SAFETY DATA SHEET
DIOCTYL PHTHALATE (DOP)
REVISION 5, DATE 28 MAY 20

1. IDENTIFICATION

Product Name	**Dioctyl Phthalate (DOP)**
Other Names	Bis(2-ethylhexyl) phthalate; Di(2-ethylhexyl) phthalate; Diethylhexyl phthalate (DEHP); Dioctylphthalate
Uses	Plasticiser.
Chemical Family	No Data Available
Chemical Formula	C24H38O4
Chemical Name	1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester
Product Description	No Data Available

Contact Details of the Supplier of this Safety Data Sheet

Organisation	Location	Telephone
Redox Ltd	2 Swettenham Road Minto NSW 2566 Australia	+61-2-97333000
Redox Ltd	11 Mayo Road Wiri Auckland 2104 New Zealand	+64-9-2506222
Redox Inc.	3960 Paramount Boulevard Suite 107 Lakewood CA 90712 USA	+1-424-675-3200
Redox Chemicals Sdn Bhd	Level 2, No. 8, Jalan Sapir 33/7 Seksyen 33, Shah Alam Premier Industrial Park 40400 Shah Alam Sengalor, Malaysia	+60-3-5614-2111

Emergency Contact Details

For emergencies only; DO NOT contact these companies for general product advice.

Organisation	Location	Telephone
Poisons Information Centre	Westmead NSW	1800-251525 131126
Chemcall	Australia	1800-127406 +64-4-9179888
Chemcall	Malaysia	+64-4-9179888
Chemcall	New Zealand	0800-243622 +64-4-9179888
National Poisons Centre	New Zealand	0800-764766
CHEMTREC	USA & Canada	1-800-424-9300 CN723420 +1-703-527-3887

2. HAZARD IDENTIFICATION

Poisons Schedule (Aust)	Not Scheduled

Globally Harmonised System

Hazard Classification		Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)	
Hazard Categories		Skin Corrosion/Irritation - Category 3	
		Serious Eye Damage/Irritation - Category 2B	
		Carcinogenicity - Category 2	
		Toxic To Reproduction - Category 1B	
		Long-term Hazard To The Aquatic Environment - Category 1	
Pictograms			
Signal Word		Danger	
Hazard Statements		**H316**	Causes mild skin irritation.
		H320	Causes eye irritation.
		H351	Suspected of causing cancer.
		H360FD	May damage fertility. May damage the unborn child.
		H410	Very toxic to aquatic life with long lasting effects.
Precautionary Statements	Prevention	**P281**	Use personal protective equipment as required.
		P201	Obtain special instructions before use.
		P273	Avoid release to the environment.
		P264	Wash hands thoroughly after handling.
	Response	**P308 + P313**	IF exposed or concerned: Get medical attention.
		P391	Collect spillage.
		P332 + P313	If skin irritation occurs: Get medical attention.
		P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
		P337 + P313	If eye irritation persists: Get medical attention.
	Storage	**P405**	Store locked up.
	Disposal	**P501**	Dispose of contents/container in accordance with local / regional / national / international regulations.

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification	NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Di(2-ethylhexyl) phthalate	C24H38O4	117-81-7	99.9 - 100 %

Isononyl alcohol	C9H20O	27458-94-2	<=0.05 %
Water (moisture)	H2O	7732-18-5	<=0.05 %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed	IF SWALLOWED: Rinse mouth thoroughly with water. Get medical advice/attention immediately. Do not induce vomiting unless directed to do so by medical personnel.
Eye	IF IN EYES: Do not rub eyes. Immediately flush eyes with running water for several minutes, holding eyelids open and occasionally lifting the upper and lower lids. Remove contact lenses if present and easy to do. Continue rinsing for at least 15 minutes. If eye irritation persists, get medical advice/attention.
Skin	IF ON SKIN: Remove contaminated clothing and shoes immediately. Flush skin with running water for at least 15 minutes. If skin irritation occurs, get medical advice/attention. Wash contaminated clothing and shoes before reuse.
Inhaled	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical advice/attention immediately. Apply resuscitation if victim is not breathing - Administer oxygen if breathing is difficult.
Advice to Doctor	If exposed or concerned, get medical advice/attention. Keep victim calm and warm - Obtain immediate medical care. Ensure that attending medical personnel are aware of the identity and nature of the product(s) involved, and take precautions to protect themselves.
Medical Conditions Aggravated by Exposure	No information available.

5. FIRE FIGHTING MEASURES

General Measures	If safe to do so, move undamaged containers from fire area. Cool containers with water spray until well after fire is out.
Flammability Conditions	May burn but does not ignite readily.
Extinguishing Media	Use dry chemical, Carbon dioxide (CO2), foam or water spray for extinction - Do not use water jets.
Fire and Explosion Hazard	Containers may explode when heated. May emit flammable vapour if involved in fire.
Hazardous Products of Combustion	Fire may produce irritating, toxic and/or corrosive fumes.
Special Fire Fighting Instructions	Contain runoff from fire control or dilution water - Runoff may pollute waterways.
Personal Protective Equipment	Wear self-contained breathing apparatus (SCBA) and chemical splash suit. SCBA and structural firefighter's uniform may provide limited protection.
Flash Point	215 °C [Open cup]
Lower Explosion Limit	0.3 %
Upper Explosion Limit	No Data Available
Auto Ignition Temperature	350 - 390 °C
Hazchem Code	No Data Available

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	Ensure adequate ventilation. ELIMINATE all ignition sources. Do not touch or walk through spilled material. Avoid breathing vapours and contact with eyes, skin and clothing.
Clean Up Procedures	Absorb with earth, sand or other non-combustible material and transfer to a suitable container for disposal (see SECTION 13).
Containment	Stop leak if safe to do so - Prevent entry into waterways, drains or confined areas.
Decontamination	No information available.

Environmental Precautionary Measures	Spillages and decontamination runoff should be prevented from entering drains and watercourses.
Evacuation Criteria	Spill or leak area should be isolated immediately. Keep unauthorised personnel away. Keep upwind and to higher ground.
Personal Precautionary Measures	Use personal protective equipment as required (see SECTION 8). Large spill: Wear SCBA and chemical splash suit.

7. HANDLING AND STORAGE

Handling	Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure adequate ventilation. Obtain special instructions before use - Do not handle until all safety precautions have been read and understood. Avoid breathing mist/vapours and contact with eyes, skin and clothing. Do not ingest. Use personal protective equipment as required (see SECTION 8). Take precautionary measures against static discharge.
Storage	Store in a cool, dry and well-ventilated place, out of direct sunlight. Keep container tightly closed. Check regularly for leaks. Keep away from heat and sources of ignition - No smoking. Keep away from incompatible materials (see SECTION 10). Store locked up.
Container	Keep in the original container. Do not store in damaged containers.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	For Dioctyl phthalate (CAS No. 117-81-7): - Safe Work Australia Exposure Standard: TWA = 5 mg/m3; STEL = 10 mg/m3. - New Zealand Workplace Exposure Standard: TWA = 5 mg/m3; STEL = 10 mg/m3.
Exposure Limits	No Data Available
Biological Limits	No information available.
Engineering Measures	A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area.
Personal Protection Equipment	- Respiratory protection: Wear respiratory protection in case of inadequate ventilation or under conditions of frequent use or heavy exposure. Recommended: Any supplied-air respirator that has a full facepiece or self-contained breathing apparatus (refer to AS/NZS 1715 & 1716). - Eye/face protection: Wear appropriate eye protection to avoid eye contact. Recommended: Safety goggles; Face-shield, if the situation requires. - Hand protection: Handle with gloves. Recommended: Impervious gloves. - Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Recommended: Impervious protective clothing; Protective boots.
Special Hazards Precaustions	No information available.
Work Hygienic Practices	Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Remove contaminated clothing and shoes immediately and wash before reuse.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Appearance	Oily liquid
Odour	No or slight odour
Colour	Colourless
pH	No Data Available
Vapour Pressure	0.023 mmHg (@ 20 °C)

Relative Vapour Density	13.45 - 16 Air = 1
Boiling Point	384 - 385 °C
Melting Point	-50 - -55 °C
Freezing Point	No Data Available
Solubility	Insoluble in water (0.005% @ 20°C) - Slightly soluble in carbon tetrachloride
Specific Gravity	0.986 (Water = 1)
Flash Point	215 °C [Open cup]
Auto Ignition Temp	350 - 390 °C
Evaporation Rate	No Data Available
Bulk Density	No Data Available
Corrosion Rate	No Data Available
Decomposition Temperature	No Data Available
Density	No Data Available
Specific Heat	No Data Available
Molecular Weight	390.56 g/mol
Net Propellant Weight	No Data Available
Octanol Water Coefficient	5.03
Particle Size	No Data Available
Partition Coefficient	No Data Available
Saturated Vapour Concentration	No Data Available
Vapour Temperature	No Data Available
Viscosity	No Data Available
Volatile Percent	No Data Available
VOC Volume	No Data Available
Additional Characteristics	No information available.
Potential for Dust Explosion	Not applicable.
Fast or Intensely Burning Characteristics	No information available.
Flame Propagation or Burning Rate of Solid Materials	No information available.
Non-Flammables That Could Contribute Unusual Hazards to a Fire	No information available.
Properties That May Initiate or Contribute to Fire Intensity	May burn but does not ignite readily.
Reactions That Release Gases or Vapours	Fire/decomposition may produce irritating, toxic and/or corrosive fumes.
Release of Invisible Flammable Vapours and Gases	May emit flammable vapour if involved in fire.

10. STABILITY AND REACTIVITY

General Information	No information available.
Chemical Stability	This material is stable under recommended storage and handling conditions.
Conditions to Avoid	Keep away from heat and sources of ignition. Take precautionary measures against static discharge.
Materials to Avoid	Incompatible/reactive with nitrates, strong oxidisers, acids and alkalis.
Hazardous Decomposition Products	Fire/decomposition may produce irritating, toxic and/or corrosive fumes.

Hazardous Polymerisation Will not occur.

11. TOXICOLOGICAL INFORMATION

General Information

- Acute toxicity: Low acute toxicity. Ingestion may cause abdominal cramps, diarrhoea, nausea.
- Skin corrosion/irritation: Causes mild skin irritation.
- Eye damage/irritation: Causes eye irritation, with redness, pain.
- Respiratory/skin sensitisation: Not a skin sensitiser (Guinea pigs) [NICNAS].
- Germ cell mutagenicity: Regarded as non-genotoxic [NICNAS].
- Carcinogenicity: Suspected of causing cancer. Di(2-ethylhexyl)phthalate (CAS No. 117-81-7) is classified by the IARC Monographs as "Possibly carcinogenic to humans" (Group 2B).
- Reproductive toxicity: May damage fertility or the unborn child. Multi-generational studies with rodents reveal adverse reproductive effects of the chemical manifesting as decreased fertility and adverse developmental effects on progeny [NICNAS]. Potential endocrine disruption mechanism.
- STOT (single exposure): May cause respiratory tract irritation, with cough, sore throat.
- STOT (repeated exposure): May cause adverse systemic effects following repeated exposure (liver, testes and kidney); However, liver effects due to peroxisome proliferation in rodents are not considered relevant to humans [NICNAS].
- Aspiration toxicity: No information available.

Acute

Ingestion

Acute toxicity (Oral):
- LD50, Rat: 3,500 mg/kg [Supplier's SDS].

Other

Acute toxicity (Dermal):
- LD50, Rabbit: 25,000 mg/kg [Supplier's SDS].

Inhalation

Acute toxicity (Inhalation):
- LC50, Rat: >10.62 mg/l (4 h) [Supplier's SDS].

Carcinogen Category Cat. 2

12. ECOLOGICAL INFORMATION

Ecotoxicity

Acute aquatic toxicity:
- LC50, Fish (Pimephales promelas): >0.16 mg/L (96 h) static [NICNAS].
- EC50, Invertebrates (Daphnia pulex): 0.133 mg/L (48 h) static (Immobilisation) [NICNAS].
- EC50, Algae (Selenastrum capricornutum): >0.10 mg/L (96 h) static [NICNAS].

Chronic aquatic toxicity:
- LOEC, Fish (Poecilia reticulata): 0.001 mg/L (91 d) semi-static (Growth inhibition) [NICNAS].
- NOEC, Inverebrates (Daphnia magna): 0.077 mg/L (21 d) [NICNAS].
- NOEC, Algae (Selenastrum capricornutum): 0.1 mg/L (96 h) static [NICNAS].

*With the exception of the fish chronic toxicity study, the acute and chronic ecotoxicity values for DEHP all exceed the water solubility of this hydrophobic chemical. Acute effects of phthalate esters appear to result from a narcotic mode of toxic action, with very hydrophobic phthalate esters not exhibiting acute aquatic toxicity up to the limit of their solubility in water [NICNAS].

*There is evidence that endocrine activity of DEHP results in adverse outcomes in fish exposed to this chemical [NICNAS].

Persistence/Degradability Likely to be rapidly degradable in water under aerobic conditions. Expected to be persistent in sediment and under anaerobic conditions.

Mobility No information available.

Environmental Fate Very toxic to aquatic life with long lasting effects - Avoid release to the environment.

*Expected to have no acute aquatic toxicity at water saturation. DEHP has high chronic toxicity to fish and it has endocrine activity that is sufficient to cause adverse outcomes in fish at environmentally relevant exposure concentrations.

Bioaccumulation Potential Not expected to bioaccumulate.

Environmental Impact No Data Available

13. DISPOSAL CONSIDERATIONS

General Information	Dispose of contents/container in accordance with local/regional/national regulations.
Special Precautions for Land Fill	No information available.

14. TRANSPORT INFORMATION

Land Transport (Australia)
ADG Code

Proper Shipping Name	Dioctyl phthalate (DOP)
Class	C2 Combustible Liquids - Flash Point >93°C, Closed Cup, Not Excluded Flammable
Subsidiary Risk(s)	No Data Available
EPG	47 Low To Moderate Hazard Substances
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	AU01
Comments	Not regulated as DG when transported by road or rail in packagings that do not incorporate a receptacle exceeding 500 kg(L) or IBCs.

Land Transport (Malaysia)
ADR Code

Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Dioctyl phthalate)
Class	9 Miscellaneous Dangerous Goods and Articles
Subsidiary Risk(s)	No Data Available
EPG	47 Low To Moderate Hazard Substances
UN Number	3082
Hazchem	3Z
Pack Group	III
Special Provision	No Data Available

Land Transport (New Zealand)
NZS5433

Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Dioctyl phthalate)
Class	9 Miscellaneous Dangerous Goods and Articles
Subsidiary Risk(s)	No Data Available
EPG	47 Low To Moderate Hazard Substances
UN Number	3082
Hazchem	3Z
Pack Group	III
Special Provision	No Data Available

Land Transport (United States of America)
US DOT

Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Dioctyl phthalate)
Class	9 Miscellaneous Dangerous Goods and Articles
Subsidiary Risk(s)	No Data Available
ERG	171 Substances (Low to Moderate Hazard)
UN Number	3082
Hazchem	3Z
Pack Group	III
Special Provision	No Data Available

Sea Transport
IMDG Code

Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Dioctyl phthalate)
Class	9 Miscellaneous Dangerous Goods and Articles
Subsidiary Risk(s)	No Data Available
UN Number	3082
Hazchem	3Z
Pack Group	III
Special Provision	No Data Available
EMS	F-A, S-F
Marine Pollutant	Yes

Air Transport
IATA DGR

Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Dioctyl phthalate)
Class	9 Miscellaneous Dangerous Goods and Articles
Subsidiary Risk(s)	No Data Available
UN Number	3082
Hazchem	3Z
Pack Group	III
Special Provision	No Data Available

National Transport Commission (Australia)
Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification	NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

15. REGULATORY INFORMATION

General Information	DIETHYLHEXYL PHTHALATE for cosmetic use is listed in Schedule 10 of the SUSMP (substances of such danger to health as to warrant prohibition of sale, supply and use).
Poisons Schedule (Aust)	Not Scheduled

Environmental Protection Authority (New Zealand)
Hazardous Substances and New Organisms Amendment Act 2015

Approval Code	Additives Process Chemicals and Raw Materials Carcinogenic Group Standard 2020 HSR002512 *HSR002982 (Revoked)

National/Regional Inventories

Australia (AIIC)	Listed
Canada (DSL)	Not Determined
Canada (NDSL)	Not Determined
China (IECSC)	Not Determined
Europe (EINECS)	Not Determined
Europe (REACh)	Not Determined
Japan (ENCS/METI)	Not Determined
Korea (KECI)	Not Determined
Malaysia (EHS Register)	Not Determined
New Zealand (NZIoC)	Listed
Philippines (PICCS)	Not Determined
Switzerland (Giftliste 1)	Not Determined
Switzerland (Inventory of Notified Substances)	Not Determined
Taiwan (NCSR)	Not Determined
USA (TSCA)	Not Determined

16. OTHER INFORMATION

Related Product Codes	DIETHE1000, DIOCPB5200, DIOCPB6100, DIOCPH1000, DIOCPH1001, DIOCPH1002, DIOCPH1003, DIOCPH1004, DIOCPH1005, DIOCPH1006, DIOCPH1007, DIOCPH1008, DIOCPH1009, DIOCPH1010, DIOCPH1011, DIOCPH1012, DIOCPH1013, DIOCPH1014, DIOCPH1015, DIOCPH1016, DIOCPH1017, DIOCPH1018, DIOCPH1019, DIOCPH1020, DIOCPH1021, DIOCPH1022, DIOCPH1023, DIOCPH1024, DIOCPH1025, DIOCPH1026, DIOCPH1027, DIOCPH1028, DIOCPH1029, DIOCPH1030, DIOCPH1031, DIOCPH1032, DIOCPH1033, DIOCPH1034, DIOCPH1035, DIOCPH1036, DIOCPH1037, DIOCPH1038, DIOCPH1039, DIOCPH1200, DIOCPH1250, DIOCPH1260, DIOCPH1270, DIOCPH1500, DIOCPH2000, DIOCPH2100, DIOCPH2200, DIOCPH2400, DIOCPH2450, DIOCPH2455, DIOCPH2500, DIOCPH2550, DIOCPH2570, DIOCPH2600, DIOCPH2650, DIOCPH2700, DIOCPH2900, DIOCPH3000, DIOCPH3001, DIOCPH3002, DIOCPH3010, DIOCPH3500, DIOCPH3600, DIOCPH3800, DIOCPH3900, DIOCPH4000, DIOCPH4001, DIOCPH4005, DIOCPH4050, DIOCPH4200, DIOCPH4300, DIOCPH4400, DIOCPH4600, DIOCPH4700, DIOCPH5000, DIOCPH5001, DIOCPH5002, DIOCPH5003, DIOCPH5004, DIOCPH5005, DIOCPH5100, DIOCPH5200, DIOCPH5201, DIOCPH5500, DIOCPH5501, DIOCPH5502, DIOCPH6000, DIOCPH6001, DIOCPH6250, DIOCPH6500, DIOCPH6505, DIOCPH6510, DIOCPH6520, DIOCPH7000, DIOCPH7001, DIOCPH7500, DIOCPH7501, DIOCPH8000, DIOCPH8500, DIOCPH9200, DIOCPH9400
Revision	5
Revision Date	28 May 2020
Key/Legend	< Less Than > Greater Than **AICS** Australian Inventory of Chemical Substances

atm Atmosphere
CAS Chemical Abstracts Service (Registry Number)
cm^2 Square Centimetres
CO2 Carbon Dioxide
COD Chemical Oxygen Demand
deg C (°C) Degrees Celcius
EPA (New Zealand) Environmental Protection Authority of New Zealand
deg F (°F) Degrees Farenheit
g Grams
g/cm^3 Grams per Cubic Centimetre
g/l Grams per Litre
HSNO Hazardous Substance and New Organism
IDLH Immediately Dangerous to Life and Health
immiscible Liquids are insoluable in each other.
inHg Inch of Mercury
inH2O Inch of Water
K Kelvin
kg Kilogram
kg/m^3 Kilograms per Cubic Metre
lb Pound
LC50 LC stands for lethal concentration. LC50 is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours.
LD50 LD stands for Lethal Dose. LD50 is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals.
ltr or **L** Litre
m^3 Cubic Metre
mbar Millibar
mg Milligram
mg/24H Milligrams per 24 Hours
mg/kg Milligrams per Kilogram
mg/m^3 Milligrams per Cubic Metre
Misc or **Miscible** Liquids form one homogeneous liquid phase regardless of the amount of either component present.
mm Millimetre
mmH2O Millimetres of Water
mPa.s Millipascals per Second
N/A Not Applicable
NIOSH National Institute for Occupational Safety and Health
NOHSC National Occupational Heath and Safety Commission
OECD Organisation for Economic Co-operation and Development
Oz Ounce
PEL Permissible Exposure Limit
Pa Pascal
ppb Parts per Billion
ppm Parts per Million
ppm/2h Parts per Million per 2 Hours
ppm/6h Parts per Million per 6 Hours
psi Pounds per Square Inch
R Rankine
RCP Reciprocal Calculation Procedure
STEL Short Term Exposure Limit
TLV Threshold Limit Value
tne Tonne
TWA Time Weighted Average
ug/24H Micrograms per 24 Hours
UN United Nations
wt Weight