SAFETY DATA SHEET
PINE OIL
REVISION 5, DATE 02 OCT 2021

1. IDENTIFICATION

Product Name	**Pine Oil**
Other Names	Pine Oil 85%; Terpineol [CAS#8000-41-7]
Uses	Essential oil; detergent; disinfectant; solvent; ink; mining and mineral flotation agent. Restriction on use: No information available.
Chemical Family	No Data Available
Chemical Formula	Unspecified
Chemical Name	Oils, Pine
Product Description	Consisting mainly of a-terpineol and other cyclic terpene alcohols.

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	Suite 13A.03, Menara Summit Persiaran Kewajipan USJ1 47600 UEP Subang Jaya Selangor, 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	Australia – Westmead NSW	1800-251525 131126
Chemcall	Australia	1800-127406 +64-4-9179888
Chemcall	Malaysia	+64-4-9179888
National Poison Centre	Malaysia	+60-4-6536-999
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

Flammable Liquids - Category 4

Skin Corrosion/Irritation - Category 2

Serious Eye Damage/Irritation - Category 2

Sensitisation (Skin) - Category 1

Aspiration Hazard - Category 1

Long-term Hazard To The Aquatic Environment - Category 2

Pictograms

Signal Word

Danger

Hazard Statements

H227	Combustible liquid.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H304	May be fatal if swallowed and enters airways.
H411	Toxic to aquatic life with long lasting effects.

Precautionary Statements

Prevention	**P210**	Keep away from flames and hot surfaces. No smoking.
	P280	Wear protective gloves/eye protection/face protection.
	P261	Avoid breathing mist/vapours/spray.
	P273	Avoid release to the environment.
	P272	Contaminated work clothing should not be allowed out of the workplace.
Response	**P370 + P378**	In case of fire: Use carbon dioxide (CO2), dry chemical, regular foam extinguishing agent or water spray for extinction.
	P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor.
	P331	Do NOT induce vomiting.
	P302 + P352	IF ON SKIN: Wash with plenty of water.
	P337 + P313	If eye irritation persists: Get medical attention.
	P333 + P313	If skin irritation or rash occurs: Get medical attention.
	P391	Collect spillage.
	P362	Take off contaminated clothing.
	P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Storage	**P403 + P235**	Store in a well-ventilated place. Keep cool.
	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)

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

HSNO Classifications	Physical Hazards	**3.1D**	Flammable liquid - low hazard
	Health Hazards	**6.3A**	Substances that are irritating to the skin
		6.4A	Substances that are irritating to the eye
		6.5B	Substances that are contact sensitisers
		6.1E	Substances that are acutely toxic –May be harmful, Aspiration hazard
	Environmental Hazards	**9.1B**	Substances that are ecotoxic in the aquatic environment

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Pine oil	Unspecified	8002-09-3	100 %
Contains: Terpineol	C10H18O	8000-41-7	>=85 %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed	IF SWALLOWED: Rinse mouth with water. Do NOT induce vomiting. Immediately call a Poison Centre or doctor/physician for advice. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Never give anything by mouth to an unconscious person.
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 15 minutes. If eye irritation persists, get medical advice/attention. *Removal of contact lenses after an eye injury should only be undertaken by skilled personnel. *Suitable emergency eye wash facility should be immediately available.
Skin	IF ON SKIN (or hair): Remove and isolate contaminated clothing and shoes. Immediately wash skin and hair with plenty of soap and running water. If skin irritation or rash occurs, get medical advice/attention. Wash contaminated clothing and shoes before reuse. *Suitable emergency safety shower facility should be immediately available.
Inhaled	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Loosen tight clothing such as a collar, tie, belt or waistband. If respiratory symptoms persist, get medical advice/attention. Give artificial respiration if victim is not breathing. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Administer oxygen if breathing is difficult.
Advice to Doctor	Treat symptomatically. Keep victim calm and warm. Ensure that attending medical personnel are aware of identity and nature of product(s) involved, and take precautions to protect themselves. Any material aspirated during vomiting may produce lung injury. If spontaneous vomiting has occurred after ingestion, the patient should be monitored for difficulty in breathing, as adverse effects of aspiration into the lungs may be delayed up to 48 hours. * Most important symptoms and effects, both acute and delayed: No information available. * Indication of any immediate medical attention and special treatment needed: No information available. May cause an allergic skin reaction. The material may accentuate any pre-existing dermatitis condition.

Medical Conditions Aggravated by Exposure	

5. FIRE FIGHTING MEASURES

General Measures	If safe to do so, move undamaged containers from fire area. Cool container with water spray until well after fire is out. Dike fire-control water for later disposal.
Flammability Conditions	Combustible liquid; May be ignited by heat, sparks or flames.
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. Vapours may form explosive mixtures with air.
Hazardous Products of Combustion	Fire may produce irritating and/or toxic gases, including Carbon oxides, other pyrolysis products typical of burning organic material; May emit acrid smoke.
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). Structural firefighters' protective clothing will only provide limited protection.
Flash Point	>60 - <=93 °C
Lower Explosion Limit	No Data Available
Upper Explosion Limit	No Data Available
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. All equipment used in handling the product must be earthed. Do not touch or walk through spilled material. Clean up spills immediately. Avoid breathing vapours and contact with eyes, skin and clothing.
Clean Up Procedures	Collect recoverable product into suitable, labelled containers for recycling. Absorb residues with earth, sand or other non-combustible material. Use clean, non-sparking tools to collect absorbed material and place it into suitable containers for disposal (see SECTION 13). NOTE: Absorbent materials wetted with occluded oil must be moistened with water as they may auto-oxidise, become self heating and ignite. Some oils slowly oxidise when spread in a film, and oil on cloths or mops may auto-oxidise and generate heat, smoulder, ignite and burn. In the workplace oily rags should be collected and immersed in water.
Containment	Stop leak if safe to do so - Prevent entry into waterways, drains or confined areas.
Decontamination	Wash area and prevent runoff into drains.
Environmental Precautionary Measures	Spillages and decontamination runoff should be prevented from entering drains and watercourses. If environmental contamination has occurred, advise local emergency services.
Evacuation Criteria	Spill or leak area should be isolated immediately. Keep unauthorised personnel away. Keep upwind and to higher ground. Large spill: Alert Emergency Services and tell them location and nature of hazard.
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. Handle in accordance with good industrial hygiene and safety practice. Avoid breathing mist/vapours/spray and contact with eyes, skin and clothing. Do not ingest. Use personal protective equipment as required (see SECTION 8). Avoid contact with incompatible materials. Keep away from heat and sources of ignition - No

	smoking. Ground/bond container and receiving equipment. Avoid release to the environment - Collect spillage (see SECTION 6). 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 (see SECTION 13).
Storage	Store in a cool, dry and well-ventilated place, out of direct sunlight. Keep containers upright and tightly closed when not in use. Protect containers against physical damage and check regularly for leaks. Keep cool. Keep away from heat and sources of ignition - No smoking. Keep away from foodstuffs and incompatible materials (see SECTION 10). Store locked up.
Container	Keep in the original container or safe packaging material. Check all containers are clearly labelled and free from leaks.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	No value assigned for this specific material by Safe Work Australia.
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: In case of inadequate ventilation, wear respiratory protection. Recommended: Organic vapour/particulate respirator (refer to AS/NZS 1715 & 1716). Cartridge respirators should never be used for emergency ingress or in areas of unknown vapour concentrations or oxygen content. Supplied-air type respirator or self-contained breathing apparatus (SCBA) may be required in special circumstances. - Eye/face protection: Wear appropriate eye protection to avoid eye contact. Recommended: Chemical goggles. - Hand protection: Wear protective gloves. Recommended: Chemical-resistant gloves. - Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Recommended: Overalls, safety footwear or safety gumboots (rubber).
Special Hazards Precaustions	Prevent concentration in hollows and sumps. Do NOT enter confined spaces until atmosphere has been checked.
Work Hygienic Practices	Do not eat, drink or smoke when using this product. Always wash hands with soap and water after handling. Remove contaminated clothing and shoes immediately - Do NOT allow clothing wet with material to stay in contact with skin. Wash contaminated clothing before reuse. Work clothes should be laundered separately. Contaminated work clothing should not be allowed out of the workplace. 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.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Appearance	Clear liquid
Odour	Characteristic & Terpenic
Colour	Colourless to pale yellowish
pH	No Data Available
Vapour Pressure	No Data Available
Relative Vapour Density	No Data Available
Boiling Point	178 - 230 °C
Melting Point	No Data Available
Freezing Point	No Data Available
Solubility	Negligible solubility in water - Soluble in paraffin oil, alcohol, kerosene
Specific Gravity	0.900 - 0.930 (Water = 1)
Flash Point	>60 - <=93 °C
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	0.93 g/cm3
Specific Heat	No Data Available
Molecular Weight	No Data Available
Net Propellant Weight	No Data Available
Octanol Water Coefficient	No Data Available
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	Combustible liquid; May be ignited by heat, sparks or flames.
Reactions That Release Gases or Vapours	Fire may produce irritating and/or toxic gases, including Carbon oxides, other pyrolysis products typical of burning organic material; May emit acrid smoke.
Release of Invisible Flammable Vapours and Gases	Vapours may form explosive mixtures with air.

10. STABILITY AND REACTIVITY

General Information	No dangerous reaction known under conditions of normal use.
Chemical Stability	Product is considered stable under conditions of normal use.
Conditions to Avoid	Keep away from heat and sources of ignition.
Materials to Avoid	Incompatible/reactive with oxidising agents.
Hazardous Decomposition Products	Fire may produce irritating and/or toxic gases, including Carbon oxides, other pyrolysis products typical of burning organic material; May emit acrid smoke. *Long standing in contact with air and light may result in the formation of potentially explosive peroxides.
Hazardous Polymerisation	Will not occur.

11. TOXICOLOGICAL INFORMATION

General Information	Information on toxicological effects: - Acute toxicity: May be harmful if swallowed, in contact with skin and if inhaled.

- Skin corrosion/irritation: Causes skin irritation. This material can cause inflammation of the skin in some persons. The material may accentuate any pre-existing dermatitis condition. Repeated exposure may cause skin cracking, flaking or drying.
- Eye damage/irritation: Causes serious eye irritation.
- Respiratory/skin sensitisation: May cause an allergic skin reaction. Sensitisation may result in allergic dermatitis responses including rash, itching, hives or swelling of extremities.
- Germ cell mutagenicity: No information available.
- Carcinogenicity: No information available.
- Reproductive toxicity: No information available.
- STOT (single exposure): The material can cause respiratory irritation in some persons. Inhalation of vapours may cause drowsiness and dizziness, accompanied by sleepiness, reduced alertness, loss of reflexes, lack of co-ordination and vertigo. Inhalation of fume/mist/aerosol generated by the material may be damaging to the health of the individual. Inhalation hazard is increased at higher temperatures. Acute effects from inhalation of high vapour concentrations may be chest and nasal irritation with coughing, sneezing, headache and nausea.
- STOT (repeated exposure): Substance accumulation in the human body may occur and may cause some concern following repeated or long-term occupational exposure. Long-term exposure to respiratory irritants may result in disease of the
airways involving difficult breathing and related systemic problems.
- Aspiration toxicity: May be fatal if swallowed and enters airways. Swallowing of the liquid may cause aspiration into the lungs with the risk of chemical pneumonitis.

Information on likely routes of exposure:
- Ingestion: Can cause GI discomfort.
- Eye contact: Contact with eyes may cause irritation or redness.
- Skin contact: Cam cause skin irritation.
- Inhalation: Harmful if inhaled.
Chronic effects: None known.

Acute

Ingestion	Acute toxicity (Oral): - LD50, Rat: 3,200 mg/kg [Supplier's SDS].
Other	Acute toxicity (Dermal): - LD50, Rabbit: 5,000 mg/kg [Supplier's SDS].
Carcinogen Category	None

12. ECOLOGICAL INFORMATION

Ecotoxicity	Toxic to aquatic life with long lasting effects.
Persistence/Degradability	No information available.
Mobility	No information available.
Environmental Fate	Avoid release to the environment.
Bioaccumulation Potential	Accumulation in aquatic organisms is expected.
Environmental Impact	No Data Available

13. DISPOSAL CONSIDERATIONS

General Information	This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. Recycle wherever possible or dispose of in accordance with local/regional/national regulations. Bury or incinerate residue at an approved site.
Special Precautions for Land Fill	Recycle containers if possible, or dispose of in an authorised landfill.

14. TRANSPORT INFORMATION

Land Transport (Australia)
ADG Code

Proper Shipping Name	Pine oil
Class	C1 Combustible Liquids - Flash Point >60°C - <=93°C, Closed Cup
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. (Pine oil)
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. (Pine oil)
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. (Pine oil)
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. (Pine oil)
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. (Pine oil)
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	PINE OILs are listed in Schedules 5 & 6 of the SUSMP when packed and labelled as a herbicide.
Poisons Schedule (Aust)	Not Scheduled

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

Approval Code	HSR002490 HSR001521 (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 (List of Classified Substances)	Not Determined
New Zealand (NZIoC)	Listed
Philippines (PICCS)	Not Determined
Taiwan (TCSI)	Not Determined
USA (TSCA)	Not Determined
Mexico (INSQ)	Not Determined

16. OTHER INFORMATION

Related Product Codes	PINOIA0900, PINOIA1000, PINOIA1001, PINOIA1002, PINOIA1004, PINOIA1005, PINOIA1006, PINOIA1007, PINOIA1008, PINOIA1009, PINOIA1010, PINOIA1011, PINOIA1012, PINOIA1013, PINOIA1014, PINOIA1015, PINOIA1016, PINOIA1017, PINOIA1018, PINOIA1019, PINOIA2000, PINOIA2001, PINOIA3000, PINOIA3300, PINOIA3305, PINOIA3500, PINOIA3501, PINOIA3505, PINOIA3550, PINOIA4000, PINOIA4001, PINOIA8500, PINOIA8700
Revision	5
Revision Date	02 Oct 2021
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