

Material Safety Data for: Diethyl Phthalate

1. PRODUCT IDENTIFICATION

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

2. INGREDIENTS

	%	TWAEV / TLV mg/m ³	LD ₅₀ ORAL	(mg/kg) SKIN	LC ₅₀ ppm INHALATION
Phthalic Acid, Diethyl Ester	100%	0.55 / 5	1000*	>22,400	>625

3. (a) HAZARDS SUMMARY

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

U.S.A. – HMIS

Key:

Health – 0, Fire – 1, Reactivity – 0

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

3. (b) HAZARDS – 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 very different from the LD₅₀ for other species and is unlikely to be relevant to human toxicity.

* **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.

Please ensure that this MSDS is given to, and explained to people using this product.

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4. FIRST AID

- SKIN: Wash with soap and 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.

5. 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</i> = 1)	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

6. FLAMMABILITY & FIRE FIGHTING

Flash Point	161°C / 322°F (closed cup)
Autoignition Temperature	457°C / 855°F
Flammable Limits	0.7% – <i>upper limit unknown</i>
Combustion Products	carbon monoxide, nitrogen oxides, smoke, part oxidised hydrocarbon fragments
Fire Fighting Precautions	foam, dry chemical, water fog, water spray only to cool & dilute, 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>

7. STABILITY / 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

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8. PROTECTIVE EQUIPMENT / EXPOSURE CONTROL

ACGIH TLV	45ppm / 5mg/m ³
OSHA PEL	not listed
STEL	not listed
Ventilation	no special ventilation required; ventilation required to clear any visible product mist
Hands	butyl, nitrile or "Viton" gloves may be worn – <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. 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 3b)

10. SPILL PROCEDURES

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, shovel, & store in closed containers for recycling or disposal

11. DISPOSAL

Waste Disposal	do not flush to sewer , recycle solvent if possible, may be incinerated in approved facility after mixing with a suitable flammable waste
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. <i>Never cut, drill, weld or grind on or near this container, even if empty</i>

12. ENVIRONMENTAL INFORMATION

Bioaccumulation	this product may bioaccumulate, although some species metabolise or eliminate it rapidly
Biodegradation 28days	this product degrades readily and rapidly; in water, aerobic half life =3days, anaerobic half-life
Abiotic Degradation	this product reacts with atmospheric hydroxyl radicals; its estimated half-life in air is 110hours
Mobility in soil, water	this product is only slightly water soluble and 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), 17-34mg/litre (Pimephelas promelas), 12mg/litre (Salmo gairdneri), 53 & 61mg/litre (Leuciscus idus)
EC ₅₀ (Crustacea, 24hr)	26-86mg/litre (Daphnia magna) & others
EC ₅₀ (Algae)	21-62mg/litre (Scenedesmus subspicatus), 30mg/litre (Selenastrum capricornutum)
EC ₅₀ (Protozoa)	314mg/litre (Tetrahymena pyriformis)

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13. TRANSPORT REGULATIONS

Canada TDG	PIN	UN- not regulated for transport
AND	Shipping Name	not regulated for transport
U.S.A. 49 CFR	Class	not regulated for transport
	Packing Group	not regulated for transport
Marine Pollutant		not a marine pollutant

14. 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

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. PREPARATION INFORMATION

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With data from RTECS, Haz. Substance Data Base, Cheminfo (CCOHS), IUCLID Datasheets (European Chem. Substance Info. System), & others, as available

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

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