



Safety Data Sheet

1. PRODUCT IDENTIFICATION

Name	Diethyl Phthalate
Synonyms	diethyl-1,2-benzenedicarboxylate; phthalic acid, diethyl ester
CAS#	84-66-2
Europe EC#	201-550-6
Product Uses	plasticiser

2. HAZARDS

Quick Guide:	<i>not hazardous</i>
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Canada – WHMIS

Key:

not controlled under WHMIS

B 2 – Flash Point <38°C, B 3 – Flash Point >38°C & <93°C
D 1 – Immediately Toxic, D 2 – Chronic Toxicity
C – Oxidising Substance, E – Corrosive, F – Reactive Substance

U.S.A. – HMIS

Key:

Health – 0, Fire – 1, Reactivity – 0

0=minimal, 1=slight, 2=moderate, 3=serious, 4=severe

3. COMPOSITION

	%	TWAEV / TLV mg/m ³	LD ₅₀ (mg/kg) ORAL	LD ₅₀ (mg/kg) SKIN	LC ₅₀ ppm INHALATION
Phthalic Acid, Diethyl Ester	100%	0.55 / 5	6170*	>22,400	>625

* See Part 11, below.

4. FIRST AID

SKIN:	Wash with soap & plenty of water. Remove contaminated clothing and do not reuse until thoroughly cleaned or laundered.
EYES:	Wash eyes with plenty of water, holding eyelids open. Seek medical assistance promptly if there is irritation.
INHALATION:	Remove from contaminated area promptly. CAUTION: Rescuer must not endanger himself! If breathing stops, administer artificial respiration and seek medical aid promptly.
INGESTION:	Give plenty of water to dilute product. Do not induce vomiting (NOTE below). Keep victim quiet. If vomiting occurs, lower victim's head below hips to prevent inhalation of vomited material. Seek medical help promptly.

Inadvertent inhalation of vomited material may seriously damage the lungs. The danger of this is greater than the risk of poisoning through absorption of this relatively low-toxicity substance. The stomach should only be emptied under medical supervision, and after the installation of an airway to protect the lungs.

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5. FIRE FIGHTING & FLAMMABILITY

Flash Point	161°C / 322°F (closed cup)
Autoignition Temperature	457°C / 855°F
Flammable Limits	0.7% – upper limit unknown
Combustion Products	carbon monoxide, nitrogen oxides, smoke, part oxidised hydrocarbon fragments
Fire Fighting Precautions	as for materials sustaining fire; foam, dry chemical, or CO ₂ are good choices, product floats on water – water jet spreads flames; fire fighters must wear SCBA
Static Charge Accumulation	probably cannot accumulate a static charge on agitation or pumping; <i>high flash point makes ignition by means of static discharge highly improbable</i>

6. ACCIDENTAL RELEASE MEASURES

Leak Precaution	dyke to control spillage and prevent environmental contamination
Handling Spill	ventilate contaminated area; recover free liquid with suitable pumps; absorb residue on an inert sorbent, sweep & pick up using plastic or aluminium shovel, & store in closed containers for recycling or disposal

7. HANDLING & STORAGE

Store in a cool, dry environment, away from sources of ignition, acids and oxidising agents. Empty containers may contain a flammable / explosive vapour. Always ensure that containers, empty, full, or part full, are tightly sealed unless in use.

Never cut, drill, weld or grind on or near this container. Avoid prolonged contact with skin and wash work clothes frequently. An eye bath and safety shower should be available near the workplace.

NOTE: Many phthalates appear to alter the action of sex hormones in the fetus and in young children. Although there is less evidence of an effect in adults, it is prudent to minimise skin contact with these substances. (see also NOTE in Part 11)

8. EXPOSURE CONTROL & PERSONAL PROTECTION

Ontario TWAEV	5mg/m ³
ACGIH TLV	5mg/m ³
OSHA PEL	5mg/m ³
Ventilation	no special ventilation required; ventilation required to clear any visible product mist
Hands	no special protective gloves required; butyl, nitrile or “Viton” gloves are resistant – <i>consult supplier to confirm suitability</i>
Eyes	safety glasses with side shields – <i>always protect the eyes</i>
Clothing	no special protective clothing required

9. PHYSICAL PROPERTIES

Odour & Appearance	clear, viscous, colourless to pale yellow liquid with very faint odour and a bitter taste
Odour Threshold	not known
Vapour Pressure	1.65x10 ⁻³ mmHg / 2.2x10 ⁻⁴ kPa (25°C / 77°F)
Evaporation Rate (<i>Butyl Acetate = 1</i>)	not known – <i>not volatile</i>
Vapour Density (air = 1)	7.7
Boiling Range	298°C / 568°F
Freezing Point	-40.5°C / -41°F
Specific Gravity	1.120 (25/25°C)
Water Solubility	1.1 grams per litre
Also soluble in	ethers, ethanol, ketones, esters aromatic hydrocarbons; slightly in aliphatic hydrocarbons
Viscosity	~30centipoise (0°C / 18°F)
pH	none – (<i>does not liberate hydrogen ions when dissolved</i>)
Conversion Factor	1ppm = 9.07mg/m ³
Molecular Weight	222grams per mole

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10. REACTIVITY

Dangerously Reactive With	strong oxidising agents; strong acids, permanganates
Also Reactive With	none known
Stability	stable; will not polymerize
Decomposes in Presence of	not known
Decomposition Products	none apart from Hazardous Combustion Products
Sensitive to Mechanical Impact	no

11. TOXICITY**Effects, Acute Exposure**

Skin Contact	little to no effect
Skin Absorption	no toxic effects likely by this route
Eye Contact	slightly irritating; will not damage eyes
Inhalation	low vapour pressure & high viscosity makes inhalation unlikely
Ingestion	not known; bitter taste makes ingestion unlikely – <i>not a route of industrial exposure</i>

Effects, Chronic Exposure

General	no known effect
Sensitising	not a sensitiser in humans or animals
Carcinogen/Tumorigen	not considered a tumorigen or a carcinogen in humans or animals
Reproductive Effect	no known effect in humans or animals
Mutagen	no known effect on humans or animals
Synergistic With	not known
LD ₅₀ (oral) (rabbit)	8600 & 9200mg/kg (rat), 6170mg/kg (mouse), 8600mg/kg (guinea pig), 1000mg/kg*
LD ₅₀ (skin)	over 22,400mg/kg (rabbit)
LC ₅₀ (inhalation)	over 625ppm (rat)

* The oral LD₅₀ for rabbit is far lower than the LD₅₀ for other species and is likely to be unreliable.

* **NOTE:** Small amounts of phthalates can be absorbed from a variety of plastics by ingestion. Metabolism of phthalates can produce substances which mimic sex hormones – they are thought to be “anti androgens” – and may have effects on the developing fetus & young children. There are also weak (and unproven) statistical links to health effects such as obesity, insulin resistance, and attention deficit disorder. Although absorption via the skin is slight, even tiny amounts of phthalates may be able to produce harmful effects. Accordingly, take care to limit skin contact with this product.

Please note that the above is characteristic of phthalates in general, and does not depend on either the source or the manufacturer of the product.

12. ECOLOGICAL INFORMATION

Bioaccumulation	may bioaccumulate, although some species metabolise or eliminate it rapidly
Biodegradation	biodegrades readily & rapidly; in water, 90-95% in 24hrs & 100% in 7 days; also aerobic ½-life = 3days & anaerobic ½-life = 28days
Abiotic Degradation	reacts with atmospheric hydroxyl radicals; estimated ½-life in air is 110hrs, <i>also given as 22hrs</i>
Mobility in soil, water	slightly water soluble; moves slowly in soil and water
Aquatic Toxicity	
LC ₅₀ (Fish, 96hr)	23-69mg/litre (Cyprinodon variegates), 17, 22, 34, 98 & 110mg/litre (Lepomis macrochirus), 17-32mg/litre (Pimephelas promelas), 12mg/litre (Salmo gairdneri), 53 & 61 mg/litre (Leuciscus idus)
EC ₅₀ (Crustacea, 48hr)	38-90mg/litre (Daphnia magna – <i>several results</i>), 18.3mg/litre (Mysidopsis bahia, 96hr), 74mg/litre (Nitodra spinipes)
EC ₅₀ (Algae)	21-62mg/litre (Scenedesmus subspicatus – <i>several results</i>), 30mg/litre (Selenastrum capricornutum) 4.6mg/litre (Gymnodinium breve)
EC ₅₀ (Protozoa)	314mg/litre (Tetrahymena pyriformis), 112mg/litre (Photobacterium phosphoreum) & others

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13. DISPOSAL

Waste Disposal **do not flush to sewer**, incinerate in approved facility between 650°C – 1600°C
Containers **Drums** should be reused. Recondition and pressure test by a licensed reconditioner prior to re-use.
Pails must be vented and thoroughly dried prior to crushing and recycling.
IBCs (intermediate bulk containers): polyethylene bottle must be pressure tested & recertified at 30 months.
Replace at 60 months (5yrs). Steel containers must be inspected, pressure tested & recertified every 5 years.
Never cut, drill, weld or grind on or near this container, even if empty

14. TRANSPORT CLASSIFICATION

Canada TDG	PIN	UN - not regulated for transport
AND	Shipping Name	not regulated for transport
U.S.A. 49 CFR	Class & Packing Group	not regulated for transport
Marine Pollutant		not a marine pollutant
ERAP Required		NO

EMERGENCY INFORMATION

Canada	Call CANUTEC (collect)	(613) 996-6666
U.S.A.	Call CHEMTREC	(800) 424-9300

15. REGULATIONS

Canada DSL	on inventory
U.S.A. TSCA	on inventory
Europe EINECS	on inventory
Europe Classification	<i>not hazardous in Europe</i>

USA Regulations:

NIOSH Recommendations: Recommended Exposure Limit: 10 Hr Time-Weighted Avg: 5 mg/cu m.

Threshold Limit Values: 8 hr Time Weighted Avg (TWA): 5 mg/cu m. Excursion Limit Recommendation: Excursions in worker exposure levels may exceed three times the TLV-TWA for no more than a total of 30 min during a work day, and under no circumstances should they exceed five times the TLV-TWA, provided that the TLV-TWA is not exceeded. A4; Not classifiable as a human carcinogen.

Federal Drinking Water Guidelines: EPA 5000 ug/l

State Drinking Water Guidelines: Florida 5,600 ug/l, Minnesota 6000 ug/l, Maine 5,000 ug/l

Clean Water Act Requirements: For the protection of human health from the toxic properties of diethyl phthalate ingested through water and contaminated organisms, the ambient water criterion is determined to be 350 mg/l. For the protection of human health from the toxic properties of diethyl phthalate ingested through contaminated aquatic organisms alone, the ambient water criterion is determined to be 1.8 g/l.

CERCLA Reportable Quantities: Persons in charge of vessels or facilities are required to notify the National Response Center (NRC) immediately, when there is a release of this designated hazardous substance, in an amount equal to or greater than its reportable quantity of 1000 lb or 454 kg. The toll free number of the NRC is (800) 424-8802. The rule for determining when notification is required is stated in 40 CFR 302.4 (section IV. D.3.b).

TSCA Requirements: Pursuant to section 8(d) of TSCA, EPA promulgated a model Health and Safety Data Reporting Rule. The section 8(d) model rule requires manufacturers, importers, and processors of listed chemical substances and mixtures to submit to EPA copies and lists of unpublished health and safety studies. 1,2-Benzenedicarboxylic acid, diethyl ester is included on this list. Effective date 10/04/82; Sunset date 10/04/92.

RCRA Requirements: As stipulated in 40 CFR 261.33, when diethyl phthalate, as a commercial chemical product or manufacturing chemical intermediate or an off-specification commercial chemical product or a manufacturing chemical intermediate, becomes a waste, it must be managed according to Federal and/or State hazardous waste regulations. Also defined as a hazardous waste is any residue, contaminated soil, water, or other debris resulting from the cleanup of a spill, into water or on dry land, of this waste. Generators of small quantities of this waste may qualify for partial exclusion from hazardous waste regulations (40 CFR 261.5).

FDA Requirements: Substances classified as plasticizers when migrating from food-packaging material includes diethyl phthalate. Diethyl phthalate is an indirect food additive for use only as a component of adhesives.

16. OTHER INFORMATION

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Data from RTECS, HSDB (Haz. Substance Data Base), Cheminfo (CCOHS), IUCLID Datasheets (ESIS – European Chem. Substance Info. System), & others.

Preparation Date: **December 2003** Revision Date: **December 2006, December 2009, February 2010, February 2013**

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