ISO14389 Phthalates Reference Standard

Novachem Pty Ltd

Chemwatch Hazard Alert Code: **3**

Version No: **1.1**
Safety Data Sheet according to Work Health and Safety Regulations (Hazardous Chemicals) 2023 and ADG requirements

Initial Date: **06/02/2026**
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Print Date: **06/02/2026**
S.GHS.AUS.EN

SECTION 1 Identification of the substance / mixture and of the company / undertaking

Product Identifier

Product name	ISO14389 Phthalates Reference Standard
Synonyms	Not Available
Proper shipping name	HEXANES
Other means of identification	ISO14389

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses	Laboratory Chemical Reference Material

Details of the manufacturer or importer of the safety data sheet

Registered company name	**Novachem Pty Ltd**	**Novachem Pty Ltd**
Address	25 Crissane Road, Heidelberg West Victoria 3081 Australia	25 Crissane Road, Heidelberg West Victoria 3081 Australia
Telephone	+61384151255	+61384151255
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Website	www.novachem.com.au	www.novachem.com.au
Email	novachem@novachem.com.au	novachem@novachem.com.au

Emergency telephone number

Association / Organisation	**Victorian Poisons Information Centre**	**Victorian Poisons Information Centre**
Emergency telephone number(s)	13 11 26	13 11 26
Other emergency telephone number(s)	Not Available	Not Available

SECTION 2 Hazards identification

Classification of the substance or mixture

Poisons Schedule	Not Applicable
Classification [1]	Flammable Liquids Category 2, Acute Toxicity (Oral) Category 4, Aspiration Hazard Category 1, Skin Corrosion/Irritation Category 2, Serious Eye Damage/Eye Irritation Category 2B, Acute Toxicity (Inhalation) Category 4, Specific Target Organ Toxicity - Single Exposure (Respiratory Tract Irritation) Category 3, Specific Target Organ Toxicity - Single Exposure (Narcotic Effects) Category 3, Carcinogenicity Category 2, Reproductive Toxicity Category 1B, Specific Target Organ Toxicity - Repeated Exposure Category 2, Hazardous to the Aquatic Environment Acute Hazard Category 3, Hazardous to the Aquatic Environment Long-Term Hazard Category 2
Legend:	***1. Classified by Chemwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI***

Label elements

Hazard pictogram(s)	
Signal word	**Danger**

Hazard statement(s)

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H225	Highly flammable liquid and vapour.
H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H320	Causes eye irritation.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.
H351	Suspected of causing cancer.
H360	May damage fertility or the unborn child.
H373	May cause damage to organs through prolonged or repeated exposure.
H402	Harmful to aquatic life.
H411	Toxic to aquatic life with long lasting effects.

Precautionary statement(s) Prevention

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P260	Do not breathe mist/vapours/spray.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves and protective clothing.

Precautionary statement(s) Response

P301+P310	IF SWALLOWED: Immediately call a POISON CENTER/doctor/physician/first aider.
P331	Do NOT induce vomiting. If more than 15 mins from Doctor, INDUCE VOMITING (if conscious).
P308+P313	IF exposed or concerned: Get medical advice/ attention.
P370+P378	In case of fire: Use alcohol resistant foam or normal protein foam to extinguish.

Precautionary statement(s) Storage

P403+P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.

Precautionary statement(s) Disposal

P501	Dispose of contents/container to authorised hazardous or special waste collection point in accordance with any local regulation.

No further product hazard information.

SECTION 3 Composition / information on ingredients

Substances

See section below for composition of Mixtures

Mixtures

CAS No	%[weight]	Name
110-54-3	98.5	n-hexane
84-61-7	0.1	dicyclohexyl phthalate
28553-12-0	0.1	diisononyl phthalate
117-81-7	0.1	di-sec-octyl phthalate
117-84-0	0.1	di-n-octyl phthalate
26761-40-0	0.1	diisodecyl phthalate
85-68-7	0.1	butyl benzyl phthalate
84-74-2	0.1	dibutyl phthalate
84-69-5	0.1	diisobutyl phthalate
131-18-0	0.1	diamyl phthalate
71888-89-6	0.1	diisoheptyl phthalate
117-82-8	0.1	dimethylglycol phthalate
605-50-5	0.1	diisoamyl phthalate
84-75-3	0.1	dihexyl phthalate
776297-69-9	0.1	isopentyl pentyl phthalate
71850-09-4	0.1	diisohexyl phthalate
Legend:	***1. Classified by Chemwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI; 4. Classification drawn from C&L; * EU IOELVs available***	

SECTION 4 First aid measures

Description of first aid measures

Eye Contact	If this product comes in contact with the eyes: ▸ Wash out immediately with fresh running water.

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	▸ 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. ▸ Seek medical attention without delay; if pain persists or recurs seek medical attention. ▸ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Skin Contact	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.
Inhalation	▸ If fumes or combustion products are inhaled remove from contaminated area. ▸ Lay patient down. Keep warm and rested. ▸ Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures. ▸ Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary. ▸ Transport to hospital, or doctor, without delay.
Ingestion	▸ If spontaneous vomiting appears imminent or occurs, hold patient's head down, lower than their hips to help avoid possible aspiration of vomitus. ▸ 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. ▸ Avoid giving milk or oils. ▸ Avoid giving alcohol.

Indication of any immediate medical attention and special treatment needed

Following acute or short term repeated exposures to n-hexane:
- Large quantities of n-hexane are expired by the lungs after vapour exposure (50-60%). Humans exposed to 100 ppm demonstrate an n-hexane biological half life of 2 hours.
- Initial attention should be directed towards evaluation and support of respiration. Cardiac dysrhythmias are a potential complication.

INGESTION:
- Ipecac syrup should be considered for ingestion of pure hexane exceeding 2-3ml/kg. Extreme caution must be taken to avoid aspiration since small amounts of n-hexane intratracheally, produce a severe chemical pneumonitis.

[***Ellenhorn and Barceloux: Medical Toxicology***]
BIOLOGICAL EXPOSURE INDEX - BEI
BEIs represent the levels of determinants which are most likely to be observed in specimens collected in a healthy worker who has been exposed to chemicals to the same extent as a worker with inhalation exposure to the Exposure Standard (ES or TLV).

Determinant	Index	Sampling Time	Comments
1. 2,5-hexanedione in urine	5 mg/gm creatinine	End of shift	NS
2. n-Hexane in end-exhaled air			SQ

NS: Non-specific determinant; Metabolite observed following exposure to other materials.
SQ: Semi-quantitative determinant; Interpretation may be ambiguous - should be used as a screening test or confirmatory test.

SECTION 5 Firefighting measures

Extinguishing media

Special hazards arising from the substrate or mixture

Fire Incompatibility	▸ Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result

Advice for firefighters

Fire Fighting	
Fire/Explosion Hazard	▸ Liquid and vapour are highly flammable. ▸ Severe fire hazard when exposed to heat, flame and/or oxidisers. ▸ Vapour may travel a considerable distance to source of ignition. ▸ Heating may cause expansion or decomposition leading to violent rupture of containers. Combustion products include: ▸ carbon dioxide (CO_2) ▸ other pyrolysis products typical of burning organic material. May emit clouds of acrid smoke
HAZCHEM	3YE

SECTION 6 Accidental release measures

Personal precautions, protective equipment and emergency procedures

See section 8

Environmental precautions

See section 12

Methods and material for containment and cleaning up

Minor Spills	Environmental hazard - contain spillage. ▸ Remove all ignition sources. ▸ Clean up all spills immediately. ▸ Avoid breathing vapours and contact with skin and eyes. ▸ Control personal contact with the substance, by using protective equipment.
Major Spills	Environmental hazard - contain spillage. ▸ Clear area of personnel and move upwind. ▸ Alert Fire Brigade and tell them location and nature of hazard. ▸ Wear breathing apparatus plus protective gloves. ▸ Prevent, by any means available, spillage from entering drains or water course.

Personal Protective Equipment advice is contained in Section 8 of the SDS.

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SECTION 7 Handling and storage

Precautions for safe handling

Safe handling	▸ Containers, even those that have been emptied, may contain explosive vapours. ▸ Do NOT cut, drill, grind, weld or perform similar operations on or near containers. ▸ Avoid skin 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** allow clothing wet with material to stay in contact with skin
Other information	▸ Store in original containers in approved flame-proof area. ▸ No smoking, naked lights, heat or ignition sources. ▸ **DO NOT** store in pits, depression, basement or areas where vapours may be trapped. ▸ Keep containers securely sealed.

Conditions for safe storage, including any incompatibilities

Suitable container	▸ Packing as supplied by manufacturer. ▸ Plastic containers may only be used if approved for flammable liquid. ▸ Check that containers are clearly labelled and free from leaks. ▸ For low viscosity materials (i) : Drums and jerry cans must be of the non-removable head type. (ii) : Where a can is to be used as an inner package, the can must have a screwed enclosure. ▸ For materials with a viscosity of at least 2680 cSt. (23 deg. C) ▸ For manufactured product having a viscosity of at least 250 cSt.
Storage incompatibility	Phthalates: ▸ react with strong acids, strong oxidisers, permanganates and nitrates ▸ attack some form of plastics ▸ Avoid reaction with oxidising agents

SECTION 8 Exposure controls / personal protection

Control parameters

Occupational Exposure Limits (OEL)

INGREDIENT DATA

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
Australia Exposure Standards	di-sec-octyl phthalate	Di-sec-octyl phthalate	5 mg/m3	10 mg/m3	Not Available	Not Available
Australia Exposure Standards	dibutyl phthalate	Dibutyl phthalate	5 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	n-hexane	Hexane (n-Hexane)	20 ppm / 72 mg/m3	Not Available	Not Available	Not Available

Exposure controls

Appropriate engineering controls	Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection. The basic types of engineering controls are: Process controls which involve changing the way a job activity or process is done to reduce the risk. Enclosure and/or isolation of emission source which keeps a selected hazard 'physically' away from the worker and ventilation that strategically 'adds' and 'removes' air in the work environment.
Individual protection measures, such as personal protective equipment	
Eye and face protection	▸ Safety glasses with side shields. ▸ Chemical goggles. [AS/NZS 1337.1, EN166 or national equivalent] ▸ Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task.
Skin protection	See Hand protection below
Hands/feet protection	▸ Wear chemical protective gloves, e.g. PVC. ▸ Wear safety footwear or safety gumboots, e.g. Rubber **NOTE:** ▸ The material may produce skin sensitisation in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact. ▸ Contaminated leather items, such as shoes, belts and watch-bands should be removed and destroyed. The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application. The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice. Personal hygiene is a key element of effective hand care.
Body protection	See Other protection below
Other protection	▸ Overalls. ▸ PVC Apron. ▸ PVC protective suit may be required if exposure severe. ▸ Eyewash unit. ▸ Some plastic personal protective equipment (PPE) (e.g. gloves, aprons, overshoes) are not recommended as they may produce static electricity. ▸ For large scale or continuous use wear tight-weave non-static clothing (no metallic fasteners, cuffs or pockets). ▸ Non sparking safety or conductive footwear should be considered. Conductive footwear describes a boot or shoe with a sole made from a conductive compound chemically bound to the bottom components, for permanent control to electrically ground the foot an shall dissipate static electricity from the body to reduce the possibility of ignition of volatile compounds.

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Recommended material(s)

GLOVE SELECTION INDEX

Glove selection is based on a modified presentation of the:
'Forsberg Clothing Performance Index'.
The effect(s) of the following substance(s) are taken into account in the ***computer-generated*** selection:
ISO14389 Phthalates Reference Standard

Material	CPI
BUTYL	C
NATURAL RUBBER	C
NATURAL+NEOPRENE	C
NEOPRENE	C
NEOPRENE/NATURAL	C
NITRILE	C
NITRILE+PVC	C
PE/EVAL/PE	C
PVA	C
PVC	C
SARANEX-23 2-PLY	C
TEFLON	C
VITON	C
VITON/CHLOROBUTYL	C

* CPI - Chemwatch Performance Index
A: Best Selection
B: Satisfactory; may degrade after 4 hours continuous immersion
C: Poor to Dangerous Choice for other than short term immersion
NOTE: As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. -
* Where the glove is to be used on a short term, casual or infrequent basis, factors such as 'feel' or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

Respiratory protection

Type AX-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

Where the concentration of gas/particulates in the breathing zone, approaches or exceeds the 'Exposure Standard' (or ES), respiratory protection is required. Degree of protection varies with both face-piece and Class of filter; the nature of protection varies with Type of filter.

Required Minimum Protection Factor	Half-Face Respirator	Full-Face Respirator	Powered Air Respirator
up to 10 x ES	AX-AUS P2	-	AX-PAPR-AUS / Class 1 P2
up to 50 x ES	-	AX-AUS / Class 1 P2	-
up to 100 x ES	-	AX-2 P2	AX-PAPR-2 P2 ^

^ - Full-face
A(All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO2), G = Agricultural chemicals, K = Ammonia(NH3), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

- Cartridge respirators should never be used for emergency ingress or in areas of unknown vapour concentrations or oxygen content.
- The wearer must be warned to leave the contaminated area immediately on detecting any odours through the respirator. The odour may indicate that the mask is not functioning properly, that the vapour concentration is too high, or that the mask is not properly fitted. Because of these limitations, only restricted use of cartridge respirators is considered appropriate.
- Cartridge performance is affected by humidity. Cartridges should be changed after 2 hr of continuous use unless it is determined that the humidity is less than 75%, in which case, cartridges can be used for 4 hr. Used cartridges should be discarded daily, regardless of the length of time used

SECTION 9 Physical and chemical properties

Information on basic physical and chemical properties

Appearance	Clear Liquid

Physical state	Liquid	**Relative density (Water = 1)**	0.660
Odour	Characteristic	**Partition coefficient n-octanol / water**	Not Available
Odour threshold	Not Available	**Auto-ignition temperature (°C)**	234
pH (as supplied)	Not Available	**Decomposition temperature (°C)**	Not Available
Melting point / freezing point (°C)	-95	**Viscosity (cSt)**	Not Available
Initial boiling point and boiling range (°C)	68-70	**Molecular weight (g/mol)**	Not Available
Flash point (°C)	-26	**Taste**	Not Available
Evaporation rate	9 BuAC = 1	**Explosive properties**	Not Available
Flammability	HIGHLY FLAMMABLE.	**Oxidising properties**	Not Available
Upper Explosive Limit (%)	7.7	**Surface Tension (dyn/cm or mN/m)**	Not Available
Lower Explosive Limit (%)	1.2	**Volatile Component (%vol)**	>99
Vapour pressure (kPa)	16.67	**Gas group**	Not Available
Solubility in water	Immiscible	**pH as a solution (1%)**	Not Available
Vapour density (Air = 1)	3	**VOC g/L**	Not Available
Heat of Combustion (kJ/g)	Not Available	**Ignition Distance (cm)**	Not Available
Flame Height (cm)	Not Available	**Flame Duration (s)**	Not Available
Enclosed Space Ignition Time Equivalent (s/m3)	Not Available	**Enclosed Space Ignition Deflagration Density (g/m3)**	Not Available

SECTION 10 Stability and reactivity

Reactivity	See section 7
Chemical stability	- Unstable in the presence of incompatible materials. - Product is considered stable. - Hazardous polymerisation will not occur.
Possibility of hazardous reactions	See section 7

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Conditions to avoid	See section 7
Incompatible materials	See section 7
Hazardous decomposition products	See section 5

SECTION 11 Toxicological information

Information on toxicological effects

a) Acute Toxicity	There is sufficient evidence to classify this material as acutely toxic.
b) Skin Irritation/Corrosion	There is sufficient evidence to classify this material as skin corrosive or irritating.
c) Serious Eye Damage/Irritation	There is sufficient evidence to classify this material as eye damaging or irritating
d) Respiratory or Skin sensitisation	Based on available data, the classification criteria are not met.
e) Mutagenicity	Based on available data, the classification criteria are not met.
f) Carcinogenicity	There is sufficient evidence to classify this material as carcinogenic
g) Reproductivity	There is sufficient evidence to classify this material as toxic to reproductivity
h) STOT - Single Exposure	There is sufficient evidence to classify this material as toxic to specific organs through single exposure
i) STOT - Repeated Exposure	There is sufficient evidence to classify this material as toxic to specific organs through repeated exposure
j) Aspiration Hazard	There is sufficient evidence to classify this material as an aspiration hazard

Inhaled	Inhalation of vapours or aerosols (mists, fumes), generated by the material during the course of normal handling, may be harmful. The material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage. Inhalation of vapours may cause drowsiness and dizziness. This may be accompanied by sleepiness, reduced alertness, loss of reflexes, lack of co-ordination, and vertigo. Inhalation of high concentrations of gas/vapour causes lung irritation with coughing and nausea, central nervous depression with headache and dizziness, slowing of reflexes, fatigue and inco-ordination.
Ingestion	The material is not thought to produce adverse health effects following ingestion (as classified by EC Directives using animal models). Nevertheless, adverse systemic 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. Swallowing of the liquid may cause aspiration into the lungs with the risk of chemical pneumonitis; serious consequences may result. (ICSC13733) The toxicity of phthalates is not excessive due to slow oral absorption and metabolism. Absorption is affected by fat in the diet. Repeated doses can cause cumulative toxic effects, and symptoms include an enlarged liver which often reverses if exposure is maintained. Carbohydrate metabolism is disrupted, and cholesterol and triglyceride levels in the blood falls.
Skin Contact	This material can cause inflammation of the skin on contact in some persons. The material may accentuate any pre-existing dermatitis condition Skin contact with the material may damage the health of the individual; systemic effects may result following absorption. Open cuts, abraded or irritated skin should not be exposed to this material 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. The liquid may be able to be mixed with fats or oils and may degrease the skin, producing a skin reaction described as non-allergic contact dermatitis. The material is unlikely to produce an irritant dermatitis as described in EC Directives.
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 characterised by a temporary redness of the conjunctiva (similar to windburn).
Chronic	There has been concern that this material can cause cancer or mutations, but there is not enough data to make an assessment. Long-term exposure to respiratory irritants may result in airways disease, involving difficulty breathing and related whole-body problems. Skin contact with the material is more likely to cause a sensitisation reaction in some persons compared to the general population. Toxic: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed. This material can cause serious damage if one is exposed to it for long periods. It can be assumed that it contains a substance which can produce severe defects. Ample evidence exists from experimentation that reduced human fertility is directly caused by exposure to the material. Ample evidence exists, from results in experimentation, that developmental disorders are directly caused by human exposure to the material. Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure. Exposure to phthalates over years leads to pain, numbness and spasms in the hands and feet. Many people have developed multiple disorders in the nervous system and the balancing system. Chronic inhalation or skin exposure to n-hexane may cause damage to nerve ends in extremities, e.g. finger, toes with loss of sensation. gamma-diketones are generally toxic to the nervous system. They can occur as commercial products or as metabolic products.

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TOXICITY	IRRITATION
Not Available	Not Available

dicyclohexyl phthalate

TOXICITY	IRRITATION
dermal (rat) LD50: >2000 mg/kg[1]	Eye: no adverse effect observed (not irritating)[1]
Oral (Rat) LD50: >2000 mg/kg[1]	Skin: no adverse effect observed (not irritating)[1]

diisononyl phthalate

TOXICITY	IRRITATION
Dermal (rabbit) LD50: >3160 mg/kg[2]	Eye (Rodent - rabbit): 0.1mL - Mild
Inhalation (Rat) LC50: >4.4 mg/l4h[1]	Eye: no adverse effect observed (not irritating)[1]
Oral (Rat) LD50: >10000 mg/kg[2]	Skin: no adverse effect observed (not irritating)[1]

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di-sec-octyl phthalate

TOXICITY	IRRITATION
Dermal (Guinea Pig) LD50: 10000 mg/kg[2]	Eye (Rodent - rabbit): 500mg - Mild
Inhalation (Rat) LC50: >10.62 mg/l4h[2]	Eye (Rodent - rabbit): 500mg/24H - Mild
Oral (Mouse) LD50; 1500 mg/kg[2]	Eye: adverse effect observed (irritating)[1]
	Skin (Rodent - rabbit): 500mg/24H - Mild
	Skin: adverse effect observed (irritating)[1]

di-n-octyl phthalate

TOXICITY	IRRITATION
Dermal (Guinea Pig) LD50: >5000 mg/kg[2]	Eye (Rodent - rabbit): 20mg - Severe
Oral (Mouse) LD50; 6513 mg/kg[2]	Eye (Rodent - rabbit): 500mg/24H - Mild
	Skin (Rodent - rabbit): 500mg/24H - Mild

diisodecyl phthalate

TOXICITY	IRRITATION
dermal (rat) LD50: >2900 mg/kg[2]	Eye (Rodent - rabbit): 0.1mL - Mild
Inhalation (Rat) LC50: >12.54 mg/l4h[2]	Eye: no adverse effect observed (not irritating)[1]
Oral (Rat) LD50: >15000 mg/kg[2]	Skin: no adverse effect observed (not irritating)[1]

butyl benzyl phthalate

TOXICITY	IRRITATION
Dermal (rabbit) LD50: >10000 mg/kg[2]	Eye: no adverse effect observed (not irritating)[1]
Inhalation (Rat) LC50: >6.7 mg/l4h[2]	Skin (Human): 10%
Oral (Rat) LD50: 2330 mg/kg[2]	Skin: no adverse effect observed (not irritating)[1]

dibutyl phthalate

TOXICITY	IRRITATION
Dermal (rabbit) LD50: >2000 mg/kg[2]	Eye: no adverse effect observed (not irritating)[1]
Inhalation (Rat) LC50: >=15.68 mg/l4h[1]	Skin: no adverse effect observed (not irritating)[1]
Oral (Rat) LD50: 8000 mg/kg[2]	

diisobutyl phthalate

TOXICITY	IRRITATION
Dermal (Guinea Pig) LD50: 10000 mg/kg[2]	Eye: no adverse effect observed (not irritating)[1]
Oral (Rat) LD50: 15000 mg/kg[2]	Skin: no adverse effect observed (not irritating)[1]

diamyl phthalate

TOXICITY	IRRITATION
Not Available	Not Available

diisoheptyl phthalate

TOXICITY	IRRITATION
Dermal (rabbit) LD50: >3160 mg/kg[2]	Not Available
Oral (Rat) LD50: >10000 mg/kg[2]	

dimethylglycol phthalate

TOXICITY	IRRITATION
Dermal (Guinea Pig) LD50: >20000 mg/kg[2]	Eye (Rodent - rabbit): 100mg - Mild
Oral (Mouse) LD50; 3200 mg/kg[2]	Skin (Rodent - guinea pig): 500mg - Mild

diisoamyl phthalate

TOXICITY	IRRITATION
Oral (Rat) LD50: >=2000 mg/kg[1]	Not Available

dihexyl phthalate

TOXICITY	IRRITATION
Dermal (Guinea Pig) LD50: 10000 mg/kg[2]	Skin (Rodent - rabbit): 500mg/24H - Mild
Oral (Mouse) LD50; 1500 mg/kg[2]	

isopentyl pentyl phthalate

TOXICITY	IRRITATION
Not Available	Not Available

Continued...

diisohexyl phthalate

TOXICITY	IRRITATION

Continued...

	Not Available	Not Available

n-hexane

TOXICITY	IRRITATION
Dermal (rabbit) LD50: >2000 mg/kg[1]	Eye (Rodent - rabbit): 10mg - Mild
Inhalation (Rat) LC50: 48000 ppm4h[2]	Eye: no adverse effect observed (not irritating)[1]
Oral (Rat) LD50: 28710 mg/kg[2]	Skin: no adverse effect observed (not irritating)[1]

Legend:	***1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2. Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances***

DICYCLOHEXYL PHTHALATE	DCHP can be considered to have low acute toxicity. It causes minimal irritation of the skin and eye. It may also cause wheezing. Animal testing suggests that repeated exposure may cause increased weight of the liver.
DIISONONYL PHTHALATE	[Huls] The effects of DINP on fertility-related parameters such as reduced testosterone content and production and altered reproductive organ weights (with or without histopathologies) have been demonstrated in rats. Although quantitatively being less potent, DINP has exhibited adverse effects on the male reproductive system and sexual differentiation during development in a number of rodent studies (e.g. increased nipple retention, testicular pathology and decreased AGD/AGI in male offspring), which are components of the antiandrogenic pattern observed with diethylhexyl phthalate (DEHP) (a known reproductive toxicant). Foetal expression of genes involved in androgen synthesis such as StAR and Cyp11a were also reduced. There was also a report of increased gene expression levels of Insl3 (a foetal Leydig cell product critical for testis descent) that may infer the impaired testicular steroidogenesis following exposure to DINP at high doses (e.g. = 750 mg/kg bw/d). Considering the chemical composition of DINP, which is represented as mixed phthalates with side-chains made up of 5?10% methylethylhexyl, limited evidence of the toxicological properties of transitional phthalates may be expected at high doses of DINP tested The reduced pup weight was observed at approximately 100 mg/kg bw/d in both sexes, both in one- and two-generation reproductive studies in rats, in the absence of overt maternal toxicity. The pup weight reduction was also sustained and not considered solely related to low birth weight. In a post-natal toxicity study, reduced pup weight was also reduced at = 250 mg/kg bw/d. Therefore, this adverse effect of DINP is assessed as the most sensitive endpoint on offspring development. Overall, the available human data do not provide sufficient evidence for a causal relationship between exposure to DINP and adverse health effects in humans. There is also insufficient information to examine the mode of action of DINP on male reproductive tract development and sexual function in comparison with transitional phthalates. However, elements of the plausible mode of action for DINP effects on the male reproductive system, offspring growth and sexual differentiation are considered likely to be parallel in rats and humans if the exposure to DINP is high and within a critical window of development. Therefore, the effects observed in animal studies are regarded as relevant to a human risk assessment.
DI-SEC-OCTYL PHTHALATE	Oral (rat) NOAEL: 28.9-36.1 mg/kg/day Di-sec-octyl phthalate (DEHP) in animal testing has not been shown to be acutely toxic when swallowed. Very high doses may cause reduced growth and increased liver and kidney weights. In animals, DEHP does not seem to affect fertility; however it may cause birth defects (notably of the bone) and mutations. Workers exposed to phthalate vapours have noted pain, numbness and limb spasms after years of exposure, with inflammation of nerves and poor balance. **WARNING:** This substance has been classified by the IARC as Group 2B: Possibly Carcinogenic to Humans. Tenth Annual Report on Carcinogens: Substance anticipated to be Carcinogen [***National Toxicology Program: U.S. Dep. of Health & Human Services 2002***]
DI-N-OCTYL PHTHALATE	The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.
DIISODECYL PHTHALATE	Effects, Chronic Exposure General liver damage reported in rodents and dogs fed DIDP; not a route of industrial exposure Sensitising not a sensitiser 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 for bis(2-propylheptyl)phthalate A substance thought to be comparable to bis(2-propylheptyl)phthalate is diisodecyl phthalate (syn: DIDP) **Acute toxicity:** Bis(2-propylheptyl)phthalate is of low acute oral, dermal and inhalation toxicity and is slightly irritating to eyes and skin. The result of the non-adjuvant skin sensitisation test provided for assessment was negative and additional information available in the EU report for DIDP indicates that the material has low sensitising potential. **Repeat dose toxicity** : Based on repeated dose studies using DIDP, the more complex analogue of the substance, the target organ in subacute and subchronic studies in rats is the liver, the effects observed being increased liver weight and changes in liver peroxisome proliferator enzyme activities. As the NOAELs derived are due to the latter, which is considered to be species-specific and of little relevance to humans, the NOAEL of 15 mg/kg/day from a 90-day dog study was used in the EU risk assessment. However, this study was considered to be of poor reliability.
BUTYL BENZYL PHTHALATE	Activation of the aryl hydrocarbon receptor (AhR) may lead to certain toxic responses. The “his” receptor has been shown to regulate xenobiotic-metabolising enzymes, such as cytochrome c. Toxicity results from two different ways of receptor signalling. The first is a side effect of the adaptive response, in which the induction of metabolising enzymes results in the production of toxic metabolites. The second results from changes in global gene transcription, beyond those observed in the “AhR gene group”. The substance is classified by IARC as Group 3: **NOT** classifiable as to its carcinogenicity to humans. Evidence of carcinogenicity may be inadequate or limited in animal testing. For benzyl butyl phthalate (BBP): Repeat dose toxicity: Animal studies show that BBP may affect the pancreas, kidney, liver and blood, and the testes at higher doses. Reproductive toxicity and birth defects: Animal studies suggest that BBP may reduce fertility. Developmental toxicity: BBP causes significant developmental effects but only at levels that would be toxic to the mother. Cancer-causing potential: Animal studies show that there is some evidence of cancer-causing potential for BBP. Genetic toxicity: Animal studies results are conflicting, with some negative results and others showing that BBP can cause chromosomal aberrations.
DIBUTYL PHTHALATE	For dibutyl phthalate (DBP): In studies on rats, DBP is absorbed through the skin, although studies have shown human skin is less permeable. Animal testing shows DBP is rapidly absorbed from the gastrointestinal tract, distributed mainly in the liver and kidneys and excreted in urine as breakdown products if given orally or through a vein. Accumulation has not been observed in any organ. The profile of effects following exposure to DBP is similar to that of other phthalate esters, which, in susceptible species, can cause enlarged liver, toxicity to the foetus, birth defects, and damage to the testicles. Acute toxicity: Animal testing shows that acute toxicity of DBP is low.
DIMETHYLGLYCOL PHTHALATE	Paternal effects, specific developmental abnormalities (central nervous system, eye/ear, cardiovascular system, msculoskeletal system), effects on fertility, foetolethality recorded. Exposure to the material for prolonged periods may cause physical defects in the developing embryo (teratogenesis).
DIHEXYL PHTHALATE	for di-sec-octyl phthalate
ISO14389 Phthalates Reference Standard &	Asthma-like symptoms may continue for months or even years after exposure to the material ends. This may be due to a non-allergic condition known as reactive airways dysfunction syndrome (RADS) which can occur after exposure to high levels of highly irritating compound. Main criteria for diagnosing RADS include the absence of previous airways disease in a non-atopic individual, with sudden onset

Continued...

DICYCLOHEXYL PHTHALATE & DI-N-OCTYL PHTHALATE	of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. Other criteria for diagnosis of RADS include a reversible airflow pattern on lung function tests, moderate to severe bronchial hyperreactivity on methacholine challenge testing, and the lack of minimal lymphocytic inflammation, without eosinophilia.
ISO14389 Phthalates Reference Standard & DICYCLOHEXYL PHTHALATE	The following information refers to contact allergens as a group and may not be specific to this product. Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody-mediated immune reactions.
ISO14389 Phthalates Reference Standard & BUTYL BENZYL PHTHALATE	Although elevated levels of lysophosphatidylcholine (LPC) have been linked to the cardiovascular complications associated with atherosclerosis, ischaemia, and diabetes, the precise pathophysiological roles played by LPC in several states remain to be established. In animal tests the main toxic effect of alkyl-lysophospholipids (ALPs), such as edelfosine, was gastrointestinal irritation. There were no significant negative systemic side effects observed. It showed that edelfosine can be given over a long period safely. Most important, in contrast to many DNA-directed anti-cancer drugs, no bone marrow toxicity was in vivo observed. **Clas a gpcr modulators adverse effects** **Class A G protein-coupled receptors (GPCRs) continue to garner interest for their essential roles in cell signalling and their importance as drug targets. Although numerous drugs in the clinic target these receptors, over 60% GPCRs remain unexploited. Moreover, the adverse effects triggered by the available unbiased GPCR modulators, limit their use and therapeutic value** For G-protein inhibitors:/ antagonists/ modulators. G protein-coupled receptors (GPCRs) are essential cell membrane signaling molecules and represent the most important class of drug targets. Some signaling pathways downstream of a GPCR may be responsible for drug adverse effects, while others mediate therapeutic efficacy. Biased ligands preferentially activate only a subset of all GPCR signaling pathways. They hold great potential to become next-generation GPCR drugs with less side effects due to their potential to exclusively activate desired signaling pathways.
ISO14389 Phthalates Reference Standard & DICYCLOHEXYL PHTHALATE & DIISONONYL PHTHALATE & DI-SEC-OCTYL PHTHALATE & DI-N-OCTYL PHTHALATE & DIISODECYL PHTHALATE & BUTYL BENZYL PHTHALATE & DIBUTYL PHTHALATE & DIISOBUTYL PHTHALATE & DIAMYL PHTHALATE & DIISOHEPTYL PHTHALATE & DIMETHYLGLYCOL PHTHALATE & DIISOAMYL PHTHALATE & DIHEXYL PHTHALATE & ISOPENTYL PENTYL PHTHALATE & DIISOHEXYL PHTHALATE	The material may produce peroxisome proliferation. Peroxisomes are single, membrane limited organelles in the cytoplasm that are found in the cells of animals, plants, fungi, and protozoa.
DICYCLOHEXYL PHTHALATE & DI-SEC-OCTYL PHTHALATE & DIBUTYL PHTHALATE & DIISOBUTYL PHTHALATE & DIAMYL PHTHALATE & DIISOHEPTYL PHTHALATE & DIISOAMYL PHTHALATE & DIHEXYL PHTHALATE & ISOPENTYL PENTYL PHTHALATE	Available data indicate that phthalate esters are minimally toxic by swallowing, inhalation and skin contact. Repeated exposure may result in weight gain, liver enlargement and induction of liver enzymes. They may also cause shrinking of the testicles and other structural malformations. They may reduce male and female fertility and number of live births, according to animal testing.
DIISONONYL PHTHALATE & DI-N-OCTYL PHTHALATE & DIISODECYL PHTHALATE	High Molecular Weight Phthalate Esters (HMWPEs) Category The HMWPE group includes chemically similar substances produced from alcohols. These substances have been demonstrated to have few biological effects. They demonstrate minimal acute toxicity, with effect on the liver and kidney at high doses. They also cause reproductive and developmental toxicity, also, liver cancer.
DI-SEC-OCTYL PHTHALATE & DIHEXYL PHTHALATE	Gastrointestinal changes, respiratory system changes, somnolence, haemorrhage, necrotic changes in GI tract, lowered blood pressure, liver, endocrine tumours, foetotoxicity, paternal effects, maternal effects, specific developmental abnormalities (hepatobiliary system, musculoskeletal system, cardiovascular system, urogenital system, central nervous system, eye/ear), foetolethality recorded.
DI-SEC-OCTYL PHTHALATE & DIHEXYL PHTHALATE & N-HEXANE	The material may be irritating to the eye, with prolonged contact causing inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.
DI-SEC-OCTYL PHTHALATE & DI-N-OCTYL PHTHALATE & DIMETHYLGLYCOL PHTHALATE & DIHEXYL PHTHALATE	The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.
DI-SEC-OCTYL PHTHALATE & DIMETHYLGLYCOL PHTHALATE	**NOTE:** Substance has been shown to be mutagenic in at least one assay, or belongs to a family of chemicals producing damage or change to cellular DNA.
BUTYL BENZYL PHTHALATE & DIAMYL PHTHALATE	Reproductive effector in rats.
DIAMYL PHTHALATE & DIISOHEPTYL PHTHALATE & ISOPENTYL PENTYL PHTHALATE & DIISOHEXYL PHTHALATE	No significant acute toxicological data identified in literature search.

Acute Toxicity	✔	**Carcinogenicity**	✔
Skin Irritation/Corrosion	✔	**Reproductivity**	✔
Serious Eye Damage/Irritation	✔	**STOT - Single Exposure**	✔
Respiratory or Skin sensitisation	✘	**STOT - Repeated Exposure**	✔
Mutagenicity	✘	**Aspiration Hazard**	✔

Legend: ✘ ***– Data either not available or does not fill the criteria for classification***
✔ ***– Data available to make classification***

Continued...

SECTION 12 Ecological information

Toxicity

ISO14389 Phthalates Reference Standard

Endpoint	Test Duration (hr)	Species	Value	Source
Not Available	Not Available	Not Available	Not Available	Not Available

dicyclohexyl phthalate

Endpoint	Test Duration (hr)	Species	Value	Source
EC50	72h	Algae or other aquatic plants	>2mg/l	2
LC50	96h	Fish	>2mg/l	2
NOEC(ECx)	504h	Crustacea	0.181mg/l	2

diisononyl phthalate

Endpoint	Test Duration (hr)	Species	Value	Source
EC50	72h	Algae or other aquatic plants	>88mg/l	2
EC50	48h	Crustacea	>0.086mg/l	1
EC50	96h	Algae or other aquatic plants	>2.8mg/l	1
NOEC(ECx)	504h	Crustacea	>0.034mg/l	1
LC50	96h	Fish	>0.1mg/l	2

di-sec-octyl phthalate

Endpoint	Test Duration (hr)	Species	Value	Source
BCF	1344h	Fish	<0.7-29.7	7
EC50	72h	Algae or other aquatic plants	>130mg/l	1
EC50	48h	Crustacea	>0.16mg/l	1
NOEC(ECx)	1680h	Fish	0.007mg/l	1
EC50	96h	Algae or other aquatic plants	>0.1mg/l	1
LC50	96h	Fish	>0.16mg/l	2
ErC50	72h	Algae or other aquatic plants	>130mg/l	1

di-n-octyl phthalate

Endpoint	Test Duration (hr)	Species	Value	Source
NOEC(ECx)	0.08h	Fish	0.03-0.04mg/L	4
LC50	96h	Fish	>0.045mg/l	4

diisodecyl phthalate

Endpoint	Test Duration (hr)	Species	Value	Source
BCF	1344h	Fish	<*3.6	7
EC50	72h	Algae or other aquatic plants	0.8mg/l	Not Available
EC50	48h	Crustacea	>0.02mg/L	4
EC50(ECx)	72h	Algae or other aquatic plants	0.8mg/l	Not Available
EC50	96h	Algae or other aquatic plants	>0.8mg/L	4
LC50	96h	Fish	>0.47mg/l	Not Available

butyl benzyl phthalate

Endpoint	Test Duration (hr)	Species	Value	Source
EC50	72h	Algae or other aquatic plants	0.5mg/l	1
EC50	48h	Crustacea	0.97mg/l	1
EC50	96h	Algae or other aquatic plants	>2.69mg/l	1
LC50	96h	Fish	0.46-0.55mg/l	4
NOEC(ECx)	72h	Algae or other aquatic plants	0.1mg/l	1
ErC50	72h	Algae or other aquatic plants	0.325mg/L	2

dibutyl phthalate

Endpoint	Test Duration (hr)	Species	Value	Source
BCF	1344h	Fish	3.1-21.2	7
EC50	72h	Algae or other aquatic plants	1.2mg/l	1
EC50	48h	Crustacea	3.4mg/l	1
LC50	96h	Fish	0.28-0.44mg/l	4
EC50	96h	Algae or other aquatic plants	0.003mg/L	4
NOEC(ECx)	72h	Algae or other aquatic plants	0.5mg/l	1
ErC50	72h	Algae or other aquatic plants	1.2mg/l	1

Continued...

diisobutyl phthalate

Endpoint	Test Duration (hr)	Species	Value	Source
EC50	72h	Algae or other aquatic plants	1mg/l	1
EC50	48h	Crustacea	4.8mg/l	2
LC50	96h	Fish	0.9mg/l	2
NOEC(ECx)	72h	Algae or other aquatic plants	0.19mg/l	1
ErC50	72h	Algae or other aquatic plants	1mg/l	1

diamyl phthalate

Endpoint	Test Duration (hr)	Species	Value	Source
NOEC(ECx)	240h	Fish	10.2mg/L	4

diisoheptyl phthalate

Endpoint	Test Duration (hr)	Species	Value	Source
Not Available	Not Available	Not Available	Not Available	Not Available

dimethylglycol phthalate

Endpoint	Test Duration (hr)	Species	Value	Source
NOEC(ECx)	240h	Fish	11.71mg/L	4

diisoamyl phthalate

Endpoint	Test Duration (hr)	Species	Value	Source
EC50	72h	Algae or other aquatic plants	>0.224mg/l	2
EC50	48h	Crustacea	>0.482mg/l	2
NOEC(ECx)	72h	Algae or other aquatic plants	~0.224mg/l	2

dihexyl phthalate

Endpoint	Test Duration (hr)	Species	Value	Source
EC50	48h	Crustacea	>0.18mg/L	4
LC50	96h	Fish	>0.1mg/L	4
NOEC(ECx)	48h	Crustacea	0.029mg/l	4

isopentyl pentyl phthalate

Endpoint	Test Duration (hr)	Species	Value	Source
Not Available	Not Available	Not Available	Not Available	Not Available

diisohexyl phthalate

Endpoint	Test Duration (hr)	Species	Value	Source
Not Available	Not Available	Not Available	Not Available	Not Available

n-hexane

Endpoint	Test Duration (hr)	Species	Value	Source
EC50(ECx)	4h	Algae or other aquatic plants	0.12mg/L	4
LC50	96h	Fish	113mg/L	4

Legend: ***Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. US EPA, Ecotox database - Aquatic Toxicity Data 4. ECETOC Aquatic Hazard Assessment Data 5. NITE (Japan) - Bioconcentration Data 6. METI (Japan) - Bioconcentration Data 7. Vendor Data***

On the basis of available evidence concerning either toxicity, persistence, potential to accumulate and or observed environmental fate and behaviour, the material may present a danger, immediate or long-term and /or delayed, to the structure and/ or functioning of natural ecosystems.
Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Do NOT allow product to come in contact with surface waters or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash-waters.
Wastes resulting from use of the product must be disposed of on site or at approved waste sites.
For n-Hexane: Log Kow: 3.17-3.94; Henry s Law Constant: 1.69 atm-m3 mol; Vapor Pressure: 150 mm Hg @ 25 C; Log Koc: 2.90 to 3.61. BOD 5, (if unstated): 2.21; COD: 0.04; ThOD: 3.52.
Atmospheric Fate: n-Hexane is not expected to be directly broken down by sunlight. The main atmospheric removal mechanism is through reactions with hydroxyl radicals, with an approximant half-life of 2.9 days.
For Phthalate Esters:
Terrestrial Fate: Phthalate esters have been observed to broken down by a wide range of bacteria. Biodegradation is, therefore, expected to be the dominant fate in surface soils and sediments.
Little information is available on the fate of phthalate esters in soil, even though the primary point of entry, (landfills). The migration of phthalate esters out of plastics is slow.
DO NOT discharge into sewer or waterways.

Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
dicyclohexyl phthalate	HIGH	HIGH
diisononyl phthalate	HIGH	HIGH
di-sec-octyl phthalate	HIGH (Half-life = 389 days)	LOW (Half-life = 1.21 days)
di-n-octyl phthalate	HIGH (Half-life = 365 days)	LOW (Half-life = 1.87 days)
diisodecyl phthalate	HIGH	HIGH
butyl benzyl phthalate	HIGH (Half-life = 180 days)	LOW (Half-life = 2.5 days)
dibutyl phthalate	LOW (Half-life = 23 days)	LOW (Half-life = 3.08 days)
diisobutyl phthalate	LOW	LOW

Continued...

Ingredient	Persistence: Water/Soil	Persistence: Air
diamyl phthalate	LOW	LOW
diisoheptyl phthalate	HIGH	HIGH
dimethylglycol phthalate	LOW	LOW
diisoamyl phthalate	LOW	LOW
dihexyl phthalate	LOW	LOW
n-hexane	LOW	LOW

Bioaccumulative potential

Ingredient	Bioaccumulation
dicyclohexyl phthalate	HIGH (LogKOW = 6.2)
diisononyl phthalate	LOW (BCF = 183.8)
di-sec-octyl phthalate	HIGH (BCF = 24500)
di-n-octyl phthalate	LOW (LogKOW = 8.1)
diisodecyl phthalate	HIGH (BCF = 3500)
butyl benzyl phthalate	MEDIUM (BCF = 663)
dibutyl phthalate	LOW (BCF = 176)
diisobutyl phthalate	MEDIUM (BCF = 780)
diamyl phthalate	HIGH (LogKOW = 5.62)
diisoheptyl phthalate	LOW (LogKOW = 7.41)
dimethylglycol phthalate	LOW (LogKOW = 3.14)
diisoamyl phthalate	HIGH (LogKOW = 5.4452)
dihexyl phthalate	HIGH (LogKOW = 6.82)
diisohexyl phthalate	HIGH (LogKOW = 6.43)
n-hexane	MEDIUM (LogKOW = 3.9)

Mobility in soil

Ingredient	Mobility
dicyclohexyl phthalate	LOW (Log KOC = 17640)
diisononyl phthalate	LOW (Log KOC = 467200)
di-sec-octyl phthalate	LOW (Log KOC = 165400)
di-n-octyl phthalate	LOW (Log KOC = 195500)
diisodecyl phthalate	LOW (Log KOC = 1589000)
butyl benzyl phthalate	LOW (Log KOC = 9359)
dibutyl phthalate	LOW (Log KOC = 1460)
diisobutyl phthalate	LOW (Log KOC = 1026)
diamyl phthalate	LOW (Log KOC = 4966)
diisoheptyl phthalate	LOW (Log KOC = 40370)
dimethylglycol phthalate	LOW (Log KOC = 10)
diisoamyl phthalate	LOW (Log KOC = 3489)
dihexyl phthalate	LOW (Log KOC = 16890)
n-hexane	LOW (Log KOC = 149)

SECTION 13 Disposal considerations

Waste treatment methods

Product / Packaging disposal	▸ Containers may still present a chemical hazard/ danger when empty. ▸ Return to supplier for reuse/ recycling if possible. Otherwise: ▸ If container can not be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill. ▸ Where possible retain label warnings and SDS and observe all notices pertaining to the product. Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked. A Hierarchy of Controls seems to be common - the user should investigate: ▸ Reduction ▸ Reuse ▸ Recycling ▸ Disposal (if all else fails) This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. ▸ **DO NOT** allow wash water from cleaning or process equipment to enter drains. ▸ It may be necessary to collect all wash water for treatment before disposal. ▸ In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first. ▸ Where in doubt contact the responsible authority. ▸ Recycle wherever possible. ▸ Consult manufacturer for recycling options or consult local or regional waste management authority for disposal if no suitable treatment or disposal facility can be identified. ▸ Dispose of by: burial in a land-fill specifically licensed to accept chemical and / or pharmaceutical wastes or Incineration in a licensed apparatus (after admixture with suitable combustible material). ▸ Decontaminate empty containers.

Continued...

SECTION 14 Transport information

Labels Required

	
Marine Pollutant	
HAZCHEM	3YE

Land transport (ADG)

14.1. **UN number or ID number**	1208
14.2. **UN proper shipping name**	HEXANES
14.3. **Transport hazard class(es)**	Class: 3 Subsidiary Hazard: Not Applicable
14.4. **Packing group**	II
14.5. **Environmental hazard**	Environmentally hazardous
14.6. **Special precautions for user**	Special provisions: Not Applicable Limited quantity: 1 L

Air transport (ICAO-IATA / DGR)

14.1. **UN number**	1208
14.2. **UN proper shipping name**	Hexanes
14.3. **Transport hazard class(es)**	ICAO/IATA Class: 3 ICAO / IATA Subsidiary Hazard: Not Applicable ERG Code: 3H
14.4. **Packing group**	II
14.5. **Environmental hazard**	Environmentally hazardous
14.6. **Special precautions for user**	Special provisions: Not Applicable Cargo Only Packing Instructions: 364 Cargo Only Maximum Qty / Pack: 60 L Passenger and Cargo Packing Instructions: 353 Passenger and Cargo Maximum Qty / Pack: 5 L Passenger and Cargo Limited Quantity Packing Instructions: Y341 Passenger and Cargo Limited Maximum Qty / Pack: 1 L

Sea transport (IMDG-Code / GGVSee)

14.1. **UN number**	1208
14.2. **UN proper shipping name**	HEXANES
14.3. **Transport hazard class(es)**	IMDG Class: 3 IMDG Subsidiary Hazard: P
14.4. **Packing group**	II
14.5 **Environmental hazard**	Marine Pollutant
14.6. **Special precautions for user**	EMS Number: F-E, S-D Special provisions: Not Applicable Limited Quantities: 1 L

14.7. Maritime transport in bulk according to IMO instruments

14.7.1. Transport in bulk according to Annex II of MARPOL and the IBC code

Not Applicable

14.7.2. Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code

Continued...

Product name	Group
dicyclohexyl phthalate	Not Applicable
diisononyl phthalate	Not Applicable
di-sec-octyl phthalate	Not Applicable
di-n-octyl phthalate	Not Applicable
diisodecyl phthalate	Not Applicable
butyl benzyl phthalate	Not Applicable
dibutyl phthalate	Not Applicable
diisobutyl phthalate	Not Applicable
diamyl phthalate	Not Applicable
diisoheptyl phthalate	Not Applicable
dimethylglycol phthalate	Not Applicable
diisoamyl phthalate	Not Applicable
dihexyl phthalate	Not Applicable
isopentyl pentyl phthalate	Not Applicable
diisohexyl phthalate	Not Applicable
n-hexane	Not Applicable

14.7.3. Transport in bulk in accordance with the IGC Code

Product name	Ship Type
dicyclohexyl phthalate	Not Applicable
diisononyl phthalate	Not Applicable
di-sec-octyl phthalate	Not Applicable
di-n-octyl phthalate	Not Applicable
diisodecyl phthalate	Not Applicable
butyl benzyl phthalate	Not Applicable
dibutyl phthalate	Not Applicable
diisobutyl phthalate	Not Applicable
diamyl phthalate	Not Applicable
diisoheptyl phthalate	Not Applicable
dimethylglycol phthalate	Not Applicable
diisoamyl phthalate	Not Applicable
dihexyl phthalate	Not Applicable
isopentyl pentyl phthalate	Not Applicable
diisohexyl phthalate	Not Applicable
n-hexane	Not Applicable

SECTION 15 Regulatory information

Safety, health and environmental regulations / legislation specific for the substance or mixture

dicyclohexyl phthalate is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australian Inventory of Industrial Chemicals (AIIC)
Chemical Footprint Project - Chemicals of High Concern List

diisononyl phthalate is found on the following regulatory lists

Australian Inventory of Industrial Chemicals (AIIC)
Chemical Footprint Project - Chemicals of High Concern List

di-sec-octyl phthalate is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australian Inventory of Industrial Chemicals (AIIC)
Chemical Footprint Project - Chemicals of High Concern List
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Group 2B: Possibly carcinogenic to humans

di-n-octyl phthalate is found on the following regulatory lists

Australian Inventory of Industrial Chemicals (AIIC)

diisodecyl phthalate is found on the following regulatory lists

Australian Inventory of Industrial Chemicals (AIIC)
Chemical Footprint Project - Chemicals of High Concern List

butyl benzyl phthalate is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australian Inventory of Industrial Chemicals (AIIC)
Chemical Footprint Project - Chemicals of High Concern List
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Not Classified as Carcinogenic

dibutyl phthalate is found on the following regulatory lists

Continued...

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australian Inventory of Industrial Chemicals (AIIC)
Chemical Footprint Project - Chemicals of High Concern List

diisobutyl phthalate is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australian Inventory of Industrial Chemicals (AIIC)
Chemical Footprint Project - Chemicals of High Concern List

diamyl phthalate is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Chemical Footprint Project - Chemicals of High Concern List

diisoheptyl phthalate is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australian Inventory of Industrial Chemicals (AIIC)
Chemical Footprint Project - Chemicals of High Concern List

dimethylglycol phthalate is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australian Inventory of Industrial Chemicals (AIIC)
Chemical Footprint Project - Chemicals of High Concern List

diisoamyl phthalate is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Chemical Footprint Project - Chemicals of High Concern List

dihexyl phthalate is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australian Inventory of Industrial Chemicals (AIIC)
Chemical Footprint Project - Chemicals of High Concern List

isopentyl pentyl phthalate is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Chemical Footprint Project - Chemicals of High Concern List

diisohexyl phthalate is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals

n-hexane is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australian Inventory of Industrial Chemicals (AIIC)
Chemical Footprint Project - Chemicals of High Concern List

Additional Regulatory Information

Not Applicable

National Inventory Status

National Inventory	Status
Australia - AIIC / Australia Non-Industrial Use	No (diamyl phthalate; diisoamyl phthalate; isopentyl pentyl phthalate; diisohexyl phthalate)
Canada - DSL	No (diisoamyl phthalate; isopentyl pentyl phthalate; diisohexyl phthalate)
Canada - NDSL	No (dicyclohexyl phthalate; diisononyl phthalate; di-sec-octyl phthalate; di-n-octyl phthalate; diisodecyl phthalate; butyl benzyl phthalate; dibutyl phthalate; diisobutyl phthalate; diamyl phthalate; diisoheptyl phthalate; dimethylglycol phthalate; diisoamyl phthalate; dihexyl phthalate; isopentyl pentyl phthalate; diisohexyl phthalate; n-hexane)
China - IECSC	No (diisoamyl phthalate; isopentyl pentyl phthalate; diisohexyl phthalate)
Europe - EINEC / ELINCS / NLP	No (isopentyl pentyl phthalate)
Japan - ENCS	No (diamyl phthalate; diisoamyl phthalate; isopentyl pentyl phthalate)
Korea - KECI	No (dimethylglycol phthalate; diisoamyl phthalate; isopentyl pentyl phthalate; diisohexyl phthalate)
New Zealand - NZIoC	No (dimethylglycol phthalate; diisoamyl phthalate; isopentyl pentyl phthalate; diisohexyl phthalate)
Philippines - PICCS	No (diamyl phthalate; dimethylglycol phthalate; diisoamyl phthalate; dihexyl phthalate; isopentyl pentyl phthalate; diisohexyl phthalate)
USA - TSCA	TSCA Inventory 'Active' substance(s) (dicyclohexyl phthalate; diisononyl phthalate; di-sec-octyl phthalate; di-n-octyl phthalate; diisodecyl phthalate; butyl benzyl phthalate; dibutyl phthalate; diisobutyl phthalate; diamyl phthalate; diisoheptyl phthalate; dimethylglycol phthalate; dihexyl phthalate; n-hexane); No (diisoamyl phthalate; isopentyl pentyl phthalate; diisohexyl phthalate)
Taiwan - TCSI	No (isopentyl pentyl phthalate; diisohexyl phthalate)
Mexico - INSQ	No (diamyl phthalate; diisoheptyl phthalate; dimethylglycol phthalate; diisoamyl phthalate; dihexyl phthalate; isopentyl pentyl phthalate; diisohexyl phthalate)
Vietnam - NCI	No (diisohexyl phthalate)
Russia - FBEPH	No (diamyl phthalate; dimethylglycol phthalate; diisoamyl phthalate; isopentyl pentyl phthalate; diisohexyl phthalate)
UAE - Control List (Banned/Restricted Substances)	No (dicyclohexyl phthalate; diisononyl phthalate; di-sec-octyl phthalate; di-n-octyl phthalate; diisodecyl phthalate; butyl benzyl phthalate; dibutyl phthalate; diisobutyl phthalate; diamyl phthalate; diisoheptyl phthalate; dimethylglycol phthalate; diisoamyl phthalate; dihexyl phthalate; isopentyl pentyl phthalate; diisohexyl phthalate; n-hexane)
Legend:	***Yes = All CAS declared ingredients are on the inventory*** ***No = One or more of the CAS listed ingredients are not on the inventory. These ingredients may be exempt or will require registration.***

SECTION 16 Other information

Continued...

Revision Date	06/02/2026
Initial Date	06/02/2026

Other information

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

Definitions and abbreviations

- PC—TWA: Permissible Concentration-Time Weighted Average
- PC—STEL: Permissible Concentration-Short Term Exposure Limit
- IARC: International Agency for Research on Cancer
- ACGIH: American Conference of Governmental Industrial Hygienists
- STEL: Short Term Exposure Limit
- TEEL: Temporary Emergency Exposure Limit。
- IDLH: Immediately Dangerous to Life or Health Concentrations
- ES: Exposure Standard
- OSF: Odour Safety Factor
- NOAEL: No Observed Adverse Effect Level
- LOAEL: Lowest Observed Adverse Effect Level
- TLV: Threshold Limit Value
- LOD: Limit Of Detection
- OTV: Odour Threshold Value
- BCF: BioConcentration Factors
- BEI: Biological Exposure Index
- DNEL: Derived No-Effect Level
- PNEC: Predicted no-effect concentration
- MARPOL: International Convention for the Prevention of Pollution from Ships
- IMSBC: International Maritime Solid Bulk Cargoes Code
- IGC: International Gas Carrier Code
- IBC: International Bulk Chemical Code

- AIIC: Australian Inventory of Industrial Chemicals
- DSL: Domestic Substances List
- NDSL: Non-Domestic Substances List
- IECSC: Inventory of Existing Chemical Substance in China
- EINECS: European INventory of Existing Commercial chemical Substances
- ELINCS: European List of Notified Chemical Substances
- NLP: No-Longer Polymers
- ENCS: Existing and New Chemical Substances Inventory
- KECI: Korea Existing Chemicals Inventory
- NZIoC: New Zealand Inventory of Chemicals
- PICCS: Philippine Inventory of Chemicals and Chemical Substances
- TSCA: Toxic Substances Control Act
- TCSI: Taiwan Chemical Substance Inventory
- INSQ: Inventario Nacional de Sustancias Químicas
- NCI: National Chemical Inventory
- FBEPH: Russian Register of Potentially Hazardous Chemical and Biological Substances

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end of SDS