Section 1 - PRODUCT AND COMPANY IDENTIFICATION

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PRODUCT NAME DOP

Serial Number: JPIA-0001

PRODUCT USE Primary plasticizer for PVC resin

SYNONYMS 1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester
Bis (2-ethylhexyl) phthalate
Di (2-ethylhexyl) phthalate (Abbr. DEHP)

Section 2 - HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

Continued…

SWALLOWED

Accidental ingestion of the material may be damaging to the health of the individual.

EYE

Limited evidence or practical experience suggests that the material may cause eye irritation in a substantial number of individuals. Prolonged eye contact may cause inflammation characterized by a temporary redness of the conjunctiva (similar to windburn).

The liquid may produce eye discomfort and is capable of causing temporary impairment of vision and/or transient eye inflammation, ulceration.

SKIN

There is some evidence to suggest that the material may cause mild but significant inflammation of the skin either following direct contact or after a delay of some time. Repeated exposure can cause contact dermatitis which is characterized by redness, swelling and blistering.

Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

INHALED

Not normally a hazard due to non-volatile nature of product.

Inhalation hazard is increased at higher temperatures.

The material is not thought to produce either adverse health effects or irritation of the respiratory tract following inhalation (as classified using animal models). Nevertheless, adverse effects have been produced following exposure of animals by at least one other route and good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

Classification of Substance and Mixture

Substance

Ingredient	CAS No	%
1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester	117-81-7	>99

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Section 4 - FIRST AID MEASURES

SWALLOWED

- If swallowed do NOT induce vomiting.
- If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
- Observe the patient carefully.
- Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.
- Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.
- Seek medical advice.

EYE

If this product comes in contact with the eyes:

- Wash out immediately with fresh running water.
- Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
- If pain persists or recurs seek medical attention.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

If skin contact occurs:

- Immediately remove all contaminated clothing, including footwear
- Flush skin and hair with running water (and soap if available).
- Seek medical attention in event of irritation.

INHALED

- If fumes or combustion products are inhaled remove from contaminated area.
- Other measures are usually unnecessary.

NOTES TO PHYSICIAN

Treat symptomatically.

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Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

- Foam.
- Dry chemical powder.
- BCF (where regulations permit).
- Carbon dioxide.
- Water spray or fog - Large fires only.

FIRE FIGHTING

- Alert Emergency Responders and tell them location and nature of hazard.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water course.
- Use water delivered as a fine spray to control fire and cool adjacent area.
- Avoid spraying water onto liquid pools.
- Do not approach containers suspected to be hot.
- Cool fire exposed containers with water spray from a protected location.
- If safe to do so, remove containers from path of fire.

GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS

- Combustible.
- Slight fire hazard when exposed to heat or flame.
- Heating may cause expansion or decomposition leading to violent rupture of containers.
- On combustion, may emit toxic fumes of carbon monoxide (CO).
- May emit acrid smoke.
- Mists containing combustible materials may be explosive.

Combustion products include, carbon monoxide (CO), carbon dioxide (CO_2), other pyrolysis products typical of burning organic material.

May emit poisonous fumes.

May emit corrosive fumes.

FIRE INCOMPATIBILITY

Avoid contamination with oxidizing agents i.e. nitrates, oxidizing acids, chlorine bleaches, pool chlorine etc. as ignition may result.

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PERSONAL PROTECTION

Glasses:

Chemical goggles.

Gloves:

PVC chemical resistant type.

Respirator:

Type A-P Filter of sufficient capacity

Section 6 - ACCIDENTAL RELEASE MEASURES

Point to Notice for Public Health:

Ventilate well indoor until disposal is finished. In case of accidental release, no admittance is allowed except people involved by stretching rope and others.

Wear protective equipments in case of operation.

Point to Notice for Environment

Pay attention to prevent the released product from leaking to public river so as to give no impact to environment.

Removing Method

In case of small amount, remove by absorbing with absorbents (sawdust, soil, sand, waste cloth, etc.), and then wipe off the waste well with waste cloth, and rag.

In case of large amount, prevent leakage by enclosing with nonflammables (earth and sand, etc.) and collect into empty container by scoop, suction equipment or the like.

Preventive Measures of Secondary Disaster

Remove potential ignition source in vicinity as soon as possible, and simultaneously prepare extinguishing agent.

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Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

DO NOT allow clothing wet with material to stay in contact with skin.

- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- Prevent concentration in hollows and sumps.
- DO NOT enter confined spaces until atmosphere has been checked.
- Avoid smoking, naked lights or ignition sources.
- Avoid contact with incompatible materials.
- When handling, DO NOT eat, drink or smoke.
- Keep containers securely sealed when not in use.
- Avoid physical damage to containers.
- Always wash hands with soap and water after handling.
- Work clothes should be laundered separately.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.
- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions.

RECOMMENDED STORAGE METHODS

- Metal can or drum
- Packing as recommended by manufacturer.
- Check all containers are clearly labeled and free from leaks.

STORAGE REQUIREMENTS

- Store in original containers.
- Keep containers securely sealed.
- No smoking, naked lights or ignition sources.
- Store in a cool, dry, well-ventilated area.
- Store away from incompatible materials and foodstuff containers.
- Protect containers against physical damage and check regularly for leaks.
- Observe manufacturer's storing and handling recommendations.

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

Source	Material	
ACGIH	Dioctyl phthalate	5mg/m^3
NIOSH		5mg/m^3 TWA
OSHA - Final PELs		5mg/m^3 TWA
OSHA Vacated PELs		5mg/m^3 TWA

EMERGENCY EXPOSURE LIMITS

Material	Original IDLH Value (ppm)	Original IDLH Value (mg/m3)	Revised IDLH Value (mg/m3)	Revised IDLH Value (ppm)
di-sec-octyl phthalate	Unknown	Unknown	5,000	

MATERIAL DATA

1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester: Not available

PERSONAL PROTECTION

EYE

- Safety glasses with side shields.
- Chemical goggles.
- Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them. DO NOT wear contact lenses.

HANDS/FEET

Suitability and durability of glove type is dependent on usage. Factors such as:

- frequency and duration of contact,
- chemical resistance of glove material,
- glove thickness and
- dexterity

are important in the selection of gloves.

Wear chemical protective gloves, eg. PVC.

Wear safety footwear or safety gumboots, eg. Rubber.

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OTHER

- Overalls.
- P.V.C. apron.
- Barrier cream.
- Skin cleansing cream.
- Eye wash unit.

RESPIRATOR

Selection of the Class and Type of respirator will depend upon the level of breathing zone contaminant and the chemical nature of the contaminant.

Protection Factors (defined as the ratio of contaminant outside and inside the mask) may also be important.

Breathing Zone Level ppm (volume)	Maximum Protection Factor	Half-face Respirator	Full-Face Respirator
1000	10	A-1 P	-
1000	50	-	A-1 P
5000	50	Airline*	-
5000	100	-	A-2 P
10000	100	-	A-3 P
	100+		Airline* *

* - Continuous Flow ** - Continuous-flow or positive pressure demand.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required.

Use appropriate NIOSH-certified respirator based on informed professional judgement. In conditions where no reasonable estimate of exposure can be made, assume the exposure is in a concentration IDLH and use NIOSH-certified full face pressure demand SCBA with a minimum service life of 30 minutes, or a combination full facepiece pressure demand SAR with auxiliary self-contained air supply. Respirators provided only for escape from IDLH atmospheres shall be NIOSH-certified for escape from the atmosphere in which they will be used.

ENGINEERING CONTROLS

General exhaust is adequate under normal operating conditions. Local exhaust ventilation may be required in specific circumstances. If risk of overexposure exists, wear an approved respirator. Correct fit is essential to obtain adequate protection. Provide adequate ventilation in warehouse or

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closed storage areas.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL PROPERTIES

Color: Colorless

Physical State: Liquid

pH: Not applicable

Molecular Weight: 390

Melting Point : -58 ° F(-50 ° C)

Boiling Point : 727 ° F(386 ° C)

Flash Point : 424 ° F(218 ° C)(OC)

Evaporation Rate: Not Available

Lower Explosive Limit : 0.1Vol%(in air)

Vapor Pressure: 160Pa@392 ° F(200 ° C)

Specific Gravity: 0.986@68 ° F(20 ° C)

Solubility: Insoluble in Water@68 ° F(20 ° C)

Partition Coefficient(n-octanol/water): logPow=7.60

Decomposition Temperature: Not Available

Auto-ignition Temperature: 752 ° F(400 ° C)

Viscosity: 81.4cps@68 ° F(20 ° C)

Section 10 - STABILITY AND REACTIVITY

Stability:

Stable under ordinary conditions of use and storage.

Conditions to Avoid:

Heat, flames, ignition sources and incompatibles.

Incompatible Materials:

Strong oxidizing agents, acids, alkalies.

Hazardous Decomposition Products:

Carbon dioxide and carbon monoxide may from when heated to decomposition.

Possibility of hazardous reactions:

Will not occur.

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Section 11 – TOXICOLOGICAL INFORMATION

ACUTE EFFECTS:

Oral LD50:	30 g/kg (rats)
Oral LD50:	34 g/kg (rabbits)
Oral LD50:	26 g/kg (guinea pigs)
Dermal LD50:	25 g/kg (rabbits)
Inhalation LD50 (vapor):	No data available
Inhalation LD50 (mist):	>15.68 mg/L (rats)
Dermal Corrosion/Irritation:	500 mg/24h Mild (rabbits) According to ATSDR (2002) and EU-RAR No. 42 (2003), it is conceivable that DOP is not irritating or slightly irritating, and based on the results of 4 hour application tests, DOP is slightly irritating.
Serious Eye Damage/Irritation:	500 mg/24h Mild (rabbits) According to ACGIH (7th, 2001), ATSDR (2002), EHC 131 (1992), and EU-RAR No. 42 (2003), it is conceivable that DOP is not irritating or slightly irritating, and based on tests results, DOP is slightly irritating.
Respiratory sensitization:	No data available
Skin sensitization:	According to the description in EU-RAR No. 42 (2003), 'DOP was not shown as skin sensitizing by test results of the maximizing method and Buehler method using guinea pigs.', it was conceivable that DOP is not skin sensitizing.
Mutagenicity (germ cell mutagenicity):	DOP was negative from results of mutagenicity tests with microbes (not injurious to DNA). According to CERI & NITE's Hazards Evaluation No. 7 (2004) and ATSDR (2002), positive in mutagenicity tests (dominant lethal tests) through generations. However, administration routes in the tests showing positive were not appropriate and other dominant lethal tests and micronucleus tests proved negative.
Carcinogenicity:	According to the IARC Report (February, 2000), Group 2B was modified into Group 3.

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Reproductive Toxicity:	The substance was administered to a pair of male and female mice by blending into food, and a plurality of mating was performed for the pair. As a result, administration of 144 mg/kg/day or more was observed to produce infertility and decrease of number of survival babies of the same pair. On the contrary, no influence is observed on ovary in testing the substance by using marmoset (primates).
STOST-Single exposure:	Lack of data.
STOST-Repeated exposure:	No testoid toxicity in primates.
Aspiration hazard if inhaled:	No data available
Others:	No activations were observed in estrogen activation tests in vivo (uterine hypertrophy reaction tests with ovary-extracted rats).

Section 12 - ECOLOGICAL INFORMATION

Ecotoxicity

Hazards to the aquatic environment (acute):	Acute toxicity has not been reported at concentrations up to water solubility (0.003 mg/L). (Reference) Killfish LC50 75 mg/L Salmon gairdneri LC50 540 mg/L
Hazards to the aquatic environment (chronic):	Rapid degradation and low bioaccumulation
Persistence/Degradation:	Rapid degradation from the results of safety inspection on existing chemical substances (BOD solubility: 69%)
Bioaccumulation:	No or low concentrative property from the results (BCF=29.7) of safety inspection on existing chemical substances

Section 13 - DISPOSAL CONSIDERATIONS

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste.

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US EPA guidances for the classification determination are listed in 40 CFR Parts 261.3.

Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: Not listed.

RCRA U-series:CAS No 117-81-7:waste number U028

Section 14 - TRANSPORTATION INFORMATION

US DOT

Shipping Name: Not regulated as a hazardous material.

Hazard Class:

UN Number:

Packing Group:

CANADA TDG

Shipping Name: Not regulated as a hazardous material.

Hazard Class:

UN Number:

Packing Group:

USA RQ: CAS No 117-81-7

Section 15 - REGULATORY INFORMATION

US FEDERAL

TSCA:

CAS No 117-81-7 is listed on the TSCA Inventory.

Health & Safety Reporting List:

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules:

CAS No 117-81-7 Test for Chemical Fate

Section 12b:

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None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rules:

None of the chemicals in the substance have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs:

CAS No 117-81-7: 100 lb final RQ; 45.4 kg final RQ

SARA section 302 Extremely Hazardous Substances:

None of the chemicals in this product have a TPQ

SARA Codes:

CAS No 117-81-7:acute, chronic.

Section 313:

The substance contains 1,2-Benzebdicarboxylic acid, bis(2-ethylhexyl)(CAS No 117-81-7,>99%),which is subject to the reporting requirements of Section 313 of SARA Title and 40 CFR Part 372.

Clean Air Act:

CAS No 117-81-7 is listed as a hazardous air pollutant(HAP). The substance does not contain any Class 1 Ozone depletors. The substance does not contain any Class 2 Ozone depletors.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA. CAS No 117-81-7 is listed as a Priority Pollutant under the Clean Water Act. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

California Significant Level:

No Risk CAS No 117-81-7: 310mg/day NSRL

European/International Regulation

European Labeling in Accordance with EC Directives:

Hazard Symbols: T

Risk Phrases:

R 61 May cause harm to the unborn child.

R 60 May impair fertility.

Safety Phrases:

S 53 Avoid exposure - obtain special instructions before use.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Designation of the substance, of the groups of substances or of the preparation:

Shall not be used as substances or as constituents of preparations, at concentrations higher than 0.1 % by mass of the plasticized material, in toys and childcare articles*.

Toys and childcare articles containing these phthalates** in a concentrations higher than 0.1 % by mass of

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the plasticized material shall not be placed on the market.

The Commission shall re-evaluate, by 16 January 2010, the measures provided for in relation to this point in the light of new scientific information on such substances and their substitutes, and if justified, these measures shall be modified accordingly.

*-For the purposes of this point “childcare article” shall mean any product intended to facilitate sleep, relaxation, hygiene, the feeding of children or sucking on the part of children.

**-The following phthalates (or other CAS- and EINECS numbers covering the substance):

Bis (2-ethylhexyl) phthalate (DEHP) CAS No 117-81-7 EINECS No 204-211-0

Dibutyl phthalate (DBP) CAS No 84-74-27 EINECS No 201-557-4

Benzyl butyl phthalate (BBP) CAS No 85-68-7 EINECS No 201-622-7

WGK(Water Danger/Protection)

CAS No 117-81-7: 1

Canada:

CAS No 117-81-7 is listed on Canada7s DSL listed

Canadian WEMITS Classifications: D2A

The substance has been classified in accordance with the hazard criteria of controlled Products Regulations and the MSDS contains all of the information required by those regulations.

CAS No 117-81-7 is listed on Canada7s Ingredient Disclosure List

Section 16 - OTHER INFORMATION

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purpose. In no event shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, or exemplary damages however arising, even if the company has been advised of the possibility of such damages.

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