1. **PRODUCT IDENTIFICATION**

**Name**

Diisodecyl Phthalate

**Synonyms**

1,2-benzenedicarboxylic acid, diisodecyl ester; phthalic acid, diisodecyl ester; DIDP

**CAS#**

26761-40-0

**Europe EC#**

247-977-1

**Product Uses**

plasticiser

2. **HAZARDS**

**Canada – WHMIS**

not controlled under WHMIS

**Key:**

- 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

**GHS Class (Category)**

aquatic acute (1)

**Signal Words**

WARNING

**Hazard Statements**

very toxic to aquatic life (H400)

3. **COMPOSITION**

<table>
<thead>
<tr>
<th>%</th>
<th>TWAEV / TLV mg/m³</th>
<th>LD₅₀ (mg/kg) ORAL</th>
<th>LD₅₀ (mg/kg) SKIN</th>
<th>LC₅₀ ppm INHALATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>not listed</td>
<td>62,000</td>
<td>&gt;3160</td>
<td>&gt;12,540</td>
</tr>
</tbody>
</table>

4. **FIRST AID**

**SKIN:**

Wash with plenty of water. Remove contaminated clothing and do not reuse until thoroughly 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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*Please ensure that this MSDS is given to, and explained to people using this product.*
5. **FIRE FIGHTING & FLAMMABILITY**

Flash Point  
232°C / 450°F (closed cup)

Autoignition Temperature  
380°C / 716°F – *(an average of several available values)*

Flammable Limits  
0.3 – upper limit unknown

Combustion Products  
carbon monoxide, nitrogen oxides, smoke, part oxidised hydrocarbon fragments

Firefighting Precautions  
foam, dry chemical, water fog, water spray only to cool & dilute, product floats on water – water jet spreads flames; firefighters must wear SCBA

Static Charge Accumulation  
not known – flash point far too high to ignite by means of static discharge

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 cool, dry environment, away from sources of ignition, heat and oxidising agents. 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 contact with skin and wash work clothes frequently. An eye bath and safety shower must be available near the workplace.

Where allergic reactions or sensitisation have been reported with diisodecyl phthalate, this is believed to be due to the presence of unreacted monomer or oligomer present in incompletely cured polymer, and not to the plasticiser.

*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)*

8. **EXPOSURE CONTROL & PERSONAL PROTECTION**

Ontario TWAEV  
not listed

ACGIH TLV  
not listed

OSHA PEL  
not listed

Ventilation  
no special ventilation required

Hands  
no special protective gloves required; butyl or nitrile gloves are resistant – *confirm suitability with supplier*

Eyes  
safety glasses with side shields – *always protect the eyes*

Clothing  
no special protective clothing required

9. **PHYSICAL PROPERTIES**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odour &amp; Appearance</td>
<td>clear, colourless, viscous liquid with almost no odour</td>
</tr>
<tr>
<td>Odour Threshold</td>
<td>not known – odourless</td>
</tr>
<tr>
<td>Vapour Pressure</td>
<td>5.28x10^7 mmHg / 7x10^4 kPa (25°C / 77°F)</td>
</tr>
<tr>
<td>Evaporation Rate <em>(Butyl Acetate = 1)</em></td>
<td>not known – extremely low volatility</td>
</tr>
<tr>
<td>Vapour Density <em>(air = 1)</em></td>
<td>15 (theoretical)</td>
</tr>
<tr>
<td>Boiling Range</td>
<td>250-257°C / 482-495°F (at 4mmHg – near vacuum); at atmospheric pressure, &gt;400°C/750°F</td>
</tr>
<tr>
<td>Freezing Point</td>
<td>-45°C / -49°F <em>(mean value – various values given)</em></td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>0.966 (20/20°C)</td>
</tr>
<tr>
<td>Water Solubility</td>
<td>0.2 micrograms per litre (20°C / 68°F) – virtually nil</td>
</tr>
<tr>
<td>Also soluble in</td>
<td>acetone and many non-polar solvents</td>
</tr>
<tr>
<td>Partition Coefficient <em>(Octanol/H2O)</em></td>
<td>8.8 <em>(measured)</em>, 10.3 <em>(calculated)</em></td>
</tr>
<tr>
<td>Viscosity</td>
<td>130 centipoise (20°C / 68°F)</td>
</tr>
</tbody>
</table>

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Product Name: Diisodecyl Phthalate

<table>
<thead>
<tr>
<th>Property</th>
<th>resc</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>none – (does not liberate hydrogen ions when dissolved)</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>447 grams/mole</td>
</tr>
</tbody>
</table>

10. **REACTIVITY**

- Dangerously Reactive With: strong oxidising agents
- Also Reactive With: none known
- Stability: stable; will not polymerize
- Decomposes in Presence of: gradually hydrolyses in both alkaline and acidic conditions
- Decomposition Products: none apart from Hazardous Combustion Products
- Sensitive to Mechanical Impact: no

11. **TOXICITY**

### Effects, Acute Exposure
- Skin Contact: may be slightly irritating
- Skin Absorption: slight; no acute toxic effects likely by this route, but see NOTE below
- Eye Contact: may be mildly irritating
- Inhalation: low vapour pressure and high viscosity make inhalation unlikely
- Ingestion: no effect in rodent testing

#### Effects, Chronic Exposure
- General: liver damage reported in rodents and dogs fed DIDP; not a route of industrial exposure
- Sensitising: not a sensitizer in humans or animals; very few reports of human sensitisation usually associated with monomers or oligomers in incompletely cured polymer, not the plasticiser
- Carcinogen/Tumorigen: not considered a tumorigen or a carcinogen in humans or animals
- Reproductive Effect: rodent fetotoxicity on prolonged feeding; no known effect in humans or animals
- Mutagen: no known effect on humans or animals
- Synergistic With: not known
- LD₅₀ (oral): 64,000 mg/kg (rat)
- LD₅₀ (skin): over 3160 mg/kg (rabbit) – no mortality occurred, over 9660 mg/kg (rat)
- LC₅₀ (inhalation): over 12,540 mg/m³ (rat) – no mortality occurred

*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 is 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 as "hormone mimics". Accordingly, take care to limit skin contact with this product.*

12. **ECOLOGICAL INFORMATION**

- Bioaccumulation: does not bioaccumulate in most species despite very low water solubility; probably because of ready metabolism by most living creatures; in fish, ½-life may be as brief as 90 minutes
- Biodegradation: biodegrades in the presence of oxygen; various tests show 30-50% biodegradation in 2-3 weeks; also 56% in 28 days & 99% in 28 days; Pseudomonas acidovarans digests DIDP with ½-life of 4 days
- Abiotic Degradation: reacts with atmospheric hydroxyl radicals; estimated ½-life in air is 15 hours
- Mobility in soil, water: water insoluble; virtually immobile in soil

**Aquatic Toxicity**
- LC₅₀ (Fish, 96hr): >0.47 mg/litre (Cyprinodon variegatus), >1mg/litre (Pimephales promelas), >0.62 mg/litre (Salmo gairdneri), >0.55 mg/litre (Lepomis macrochirus), 10,000 mg/litre (Leuciscus idus)*
- EC₅₀ (Crustacea, 24hr): >500 mg/litre (Daphnia magna)
- EC₅₀ (Crustacea, 48hr): 180 mg/litre (Daphnia magna) – this dose had no effect – EC₅₀
- EC₅₀ (Algae, 72hr): 500 mg/litre (Scenedesmus subspicatus), 0.8 mg/litre (Pseudokirchneriella subcapitata)
- EC₅₀ (Bacteria): 25,000 mg/litre (Pseudomonas putida)* – this dose had no effect – EC₅₀

*NOTE: These doses are far higher than the water solubility of DIDP. Also, wide variation in toxicity to aquatic life suggests that the above results are highly dependent on the method of administration (eg: mechanical emulsification, surfactant aided dispersion, etc) of this strongly hydrophobic substance.*

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13. DISPOSAL

Waste Disposal: do not flush to sewer, recycle solvent if possible, may be mixed with flammable waste solvent and incinerated in approved facility with flue gas monitoring and scrubbing.

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

NOTE: Six phthalates (DBP, BBP, DEHP, DOP, DINP, & DIDP) have been banned by the USA “Consumer Product Safety Improvement Act (2008) Other restrictions on the use of phthalates also exist in Europe & Canada.


And a USA Consumer Product Safety Commission summary is also available: http://www.cpsc.gov/about/cpsia/phthalover.pdf

The latter document also states “Other phthalates including but not limited to di-n-propyl phthalate, diisobutyl phthalate, di-n-pentyl phthalate, dicyclohexyl phthalate & di(2-propylheptyl) phthalate may also contribute to the cumulative health risks of phthalates.”

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.
Preparation Date: March 2004 Revision Date: April 2007, April 2010, April 2013

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