



# Safety Data Sheet

## Polyvinyl Alcohol (Fully Hydrolyzed PVA)

### Revision 2, Date 01 Jul 2014

## 1. IDENTIFICATION

<b>Product Name</b>	<b>Polyvinyl Alcohol (Fully Hydrolyzed PVA)</b>
<b>Other Names</b>	Ethenol, Homopolymer; Poly(Vinyl Alcohol)
<b>Uses</b>	Fiber sizing agents, paper processing agents, adhesives, manufacture of polyvinyl butyral resins, stabilizer for polyvinyl chloride polymerization, paints, lacquers, and printing inks.
<b>Chemical Family</b>	No Data Available
<b>Chemical Formula</b>	$[-C_2H_4O-]_n$
<b>Chemical Name</b>	Polyvinyl Alcohol (Fully Hydrolyzed PVA)
<b>Product Description</b>	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

Redox Pty Ltd  
Corporate Office Sydney  
Locked Bag 15 Minto NSW 2566 Australia  
2 Swettenham Road Minto NSW 2566 Australia  
All Deliveries: 4 Holmes Road Minto NSW 2566 Australia

Phone +61 2 9733 3000  
Fax +61 2 9733 3111  
E-mail [sydney@redox.com](mailto:sydney@redox.com)  
Web [www.redox.com](http://www.redox.com)  
ABN 92 000 762 345

Australia  
Adelaide  
Brisbane  
Melbourne  
Perth  
Sydney

New Zealand  
Auckland  
Christchurch  
Hawke's Bay

Malaysia  
Kuala Lumpur

USA  
Los Angeles



**Hazard Classification** NOT hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)

**Signal Word** None

### 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)

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

### Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Polyvinyl Alcohol - Fully Hydrolyzed	No Data Available	9002-89-5	>94.0 %
Water	No Data Available	7732-18-5	<=5.0 %
Methanol	No Data Available	67-56-1	<=3.0 %
Methyl Acetate	No Data Available	79-20-9	<=0.5 %

## 4. FIRST AID MEASURES

### Description of necessary measures according to routes of exposure

<b>Swallowed</b>	Ingestion is unlikely route of exposure. Do not induce vomiting unless instructed by a physician.
<b>Eye</b>	Immediately flush eyes with running water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Seek prompt medical attention if redness or irritation occurs.
<b>Skin</b>	Wash thoroughly with soap and water for 15 minutes. If skin irritation occurs, seek medical attention.
<b>Inhaled</b>	Remove source(s) of contamination and move victim to fresh air. Rinse mouth with water. If breathing has stopped, give artificial respiration, then oxygen if needed. Contact physician immediately.
<b>Advice to Doctor</b>	Treat symptomatically based on judgement of doctor and individual reactions of patient.
<b>Medical Conditions Aggravated by Exposure</b>	Persons with pre-existing eye or skin disorders or impaired pulmonary function may be more susceptible to the effects of this product. Methanol: Poisoning is usually caused by ingestion. Poisoning by inhalation of vapor is uncommon but can occur at extreme levels of exposure. Intoxication by skin absorption is unlikely unless prolonged contact occurs with injured skin. Acute systemic toxicity is manifested in acidosis and injury to the optic nerve. Onset of symptoms may be delayed as long as 30 hours. A latent period of 12-18 hours is common. Mild intoxication may be associated with non-specific headache, fatigue, nausea and blurring of vision, usually reversible. Moderate intoxication may produce severe headache, dizziness, nausea, vomiting, abdominal or lumbar pain and depression of the central nervous system. Blurring or loss of vision may be temporary to permanent and generally follows latent periods of two to six days. In severe intoxication, these findings are accentuated and there may be shock, coma and hyperemia of the optic disc with blurring of the disc margins. Acidosis is a prominent observation. Death has been reported in about 25% of patients with severe poisoning (carbon dioxide combining power less than 20 meg/l). Visual disturbances, the most damaging aspect of most cases of intoxication, may develop promptly with little warning. The loss of acuity may be accompanied by the perception of spots or a grey mist. Changes in color perception, scotomatia, photophobia or tenderness of the eyes. Prognosis for improvement of vision is poor if changes persist for 6 days. Chronic poisoning from inhalation has been described as showing visual impairment with blurring, loss of acuity, contraction of fields and sometimes total blindness. This condition is believed to be exceedingly rare and not well documented. Liquid and vapor may be irritating to the skin and mucous membranes. May have a defatting action upon the skin and dryness and vulnerability to infection may result.

## 5. FIRE FIGHTING MEASURES

<b>General Measures</b>	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.
<b>Flammability Conditions</b>	Product is a combustible solid.
<b>Extinguishing Media</b>	Suitable fire-extinguishing media include Water, Alcohol type or all purpose type foam for large fires and carbon dioxide or dry chemical media for small fires. Use water spray to cool fire-exposed containers and structures. Use water spray to disperse vapors, re-ignition is possible.
<b>Fire and Explosion Hazard</b>	Explosion limit Dust, 35g/m <sup>3</sup>
<b>Hazardous Products of Combustion</b>	Combustible solid. Avoid generating dust. Organic dusts have potential to be explosive with static spark or flame initiation. Powders with diameters less than 0.1mm may cause dust explosions if ignited by static ignition charges or strong friction. Maintain good housekeeping for control of dust. Ground all containers when transferring to avoid static charges. Incompatible with strong oxidising agents and sources of ignition. Thermal oxidative decomposition can produce carbon monoxide and carbon dioxide. It may decompose at temperatures higher than 200°C.
<b>Special Fire Fighting Instructions</b>	Do NOT allow fire fighting water to reach waterways, drains or sewers. Store fire fighting water for treatment.
<b>Personal Protective Equipment</b>	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).
	There is a possibility of explosive dust-air mixtures, and dust explosion.
<b>Flash Point</b>	>70 °C
<b>Lower Explosion Limit</b>	No Data Available
<b>Upper Explosion Limit</b>	No Data Available
<b>Auto Ignition Temperature</b>	440 °C
<b>Hazchem Code</b>	No Data Available

## 6. ACCIDENTAL RELEASE MEASURES

<b>General Response Procedure</b>	Avoid accidents, clean up immediately. May be slippery when spilt. Eliminate all sources of ignition. Increase ventilation. Avoid generating dust. Stop leak if safe to do so. Isolate the danger area. Use clean, non-sparking tools and equipment.
<b>Clean Up Procedures</b>	Contain and sweep/shovel up spills with dust binding material or use an industrial vacuum cleaner. Transfer to a suitable, labelled container and dispose of promptly. Pick up dry - forms slippery surface with water.
<b>Containment</b>	Stop leak if safe to do so. Isolate the danger area.
<b>Environmental Precautionary Measures</b>	Do NOT let product reach drains or waterways. If product does enter a waterway, advise the Environmental Protection Authority or your local Waste Management.
<b>Evacuation Criteria</b>	Evacuate all unnecessary personnel.
<b>Personal Precautionary Measures</b>	Personnel involved in the clean up should wear full protective clothing as listed in section 8.

## 7. HANDLING AND STORAGE

<b>Handling</b>	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 handling which leads to dust formation. In closed containers, due to the development of heat, vapors from methanol and methyl acetate could collect in the headspace of the containers therefore keep containers closed and away from open fires. Lead off electrostatic charges. Minimize breathing of vapors and avoid prolonged or repeated contact with skin. Wear proper protective equipment. If ventilation is not sufficient, wear proper respiratory equipment. Do not use near ignition sources. Avoid contact with eyes, skin and clothing.
<b>Storage</b>	Store in a cool, dry, well-ventilated area. 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. Keep away from ignition sources. This product is not classified dangerous for transport according to The Australian Code for the Transport of Dangerous Goods By Road and Rail.
<b>Container</b>	Store in original packaging as approved by manufacturer.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

<b>General</b>	<p>No exposure standard has been established for this product by the Australian Safety and Compensation Council (ASCC). However, the following may be adopted: Singapore National Environment Agency Emission Limit 100 ppm ACGIH-TLV 2mg/m<sup>3</sup> (as organic dust, TWA), OSHA-PEL 2mg/m<sup>3</sup> (as organic dust, TWA) NOTE: The exposure value at the TWA is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week.</p> <p>These exposure standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.</p>
<b>Exposure Limits</b>	No Data Available
<b>Biological Limits</b>	No information available on biological limit values for this product.
<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>	RESPIRATOR: Wear a P2 particulate respirator when handling this product (AS1715/1716). EYES: Safety glasses with side shields (AS1336/1337). HANDS: Rubber or plastic gloves (AS2161). CLOTHING: Long-sleeved protective clothing and safety footwear (AS3765/2210).
<b>Work Hygienic Practices</b>	No Data Available

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical State</b>	Solid
<b>Appearance</b>	Powder/Fine Granules
<b>Odour</b>	Slightly vinegary
<b>Colour</b>	White to slightly yellowish
<b>pH</b>	4.5 - 7 Aqueous solution is neutral or slightly acid
<b>Vapour Pressure</b>	No Data Available
<b>Relative Vapour Density</b>	No Data Available
<b>Boiling Point</b>	No Data Available
<b>Melting Point</b>	150 - 230 °C
<b>Freezing Point</b>	No Data Available
<b>Solubility</b>	Soluble in water 25°C
<b>Specific Gravity</b>	1.19 - 1.31
<b>Flash Point</b>	>70 °C
<b>Auto Ignition Temp</b>	440 °C
<b>Evaporation Rate</b>	No Data Available
<b>Bulk Density</b>	0.3 - 0.7
<b>Corrosion Rate</b>	No Data Available
<b>Decomposition Temperature</b>	160 °C
<b>Density</b>	No Data Available
<b>Specific Heat</b>	0.4 cal/g°C
<b>Molecular Weight</b>	No Data Available
<b>Net Propellant Weight</b>	No Data Available
<b>Octanol Water Coefficient</b>	No Data Available
<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>	No Data Available
<b>Volatile Percent</b>	No Data Available

<b>VOC Volume</b>	<3% wt (Measured)
<b>Additional Characteristics</b>	Heat of Combustion 5.99 kcal/g (1,100 kJ/mol)
<b>Potential for Dust Explosion</b>	Organic dusts have potential to be explosive with static spark or flame.
<b>Fast or Intensely Burning Characteristics</b>	No Data Available
<b>Flame Propagation or Burning Rate of Solid Materials</b>	No Data Available
<b>Non-Flammables That Could Contribute Unusual Hazards to a Fire</b>	No Data Available
<b>Properties That May Initiate or Contribute to Fire Intensity</b>	No Data Available
<b>Reactions That Release Gases or Vapours</b>	No Data Available
<b>Release of Invisible Flammable Vapours and Gases</b>	No Data Available

## 10. STABILITY AND REACTIVITY

<b>Chemical Stability</b>	This product is stable at room temperature under normal storage and handling conditions. It may decompose at temperatures higher than 200 Deg C.
<b>Conditions to Avoid</b>	Heat, flame, ignition sources and dusts.
<b>Materials to Avoid</b>	Strong oxidizing agents.
<b>Hazardous Decomposition Products</b>	Thermal oxidative decomposition can produce carbon monoxide and carbon dioxide. It may decompose at temperatures higher than 200 Deg C. Thermal oxidative decomposition can produce carbon monoxide and carbon dioxide.
<b>Hazardous Polymerisation</b>	Hazardous polymerization will not occur.

## 11. TOXICOLOGICAL INFORMATION

<b>General Information</b>	Polyvinyl alcohol Oral LD50 (Rat): > 20000 mg/kg Methanol Dermal LD50 (Rabbit): 15800 mg/kg Methanol Inhalation LC50 (4 hour(s), Rat): 64000 ppm (v) Methanol Oral LD50 (Rat): 5628 mg/kg Methanol: Human exposure to methanol may result in illness, systemic poisoning, blindness, optic nerve damage and perhaps death, after being ingested, absorbed through the skin or inhaled. Death due to cardiac or respiratory failure has been reported in some cases from consumption of as little as 30 mls.
<b>EyeIrritant</b>	Avoid large quantity PVA contact with eyes. Causes irritation, experienced as stinging and discomfort or pain. Corneal injury may occur due to mechanical action.
<b>Ingestion</b>	Polyvinyl Alcohol is non toxic. Oral toxicity is low. May cause abdominal discomfort, nausea, vomiting and diarrhea.
<b>Inhalation</b>	Avoid large quantity of PVA into the nose, as this can cause blockage to the airway. Dust causes irritation of the respiratory tract, with coughing and chest discomfort.
<b>SkinIrritant</b>	Avoid large quantity PVA contact with skin. May cause minor irritation with itching and possible slight local redness.
<b>Carcinogen Category</b>	No Data Available

## 12. ECOLOGICAL INFORMATION

<b>Ecotoxicity</b>	The product is not expected to be hazardous to the environment. Fish toxicity: LC50 > 5000 mg/l (96 hours, Zebra fish)
<b>Persistence/Degradability</b>	Expected to be biodegradable in aqueous solution. Chemical oxygen demand: Approx. 1600 mg/g
<b>Mobility</b>	No information available on mobility for this product.

	Soluble in water.
<b>Environmental Fate</b>	Do NOT let product reach waterways, drains and sewers.
<b>Bioaccumulation Potential</b>	No information available on bioaccumulation for this product.
<b>Environmental Impact</b>	No Data Available

### 13. DISPOSAL CONSIDERATIONS

<b>General Information</b>	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.
<b>Special Precautions for Land Fill</b>	Contact a specialist disposal company or the local waste regulator for advice.

### 14. TRANSPORT INFORMATION

#### Land Transport (Australia)

ADG Code

<b>Proper Shipping Name</b>	POLYVINYL ALCOHOL (FULLY HYDROLYZED PVA)
<b>Class</b>	C1 Combustible Liquids - Flash Point >60°C - <=93°C, Closed Cup
<b>Subsidiary Risk(s)</b>	No Data Available No Data Available
<b>UN Number</b>	No Data Available
<b>Hazchem</b>	No Data Available
<b>Pack Group</b>	No Data Available
<b>Special Provision</b>	No Data Available

#### Land Transport (Malaysia)

ADR

<b>Proper Shipping Name</b>	POLYVINYL ALCOHOL (FULLY HYDROLYZED PVA)
<b>Class</b>	No Data Available
<b>Subsidiary Risk(s)</b>	No Data Available No Data Available
<b>UN Number</b>	No Data Available
<b>Hazchem</b>	No Data Available
<b>Pack Group</b>	No Data Available
<b>Special Provision</b>	No Data Available

#### Land Transport (New Zealand)

NZS5433

<b>Proper Shipping Name</b>	POLYVINYL ALCOHOL (FULLY HYDROLYZED PVA)
<b>Class</b>	No Data Available
<b>Subsidiary Risk(s)</b>	No Data Available No Data Available
<b>UN Number</b>	No Data Available
<b>Hazchem</b>	No Data Available
<b>Pack Group</b>	No Data Available

**Special Provision** No Data Available

### Land Transport (United States of America)

US DOT

**Proper Shipping Name** POLYVINYL ALCOHOL (FULLY HYDROLYZED PVA)  
**Class** No Data Available  
**Subsidiary Risk(s)** No Data Available  
No Data Available  
**UN Number** No Data Available  
**Hazchem** No Data Available  
**Pack Group** No Data Available  
**Special Provision** No Data Available

### Sea Transport

IMDG Code

**Proper Shipping Name** POLYVINYL ALCOHOL (FULLY HYDROLYZED PVA)  
**Class** No Data Available  
**Subsidiary Risk(s)** No Data Available  
**UN Number** No Data Available  
**Hazchem** No Data Available  
**Pack Group** No Data Available  
**Special Provision** No Data Available  
**EMS** No Data Available  
**Marine Pollutant** No

### Air Transport

IATA DGR

**Proper Shipping Name** POLYVINYL ALCOHOL (FULLY HYDROLYZED PVA)  
**Class** No Data Available  
**Subsidiary Risk(s)** No Data Available  
**UN Number** No Data Available  
**Hazchem** No Data Available  
**Pack Group** No Data Available  
**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** Not Assessed

## National/Regional Inventories

<b>Australia (AICS)</b>	Listed
<b>Canada (DSL)</b>	Not Determined
<b>Canada (NDSL)</b>	Not Determined
<b>China (IECSC)</b>	Not Determined
<b>Europe (EINECS)</b>	Not Determined
<b>Europe (REACH)</b>	Not Determined
<b>Japan (ENCS/METI)</b>	Not Determined
<b>Korea (KECI)</b>	Not Determined
<b>Malaysia (EHS Register)</b>	Not Determined
<b>New Zealand (NZIoC)</b>	Not Determined
<b>Philippines (PICCS)</b>	Not Determined
<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>	Not Determined

## 16. OTHER INFORMATION

<b>Related Product Codes</b>	POVIAL1300, POVIAL8600, POVIAL8700, POVIAL9000, POVIAL9800, POVIAL9801
<b>Revision</b>	2
<b>Revision Date</b>	01 Jul 2014
<b>Key/Legend</b>	< Less Than > Greater Than <b>AICS</b> Australian Inventory of Chemical Substances <b>atm</b> Atmosphere <b>CAS</b> Chemical Abstracts Service (Registry Number) <b>cm<sup>2</sup></b> Square Centimetres <b>CO<sub>2</sub></b> Carbon Dioxide <b>COD</b> Chemical Oxygen Demand <b>deg C (°C)</b> Degrees Celcius <b>EPA (New Zealand)</b> Environmental Protection Authority of New Zealand <b>deg F (°F)</b> Degrees Farenheit <b>g</b> Grams <b>g/cm<sup>3</sup></b> Grams per Cubic Centimetre <b>g/l</b> Grams per Litre <b>HSNO</b> Hazardous Substance and New Organism <b>IDLH</b> Immediately Dangerous to Life and Health <b>immiscible</b> Liquids are insoluable in each other. <b>inHg</b> Inch of Mercury <b>inH<sub>2</sub>O</b> Inch of Water <b>K</b> Kelvin <b>kg</b> Kilogram



**kg/m<sup>3</sup>** 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<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