



## Safety Data Sheet (SDS)

Revision / Review Date: 11-5-2014

### 1. Chemical Product and Company Identification

Product Name: DOTP  
Distributed By: HB Chemical  
1665 Enterprise Parkway  
Twinsburg Oh 44087  
Phone - 330-920-8023  
MSDS Prepared By (w Suppliers Input): HB Chemical  
Chemical Name / Family: Bis(2-ethylhexyl) terephthalate  
EC No: 229-176-9  
CAS No: 6422-86-2  
REACH Registration No: 01-2119446265-39-0006  
OSHA Status: Not Hazardous

For emergency health, safety, and environmental information, calls 330-920-8023  
For emergency transportation information, in the United States: call CHEMTREC at 800-424-9300

### 2. Hazard(s) Identification

#### Classification according to Regulation

(EC) no 1272/2008: Substance is not classified as dangerous.

Classification according to Directive 67/548/EEC: Substance is not classified as dangerous.

Hazard pictograms/Signal word: Not applicable.

Other hazards: The substance does not meet the criteria for PBT or vPvB substance.

### 3. Composition / Information on Ingredients

Product identifier type in accordance with Article 18(2) of Regulation (EC) No 1272/2008	Identifier number	Identification name	Weight % content (or range)	EC Number
CAS number	6422-86-2	Bis(2-ethylhexyl) terephthalate	98.5%	229-176-9
CAS number	63468-13-3	2-ethylhexyl methyl terephthalate	< 2.0%	264-249-9

HB Chemical 1665 Enterprise Parkway Twinsburg, Ohio 44087

Phone 330-920-8023 Fax 330-920-0971

[www.hbchemical.com](http://www.hbchemical.com)

#### 4. First Aid Measures

<u>Inhalation:</u>	If symptoms develop, move victim away from exposure and into fresh air. Get medical attention if symptoms persist.
<u>Eyes:</u>	Flush eyes with copious quantities of water while holding open. If easy to do, remove contact lenses. Consult physician if symptoms persist.
<u>Skin:</u>	Wash exposed area with soap and water. If irritation persists, consult a physician.
<u>Ingestion:</u>	Seek medical advice.
<u>Most important symptoms and effects, both Acute and delayed:</u>	No data available.

#### 5. Fire-Fighting Measures

<u>Suitable Extinguishing Media:</u>	Water spray, dry chemical, carbon dioxide, foam. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
<u>Unsuitable extinguishing media:</u>	No data available.
<u>Special hazards arising from the substance or mixture:</u>	Material may accumulate a static charge which could act as an ignition source. Hazardous Combustion products: Carbon dioxide, carbon monoxide.
<u>Advice for firefighters:</u>	Wear self-contained breathing apparatus and protective clothing.

#### 6. Accidental Release Measures

<u>For non-emergency personnel:</u>	Avoid inhalation and contact with skin, eyes and clothing. Wear appropriate personal protective equipment as specified in Section 8. Ensure adequate ventilation.
<u>For emergency responders:</u>	No data available.
<u>Environmental precautions:</u>	Avoid dispersal of spilled material and contact with soil, ground and surface water, drains and sewers.
<u>Methods and material for containment and cleaning up:</u>	Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. For Larger spills; Flush spill area with water spray. Prevent runoff from entering drains. Sewers or streams. Dike for later disposal. Reclaim or dispose of in accordance with local, state, and federal regulations

## **7. Handling and Storage:**

### **Precautions for safe handling:**

No special precautionary health measures should be needed under anticipated conditions of use.

### **Conditions for safe storage, Including any incompatibilities:**

Keep container closed. Keep from contact with oxidizing materials.

## **8. Exposure Controls / Personal Protection**

### **Control parameters:**

Community workplace exposure limits were not established.

### **DNELs:**

Exposure pattern	DNEL	
	Workers	General Population
Long-term – inhalation, systemic	23.2 mg/m <sup>3</sup>	6.86 mg/m <sup>3</sup>
Long-term – dermal, systemic	6.58 mg/kg bwt/day	3.95 mg/kg/day
Long-term – oral, systemic	not relevant	3.95 mg/kg/day

### **PNECs:**

PNEC <sub>freshwater</sub>	0.08 mg/l
PNEC <sub>marine-water</sub>	0.008 mg/l
PNEC <sub>intermittent</sub>	0.014 mg/l
PNEC <sub>freshwater sediment</sub>	1.8 mg/kg wet wt
PNEC <sub>marine sediment</sub>	0.18 mg/kg wet wt
PNEC <sub>soil</sub>	13.2 mg/kg wet wt
PNEC <sub>STP microbes</sub>	1.0 mg/l
PNEC <sub>Coral</sub>	52.7 mg/kgfood

### **Exposure Controls:**

#### **Appropriate engineering controls:**

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. Supplementary local exhaust ventilation, closed systems, or respiratory and eye protection may be needed in special circumstances: such as poorly ventilated spaces, heating, evaporation of liquids from large surfaces, spraying of mists, mechanical generation of dusts, drying of solids, etc.

#### **Respiratory Protection:**

If engineering controls do not maintain airborne concentration below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Respirator type: Air purifying respirator with an appropriate, government approved (where applicable), air-purifying filter, cartridge or canister. Contact health and safety professional or manufacturer for specific information.

#### **Thermal hazards:**

The substance does not represent a thermal hazard, thus special consideration is not required.

#### **Eye Protection:**

It is a good industrial hygiene practice to minimize eye contact.

<u>Skin and Body Protection:</u>	It is a good industrial hygiene practice to minimize skin contact.
<u>Environmental exposure controls:</u>	Avoid dispersal of spilled material and contact with soil, ground and surface water drains and sewers.
<u>Decontamination Facilities:</u>	Eye bath, washing facilities (sinks / showers)

## 9. Physical and Chemical Properties

<b>Appearance:</b>	colorless liquid (at room temperature)
<b>Odour:</b>	mild odour
<b>Odour threshold:</b>	no data available
<b>pH:</b>	no data available
<b>Melting point/freezing point:</b>	$\leq -67.2^{\circ}\text{C}$ (at 1 atm)
<b>Initial boiling point and boiling range:</b>	$375 \pm 5^{\circ}\text{C}$ (extrapolated to 101.325 Pa)
<b>Flash point:</b>	$212 \pm 2^{\circ}\text{C}$ (closed cup at 101.325 kPa)
<b>Evaporation rate:</b>	no data available
<b>Flammability (solid, gas):</b>	in accordance with REACH Annex XI, the analysis need not be conducted as, concluded from structural analysis, and experience in handling and use, material is not pyrophoric nor is it flammable upon contact with water
<b>Upper/lower flammability or explosive limits:</b>	no data available
<b>Vapour pressure:</b>	0.001 Pa (at $25^{\circ}\text{C}$ )
<b>Vapour density:</b>	no data available
<b>Relative density:</b>	$0.98 \pm 0.0001 \text{ g/cm}^3$ (density at $20^{\circ}\text{C}$ )
<b>Solubility(ies):</b>	water solubility: 0.4 ug/L
<b>Partition coefficient: n-octanol/water:</b>	Log Pow = 5.72 (method equivalent to OECD 107 guideline)
<b>Auto-ignition temperature:</b>	$387 \pm 5^{\circ}\text{C}$ (at 98 kPa)
<b>Decomposition temperature:</b>	no data available
<b>Viscosity:</b>	65.8 mPa s (dynamic) (at $25^{\circ}\text{C}$ )
<b>Explosive properties:</b>	no explosiveness potential (no functional groups present with explosive properties per Annex VII 7.11)
<b>Oxidising properties:</b>	none (the material is incapable of reacting exothermically with combustibles)

**9.2 Other information:** Surface tension:  $32.7 \pm 1 \text{ mN/m}$  (at  $22^{\circ}\text{C}$ ).

## 10. Stability and Reactivity

<u>Stability:</u>	This product is stable under normal conditions.
<u>Incompatibility (Materials to Avoid):</u>	Material reacts with strong oxidizing agents
<u>Conditions to Avoid:</u>	No data available.
<u>Hazardous Polymerization:</u>	Hazardous polymerization will not occur



## **11. Toxicological Information**

### **Acute toxicity:**

The substance is not classified for acute toxicity according to Regulation (EC) No 1272/2008. No significant clinical signs, body weight changes or gross or microscopic observations to indicate systemic toxicity were observed by any route of exposure.

#### **Acutetoxicity:oral**

*Method:* TSCA FHSA Regulations (1979): 16 CFR Part 1500.40 (Hazardous Substances and Articles, Administration and Enforcement Regulations)

*Species:* rat (CD(SD)BR VAF/Plus) male/female

*Routes of administration:* oral: gavage

*Results:* LD50: > 5000 mg/kg bw (male/female)

#### **Acutetoxicity:dermal**

*Method:* Internal Eastman Kodak method (Method is an in vivo study using three guinea pigs. Following depilation of the abdomen of each animal, a single dose of the test substance is applied under an occlusive wrap for 24 hours. Animals are observed following removal of the cuff, and on Days 7 and 14. In addition to observations for mortality, dermal reactions and weight changes were also recorded.)

*Species:* guinea pig

*Routes of administration:* coverage: occlusive

*Results:* LD50: > 20 mL/kg bw

### **Skin corrosion/irritation:**

The substance is not classified for skin corrosion/irritation according to Regulation (EC) No 1272/2008.

#### **Humandata**

*Method:* The test substance was evaluated in 18 test subjects. Subjects were patched dermally on the back under semi-occlusive patches with 0.2 mL of five dilutions of the test substance in acetone. Subjects were patched three times over a period of five days (Days 1, 3, and 5). The subjects removed the patches after 24 hours, and scoring of patch sites for irritation was made prior to applications on Days 3 and 5 and on Day 8. Dermal reactions, if any, were assessed to determine the primary irritation potential of the test substance. The clinical investigation was reviewed by an Institutional Review Board in accordance with CFR, Title 21, Parts 50 and 56.

*Coverage:* semiocclusive

*Species:* human

*Results:* not irritating

#### **Animaldata**

*Method:* OECD Guideline 404 (Acute Dermal Irritation / Corrosion)

*Coverage:* semiocclusive (Fur was clipped from the dorsal and trunk areas the day before application)

*Species:* rabbit (New Zealand White)

*Results:* not classified (No erythema was observed at any time at any of the treated sites. No edema was observed at any time at any of the treated sites.)

**Serious eye damage/irritation:**

The substance is not classified for eye damage/irritation according to Regulation (EC) No 1272/2008.

*Method:* OECD Guideline 405 (Acute Eye Irritation / Corrosion)

*Species:* rabbit (New Zealand White)

*Results:* minimally irritating

**Respiratory irritation:**

The substance is not classified for respiratory irritation according to Regulation (EC) No 1272/2008.

There were no clinical signs indicative of respiratory tract irritation in rats following repeated exposures to the highest airborne concentrations of di (2-ethylhexyl) terephthalate that could be generated by heating the test material to 95°C. Following exposure for 5 days/week, 6 hours/day for 10 days over a 14-day period, there was no gross or microscopic evidence of irritation in the lungs or trachea. In addition, di (2-ethylhexyl) terephthalate is not classified as an eye or skin irritant.

**Skin sensitization:**

The substance is not classified for skin sensitization according to Regulation (EC) No 1272/2008.

**Humandata**

*Method:* HRIPT (modified Draize procedure)

*Species:* human male/female

*Routes of administration:* Induction: epicutaneous, semioclusive; Challenge: epicutaneous, open

*Results:* not sensitising

**Respiratory sensitization:**

No information available on respiratory sensitization.

**Germ cell mutagenicity:**

The substance is not classified for germ cell mutagenicity according to Regulation (EC) No 1272/2008.

**Bacterial reverse mutation assay (e.g. Amestest) (gene mutation)**

*Method:* OECD Guideline 471 (Bacterial Reverse Mutation Assay)

*Species/strain:* S. typhimurium TA1535, TA1537, TA98 and TA100 (met. act.: with and without), S. typhimurium TA 1538 (met. act.: with and without)

*Doses:* Screening Study: 10 doses from 0.32 to 10000 µg/plate

Mutagenicity Study: 1.0, 10, 100, 1000, 10000 µg/plate

*Results:*

negative for S. typhimurium TA 1535, TA 1537, TA 98 and TA 100 (all strains/cell types tested); met. act.: with and without; cytotoxicity: No cytotoxicity was observed at concentrations up to 10,000 micrograms/plate.

negative for S. typhimurium TA 1538 (all strains/cell types tested); met. act.: with and without; cytotoxicity: No cytotoxicity was observed at concentrations up to 10,000 micrograms/plate.

**Mammalian cell gene mutation assay (gene mutation)**

*Method:* OECD Guideline 476 (In vitro Mammalian Cell Gene Mutation Test)



*Species/strain:* Chinese hamster Ovary (CHO) (met. act.: with and without)

*Doses:*

Preliminary cytotoxicity assay: 0, 0.001, 0.002, 0.005, 0.01, 0.02, 0.039, 0.078, 0.156, 0.313, 0.625, 1.25, 2.5, 5, 10, and 20 nL/mL

Mutation Assay: 0, 1.25, 2.5, 5, 10, 20 nL/ml

*Results:*

negative for Chinese hamster Ovary (CHO)(all strains/cell types tested); met. act.: with and without; cytotoxicity: yes

Bacterial forward mutation assay (gene mutation)

*Method:* OECD Guideline 471 (Bacterial Reverse Mutation Assay)

*Species/strain:* S. typhimurium TA1535, TA1537, TA98 and TA100 (met. act.: with and without), S. typhimurium TA 1538 (met. act.: with and without)

*Doses:*

Initial Toxicity Test: 0, 0.3164, 1.0, 3.164, 10.0, 31.64, 100.0, 316.4, 1000.0, 3164.0, and 10000.0 µg/plate

Mutagenicity Test: 0, 1.0, 10.0, 100.0, 1000.0, and 10000.0 µg/plate

*Results:*

negative for S. typhimurium TA 1535, TA 1537, TA 98 and TA 100 (all strains/cell types tested); met. act.: with and without; cytotoxicity: no

negative for S. typhimurium TA 1538 (all strains/cell types tested); met. act.: with and without; cytotoxicity: no

In vitro mammalian chromosome aberration test (chromosome aberration)

*Method:* OECD Guideline 473 (In vitro Mammalian Chromosome Aberration Test)

*Species/strain:* Chinese hamster Ovary (CHO) (met. act.: with and without)

*Doses:*

Preliminary range-finding study: 0, 100, 333, 1000 nL/mL

Chromosome Aberration study: 0, 700, 800, 900, and 1000 nL/mL

*Results:*

negative for Chinese hamster Ovary (CHO)(all strains/cell types tested); met. act.: with and without; cytotoxicity: No cytotoxicity was observed at concentrations up to 1000 nL/mL.

**Carcinogenicity:**

The substance is not classified for carcinogenicity according to Regulation (EC) No 1272/2008.

*Method:* EPA OPPTS 870.4200 (Carcinogenicity)

*Species/strain:* rat (Fischer 344) male/female

*Routes of administration:* oral: feed

*Doses:*

1500 ppm (Based on feed consumption and analytical concentration, equivalent to 79 and 102 mg/kg/day in males and females, respectively)

6000 ppm (Based on feed consumption and analytical concentration, equivalent to 324 and 418 mg/kg/day in males and females, respectively)

12000 ppm (Based on feed consumption and analytical concentration, equivalent to 666 and 901 mg/kg/day in males and females, respectively)

*Exposure:* 104 weeks (ad libitum in the diet for 104 weeks)

*Results:*

NOEL (carcinogenicity): 12000 ppm (analytical) (male/female) (There was no effect on tumor incidence caused by the test substance at any dose level tested.)



NOEL (toxicity): 1500 ppm (analytical) (male/female) (Toxicity was limited to low weight gain and food conversion efficiency in male and females receiving 6000 or 12000 ppm and ocular changes in females receiving 6000 or 12000 ppm.)

NOEL (testicular toxicity): 12000 ppm (analytical) (male) (No adverse changes were observed in the testes during the study.)

NOEL (liver toxicity): 12000 ppm (analytical) (male/female) (There were increased liver weights in the study but no adverse histopathological findings and the increased liver weight was considered only an adaptive response to the test substance.)

Neoplastic effects observed in any test group: no effects.

#### **Reproductive toxicity:**

The substance is not classified for reproductive toxicity according to Regulation (EC) No 1272/2008. Effects

##### onfertility

*Method:* OECD Guideline 416 (Two-Generation Reproduction Toxicity Study), EPA OPPTS 870.3800 (Reproduction and Fertility Effects)

*Species:* rat (Sprague-Dawley) male/female

*Routes of administration:* oral: feed

*Doses:* 10,000, 6,000, 3,000, or 0 ppm

*Exposure:* All F0 animals were treated for a minimum of 70 days prior to mating until necropsy (approximately 16-18 weeks total). This process was repeated for the chosen offspring of the F0 generation (F1 animals). (Daily (ad libitum))

##### *Results:*

NOAEL (for reproductive toxicity): 10000 ppm (male/female) (No reproductive toxicity was observed in this study; gonadal function, estrous cyclicity, mating behavior, conception, gestation and parturition, and spermatogenic endpoints, were unaffected by test substance administration.)

NOAEL (for parental toxicity): 3000 ppm (male/female) (The highest concentration, 10000 ppm, resulted in mortality in both the F0 and the F1 parental animals. Since spontaneous deaths are rare in the rat, it was assumed that the mortality was test-substance related. Mean weekly body weights were reduced for both males and females in the 10000 ppm group throughout the F1 generation and for F1 males in the 6000 ppm group beginning on study week 23. Increases in mean absolute (F0 females) and in mean relative (to final body weight) liver weights (F0 and F1 females) were observed in the 6000 and 10000 ppm groups.)

NOAEL (for neonatal toxicity): 3000 ppm (male/female) (Mean F1 male and female offspring weights and weight gains in the 6000 and 10000 ppm groups were reduced throughout the preweaning period. In the F2 offspring, neonatal toxicity was also exhibited by reduced offspring weight gains in the 6000 and 10000 ppm groups during lactation.)

##### Developmental toxicity

*Method:* OECD Guideline 414 (Prenatal Developmental Toxicity Study), EPA OPPTS 870.3700 (Prenatal Developmental Toxicity Study)

*Species:* rat (Sprague-Dawley)

*Routes of administration:* oral: feed

*Doses:* Concentrations of 3000, 6000, and 10000 ppm (0.3, 0.6, and 1.0%, respectively) test substance in the diet produced mean dose levels of 226, 458, and 747 mg/kg/day for female rats treated during gestation.

*Exposure:* Days 0 to 20 of gestation (Daily (ad libitum))



*Results:*

NOAEL (maternal toxicity): 6000 ppm (Test substance related effects included reductions in mean maternal body weight gain on gestation days 16-20, which subsequently slightly reduced net body weights, and net body weight gains in the 10000 ppm group. Also, increased liver weights were observed at necropsy in 10000 ppm females (18.16 g vs. 16.76 g in the control).)

NOAEL (teratogenicity): 10000 ppm (Intrauterine growth and survival and fetal malformations were unaffected by test substance administration at any dose level. There was an increased occurrence of rudimentary 14th ribs observed in the 10000 ppm group; this was considered test substance-related, but was not considered an adverse effect. No other test substance-related developmental variations were observed at any dose level.)

Developmental toxicity

*Method:* Redbook 2000 Guideline IV.C.9.b, EPA OPPTS 870.3700 (Prenatal Developmental Toxicity Study), OECD Guideline 414 (Prenatal Developmental Toxicity Study), ICH Guideline Section 4.1.3

*Species:* mouse (CD-1)

*Routes of administration:* oral: feed

*Doses:* 1000, 3000, 7000 ppm (197, 592 and 1382 mg/kg/day) (actual ingested)

*Exposure:* Gestation Days 0-18 (continuous)

*Results:*

NOEL (maternal toxicity): 1000 ppm (Maternal toxicity was evidenced by higher mean absolute liver weights at the 3000 and 7000 ppm dosage levels.)

NOEL (teratogenicity): 7000 ppm (Intrauterine growth and survival were unaffected at all dosage levels.)

**STOT-single exposure:**

Substance is not classified for specific target organ toxicity after single exposure according to Regulation (EC) No. 1272/2008. No significant clinical signs, body weight changes or gross or microscopic observations to indicate systemic toxicity were observed by any route of exposure

**STOT-repeated exposure:**

The substance is not classified for repeated dose toxicity according to Regulation (EC) No 1272/2008.

Repeated dose toxicity: oral

*Method:* EPA guideline 799.9310 TSCA "90-Day Oral Toxicity Study in Rodents"

*Species:* rat (Sprague-Dawley) male/female

*Routes of administration:* oral: feed

*Doses:* 0.1% (54 mg/kg bw/day male and 61 mg/kg bw/day female) nominal in diet  
0.5% (277 mg/kg bw/day male and 309 mg/kg bw/day female) nominal in diet  
1.0% (561 mg/kg bw/day male and 617 mg/kg bw/day female) nominal in diet

*Exposure:* approximately 90 days (ad libitum)

*Results:*

NOEL: 277 mg/kg/day (male) (Alterations that were observed following consumption of the test substance included minor effects on red blood cell formation, and enlargement of the liver (11.2% increase relative to body weight) at a dose concentration of 1.0% (equivalent to 561 mg/kg bw/day).)

NOEL: 309 mg/kg/day (female) (Alterations that were observed following consumption of the test substance included minor effects on red blood cell formation, and enlargement



of the liver (8.9% increase relative to body weight) at a dose concentration of 1.0% (equivalent to 617 mg/kg bw /day).)

**Repeateddose toxicity: inhalation**

**Method:** no guideline followed - Five male albino rats per group were exposed to 0 or a mean of 0.0718 mg/L of di (2-ethylhexyl) terephthalate by inhalation 5 days/week 6 hours/day for 10 consecutive weekdays over a 14-day period. Three days after the last inhalation exposure, blood was taken for hematology and clinical chemistry evaluations, animals were weighed and euthanized, a gross necropsy was performed, organs were weighed, and a microscopic analysis was performed.

**Species:** rat (Sprague-Dawley) male

**Routes of administration:** inhalation (whole body)

**Exposure:** 6 hours per day (5 days/week over a 14-day period)

**Results:** NOEL: 0.0718 mg/L air (male) (No compound related effects were found after inhalation exposure to di (2-ethylhexyl) terephthalate at the highest concentration that could be generated by heating the test substance to 95 °C.)

**Repeateddose toxicity: dermal**

**Method:** no guideline followed - Undiluted di (2-ethylhexyl) terephthalate was applied 9 times over 11 days to the clipped skin of 5 guinea pigs. The 0.5 mL dose applied equates to 813 to 1144 mg/kg bw/day. Animals were observed for clinical abnormalities and body weight changes. No necropsy was performed at study termination.

**Species:** guinea pig (Dunkin-Hartley)

**Routes of administration:** coverage: open

**Exposure:** once daily (9 applications over an 11 day period)

**Results:** No deaths, signs of skin absorption or systemic toxicity were evident when guinea pigs were exposed to 0.5 mL of undiluted di (2-ethylhexyl) terephthalate (equating to 813 - 1144 mg/kg bw/day) for 9 exposures over an 11 day period. There were no gross or microscopic examinations conducted in this study.

**Aspiration hazard:**

The substance is not classified for aspiration hazard according to Regulation (EC) No 1272/2008.

**12. Ecological Information**

**Toxicity:**

The substance is not classified as hazardous to the aquatic environment according to Regulations (EC) No 1272/2008

**Short-term toxicity to fish**

LC<sub>50</sub> (96h) for freshwater fish (*Pimephales promelas*), static: > 984 mg/L test mat. (nominal)

LC<sub>50</sub> (7d) for freshwater fish (*Salmo gairdneri*), flow-through: > 0.25 mg/L test mat. (arithm. mean)

NOEC (7d) for freshwater fish (*Salmo gairdneri*), flow-through: ≥ 0.25 mg/L test mat. (arithm. mean)

**Long-term toxicity to fish**

NOEC (60d) for freshwater fish (*Oncorhynchus mykiss* (reported as *Salmo gairdneri*)), embryo and sac-fry stage: (sub)lethal effects, flow-through: ≥ 0.28 mg/L test mat. (meas. (arithm. mean)) based on: weight



NOEC (60d) for freshwater fish (*Oncorhynchus mykiss* (reported as *Salmo gairdneri*)), embryo and sac-fry stage: (sub)lethal effects, flow-through:  $\geq 0.28$  mg/L test mat. (meas. (arithm. mean)) based on: length

NOEC (11d) for freshwater fish (*Oncorhynchus mykiss* (reported as *Salmo gairdneri*)), embryo and sac-fry stage: (sub)lethal effects, flow-through:  $\geq 0.28$  mg/L test mat. (meas. (arithm. mean)) based on: number hatched

NOEC (60d) for freshwater fish (*Oncorhynchus mykiss* (reported as *Salmo gairdneri*)), embryo and sac-fry stage: (sub)lethal effects, flow-through:  $\geq 0.28$  mg/L test mat. (meas. (arithm. mean)) based on: mortality

#### Short-term toxicity to aquatic invertebrates

EC<sub>50</sub> (48h) for freshwater invertebrates (*Daphnia magna*), static:  $> 1.4$   $\mu$ g/L test mat. (meas. (geom. mean)) based on: mobility

EC<sub>50</sub> (96h) for saltwater invertebrates (*Crassostrea virginica*), flow-through:  $> 624$   $\mu$ g/L test mat. (meas. (arithm. mean)) based on: Shell deposition

#### Long-term toxicity to aquatic invertebrates

NOEC (21d) for freshwater invertebrates (*Daphnia magna*), flow-through:  $\geq 0.76$   $\mu$ g/L act. ingr. (meas. (arithm. mean)) based on: survival, reproduction, and growth

LOEC (21d) for freshwater invertebrates (*Daphnia magna*), flow-through:  $> 0.76$   $\mu$ g/L act. ingr. (meas. (arithm. mean)) based on: survival, reproduction, and growth

#### Toxicity to algae/aquatic plants

EC<sub>50</sub> (72h) for freshwater algae (*Selenastrum capricornutum* (new name: *Pseudokirchnerella subcapitata*), static:  $> 0.86$  mg/L test mat. (meas. (geom. mean)) based on: growth rate

EC<sub>50</sub> (72h) for freshwater algae (*Selenastrum capricornutum* (new name: *Pseudokirchnerella subcapitata*), static:  $> 0.86$  mg/L test mat. (meas. (geom. mean)) based on: biomass

NOEC (72h) for freshwater algae (*Selenastrum capricornutum* (new name: *Pseudokirchnerella subcapitata*), static:  $\geq 0.86$  mg/L test mat. (meas. (geom. mean)) based on: growth rate

NOEC (72h) for freshwater algae (*Selenastrum capricornutum* (new name: *Pseudokirchnerella subcapitata*), static:  $\geq 0.86$  mg/L test mat. (meas. (geom. mean)) based on: biomass

#### Toxicity to sediment organisms

NOEC (28d) for freshwater sediment organisms (*Chironomus riparius*), static: 180 mg/kg sediment dw test mat. (nominal) based on: emergence rate

EC<sub>50</sub> (28d) for freshwater sediment organisms (*Chironomus riparius*), static:  $> 1000$  mg/kg sediment dw test mat. (nominal) based on: development rate

EC<sub>50</sub> (28d) for freshwater sediment organisms (*Chironomus riparius*), static:  $> 1000$  mg/kg sediment dw test mat. (nominal) based on: emergence rate

#### Toxicity to terrestrial plants

EC<sub>50</sub> (14d) for terrestrial plants (*Raphanus sativus* (Dicotyledonae (dicots))):  $> 1400$   $\mu$ g/L test mat. (nominal) based on: growth

EC<sub>50</sub> (14d) for terrestrial plants (*Lolium perenne* (Monocotyledonae (monocots))):  $> 1400$   $\mu$ g/L test mat. (nominal) based on: growth

EC<sub>50</sub> (14d) for terrestrial plants (*Glycine max* (*G. soja*) (Dicotyledonae (dicots))): > 1500 µg/L test mat. (nominal) based on: growth

Toxicity to aquatic micro-organisms

NOEC (3h), activated sludge of a predominantly domestic sewage: ≥ 10 mg/L test mat. (nominal) based on: respiration rate

EC<sub>50</sub> (3h), activated sludge of a predominantly domestic sewage: > 10 mg/L test mat. (nominal) based on: respiration rate

Persistence and degradability:

Hydrolysis: The mass balance data indicate that even at 50°C little if any hydrolysis of bis(2-ethylhexyl) terephthalate occurs in the pH range of 4 to 9. This is supported by SPARC calculations that indicate that hydrolysis is unlikely to occur.

Biodegradation in water: Substance is considered to be readily biodegradable.

Ready biodegradability (OECD 301 B (Ready Biodegradability: CO<sub>2</sub> Evolution Test)), activated sludge, domestic, non-adapted: 73.05% after 28 d (CO<sub>2</sub> evolution) Degradation

rate in water: First Order Rate Constant:  $4.7 \times 10^{-2}$  days<sup>-1</sup>; Half-Life: 15 days Degradation

rate in sediment: First Order Rate Constant:  $2.3 \times 10^{-7}$  days<sup>-1</sup>

Degradation rate in soil: First Order Rate Constant:  $2.3 \times 10^{-6}$  days<sup>-1</sup>

Bio accumulative potential:

The measured bio concentration factor (BCF) in the saltwater species, *Crassostrea virginica*, was determined to be 393 L/kg, and represents a moderate potential for bio concentration in this species.

Mobility in soil:

log K<sub>oc</sub>: 5.07-6.6 (QSAR)(5.43 and 5.07 USEPA Episuite, 6.6 ACD Labs).

Results of PBT and vPvB assessment:

Based on the assessment substance is not considered as PBT/vPvB.

Other adverse effects:

No data available.

**13. Disposal Considerations**

Reclaim or Dispose of material in accordance with all applicable local, state, and federal regulations.

**14. Transport Information**

D.O.T. Shipping Name Not applicable

Air - ICAO (International Civil Aviation Organization) Not regulated

Sea - IMDG (International Maritime Dangerous Goods) Not regulated

**15. Regulatory Information**

Safety, health and environmental regulations/legislation specific for the substance or mixture:

HB Chemical 1665 Enterprise Parkway Twinsburg, Ohio 44087

Phone 330-920-8023 Fax 330-920-0971

[www.hbchemical.com](http://www.hbchemical.com)



Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/;

Regulation (EC) No 1272/2008 of the European parliament and of the Council of 16 December 2008 on classification, labeling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006;

COMMISSION REGULATION (EU) No 453/2010 of 20 May 2010 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH);

COUNCIL DIRECTIVE of 27 June 1967 on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances (67/548/EEC).

Authorisations: not required

Restrictions on use: none

Chemical safety assessment:

A chemical safety assessment has been carried out for this Substance.

## 16. Other Information

Abbreviations:

BCF: bioconcentration factor  
DNEL: derived no effect level  
EC<sub>50</sub>: median effective concentration  
LC<sub>50</sub>: median lethal concentration  
LD<sub>50</sub>: median lethal dose  
LOEC: lowest observed effect concentration  
NOAEL: no observed adverse effect level  
NOEC: no observed effect concentration  
NOEL: no observed effect level  
PBT: persistent, bioaccumulative, toxic chemical  
PNEC: predicted no-effect concentration  
vPvB: very persistent, very bioaccumulative chemical

Description of identified uses:

End-Use Segment	Life Cycle Stage	SU	PC	PROC	AC	ERC
Own Manufacture (ESIG)	Ind. Manufacturing	SU8, 9	-	PROC1, 2, 3, 4, 8a, 8b, 15	-	ERC1

ALL (non plast.)	Formulation	SU10	-	PROC1, 2, 3, 4, 5, 8a, 8b, 9, 14, 15	-	ERC2,3
ALL	Distribution & Storage	SU10	-	PROC1, 2, 3, 4, 5, 8a, 8b, 9, 15	-	ERC 2
Adhesives and Sealants (FEICA)	Ind. Manufacturing	SU3		PROC1, 2, 3, 4, 5, 7, 8a, 8b, 9, 10, 13		ERC5
Coatings & Inks (CEPE)	Ind. Manufacturing	SU3, 7	-	PROC1, 2, 3, 4, 5, 7, 8a, 8b, 10	-	ERC5
	Professional	SU22	-	PROC2, 3, 4, 5, 8a, 10, 11, 19	-	ERC8c, 8f
	Consumer	-	PC9a	-	-	ERC8c, 8f
Construction formulation additives	Professional	SU19, 22	-	PROC5, 8b, 10	-	ERC8c, 8f
	Consumer	SU21	PC1-B2	-	-	ERC8c, 8f, 10a, 11a
Plasticizer (plastisol)	Formulation	SU10	-	PROC1, 2, 3, 4, 5, 8a, 8b, 9, 14, 15	-	ERC2
	Ind. Manufacturing	SU3	-	PROC1, 2, 3, 5, 8a, 8b, 10, 13	-	ERC4, 5
	Professional	SU19, 22	-	PROC3, 5, 8a, 10, 19	-	ERC8c, 8f
	Consumer	SU21	PC32	-	AC5-2, 10, 13-2, 13-3	ERC10a, 11a
Plasticizer (pvc articles)	Formulation	SU10		PROC1, 2, 3, 4, 5, 6, 8a, 8b, 9, 14, 15		ERC2
	Ind. Manufacturing	SU3		PROC3, 4, 5, 8a, 8b, 9, 14, 21, 24		ERC3
	Consumer	SU21	PC32		AC5-1, 10, 13	ERC10a, 11a
Laboratory use	Professional	SU22		PROC15	-	ERC8a, 9a

The above information has been compiled from what we believe to be credible sources. To our knowledge the information is accurate and reliable, however, it is not guaranteed. Any recommendations issued by HB Chemical personnel or literature is derived from experience and by no means should be taken as fact or construed as a recommendation to violate of any law, regulation or patent. It is the users responsibility to determine the suitability of any HB supplied material in their application. The individual conditions of each customer are well outside of our control and we cannot be held liable for its functionality and use. Please contact our office should you need specific information beyond what is supplied above. As with all Chemical usage safety precautions beyond the stated are highly recommended.