

Material Safety Data Sheet -PVA filament

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

Substance or Preparation Substance

Chemical Name polyvinyl alcohol

Content > 99.9 % (Additives ≤ 0.1 %)

Formula[C₂H₄O]_n

CAS No. 9002-89-5

Impurities Contributing to Hazard None

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2. HAZARDS IDENTIFICATION

Substance or Preparation Substance

Chemical Name High Impact Polystyrene

Content > 99.9 % (Additives ≤ 0.1 %)

Formula -[C₂H₄O]_n

CAS No. 9002-89-5

3. COMPOSITION/INFORMATION ON INGREDIENTS

Impurities Contributing to Hazard None

| <u>Material</u> | <u>CAS#</u> | <u>Hazard</u> |
|-----------------|-------------|---------------|
| PVA | 9002-89-5 | none known |

Most Important Hazards None

Adverse Human Health Effects None

Environmental Effects None

Physical and Chemical Hazards None

Emergency Overview

CAUTION! May cause eye/skin irritation. Burning produces obnoxious and toxic fumes. Avoid

contact with skin and eyes. Avoid formation of dust and aerosols

Appearance: light-yellow filament

Physical state: Solid

Odor:None

4. FIRST AID MEASURES

Inhalation

In case of gases evolving from melted resin, move subject to fresh air.

Treat symptomatically.

Skin Contact

In case of pellets or powder, wash with water.

In case of melt, wash affected skin area and clothing with plenty of (soap and) water. Seek medical advice.

Eye Contact

In case of pellets or powder, flush with plenty of water for at least 15 minutes. Seek medical advice if any dust particles still remain.

In case of gases evolving from melted resin of high temperature, flush with plenty of water for at least 15 minutes. Seek medical advice if necessary.

Ingestion

Induce vomiting. Rinse mouth with water. Seek medical advice if necessary.

5. FIRE FIGHTING MEASURES

Unusual Explosion Hazard and Fire: The material will burn if exposed to sufficient heat and an ignition source. Avoid dispersion of dust in the air to reduce dust explosion hazard potential.

Extinguished Media: Water, Carbon dioxide, Dry chemical power, Foam.

Special Extinguishing Procedures: Firefighters must wear self-contained breathing apparatus and fully protective equipment.

Flammability:

Flammability Limits in Air

Flammable limits in air - lower (%): Not determined

Flammable limits in air - upper (%): Not determined

Suitable extinguishing media: Foam. Water. Carbon dioxide (CO₂). Dry chemical. Alcohol

resistant foams are preferred if available. General-purpose synthetic foams (including AFFF) or protein foams may function, but much less effectively.

Extinguishing media which must not be used for safety reasons: No information available

Hazardous decomposition products: Burning produces obnoxious and toxic fumes Aldehydes Carbon monoxide (CO) carbon dioxide (CO₂)

Special protective equipment for firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

Under fire conditions: Cool containers / tanks with spray water. Water mist may be used to cool closed containers.

Other information: Fine dust dispersed in air may ignite. Risks of ignition followed by flame propagation or secondary explosions shall be prevented by avoiding accumulation of dust, e.g. on floors and ledges.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Use personal protective equipment. See Section 8. Remove all sources of ignition. Avoid dust formation. Avoid contact with skin and eyes. Sweep up to prevent slipping hazard.

Environmental precautions: Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system.

Methods for cleaning up: Shovel into suitable container for disposal.

7. HANDLING AND STORAGE

Safe handling advice: Avoid contact with skin and eyes. Avoid dust formation. Workers should be protected from the possibility of contact with molten material during fabrication. Low hazard for usual industrial or commercial handling. Use personal protective equipment. See Section 8.

Storage:

Store in cool and dry place. Keep at temperatures below 75 °C

No special restrictions on storage with other products

Precautions: No special precautions required

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering measures: Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. Provide appropriate exhaust ventilation at places where dust is formed.

Control parameters: None

PERSONAL PROTECTIVE EQUIPMENT:

Eye protection: Safety glasses with side-shields.

Skin and body

protection: Impervious clothing.

Respiratory protection:

Respirator must be worn if exposed to dust. Wear respirator with dust filter. Respiratory protection is needed if any of the exposure limits in Section 3 are exceeded. Consult an industrial hygiene professional prior to respirator selection and use. Use a positive-pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where airpurifying respirators may not provide adequate protection. **WARNING:** Air purifying respirators do not protect workers in oxygen-deficient atmospheres.

Hand protection: Preventive skin protection.

Hygiene measures: Avoid contact with skin, eyes and clothing.

Exposure limits: See Section 3.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: light-yellow filament.

Physical state: Solid

Odor: None

Odor threshold: No data available

pH: Not applicable
Vapor pressure: Not determined
Vapor density: Not determined
Evaporation rate: No data available
Density: 1.27 g/cc
Decomposition temperature: 200C
Autoignition temperature: 466°C
Melting point/range: Softening above 75°C
Water solubility: soluble
Solubility in other solvents: glycerol

10. STABILITY AND REACTIVITY

Flammability Yes
Flash Point 404 °C
Auto-ignition Temperature 466 °C
Reactivity with Water YES
Stability Stable and non-reactive under normal handling and storage condition.
Dust Explosion Possible if powder exists.
Explosion data for powder (< 145 mesh)
Lower explosion limit 45 g/m³
Minimum ignition energy 3.6 mJ
Maximum explosion pressure 7 x 10⁵ Pa
Maximum pressure increase rate 3.2 x 10⁷ Pa/S
Thermal Decomposition Gases CO, HCN, AN, SM and NO
Combustion Energy 3.53 x 10⁷ J/kg (8424 Kcal/kg)

11. TOXICOLOGICAL INFORMATION

Principle Routes of Exposure: Eye contact. Skin contact. Inhalation. Ingestion.

Acute toxicity: There were no target organ effects noted following ingestion or dermal exposure in animal studies.

Local effects: May cause eye/skin irritation. Product dust may be irritating to eyes, skin and respiratory system. Caused mild to moderate conjunctival irritation in eye irritation studies using rabbits. Caused very mild redness in dermal irritation studies using rabbits (slightly irritating). Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.

Long term toxicity: Did not cause skin allergic reactions in skin sensitization studies using guinea pigs.

Specific effects: May cause skin irritation and/or dermatitis. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea. Inhalation of dust may cause shortness of breath, tightness of the chest, a sore throat and cough. Burning produces irritant fumes.

Mutagenic effects: No data is available on the product itself.

Reproductive toxicity: No data is available on the product itself.

Carcinogenic effects: No data is available on the product itself.

Target organ effects: There were no target organ effects noted following ingestion or

dermal exposure in animal studies.

Skin: LD50/dermal/rabbit > 2000 mg/kg

Ingestion: LD50/oral/rat > 5000 mg/kg.

Further information: No information available

12. ECOLOGICAL INFORMATION

To avoid being taken by ocean species or birds, disposal of the waste to the ocean and water sources is inhibited.

13. DISPOSAL CONSIDERATIONS

Controlled incineration or landfill according to local, state or national laws and regulations concerning health and pollution.

Inadequate incineration may generate toxic gases such as CO, HCN, AN and SM.

14. TRANSPORT INFORMATION

U.S. Department of Transportation (DOT):

Proper shipping name: None

Hazard class: Not regulated.

UN-No: None

Packing group: None

Hazardous substances (RQ): None

IMDG:

Proper shipping name: None

Hazard class: Not regulated.

UN/Id No.: None

Packing group: None

ICAO/IATA:

Proper shipping name: None

Hazard Class: Not regulated.

UN-No.: None

Packing group: None

15. REGULATORY INFORMATION

Product name: ESUN PVA filament

16. OTHER INFORMATION

Label information: ESUN PVA filament

Reason for revision: Not applicable

Revision date: 12/3/2014
