



Safety Data Sheet

1. PRODUCT IDENTIFICATION

Name	Dioctyl Adipate
Synonyms	di(2-ethylhexyl) adipate; bis(2-ethylhexyl) adipate; adipic acid, dioctyl ester; hexanedioic acid, dioctyl ester
CAS#	103-23-1
Product Uses	plasticizer, broad temperature range lubricant

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
di(2-ethylhexyl) adipate	100%	not listed	5600	8410	not known

4. FIRST AID

SKIN:	Wash with soap & plenty of water. Remove contaminated clothing and do not reuse until 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. FIRE FIGHTING & FLAMMABILITY

Flash Point	196°C / 385°F (closed cup)
Autoignition Temperature	350°C / 662°F
Flammable Limits	0.4% – upper limit not known
Combustion Products	carbon monoxide, nitrogen oxides, smoke, part oxidised hydrocarbon fragments
Firefighting Precautions	as for an oil fire; foam, dry chemical, water spray to cool; firefighters must wear SCBA
Static Charge Accumulation	unlikely to accumulate a static charge on agitation or pumping – <i>ignition by static discharge unlikely due to very high flash point</i>

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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 shovel & store in closed containers for recycling or disposal

7. HANDLING & STORAGE

Store in a dry environment, away from sources of open flame, heat and oxidising agents. Empty containers may contain a flammable / explosive vapour. Always ensure that containers, whether empty or 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.

8. EXPOSURE CONTROL & PERSONAL PROTECTION

Ontario TWAEV not listed
 ACGIH TLV not listed
 OSHA PEL not listed
 Ventilation no special exhaust ventilation required
 Hands no special protective glove required; "Viton" gloves may be worn – *consult supplier for suitability*
 Eyes safety glasses with side shields – *always protect the eyes*
 Clothing no special protective clothing required

9. PHYSICAL PROPERTIES

Odour & Appearance clear, viscous, colourless or pale yellow liquid with faint odour & a bitter taste
 Odour Threshold not known
 Vapour Pressure 8.5×10^{-7} mmHg / 1.13×10^{-7} kPa (20°C / 68°F) – *very low*
 Evaporation Rate (*Butyl Acetate=1*) nil – not volatile
 Vapour Density (*air = 1*) above 12 (theoretical)
 Boiling Range 417°C / 783°F
 Freezing Point -68°C / -90°F
 Specific Gravity 0.926 (20/20°C)
 Water Solubility 0.8mg/litre (22°C/72°F) – *emulsion probably formed; 0.003mg/litre may be true limit**
 Also soluble in acetone and other ketones
 Viscosity 13.7centipoise (20°C / 68°F)
 pH none – (*does not liberate hydrogen ions when dissolved*)
 Molecular Weight 371grams per mole

10. REACTIVITY

Dangerously Reactive With strong oxidising agents
 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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11. TOXICITY

Effects, Acute Exposure

Skin Contact	little to no effect
Skin Absorption	slight; no toxic effects likely by this route
Eye Contact	little to no effect
Inhalation	vapour may irritate but very low vapour pressure & high viscosity makes this unlikely
Ingestion	not known; bitter taste discourages ingestion – <i>not a route of industrial exposure</i>

Effects, Chronic Exposure

General	prolonged exposure may cause dermatitis; damage to rats liver & kidneys at 2500mg/kg/day (oral) for 2-3wk & in mice at 15,000mg/kg/day (oral) for 2wk, <i>(These tests & results are not relevant to industrial exposure.)</i>
Sensitising	not a sensitiser in humans or animals
Carcinogen/Tumorigen	not considered a tumorigen or a carcinogen in humans or animals; <i>2 year feeding studies in rats found the risk of liver cancer to be negligible</i>
Reproductive Effect	no known effect in humans or animals
Mutagen	no known effect on humans or animals
Synergistic With	not known
LD ₅₀ (oral)	5600, 7390, 9100, 14,800, 25,600 & 45,000mg/kg (rat), 12,900mg/kg (guinea pig), 15,000 & 24,600mg/kg (mouse)
LD ₅₀ (skin)	8410 & 15,100mg/kg (rabbit)
LC ₅₀ (inhalation)	not known

The wide variability in oral LD₅₀ suggests that the above data may not be a reliable guide to human toxicity. In any case, dioctyl adipate is considered to have very low toxicity. See NOTE at the end of this document.*

12. ECOLOGICAL INFORMATION

Bioaccumulation	not a bioaccumulator – biological ½-life ~2.7days in fish*
Biodegradation	biodegrades readily in the presence of oxygen; 83% in 28days*, also 66% & 98% in 28 days
Abiotic Degradation	estimated ½-life in air 2.6hr (<i>clean air</i>), 26hr (<i>polluted air</i>)*
Mobility in soil, water	water insoluble; cannot move in soil and water

Aquatic Toxicity

LC ₅₀ (Fish, 96hr)	54-150mg/litre (Salmo gairdneri) & others showing LC ₅₀ >0.78mg/litre
EC ₅₀ (Crustacea, 48hr)	1.6mg/litre (Daphnia magna)
EC ₅₀ (Algae)	>0.78mg/litre (Selenastrum capricornutum & scenedesmus subspicatus)
EC ₅₀ (Bacteria)	>0.35mg/litre (“activated sludge”)

*Many tests of aquatic life have been reported; all show LC₅₀s & EC₅₀s to be far higher than the water solubility of dioctyl adipate. See NOTE at end.**

13. DISPOSAL

Waste Disposal	do not flush to sewer , recycle 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>

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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 classified as hazardous in Europe</i>

Federal Drinking Water Standards: EPA 400 ug/l

Federal Drinking Water Guidelines: EPA 400 ug/l

State Drinking Water Guidelines: Maine 292 ug/l

FDA Requirements: Di(2-ethylhexyl) adipate is an indirect food additive for use only as a component of adhesives.

16. OTHER INFORMATION

Prepared for Megaloid Laboratories by Peter Bursztyn, (705) 734-1577

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

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