

### 1. IDENTIFICATION

<b>Product Name</b>	<b>Maleic acid homopolymer (HPMA)</b>
<b>Other Names</b>	Homopolymer of Maleic Acid; Polymaleic acid; Polymaleic Acid - Solvent Base
<b>Uses</b>	Deflocculant & sequestrant.
<b>Chemical Family</b>	No Data Available
<b>Chemical Formula</b>	Unspecified
<b>Chemical Name</b>	2-Butenedioic acid, (Z)-, homopolymer
<b>Product Description</b>	Polymaleic acid, aqueous solution.

### 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

<b>Hazard Classification</b>	Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)	
<b>Hazard Categories</b>	Corrosive to Metals - Category 1 Serious Eye Damage/Irritation - Category 2A Sensitisation (Skin) - Category 1	
<b>Pictograms</b>		
<b>Signal Word</b>	Danger	
<b>Hazard Statements</b>	<b>H290</b>	May be corrosive to metals.
	<b>H317</b>	May cause an allergic skin reaction.
	<b>H319</b>	Causes serious eye irritation.
<b>Precautionary Statements</b>	Prevention	<b>P280</b> Wear protective gloves/eye protection/face protection. <b>P261</b> Avoid breathing mist/vapours/spray. <b>P272</b> Contaminated work clothing should not be allowed out of the workplace.
	Response	<b>P390</b> Absorb spillage to prevent material damage. <b>P337 + P313</b> If eye irritation persists: Get medical advice/attention. <b>P302 + P352</b> IF ON SKIN: Wash with plenty of soap and water. <b>P333 + P313</b> If skin irritation or rash occurs: Get medical advice/attention. <b>P363</b> Wash contaminated clothing before reuse. <b>P305 + P351 + P338</b> IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
	Storage	<b>P406</b> Store in corrosive resistant container with a resistant inner liner.
	Disposal	<b>P501</b> 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)

<b>Dangerous Goods Classification</b>	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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## 3. COMPOSITION/INFORMATION ON INGREDIENTS

### Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Maleic acid homopolymer	(C4H4O4) <sub>x</sub>	26099-09-2	48 - 52 %
Maleic acid	C4H4O4	110-16-7	<=4 %
Fumaric acid	C4H4O4	110-17-8	<=0.5 %
Water	H2O	7732-18-5	Balance %

## 4. FIRST AID MEASURES

*Description of necessary measures according to routes of exposure*

<b>Swallowed</b>	IF SWALLOWED: Rinse mouth. Do not induce vomiting. Call a Poison Centre or doctor/physician for advice.
<b>Eye</b>	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.
<b>Skin</b>	IF ON SKIN: Remove contaminated clothing and shoes immediately. Flush skin with running water for at least 15 minutes. In case of gross contamination, drench contaminated clothing and skin with plenty of water before removing clothes. For minor skin contact, avoid spreading material on unaffected skin. If skin irritation or rash occurs, get medical advice/attention. Wash contaminated clothing and shoes before reuse.
<b>Inhaled</b>	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. Apply resuscitation if victim is not breathing - Do not use direct mouth-to-mouth method if victim ingested or inhaled the substance; use alternative respiratory method or proper respiratory device. Administer oxygen if breathing is difficult. Keep victim calm and warm - Obtain immediate medical care.
<b>Advice to Doctor</b>	Treat symptomatically. Ensure that attending medical personnel are aware of the identity and nature of the product(s) involved, and take precautions to protect themselves.
<b>Medical Conditions Aggravated by Exposure</b>	May cause an allergic skin reaction.

## 5. FIRE FIGHTING MEASURES

<b>General Measures</b>	If safe to do so, move undamaged containers from fire area. Cool containers with water spray until well after fire is out. Avoid getting water inside containers.
<b>Flammability Conditions</b>	Non-combustible; however following evaporation of aqueous component, residual material can burn if ignited.
<b>Extinguishing Media</b>	Use dry chemical, Carbon dioxide (CO <sub>2</sub> ), foam or water spray for extinction - DO not use water jets.
<b>Fire and Explosion Hazard</b>	Containers may explode when heated. Contact with metals may evolve flammable hydrogen gas.
<b>Hazardous Products of Combustion</b>	Fire or heat will produce irritating, toxic and/or corrosive gases, including Carbon monoxide, Carbon dioxide.
<b>Special Fire Fighting Instructions</b>	Contain runoff from fire control or dilution water - Runoff may be toxic and/or corrosive and may pollute waterways.
<b>Personal Protective Equipment</b>	Wear self-contained breathing apparatus (SCBA) and chemical splash suit. Fully-encapsulating, gas-tight suits should be worn for maximum protection. Structural firefighter's uniform is NOT effective for this material.
<b>Flash Point</b>	No Data Available
<b>Lower Explosion Limit</b>	No Data Available
<b>Upper Explosion Limit</b>	No Data Available
<b>Auto Ignition Temperature</b>	No Data Available
<b>Hazchem Code</b>	2X

## 6. ACCIDENTAL RELEASE MEASURES

<b>General Response Procedure</b>	Ensure adequate ventilation - Ventilate enclosed spaces before entering. ELIMINATE all ignition sources. Do not touch or walk through spilled material. Avoid breathing vapours and contact with eyes, skin and clothing.
<b>Clean Up Procedures</b>	Collect recoverable product into labelled containers for reclamation or disposal; Absorb remaining material with earth, sand or other non-combustible material and transfer to a suitable, labelled container for disposal (see SECTION 13).
<b>Containment</b>	Stop leak if safe to do so - Prevent entry into waterways, drains or confined areas.
<b>Decontamination</b>	Flush spill area with water; Neutralise washings with soda ash or lime.
<b>Environmental Precautionary Measures</b>	Spillages and decontamination runoff should be prevented from entering drains and watercourses.
<b>Evacuation Criteria</b>	Spill or leak area should be isolated immediately. Keep unauthorised personnel away. Keep upwind and to higher ground.
<b>Personal Precautionary Measures</b>	Do not touch damaged containers or spilled material unless wearing appropriate protective clothing (see SECTION 8).

## 7. HANDLING AND STORAGE

<b>Handling</b>	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). Absorb spillage to prevent material damage (see SECTION 6).
<b>Storage</b>	Store in a cool, dry and well-ventilated place, out of direct sunlight. Protect from freezing. Keep container tightly closed. Keep away from heat and sources of ignition - No smoking. Keep away from incompatible materials (see SECTION 10).
<b>Container</b>	Keep only in the original container, corrosive resistant and/or container with a resistant inner liner. Do not store in mild steel, aluminium or any other metal.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

<b>General</b>	No specific exposure standards are available for this product.
<b>Exposure Limits</b>	No Data Available
<b>Biological Limits</b>	No information available.
<b>Engineering Measures</b>	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.
<b>Personal Protection Equipment</b>	<ul style="list-style-type: none"><li>- Respiratory protection: Wear respiratory protection in case of inadequate ventilation and to avoid breathing mist/vapours. Recommended: Organic vapour/particulate filter respirator (refer to AS/NZS 1715 &amp; 1716).</li><li>- Eye/face protection: Wear appropriate eye protection to avoid eye contact. Recommended: Wear chemical goggles.</li><li>- Hand protection: Wear protective gloves. Recommended: Wear chemical-resistant gloves.</li><li>- Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Recommended: Chemical-resistant apron, safety shoes.</li></ul>
<b>Special Hazards Precautions</b>	No information available.
<b>Work Hygienic Practices</b>	Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Remove contaminated clothing and shoes immediately and wash before reuse. Contaminated work clothing should not be allowed out of the workplace.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical State</b>	Liquid
<b>Appearance</b>	Clear liquid
<b>Odour</b>	Mild
<b>Colour</b>	Yellow to amber
<b>pH</b>	<=2 (1% soln.)
<b>Vapour Pressure</b>	No Data Available
<b>Relative Vapour Density</b>	No Data Available
<b>Boiling Point</b>	100 - 102 °C
<b>Melting Point</b>	-5 °C
<b>Freezing Point</b>	-5 °C
<b>Solubility</b>	Completely miscible with water
<b>Specific Gravity</b>	1.16 - 1.22 (Water = 1)
<b>Flash Point</b>	No Data Available
<b>Auto Ignition Temp</b>	No Data Available
<b>Evaporation Rate</b>	No Data Available
<b>Bulk Density</b>	No Data Available
<b>Corrosion Rate</b>	No Data Available
<b>Decomposition Temperature</b>	No Data Available

<b>Density</b>	No Data Available
<b>Specific Heat</b>	No Data Available
<b>Molecular Weight</b>	500 - 1500 g/mol (Avg)
<b>Net Propellant Weight</b>	No Data Available
<b>Octanol Water Coefficient</b>	0.73
<b>Particle Size</b>	No Data Available
<b>Partition Coefficient</b>	No Data Available
<b>Saturated Vapour Concentration</b>	No Data Available
<b>Vapour Temperature</b>	No Data Available
<b>Viscosity</b>	10 - 60 cps (@ 25 °C)
<b>Volatile Percent</b>	No Data Available
<b>VOC Volume</b>	No Data Available
<b>Additional Characteristics</b>	No information available.
<b>Potential for Dust Explosion</b>	Not applicable.
<b>Fast or Intensely Burning Characteristics</b>	No information available.
<b>Flame Propagation or Burning Rate of Solid Materials</b>	No information available.
<b>Non-Flammables That Could Contribute Unusual Hazards to a Fire</b>	No information available.
<b>Properties That May Initiate or Contribute to Fire Intensity</b>	Non-combustible; however following evaporation of aqueous component, residual material can burn if ignited.
<b>Reactions That Release Gases or Vapours</b>	Fire/decomposition will produce irritating, toxic and/or corrosive gases, including Carbon monoxide, Carbon dioxide.
<b>Release of Invisible Flammable Vapours and Gases</b>	Contact with metals may evolve flammable hydrogen gas.

## 10. STABILITY AND REACTIVITY

<b>General Information</b>	May be corrosive to metals.
<b>Chemical Stability</b>	Stable under normal temperatures and pressures.
<b>Conditions to Avoid</b>	Do not expose to extreme temperatures.
<b>Materials to Avoid</b>	Incompatible/reactive with strong alkalis, oxidising agents, nitrites and sulfites. Do not store in mild steel, aluminium or any other metal.
<b>Hazardous Decomposition Products</b>	Fire/decomposition will produce irritating, toxic and/or corrosive gases, including Carbon monoxide, Carbon dioxide. Contact with metals may evolve flammable hydrogen gas.
<b>Hazardous Polymerisation</b>	Does not occur.

## 11. TOXICOLOGICAL INFORMATION

<b>General Information</b>	<ul style="list-style-type: none"> <li>- Acute toxicity: Practically non-toxic. Maleic acid is classified "Harmful if swallowed".</li> <li>- Skin corrosion/irritation: May cause skin irritation.</li> <li>- Eye damage/irritation: Causes serious eye irritation.</li> <li>- Respiratory/skin sensitisation: May cause an allergic skin reaction (Maleic acid).</li> <li>- Germ cell mutagenicity: No genetic effects were noted in standard bacterial tests.</li> <li>- Carcinogenicity: No information available.</li> <li>- Reproductive toxicity: No adverse effects reported in repeat dose studies.</li> <li>- STOT (single exposure): Vapours may cause respiratory irritation.</li> <li>- STOT (repeated exposure): No information available.</li> <li>- Aspiration toxicity: No information available.</li> </ul>
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**Acute****Ingestion**

Acute toxicity (Oral):  
- LD50, Rats: 15,000 mg/kg  
\*This product has not been tested for toxicity; data obtained on similar products.

**Carcinogen Category**

None

**12. ECOLOGICAL INFORMATION****Ecotoxicity**

Aquatic toxicity:  
- LC50, Fish (Oncorhynchus mykiss (Rainbow trout)): >100 mg/L (96 h).  
- LC50, Fish (Cyprinus carpio (Common carp)): >100 mg/L (96 h).  
- EC50, Invertebrates (Daphnia magna (Water flea)): >1,000 mg/L (48 h).

**Persistence/Degradability**

Not readily biodegradable. Biodegrades slowly in the environment (18 %, 35 d) [Zahn-Wellens (OECD 302B)].

**Mobility**

Accidental spillage may lead to penetration in the soil and groundwater; However, there is no evidence that this would cause adverse ecological effects.

**Environmental Fate**

Prevent entry into drains and waterways.

**Bioaccumulation Potential**

There is no evidence to suggest bioaccumulation will occur.

**Environmental Impact**

No Data Available

**13. DISPOSAL CONSIDERATIONS****General Information**

Dispose of contents/container via a licensed collector and in accordance with local/regional/national regulations.

**Special Precautions for Land Fill**

Emptied containers retain vapour and product residue - The reuse of this material's container for non-industrial purposes is prohibited and any reuse must be in consideration of the data provided in this SDS.

**14. TRANSPORT INFORMATION****Land Transport (Australia)**

ADG Code

**Proper Shipping Name**

CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (Contains Maleic acid homopolymer)

**Class**

8 Corrosive Substances

**Subsidiary Risk(s)**

No Data Available

**EPG**

37 Toxic And/Or Corrosive Substances Non-Combustible

**UN Number**

3265

**Hazchem**

2X

**Pack Group**

II

**Special Provision**

No Data Available

**Land Transport (Malaysia)**

ADR Code

**Proper Shipping Name**

CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (Contains Maleic acid homopolymer)

**Class**

8 Corrosive Substances

**Subsidiary Risk(s)**

No Data Available

**EPG**

37 Toxic And/Or Corrosive Substances Non-Combustible

**UN Number**

3265

<b>Hazchem</b>	2X
<b>Pack Group</b>	II
<b>Special Provision</b>	No Data Available

### Land Transport (New Zealand)

NZS5433

<b>Proper Shipping Name</b>	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (Contains Maleic acid homopolymer)
<b>Class</b>	8 Corrosive Substances
<b>Subsidiary Risk(s)</b>	No Data Available
<b>EPG</b>	37 Toxic And/Or Corrosive Substances Non-Combustible
<b>UN Number</b>	3265
<b>Hazchem</b>	2X
<b>Pack Group</b>	II
<b>Special Provision</b>	No Data Available

### Land Transport (United States of America)

US DOT

<b>Proper Shipping Name</b>	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (Contains Maleic acid homopolymer)
<b>Class</b>	8 Corrosive Substances
<b>Subsidiary Risk(s)</b>	No Data Available
<b>ERG</b>	153 Substances - Toxic and/or Corrosive (Combustible)
<b>UN Number</b>	3265
<b>Hazchem</b>	2X
<b>Pack Group</b>	II
<b>Special Provision</b>	No Data Available

### Sea Transport

IMDG Code

<b>Proper Shipping Name</b>	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (Contains Maleic acid homopolymer)
<b>Class</b>	8 Corrosive Substances
<b>Subsidiary Risk(s)</b>	No Data Available
<b>UN Number</b>	3265
<b>Hazchem</b>	2X
<b>Pack Group</b>	II
<b>Special Provision</b>	No Data Available
<b>EMS</b>	F-A, S-B
<b>Marine Pollutant</b>	No

### Air Transport

IATA DGR

<b>Proper Shipping Name</b>	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (Contains Maleic acid homopolymer)
<b>Class</b>	8 Corrosive Substances
<b>Subsidiary Risk(s)</b>	No Data Available
<b>UN Number</b>	3265
<b>Hazchem</b>	2X
<b>Pack Group</b>	II
<b>Special Provision</b>	No Data Available

### National Transport Commission (Australia)

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

**Dangerous Goods Classification**

Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road &amp; 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** Not Assessed**National/Regional Inventories**

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

**16. OTHER INFORMATION****Related Product Codes** POMAAC1000, POMAAC1001, POMAAC1002, POMAAC1003, POMAAC1100, POMAAC1200, POMAAC2000, POMAAC2001, POMAAC2200, POMAAC2210, POMAAC2220, POMAAC2310, POMAAC2320, POMAAC3000, POMAAC3050, POMAAC3200, POMAAC4000, POMAAC4200, POMAAC4500, POMAAC4700, POMAAC5000, POMAAC5200, POMAAC6000, POMAAC6200**Revision** 5**Revision Date** 09 Jun 2019



**Reason for Issue****Key/Legend**

SDS updated.

< Less Than

> Greater Than

**AICS** Australian Inventory of Chemical Substances

**atm** Atmosphere

**CAS** Chemical Abstracts Service (Registry Number)

**cm<sup>2</sup>** Square Centimetres

**CO<sub>2</sub>** 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<sup>3</sup>** 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

**inH<sub>2</sub>O** Inch of Water

**K** Kelvin

**kg** Kilogram

**kg/m<sup>3</sup>** Kilograms per Cubic Metre

**lb** Pound

**LC<sub>50</sub>** LC stands for lethal concentration. LC<sub>50</sub> 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.

**LD<sub>50</sub>** LD stands for Lethal Dose. LD<sub>50</sub> 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<sup>3</sup>** Cubic Metre

**mbar** Millibar

**mg** Milligram

**mg/24H** Milligrams per 24 Hours

**mg/kg** Milligrams per Kilogram

**mg/m<sup>3</sup>** Milligrams per Cubic Metre

**Misc** or **Miscible** Liquids form one homogeneous liquid phase regardless of the amount of either component present.

**mm** Millimetre

**mmH<sub>2</sub>O** 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

N/A = Not Available