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Safety Data Sheet

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 **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*

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

3. COMPOSITION

	%	TWAEV / TLV mg/m³	LD_{50} (mg/kg) ORAL	LD_{50} (mg/kg) SKIN	LC_{50} mg/m³ INHALATION
Phthalic acid, diisononyl ester	100%	not listed	>50,000	>3160	>4400

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.*

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

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	4.5×10^{-7}mmHg / 6×10^{-8}kPa (20°C / 68°F); 5.4×10^{-7}mmHg / 7.3×10^{-8}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	100centipoise (20°C / 68°F)
pH	none – (*does not liberate hydrogen ions when dissolved*)
Molecular Weight	421grams 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
LD_{50} (oral)	>50,000mg/kg (rat) – *8/20 animals died*
LD_{50} (skin)	>3160mg/kg (rabbit) – *0/4 animals died*
LC_{50} (inhalation)	>4400mg/m^3 – *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 water	reacts with atmospheric hydroxyl radicals; estimated ½-life in air is 19hr; ½-life for hydrolysis in 3.4 years @ pH 7 and 130days @ pH 8
Mobility in soil, water	water insoluble; cannot move in soil and water
Aquatic Toxicity	
LC_{50} (Fish, 96hr)	>0.52mg/litre (Cyprinodon variegatus), >0.14mg/litre (Lepomis macrochirus), >0.19mg/litre (Pimephelas promelas), 0.16mg/litre (Salmo gairdneri) – *water insoluble – max conc. not toxic* >100mg/litre (Brachydanio rerio), >500mg/litre (Leuciscus idus) – *surfactant aided solubility*
EC_{50} (Crustacea, 24-48hr)	>500mg/litre (Daphinia magna) – *surfactant aided solubility*
EC_{50} (Algae)	>500mg/litre (Scenedesmus subspicatus) – *surfactant aided solubility*
EN_{10} (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**

NOTE: ***A USA EPA review document ("Phthalates Action Plan", March 14, 2012) on Phthalates is available:***
http://www.epa.gov/oppt/existingchemicals/pubs/actionplans/phthalates_actionplan_revised_2012-03-14.pdf
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***

**** NOTE:*** *For detailed additional information, see* ***European Chemicals Bureau, EU Risk Assessment Report:***
http://esis.jrc.ec.europa.eu/doc/risk_assessment/REPORT/dinpreport046.pdf

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