1. PRODUCT IDENTIFICATION

Name: Diisononyl Phthalate
Synonyms: 1,2-Benzenedicarboxylic acid, diisononyl ester; phthalic acid, diisononyl ester; DINP
CAS#: 28553-12-0
Europe EC#: 249-079-5
Product Uses: plasticiser

2. HAZARDS

Quick Guide: not hazardous

Canada – 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

U.S.A. – HMIS
Key: Health – 0, Fire – 0, Reactivity – 0
0=minimal, 1=slight, 2=moderate, 3=serious, 4=severe

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 mg/m³ INHALATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>not listed</td>
<td>&gt;50,000</td>
<td>&gt;3160</td>
<td>&gt;4400</td>
</tr>
</tbody>
</table>

Phthalic acid, diisononyl ester

4. FIRST AID

SKIN: Wash with soap & 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.

5. FIRE FIGHTING & FLAMMABILITY

Flash Point: 200-240°C / 392-464°F (closed cup) – flash point varies with the mix of isomers present*
Autoignition Temperature: 350-400°C / 662-752°F – autoignition temperature varies with the mix of isomers present*
Flammable Limits: 0.4% – 2.9%
Combustion Products: carbon monoxide, nitrogen oxides, smoke, part oxidised hydrocarbon fragments
Firefighting Precautions: as for materials sustaining fire OR as for an oil fire; firefighters must wear SCBA
Static Charge Accumulation: probably not – in any case high flash point ensures there is no hazard from static charge

* See link to document at the end (Part 16) of this SDS.

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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 cool, dry environment, away from flame and oxidising agents.

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 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 & Part 15)

8. EXPOSURE CONTROL & PERSONAL PROTECTION

Ontario TWAEV: not listed
ACGIH TLV: not listed
OSHA PEL: not listed
STEL: not listed
Ventilation: no special ventilation required
Hands: no special protective gloves needed; neoprene, nitrile & butyl 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

Odour & Appearance: clear, colourless, odourless, viscous liquid with a bitter taste
Odour Threshold: not known – odourless
Vapour Pressure: $4.5 \times 10^{-7} \text{mmHg} / 6 \times 10^{-8} \text{kPa (20°C / 68°F)}$; $5.4 \times 10^{-7} \text{mmHg} / 7.3 \times 10^{-8} \text{kPa (25°C / 77°F)}$
Evaporation Rate (Butyl Acetate = 1): not known – not volatile
Vapour Density (air = 1): 14 (theoretical) – very little vapour present unless strongly heated
Boiling Range: 420°C / 788°F
Freezing Point: -46°C / -51°F
Specific Gravity: 0.974 (20/20°C)
Water Solubility: 0.6 micrograms per litre (20°C / 68°F) – effectively nil
Also soluble in: acetone, aromatic hydrocarbons
Viscosity: 100 centipoise (20°C / 68°F)
PH: none – (does not liberate hydrogen ions when dissolved)
Molecular Weight: 421 grams per mole

NOTE: The above may vary depending on the proportion of DINP isomers present. See link to document at the end (Part 16) of this SDS.

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**: not absorbed through the skin
- **Eye Contact**: mildly irritating – will not damage eyes
- **Inhalation**: very low vapour pressure & high viscosity make inhalation of vapour or mist unlikely
- **Ingestion**: not known – not a route of industrial exposure; bitter taste discourages intake

**Effects, Chronic Exposure**
- **General**: very low toxicity; slight increase in mortality seen in rodents fed up to 0.6% DINP for 2 years
- **Sensitising**: not a sensitiser in humans or animals
- **Carcinogen/Tumorigen**: carcinogenic in rodents, but at high chronic dose levels not comparable to industrial exposure – not considered a tumorigen or a carcinogen in humans
- **Reproductive Effect**: no known effect in humans; fetotoxic in rodents at 20,000+mg/kg daily!!
- **Mutagen**: no known effect on humans or animals
- **Synergistic With**: not known

**LD₅₀ (oral)**: >50,000mg/kg (rat) – 8/20 animals died
**LD₅₀ (skin)**: >3160mg/kg (rabbit) – 0/4 animals died
**LC₅₀ (inhalation)**: >4400mg/m³ – 0/10 animals died

**NOTE**: Small amounts of phthalates may be absorbed from a variety of plastics by ingestion. Phthalate metabolism can produce substances which mimic sex hormones – these seem to act as “anti androgens” – and may have effects on the developing fetus & young children. There are also weak (but 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**: DINP is not a bioaccumulator

**Biodegradation**: biodegrades readily & rapidly in the presence of oxygen; 75% in 96hr, test showed 85% in 24hr

**Abiotic Degradation**: reacts with atmospheric hydroxyl radicals; estimated ½-life in air is 19hr; ½-life for hydrolysis in water 3.4 years @ pH 7 and 130days @ pH 8

**Mobility in soil, water**: water insoluble; cannot move in soil and water

**Aquatic Toxicity**
- **LC₅₀ (Fish, 96hr)**: >0.52mg/litre (Cyprinodon variegatus), >0.14mg/litre (Lepomis macrochirus), >0.19mg/litre (Pimephales promelas), 0.16mg/litre (Salmo gairdneri) – water insoluble – max conc. not toxic
- **EC₅₀ (Crustacea, 24-48hr)**: >500mg/litre (Daphnia magna) – surfactant aided solubility
- **EC₅₀ (Algae)**: >500mg/litre (Scenedesmus subspicatus) – surfactant aided solubility
- **EN₅₀ (Bacteria)**: 25,000mg/litre (Pseudomonas putida) – surfactant aided solubility; extremely low toxicity

* Highly water insoluble, complicating testing on aquatic life. See link to document at the end (Part 16) of this SDS.

13. **DISPOSAL**

**Waste Disposal**: **do not flush to sewer**, recycle solvent if possible, if local regulations permit, may be put in sanitary landfill, may be incinerated in approved facility after mixing with a 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. **Never cut, drill, weld or grind on or near this container, even if empty**

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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

DINP is one of eight phthalates identified as subjects for assessment and management.
And a USA Consumer Product Safety Commission summary is also available: http://www.cpsc.gov/about/cpsia/phthalover.pdf

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: February 2004 Revision Date: February 2007, February 2010; February 2013


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