

AYERS INTERNATIONAL CORP.

MATERIAL SAFETY DATA SHEET

CHEMICAL NAME: Polyvinyl Alcohol
PVA
PVOH

Manufacturer: Chang Chun Petrochemicals
Taipei, Taiwan

Chemical Family: Vinyl Polymer

C.A.S. Chemical Name: 25213-24-5 Intermediate and Partially Hydrolyzed
9002-89-5 Super and Fully Hydrolyzed

Emergency Telephone Numbers: Sales and Product Information Phone
800-424-9300

MSDS NUMBER: 1417-05

EMERGENCY OVERVIEW:

HMIS HEALTH RATING: 1
FLAMMABILITY: 1
REACTIVITY: 0

PHYSICAL FORM: Amorphous Powder

Color: White/Off-White

Odor: Odorless

Hazards: Mild eye irritant
Mild respiratory tract irritant

EXTINGUISHING MEDIA: If unconfined, ignition of the powder will give rise to
a Class A fire.
In case of fire, use water streams

P.O. Box 4312, Greenwich, Ct. 06831
Tel: (203) 329-8919 Fax: (203) 329-8966
sales@ayersintl.com

AYERS INTERNATIONAL CORP.

SECTION 2: INGREDIENTS

All grades are composed of polyvinyl alcohol with less than 5% volatile and less than 1% inorganic ash (as sodium oxide) existing mainly as sodium acetate.

The Chemical Abstract Registry Numbers are:

9002-89-5 for Super and Fully Hydrolyzed and
25213-24-5 for Intermediate and Partially Hydrolyzed.

Polyvinyl alcohol is not a hazardous material according to the American National Standard for Precautionary Labeling of Hazardous Industrial Chemicals (ANSI Z129.1-1982), except in cases where polyvinyl alcohol dust in concentrations over 0.5 ounces per cubic foot of air exists and creates a dust explosion hazard (see Section 4)

SECTION 3: PHYSICAL DATA

Boiling Point	: Not Applicable
Melting Point	: Not Applicable
Density	: 40 lbs./cu. ft.
Solubility in water	: In Hot Water
Vapor Pressure (mm Hg)	: Not Applicable
Vapor Density	: Not Applicable
%Volatile by Volume	: 5%
PH (4% Solution)	: 4 - 8
Specific Gravity (H2O=1)	: Not Applicable

P.O. Box 4312, Greenwich, Ct. 06831
Tel: (203) 329-8919 Fax: (203) 329-8966
sales@ayersintl.com

AYERS INTERNATIONAL CORP.

SECTION 4: FIRE AND EXPLOSION DATA

Flash Point : Not Applicable

Flammable Limits (%) : Not Applicable

Extinguishing Media : Extinguish fires with water

SPECIAL FIREFIGHTING PROCEDURES:

Treat as Class A fire.

FIRE AND EXPLOSION HAZARD

Polyvinyl alcohol (PVOH) is combustible and produces a Class A fire.

Polyvinyl Alcohol powder forms an explosive mixture in air. Information about special precautions needed for bulk handling available on request. Care should be taken to prevent accumulation of polyvinyl alcohol fines and dust. The relative explosion hazard of polyvinyl alcohol is classified as weak, (PVOH is an ST I dust), according to the Bureau of Mines rating. Its explosive severity is less than 0.1 on a scale in which coal dust rates 1.0, and the maximum pressure rise is observed in the region of 1 oz./cu. ft. However, the explosive hazard is highly dependent on particle size, and the fine dust present in all products has a "strong" explosive rating (between 1.0 and 2.0).

Residual methanol and methyl acetate vapors accumulated in the headspace of bulk PVOH railcars, trailers, and silos could exceed the lower flammable limit concentration especially on warm days. The lower flammable limit for methyl acetate is 3.1% by volume; for methanol, 6% by volume. To reduce the risk of an explosion, eliminate sparks, flames and smoking in bulk handling areas.

P.O. Box 4312, Greenwich, Ct. 06831
Tel: (203) 329-8919 Fax: (203) 329-8966
sales@ayersintl.com

AYERS INTERNATIONAL CORP.

SECTION 5: 5% HEALTH HAZARD INFORMATION/FIRST AID

Exposure Effects

Polyvinyl alcohol dust is mildly irritating to the eyes and causes discomfort if inhaled. Treat as a nuisance dust and avoid inhalation or contact with eyes. There are no known detrimental effects arising from short-term polyvinyl alcohol exposure, either as a solid or in solution with water. It can easily be removed by washing with soapy water.

Polyvinyl Alcohol has a low oral toxicity rating. The acute oral LD50 is greater than 10,000 mg/kg(rats). However, PVOH is not a natural food, and its metabolism is unknown. Avoid ingestion. No chronic effects are anticipated.

Methanol and methyl acetate vapors exceeding the Threshold Limit Value (TLV=200 ppm, T.W.A.) may be encountered in the headspace of PVOH bulk tank cars, trailers and silos, especially on warm days. Poisoning by inhalation of methanol vapor is uncommon but can occur at extreme levels of exposure. Symptoms of overexposure include visual impairment, loss of acuity and sometimes total blindness. Respiratory protection, a self-contained breathing apparatus - is recommended when exposure to methanol vapors as described herein is anticipated.

Medical conditions aggravated by overexposure: Dust may aggravate symptoms of bronchitis or may provoke asthmatic responses in persons with asthma who are sensitive to dust.

Target organs: None known

Acute Toxicity and Irritation Data is as follows:

Oral LD50:	10,000 mg/kg (rat)
Dermal LD50:	7,490 mg/kg (rabbit)
Eye Irritation:	3.2 on a scale of 110.0 (rabbit)
Skin Irritation:	0.0 on a scale of 8.0 (rabbit)

FIRST AID

Polyvinyl Alcohol should be removed from the skin with soap and water. Inhalation of dust is of no known health significance. No specific first aid is recommended.

Ingestion of polyvinyl alcohol is not considered to present a toxicological emergency and no specific measures are recommended.

P.O. Box 4312, Greenwich, Ct. 06831
Tel: (203) 329-8919 Fax: (203) 329-8966
sales@ayersintl.com

AYERS INTERNATIONAL CORP.

SECTION 6: REACTIVITY DATA

STABILITY: Polyvinyl Alcohol is a very stable polymer.

INCOMPATIBILITY (SPECIFIC MATERIALS TO AVOID):

Strong oxidizing agents such as hydrogen peroxide or potassium permanganate will oxidatively cleave the polymer chain and reduce the molecular weight.

HAZARDOUS DECOMPOSITION PRODUCTS:

Decomposition is insignificant below 200C. Above 200C, the polyvinyl yellows and begins to decompose. Higher temperatures accelerate decomposition and lead to evolution of acetaldehyde, crotonaldehyde, acetone and other unknown, toxic products. Avoid exposure to decomposition products.

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 7: SPILL, LEAK AND DISPOSAL PROCEDURES

If polyvinyl alcohol is spilled as a powder, dispose of it as a non-hazardous solid waste. After removing most of the solid, thoroughly wash area with cold water to remove residual polyvinyl alcohol. Caution! Floors covered with residual polyvinyl alcohol become slippery when wet. Avoid contamination of waterways.

DISPOSAL:

Federal, state and local regulations should be observed when land filling or otherwise disposing of polyvinyl alcohol.

SECTION 8: SPECIAL PROTECTION INFORMATION

VENTILATION: Respiratory: Dust mask should be used when handling polyvinyl alcohol. 3M Part No. 8800, disposable respirator for protection against nuisance dust (National Institute for Occupation Safety and Health, NIOSH, approval TC-21C173 issued to 3M Company, November 10, 1975) or any other respirator affording the same protection and bearing NIOSH approval is recommended.

EYE PROTECTION: Safety goggles should be worn to prevent dust particles from entering the eye.

HAND PROTECTION: None required

OTHER: None

P.O. Box 4312, Greenwich, Ct. 06831
Tel: (203) 329-8919 Fax: (203) 329-8966
sales@ayersintl.com

AYERS INTERNATIONAL CORP.

SECTION 9: SPECIAL PRECAUTIONS AND HANDLING INFORMATION

Store in a dry place.
Avoid generating dust in the air.
Avoid breathing dust.

SECTION 10: ADDITIONAL INFORMATION

The products are not restricted articles according to Department of Transportation and International Air Transport Association regulations.

All components are included in the EPA Toxic Substance Control Act Chemical Substance Inventory.

H.M.I.S.

Health: 1
Flammability: 1
Reactivity: 0

These ratings should be used only as part of H.M.I.S. program.

EPA Sara Title III hazard class: None

OSHA Hazard Communication Standard (29CFR1910.1200) hazard class: None

Substance(s) listed by California under the "Safe Drinking Water and Toxic Enforcement Act of 1986" (Proposition 65): none.

This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right to Know Act of 1985 and of 40 CFR 372: methanol CAS No. 67-56-1 at 2%.

P.O. Box 4312, Greenwich, Ct. 06831
Tel: (203) 329-8919 Fax: (203) 329-8966
sales@ayersintl.com

AYERS INTERNATIONAL CORP.

SECTION 11: ECOLOGICAL INFORMATION

Ecotoxicity

LC50 Bluegill Sunfish (*Lepomis macrochirus*): >10,000 MG/L 96 hour

LC50 Cerio Daphnia: 7.9 g/L 48 hour

LC50 Fathead Minnows: >40 g/L 96 hour

LC50 Daphnia magna: 8300 MG/L 96 hour

Environmental Fate

Chemical Oxygen Demand (COD): 1800 mg/g

Biochemical Oxygen Demand: BOD5 = 0-5%; BOD30 = 100%

Biodegradability: > 90% (Zahn-Wellens Test)

Additional Information

No data

SECTION 12: TRANSPORT INFORMATION

DOT NON-BULK SHIPPING NAME RESIN COMPOUND, OTHER THAN LIQUID -
Not DOT Regulated

DOT BULK SHIPPING NAME RESIN COMPOUND, OTHER THAN LIQUID -
Not DOT Regulated

IMO SHIPPING DATA RESIN COMPOUND, OTHER THAN LIQUID -
Not DOT Regulated

ICAO/IATA SHIPPING DATA RESIN COMPOUND, OTHER THAN LIQUID -
Not DOT Regulated

P.O. Box 4312, Greenwich, Ct. 06831
Tel: (203) 329-8919 Fax: (203) 329-8966
sales@ayersintl.com

AYERS INTERNATIONAL CORP.

SECTION 13: REGULATORY INFORMATION

US FEDERAL REGULATIONS

Regulatory Concerns:

Polyvinyl Alcohols addressed herein comply with the following Food and Drug Administration (FDA) regulations:

21 CFR 175.300	Resinous & Polymeric Coatings
21 CFR 175.320	Resinous & Polymeric Coatings for Polyolefinic Films
21 CFR 176.170	Components of Paper & Paperboard in Contact with Aqueous and Fatty Foods
21 CFR 176.180	Components of Paper & Paperboard in Contact with Dry Food
21 CFR 177.1200	Cellophane
21 CFR 177.1670	Polyvinyl Alcohol Film
21 CFR 177.2260	Filters, Resin-Bonded
21 CFR 177.2800	Textiles and Textile Fibers

Subject to the use and extractive limitations prescribed in the respective regulations.

P.O. Box 4312, Greenwich, Ct. 06831
Tel: (203) 329-8919 Fax: (203) 329-8966
sales@ayersintl.com