol: Not regulated

Substance of Stockholm Protocol: Not regulated

Substance of Montreal Protocol: Not regulated

Foreign Inventory Status

- Korea management information: Existing Chemical Substance (KE-02197),
- European management information: European Inventory of Existing Commercial chemical Substances(EINECS): Present (229-176-9)
- China management information: Inventory of Existing Chemical Substances (IECSC): Present (01783)
- Australia management information: Australian Inventory of Chemical Substances (AICS): Present
- Canada management information: Domestic Substances List (DSL): Present
- New Zealand management information: New Zealand Inventory of Chemicals (NZIoC): May be used as a component in a product covered by a group standard but it is not approved for use as a chemical in its own right
- Philippines management information: Philippine Inventory of Chemicals and Chemical Substances (PICCS): Present

16. OTHER INFORMATION**16.1 Indication of changes:**

Preparation date: June 20, 2016

Version: 3

Revision date: January 20, 2020

16.2 Key literature reference and sources for data:

- o TSCA; http://iaspub.epa.gov/sor_internet/registry/substreg/searchandretrieve/searchbylist/search.do
- o EU Regulation 1272/2008
- o TOMES;LOLI ; <http://csi.micromedex.com/fraMain.asp?Mnu=0>
- o UN Recommendations on the transport of dangerous goods 17th
- o IARC Monographs on the Evaluation of Carcinogenic Risks to Humans;<http://monographs.iarc.fr>
- o ECHA CHEM; <http://echa.europa.eu/web/guest/information-on-chemicals/registered-substances>
- o OECD SIDS; <http://webnet.oecd.org/>
- o HSDB; <http://toxnet.nlm.nih.gov/>
- o EPA; <http://www.epa.gov/iris>
- o NIOSH; www.cdc.gov/niosh/npg/npgd0018.html
- o EPISUITE Program ver.4.1

16.3 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

16.4 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.