



SAFETY DATA SHEET BENZOPHENONE REVISION 5, DATE 27 JUL 20

1. IDENTIFICATION

Product Name	Benzophenone
Other Names	Benzoyl benzene; Diphenyl ketone
Uses	Additives; UV-Photoinitiator. Clear coatings for wood, plastics and metal; overprint varnish.
Chemical Family	No Data Available
Chemical Formula	C ₁₃ H ₁₀ O
Chemical Name	Methanone, diphenyl-
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	Specific Target Organ Toxicity (Repeated Exposure) - Category 2 Long-term Hazard To The Aquatic Environment - Category 2

Pictograms



Signal Word	Warning
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Hazard Statements	H373	May cause damage to organs through prolonged or repeated exposure.
	H411	Toxic to aquatic life with long lasting effects.

Precautionary Statements	Prevention	P273	Avoid release to the environment.
		P260	Do not breathe dusts or mists.
	Response	P314	Get medical advice/attention if you feel unwell.
		P391	Collect spillage.
	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)
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Environmental Protection Authority (New Zealand)

Hazardous Substances and New Organisms Amendment Act 2015

HSNO Classifications	Health Hazards	6.9B	Substances that are harmful to human target organs or systems
	Environmental Hazards	9.1B	Substances that are ecotoxic in the aquatic environment

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Benzophenone	C13H10O	119-61-9	>=99 %
Benzoic acid	C7H6O2	65-85-0	<1 %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed	IF SWALLOWED: Rinse mouth, then give 1-2 glasses of water to drink. Do NOT induce vomiting. If vomiting occurs spontaneously, keep head below hips to prevent aspiration into lungs. Get medical advice/attention if you feel unwell.
Eye	IF IN 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 20 minutes. If eye irritation persists, get medical advice/attention.
Skin	IF ON SKIN: Remove and isolate contaminated clothing and shoes. Immediately wash skin with plenty of soap and running water. 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. If respiratory symptoms persist, get medical advice/attention. Give artificial respiration if victim is not breathing. Administer oxygen if breathing is difficult.
Advice to Doctor	Get medical advice/attention if you feel unwell. Treat symptomatically. Symptoms may be delayed. Show this safety data sheet (SDS) to the doctor in attendance. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
Medical Conditions Aggravated by Exposure	No information available.

5. FIRE FIGHTING MEASURES

General Measures	Alert Fire Brigade and tell them location and nature of hazard. If safe to do so, move undamaged containers from fire area. Cool containers with water spray until well after fire is out. Dike fire control water for later disposal.
Flammability Conditions	Combustible solid which burns but propagates flame with difficulty.
Extinguishing Media	Use dry chemical, Carbon dioxide (CO ₂), foam or water spray for extinction - Do not scatter spilled material with high-pressure water streams.
Fire and Explosion Hazard	Avoid generating dust; Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard (including secondary explosions).
Hazardous Products of Combustion	Combustion of vapour and liquid may produce Carbon monoxide, Carbon dioxide and other hazardous gases.
Special Fire Fighting Instructions	Contain runoff from fire control or dilution water - Runoff may pollute waterways.
Personal Protective Equipment	Wear positive pressure self-contained breathing apparatus (SCBA) and chemical splash suit. SCBA and structural firefighter's uniform may provide limited protection.
Flash Point	155 °C [Closed cup]
Lower Explosion Limit	0.7 %
Upper Explosion Limit	5.4 %
Auto Ignition Temperature	No Data Available
Hazchem Code	No Data Available

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	Ensure adequate ventilation. ELIMINATE all ignition sources. Take precautionary measures against static discharges. Do not touch or walk through spilled material. Avoid generating dust. Do not breathe dust and avoid contact with eyes, skin and clothing.
Clean Up Procedures	With clean shovel, place material into clean, dry container and cover loosely; move containers from spill area. Keep in suitable, closed containers for disposal (see SECTION 13).
Containment	Stop leak if safe to do so – Prevent entry into waterways, drains or confined areas. Prevent dust cloud. Cover powder spill with plastic sheet or tarp to minimize spreading.
Decontamination	Wash contaminated area with plenty of water. Spillages and decontamination runoff should be prevented from entering drains and watercourses.

Environmental Precautionary Measures

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 (see SECTION 8).

7. HANDLING AND STORAGE

Handling	Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure adequate ventilation, especially in confined areas. Handle in accordance with good industrial hygiene and safety practice. Avoid formation of dust and aerosols. Do not breathe dust/aerosols and avoid contact with eyes, skin and clothing. Do not ingest. Use personal protective equipment as required (see SECTION 8). Avoid strong heating. WARNING: May form combustible dust concentrations in air. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources - No smoking. Avoid release to the environment; Collect spillage (see SECTION 6).
Storage	Store in a cool, dry and well-ventilated place, out of direct sunlight. Keep container tightly closed. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources - No smoking. Keep away from foodstuffs and incompatible materials (see SECTION 8).
Container	Keep in the original container.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	No specific exposure standards are available for this product.
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	<ul style="list-style-type: none">- Respiratory protection: Use appropriate respirator if exposure limits are exceeded or if irritation or other symptoms are experienced. Recommended: Low boiling organic solvent, Filter Type AX, Brown (refer to AS/NZS 1715 & 1716).- Eye/face protection: Wear appropriate eye protection to avoid eye contact. Recommended: Tightly fitting safety goggles.- Hand protection: Handle with gloves. Recommended: Protective gloves (such as butyl rubber).- Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Recommended: Wear fire/flame resistant/retardant clothing and antistatic boots.
Special Hazards Precautions	No information available.
Work Hygienic Practices	Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Take off contaminated clothing and wash before reuse. Remove contaminated clothing and protective equipment before entering eating areas. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Solid
Appearance	Crystal or flakes
Odour	Geranium or sweet, rose-like
Colour	White
pH	No Data Available
Vapour Pressure	0.00257 hPa (@ 25 °C)
Relative Vapour Density	No Data Available

Boiling Point	305 °C
Melting Point	46 - 49 °C
Freezing Point	No Data Available
Solubility	23.9 mg/L in water
Specific Gravity	1.1108
Flash Point	155 °C [Closed cup]
Auto Ignition Temp	No Data Available
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	No Data Available
Net Propellant Weight	No Data Available
Octanol Water Coefficient	Log Kow (Log Pow): 3.18 at 25 °C
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	Avoid generating dust; Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard (including secondary explosions).
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	Combustible solid which burns but propagates flame with difficulty.
Reactions That Release Gases or Vapours	Thermal decomposition or combustion of vapour and liquid may produce Carbon monoxide, Carbon dioxide and other hazardous gases.
Release of Invisible Flammable Vapours and Gases	When heated, vapours may form explosive mixtures with air.

10. STABILITY AND REACTIVITY

General Information	No information available.
Chemical Stability	Stable under recommended storage and handling conditions.
Conditions to Avoid	Avoid generating dust. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources.
Materials to Avoid	Incompatible/reactive with strong oxidising agents.
Hazardous Decomposition Products	None when used as directed. Thermal decomposition or combustion of vapour and liquid may produce Carbon monoxide, Carbon dioxide and other hazardous gases.

Hazardous Polymerisation

No information available.

11. TOXICOLOGICAL INFORMATION**General Information**

- Acute toxicity: May be harmful if swallowed.
- Skin corrosion/irritation: Not irritating (Rabbit).
- Eye damage/irritation: Slightly irritating (Rabbit).
- Respiratory/skin sensitisation: Not sensitising (Guinea pig).
- Germ cell mutagenicity: Negative.
- Carcinogenicity: Not classified.
- Reproductive toxicity: Not classified.
- STOT (single exposure): No information available.
- STOT (repeated exposure): May cause damage to organs (Liver, Kidney) through prolonged or repeated exposure (Oral).
- Aspiration toxicity: No information available.

Acute**Ingestion**

- Acute toxicity (Oral):
- LD50, Rat: 2,895 mg/kg [Supplier's SDS].

Other

- Acute toxicity (Dermal):
- LD50, Rabbit: 3,535 mg/kg [Supplier's SDS].

Carcinogen Category

None

12. ECOLOGICAL INFORMATION**Ecotoxicity**

- Aquatic toxicity:
- Acute LC50, Fish: 14.75 mg/L (96 h) [Supplier's SDS].
 - Acute EC50, Crustacea (Daphnia): 6.784 mg/L (48 h) [Supplier's SDS].
 - Acute EC50, Algae: 3.5 mg/L (72 h) [Supplier's SDS].

Persistence/Degradability

Readily biodegradable.

Mobility

- A low to moderate mobility in soil is to be expected.
- Koc at 20 °C: 517

Environmental Fate

Toxic to aquatic life with long lasting effects - Prevent entry into drains and waterways.

Bioaccumulation Potential

Based on the measured BCF (3.4-12) a low potential for bioconcentration in aquatic organisms is to be expected.

Environmental Impact

No Data Available

13. DISPOSAL CONSIDERATIONS**General Information**

Dispose of contents/container in accordance with local/regional/national regulations. Incineration disposal recommended.

Special Precautions for Land Fill

Containers may still present chemical hazard when empty. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. Recycle, if possible.

14. TRANSPORT INFORMATION

Land Transport (Australia)

ADG Code

Proper Shipping Name	Benzophenone
Class	No Data Available
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, SOLID, N.O.S. (Benzophenone)
Class	9 Miscellaneous Dangerous Goods and Articles
Subsidiary Risk(s)	No Data Available
EPG	47 Low To Moderate Hazard Substances
UN Number	3099
Hazchem	2Z
Pack Group	III
Special Provision	No Data Available

Land Transport (New Zealand)

NZS5433

Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Benzophenone)
Class	9 Miscellaneous Dangerous Goods and Articles
Subsidiary Risk(s)	No Data Available
EPG	47 Low To Moderate Hazard Substances
UN Number	3077
Hazchem	2Z
Pack Group	III
Special Provision	No Data Available

Land Transport (United States of America)

US DOT

Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Benzophenone)
Class	9 Miscellaneous Dangerous Goods and Articles
Subsidiary Risk(s)	No Data Available
ERG	171 Substances (Low to Moderate Hazard)
UN Number	3077
Hazchem	2Z
Pack Group	III
Special Provision	No Data Available

Sea Transport

IMDG Code

Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Benzophenone)
Class	9 Miscellaneous Dangerous Goods and Articles
Subsidiary Risk(s)	No Data Available
UN Number	3077
Hazchem	2Z
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, SOLID, N.O.S. (Benzophenone)
Class	9 Miscellaneous Dangerous Goods and Articles
Subsidiary Risk(s)	No Data Available
UN Number	3077
Hazchem	2Z
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)
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15. REGULATORY INFORMATION

General Information	No Data Available
Poisons Schedule (Aust)	Not Scheduled

Environmental Protection Authority (New Zealand)

Hazardous Substances and New Organisms Amendment Act 2015

Approval Code	HSR002670
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National/Regional Inventories

Australia (AIC)	Listed
Canada (DSL)	Not Determined
Canada (NDSL)	Not Determined

China (IECSC)	Not Determined
Europe (EINECS)	204-337-6
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	BENZOP1000, BENZOP1001, BENZOP1002, BENZOP1003, BENZOP1004, BENZOP1005, BENZOP1006, BENZOP1007, BENZOP1008, BENZOP1009, BENZOP1010, BENZOP1011, BENZOP1012, BENZOP1013, BENZOP1014, BENZOP1015, BENZOP1016, BENZOP1017, BENZOP1018, BENZOP1019, BENZOP1100, BENZOP1500, BENZOP2000, BENZOP2500, BENZOP2501, BENZOP3000, BENZOP3001, BENZOP3002, BENZOP3100, BENZOP3101, BENZOP3102, BENZOP4000, BENZOP5000, BENZOP6000
Revision	5
Revision Date	27 Jul 2020
Key/Legend	<p>< Less Than > Greater Than</p> <p>AICS Australian Inventory of Chemical Substances atm Atmosphere CAS Chemical Abstracts Service (Registry Number) cm² 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/cm³ 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/m³ 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</p>

half) of a group of test animals.

ltr or **L** Litre

m³ Cubic Metre

mbar Millibar

mg Milligram

mg/24H Milligrams per 24 Hours

mg/kg Milligrams per Kilogram

mg/m³ 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 Health 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