

1. IDENTIFICATION

| | |
|----------------------------|--|
| Product Name | ETERMER 70 |
| Other Names | 2-Propenoic acid, 1,7,7-trimethylbicyclo[2.2.1]hept-2-yl ester, exo-; EM70; IBOA |
| Uses | UV Coatings; Inks; Adhesives; Photoresists. |
| Chemical Family | No Data Available |
| Chemical Formula | C ₁₃ H ₂₀ O ₂ |
| Chemical Name | Isobornyl acrylate |
| Product Description | No Data Available |

Contact Details of the Supplier of this Safety Data Sheet

| Organisation | Location | Telephone |
|-------------------------|--|-----------------|
| Redox Pty Ltd | 2 Swettenham Road Minto NSW 2566 Australia | +61-2-97333000 |
| Redox Pty 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 |

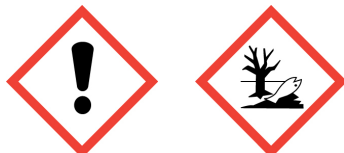
2. HAZARD IDENTIFICATION

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 | Acute Toxicity (Oral) - Category 5 Skin Corrosion/Irritation - Category 2 Serious Eye Damage/Irritation - Category 2A Sensitisation (Skin) - Category 1 Specific Target Organ Toxicity (Single Exposure) - Category 3 Acute Hazard To The Aquatic Environment - Category 2 Long-term Hazard To The Aquatic Environment - Category 2 |

Pictograms



Signal Word Warning

| | | |
|--------------------------|-------------|--|
| Hazard Statements | H303 | May be harmful if swallowed. |
| | H315 | Causes skin irritation. |
| | H317 | May cause an allergic skin reaction. |
| | H319 | Causes serious eye irritation. |
| | H335 | May cause respiratory irritation. |
| | H411 | Toxic to aquatic life with long lasting effects. |

| | | | |
|---------------------------------|-------------|---|--|
| Precautionary Statements | Prevention | 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. |
| | | P271 | Use only outdoors or in a well-ventilated area. |
| | Response | P302 + P352 | IF ON SKIN: Wash with plenty of soap and water. |
| | | P337 + P313 | If eye irritation persists: Get medical advice/attention. |
| | | P333 + P313 | If skin irritation or rash occurs: Get medical advice/attention. |
| | | P312 | Call a POISON CENTER or doctor/physician if you feel unwell. |
| | | P391 | Collect spillage. |
| | | P362 | Take off contaminated clothing and wash before reuse. |
| | | 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 | P304 + P340 | IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. |
| P403 + P233 | | Store in a well-ventilated place. Keep container tightly closed. | |
| Disposal | P405 | Store locked up. | |
| | 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 | Health Hazards | 6.1E | Substances that are acutely toxic –May be harmful, Aspiration hazard |
| | | 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 |
| | Environmental Hazards | 9.1B | Substances that are ecotoxic in the aquatic environment |

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

| Chemical Entity | Formula | CAS Number | Proportion |
|--------------------|----------|------------|------------|
| Isobornyl acrylate | C13H20O2 | 5888-33-5 | <=100 % |

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

| | |
|--|---|
| Swallowed | Rinse mouth with water. If large quantities swallowed give lukewarm water to drink if victim is completely conscious and alert. Do NOT induce vomiting, risk of damage to lungs exceeds poisoning risk. Obtain emergency medical attention. |
| Eye | Immediately flush eyes with plenty of water for 15 to 30 minutes, holding eyelids open. In all cases of eye contamination, it is a sensible precaution to seek medical advice. |
| Skin | Remove contaminated clothing. Wash affected area with mild soap and plenty of water. Flush with lukewarm water for 15 minutes. If sticky use waterless cleaner first. If irritation persists, seek medical attention. |
| Inhaled | Remove victim from exposure to fresh air. If not breathing, apply artificial respiration. If breathing is difficult, give oxygen. Seek medical attention. |
| Advice to Doctor | Treat symptomatically based on individual reactions of patient and judgement of doctor. |
| Medical Conditions Aggravated by Exposure | No information available on medical conditions which are aggravated from exposure to this product. |

5. FIRE FIGHTING MEASURES

| | |
|---|--|
| General Measures | Clear fire area of all non-emergency personnel. Stay upwind. Keep out of low areas. Eliminate ignition sources. Move fire exposed containers from fire area if it can be done without risk. |
| Flammability Conditions | Product is a Combustible Liquid. |
| Extinguishing Media | Water, foam, carbon dioxide or dry chemical. |
| Fire and Explosion Hazard | High temperatures, inhibitor depletion, accidental impurities, or exposure to radiation or oxidizers may cause spontaneous polymerizing reaction generating heat / pressure. Closed containers may rupture or explode during runaway polymerization. |
| Hazardous Products of Combustion | High temperatures, inhibitor depletion, accidental impurities, or exposure to radiation or oxidizers may cause spontaneous polymerizing reaction generating heat / pressure. Closed containers may rupture or explode during runaway polymerization. |
| Special Fire Fighting Instructions | Do NOT allow fire fighting water to reach waterways, drains or sewers. Store fire fighting water for treatment. |
| Personal Protective Equipment | Fire fighters should wear a positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots and gloves) or chemical splash suit. |
| Flash Point | >100 °C [Closed cup] |
| 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 | Eliminate all sources of ignition. Increase ventilation. Avoid walking through spilled product as it may be slippery. Use clean, non-sparking tools and equipment. Avoid raw material contact and vapor inhalation. |
| Clean Up Procedures | Soak up spilled product using absorbent non-combustible material such as sand or soil. When saturated, collect material into suitable, labelled, dry, sealable containers and hold for safe disposal. |
| Containment | Stop leak if safe to do so. |
| Environmental Precautionary Measures | Do not allow product to reach drains, sewers or waterways. If product does enter a waterway, advise the Environmental Protection Authority or your local Waste Authority. |
| Evacuation Criteria | Evacuate all unnecessary personnel. |
| Personal Precautionary Measures | Personnel involved in the clean up should wear full protective clothing as listed in section 8. |

7. HANDLING AND STORAGE

| | |
|------------------|--|
| Handling | Ensure an eye bath and safety shower are available and ready for use. Observe good personal hygiene practices and recommended procedures. Wash thoroughly after handling. Take precautionary measures against static discharges by bonding and grounding equipment. Avoid contact with eyes, skin and clothing. Do not inhale product vapours. This product is inhibited to prevent uncontrolled polymerization . A polymerization can generate heat and pressure and may cause product container to rupture. Check inhibitor content often and add inhibitor to bulk liquid if needed. If material freezes, heat and mix to redistribute the inhibitor. Heat product container slowly to 40 deg C for not more than 24 hours. Convection ovens or warm water bath (preferred due to more efficient heat transfer) are recommended for heating. Do not use drum heater. An air space, preferably an air bubble flow, should be provided for at all times during heating . |
| Storage | Store in a cool, dry, well-ventilated area. Store drums above 10°/50° and below 32°/90°. Bulk storage temperature range:15-27°/59-80°. Keep containers tightly closed when not in use. Inspect regularly for deficiencies such as damage or leaks. Protect against physical damage. Store away from incompatible materials as listed in section 10. Protect from direct sunlight, moisture and static discharges. This product has a UN classification of 3082 and a Dangerous Goods Class 9 (Miscellaneous) according to The Australian Code for the Transport of Dangerous Goods By Road and Rail. NOTE: This product is subject to special provision AU01 according to The ADG7. SP No. AU01 Environmentally Hazardous Substances meeting the descriptions of UN 3082 are not subject to this Code when transported by road or rail in; (a) packagings that do not incorporate a receptacle exceeding 450 kg(L); or (b) IBCs. |
| Container | Store in original packaging as approved by manufacturer. |

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

| | |
|-----------------------------|--|
| General | No exposure standard has been established for this product by the Australian Safety and Compensation Council (ASCC). |
| Exposure Limits | No Data Available |
| Biological Limits | No information available on biological limit values for this product. |
| 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. Using no spark, grounding ventilation system, and separate from general ventilation system.

Personal Protection Equipment

RESPIRATOR: If this material is handled at elevated temperature or under mist forming conditions, approved respiratory protection equipment should be used. (AS1716).
EYES: Eye protection such as chemical splash goggles and /or face shield must be worn when possibility exists for eye contact due to splashing or spraying liquid, airborne particles, or vapor. Contact lenses should not be worn. (AS1337).
HANDS: Products without solvents added: wear nitrile gloves. Products used with solvents: wear thick (>0.5 mm) nitrile gloves. (AS2161).
CLOTHING: Depending on the conditions of use, protective gloves, apron, boots, head and face protection, and safety footwear should be worn (AS3765/2210).

Work Hygienic Practices

All personal protective equipment should be cleaned thoroughly after each use.
Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.
Use good personal hygiene practices. Wash hands before eating, drinking, smoking, or using toilet facilities.
Promptly remove soiled clothing/wash thoroughly before reuse.
Shower after work using plenty of soap and water.

9. PHYSICAL AND CHEMICAL PROPERTIES

| | |
|---------------------------------------|-------------------------------|
| Physical State | Liquid |
| Appearance | Liquid |
| Odour | Mild, musty odour |
| Colour | Clean/clear |
| pH | ~6.8 - 7.2 |
| Vapour Pressure | No Data Available |
| Relative Vapour Density | No Data Available |
| Boiling Point | No Data Available |
| Melting Point | No Data Available |
| Freezing Point | No Data Available |
| Solubility | No Data Available |
| Specific Gravity | 0.98 - 1.00 |
| Flash Point | >100 °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 | 0.98 - 1.00 g/cm ³ |
| 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 | 5.0 - 15.0 cps (@ 25 °C) |
| Volatile Percent | No Data Available |
| VOC Volume | No Data Available |
| Additional Characteristics | No Data Available |
| Potential for Dust Explosion | Not applicable. |

| | |
|---|-------------------|
| Fast or Intensely Burning Characteristics | No Data Available |
| Flame Propagation or Burning Rate of Solid Materials | No Data Available |
| Non-Flammables That Could Contribute Unusual Hazards to a Fire | No Data Available |
| Properties That May Initiate or Contribute to Fire Intensity | No Data Available |
| Reactions That Release Gases or Vapours | No Data Available |
| Release of Invisible Flammable Vapours and Gases | No Data Available |

10. STABILITY AND REACTIVITY

| | |
|---|--|
| General Information | Combustible liquid. |
| Chemical Stability | Product is stable under recommended conditions of use, storage and temperature. |
| Conditions to Avoid | High temperatures, localized heat sources (i.e., drum or band heaters), oxidizing conditions, freezing conditions, direct sunlight, ultraviolet radiation, inert gas blanketing. |
| Materials to Avoid | Strong oxidizers, strong reducers, free radical initiators, inert gases, oxygen scavengers. |
| Hazardous Decomposition Products | Acrid smoke-fumes/carbon monoxide/carbon dioxide and perhaps other toxic vapors may be released during a fire involving this product. |
| Hazardous Polymerisation | Heat and pressure generation when polymerization and the result in closed container broken and cracked. |

11. TOXICOLOGICAL INFORMATION

| | |
|----------------------------|--|
| General Information | LD50 (oral, rat):2300~4000 mg/kg Skin sensitization hazard. |
| EyeIrritant | Although no appropriate human or animal health effects data are known to exist, this material is expected to cause slight eye irritation. May cause minor eye irritation. Symptoms may include excessive tearing, blinking and redness. |
| Inhalation | No significant signs or symptoms indicative of any adverse health hazard are expected to occur at standard conditions due to the low volatility of this material. However, aerosols, or vapors which may be generated at elevated processing temperatures, may cause respiratory tract irritation. Symptoms of irritation may include coughing, mucous production and shortness of breath. May also have potential to cause headaches, nausea and dizziness |
| SkinIrritant | Although no appropriate human or animal health effects data are known to exist, this material is not expected to be a health hazard by skin absorption. |
| Ingestion | Although no appropriate human or animal health effects data are known to exist, this material is expected to be a slight ingestion hazard. |
| Carcinogen Category | No Data Available |

12. ECOLOGICAL INFORMATION

| | |
|----------------------------------|---|
| Ecotoxicity | Toxic to aquatic life with long lasting effects. |
| Persistence/Degradability | No information available on persistence/degradability for this product. |
| Mobility | No information available on mobility for this product. |
| Environmental Fate | Avoid contaminating waterways, drains and sewers. |
| Bioaccumulation Potential | No information available on bioaccumulation for this product. |
| Environmental Impact | No Data Available |

13. DISPOSAL CONSIDERATIONS

General Information

Dispose of in accordance with all local, state and federal regulations.
All empty packaging should be disposed of in accordance with Local, State, and Federal Regulations or recycled/reconditioned at an approved facility.

Special Precautions for Land Fill

Contact a specialist disposal company or the local waste regulator for advice.
Residues and spilled material may be hazardous waste due to potential for internal heat generator.
The container for this product can present explosion or fire hazards, even when emptied. To avoid risk of injury, do not cut, puncture, or weld on or near this container.
Since the emptied containers retain product residue, follow label warnings even after container is emptied .

14. TRANSPORT INFORMATION

Land Transport (Australia)

ADG Code

| | |
|-----------------------------|--|
| Proper Shipping Name | ETERMER 70 (Isobornyl acrylate) |
| Class | C2 Combustible Liquids - Flash Point >93°C, Closed Cup, Not Excluded Flammable |
| Subsidiary Risk(s) | No Data Available |
| EPG | 47 Low To Moderate Hazard Substances |
| UN Number | No Data Available |
| Hazchem | No Data Available |
| Pack Group | No Data Available |
| Special Provision | AU01 |
| Comments | UN#3082 |

Land Transport (Malaysia)

ADR Code

| | |
|-----------------------------|--|
| Proper Shipping Name | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Isobornyl acrylate) |
| 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. (Isobornyl acrylate) |
| 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. (Isobornyl acrylate) |
| 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. (Isobornyl acrylate) |
| 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-B |
| Marine Pollutant | Yes |

Air Transport

IATA DGR

| | |
|-----------------------------|--|
| Proper Shipping Name | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Isobornyl acrylate) |
| 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 | No Data Available |
| Poisons Schedule (Aust) | Not Scheduled |

Environmental Protection Authority (New Zealand)

Hazardous Substances and New Organisms Amendment Act 2015

Approval Code HSR002670

National/Regional Inventories

| | |
|--|----------------|
| Australia (AICS) | Listed |
| Canada (DSL) | Not Determined |
| Canada (NDSL) | Not Determined |
| China (IECSC) | Not Determined |
| Europe (EINECS) | 227-561-6 |
| 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 | MONOMV1000, MONOMV1010 |
| Revision | 3 |
| Revision Date | 28 Apr 2015 |
| Key/Legend | < Less Than > Greater Than 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 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