

MATERIAL SAFETY DATA SHEET

1. Identification of the substance or mixture and of the supplier

GHS product identifier: POLYVINYL CHLORIDE

Recommended use of the chemical and restrictions on use:

- Recommended use: Raincoats, Belts, Shoe soles, Textile film, Non-flammable cover, Plumbing, Gasket
- Restrictions on use: Used for recommended use.

Supplier identifier:

- Manufacturers information
 - Manufacturers name: Hanwha Chemical Corporation
 - Address: 117, Yeosusandan 3-ro, Yeosu-si, Jeollanam-do, Korea
22, Saneop-ro 440beon-gil, Nam-gu, Ulsan, Korea
 - Respondent: PVC production team
 - Tel: +82-61-688-1846, +82-52-279-5310
- Supplier information
 - Supplier name: Hanwha Chemical Corporation
 - Address: 18F, 86, Cheonggyecheon-ro, Jung-gu, Seoul, Korea
 - Respondent: S/P Sales team, F/P Sales team, PVC overseas business team
 - Tel: +82-2-729-2775, 3095, 1457

2. Hazards identification

GHS classification of the substance/mixture: Not available

GHS label elements, including precautionary statements:

- Pictogram and symbol: Not available
- Signal word: Not available
- Hazard statements: Not available
- Precautionary statements:
 - Precaution: Not available
 - Treatment: Not available
 - Storage: Not available
 - Disposal: Not available

NFPA:

- health: **1** fire: **1** reactive: **0**

3. Composition/information on ingredients

Chemical Name	Common Name Synonyms	CAS number	Content (%)
POLYVINYL CHLORIDE TERPOLYMER	CHLOROETHENE HOMOPOLYMER POLY CHLOROETHYLENE POLY CHLOROVINYL POLY CHLOROETHYLENE POLY CHLOROETHYLENE; POLY(VINYL HLORIDE, VINYL CHLORIDE POLYMER, VINYL CHLORIDERESIN, ETHENE, CHLORO-, HOMOPOLYMER, ETHYLENE, CHLORO-, POLYMERS, CHLOROETHYLENE POLYMER, VINYL CHLORIDE HOMOPOLYMER, ATACTIC POLY (VINYLCHLORIDE), PVC POLYMER, PVC	9002-86-2	≥99.7
Other (water)	Dihydrogen oxide	7732-18-5	≤0.3

4. First aid measures

Eye contact:

- Flush eyes with large quantities of running water for at least 15 minutes.
- Call a POISON CENTER or doctor/physician if needed.

Skin contact:

- If skin symptoms occur, call a POISON CENTER or doctor.
- Wash and dry contaminated clothing and shoes thoroughly before reuse.
- Take off contaminated clothing and shoes and wash then with soap and water for at least 15 minutes immediately.

Inhalation:

- Move victims immediately to place with fresh air and non contaminated area.
- Give artificial respiration if victim is not breathing.
- If inhaled, call a POISON CENTER or doctor/physician immediately.

Ingestion:

- If person is unconscious, do not eat.
- If one is conscious, let the person rinse his/her mouth and drink 2-4 cups of water or milk slowly.
- If swallowed, immediately call a POISON CENTER or doctor/physician.

Acute and delayed symptoms/effects

- Inhalation: Inhalation of fumes from heated polyvinyl chloride produced interstitial edema, as Well as focal bronchial and intra-alveolar hemorrhage.

Indication of immediate medical attention and notes for physician

- Depending on the response of each patient, symptoms and clinical status should be checked.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

5. Firefighting measures

Suitable (and unsuitable) extinguishing media:

- Suitable extinguishing media: Dry chemical, CO₂, water, regular foam
- Unsuitable extinguishing media: Not available
- In case of major fire and large quantities: Use regular extinguishing agent and fine water spray.

Specific hazards arising from the chemical:

- Thermal decomposition products:
 - Halogenated compounds, Hydrogen chloride, Carbon monoxide, Carbon oxides, Carbon dioxide
 - Mixture of dust with air may ignite or explode.
- Fires and an explosion
 - It could be a slight fire hazard.

Special protective equipment and precautions for fire-fighters

- Move containers from fire area if you can do it without risk.
- Do not scatter spilled material with high pressure water streams.
- Make an embankment for further processing.
- Use extinguishing agent suitable for type of surrounding fire.
- Avoid inhalation of material and combustion.
- Stay upwind and Keep out of low areas.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures:

- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- Isolate exposed area and keep unauthorized personnel away.
- Prevent dust and scattering.
- Keep away from waterways.
- Move materials to suitable containers for later disposal.

Environmental precautions and protective procedures:

- Atmosphere: Ventilate appropriately.
- Land: Make an embankment for further processing.
- Underwater: Prevent entry into sewers or waterways.

The methods of purification and removal:

- Small spill:
 - Dispose of materials by mechanical means.
 - Absorb with non-combustible material.
- Large spill:
 - Make an embankment for further processing.
 - ELIMINATE all ignition sources.

7. Handling and storage**Precautions for safe handling:**

- Avoid breathing particulate matter and gases.
- Wash thoroughly after handling.
- Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures.

Conditions for safe storage:

- The temperature of the substance must be maintained at or below 49°C.
- Store in a closed container.
- Avoid contact with light.
- Call a POISON CENTER or doctor if needed.
- Do not eat, drink or smoke when using this product.

8. Exposure controls/personal protection**Occupational Exposure limits:**

- Korean Occupation of Safety and Health Regulation : Not available
- ACGIH: TWA- 1mg/m³
- OSHA: Not available
- NIOSH: Not available
- Biological exposure index : Not available
- EU Regulation: Not available
- Other: Not available

Appropriate engineering controls:

- Provide local exhaust ventilation system to keep the airborne concentrations of vapours below their respective threshold limit value.
- Check legal suitability of exposure level.
- If concentration may cause explosion, provide exhaust ventilation system with explosion proof equipment.

Personal protective equipment:

- Respiratory protection:
 - Respiratory protection: Wear NIOSH or European Standard EN 149 approved full or half face piece (with goggles) respiratory protective equipment when necessary.

- Eye/Face protection:
 - An eye wash unit and safety shower station should be available nearby work place.
 - Wear facepiece with goggles to protect from scattering toxic substance.
- Hand protection: Wear chemical-resistant gloves to avoid direct contact with chemical substance to prevent exposure of skin.
- Body protection: Wear appropriate protective chemical-resistant clothing.

9. Physical and chemical properties

Appearance: Solid (White)

Odor: Odorless

Odor threshold: Not available

Tatse: Not available

Taste threshold: Not available

pH: Not available

Melting point/freezing point: 302 °C

Initial boiling point and boiling range: Not available

Flash point: Not available

Evaporation rate: Not applicable

Flammability: 391 °C

Upper/lower flammability or explosive limits: Not available

Vapor pressure: Not applicable

Vapor density: Not available

Relative density: Not available

Solubility (ies): Insoluble

Specific gravity: Not available

Partition coefficient: n-octanol/water: Not available

Auto ignition temperature: 435 °C

Decomposition temperature: Not available

Viscosity: Not available

Molecular weight: 60,000-150,000 g/mol

10. Stability and reactivity

Chemical stability: Stable under normal temperatures and pressures

Possibility of hazardous reactions: Hazardous polymerization will not occur under room temperature.

Conditions to avoid (e.g., static discharge, shock or vibration):

- Avoid heat, flames, sparks and other sources of ignition.
- Avoid contact with incompatible materials.
- Avoid release to the environment.

Incompatible materials: Strong oxidizing agents

Hazardous decomposition products: Halogenated compounds, Carbon oxides, Hydrogen chloride, Carbon monoxide, Carbon dioxide

11. Toxicological information

Information on the likely routes of exposure (inhalation, ingestion, skin and eye contact):

- Inhalation: Inhalation of fumes from heated polyvinyl chloride produced interstitial edema as well as focal bronchial and intra-alveolar hemorrhage.

Symptoms related to the physical, chemical and toxicological characteristics:

- Explosives, Water reactive substances, Oxidizing, Self-reactive substances, Organic peroxides: Not applicable
- Refer to "5) Acute and delayed symptoms/effects" of "4. First aid measures"

Symptoms related to the physical, chemical and toxicological characteristics:

- Acute toxicity:
 - oral: Not available
 - dermal: Not available
 - Inhalation: Not available
- Skin Corrosion/ Irritation: Not available
- Serious Eye Damage/ Irritation: Not available
- Respiratory sensitizer: Not available
- Skin Sensitization: Not available
- Carcinogenicity: Not classified
 - IARC: 3
 - ACGIH, NTP, OSHA, Regulation 1272/2008, US EPA: Not applicable
 - Inadequate evidence of carcinogenicity in humans and animals.
- Mutagenicity: Not classified

In vitro- Salmonella typhimurium Ames test(Mouse lymphoma), with and without of metabolic activation system: negative

- Reproductive toxicity: Not available
- Specific target organ toxicity (single exposure): Not available
 - In rats inhalation of fumes from heated polyvinyl chloride produced interstitial edema as well as focal bronchial and intra-alveolar hemorrhage in the lungs of some animals. Rats and guinea-pigs exposed continuously to polyvinyl chloride dust for 24 hours/day for periods varying from 2-7 months were found to have extensive lung damage. This evidence for the classification is not enough.
- Specific target organ toxicity (repeat exposure): Not available
 - Lungs may be affected by repeated or prolonged exposure to dust particles, resulting in fibrosis (pneumoconiosis). This evidence for the classification is not enough.
- Aspiration Hazard: Not available

12. Ecological information

Aquatic Ecotoxicity:

-Acute toxicity: Not available
-Chronic toxicity: Not available

- Fish: Not available
- Crustacea: Not available
- Algae: Not available

Persistence and degradability:

- Persistence: Not available
- Degradability: Not available

Bioaccumulative potential:

- Bioaccumulation: Not available
- Biodegradation: Not available

Mobility in soil: Not available

13. Disposal considerations

1) Disposal method:

- Method for disposing waste synthetic polymer compounds
 - Thermosetting waste synthetic resins and other waste synthetic polymer compounds shall be crushed, cut or melted to a size at which the maximum diameter is 15 cm or less and thereafter be disposed in a stable landfill facility.
 - Non-thermosetting waste synthetic resins and other waste synthetic polymer compounds shall be incinerated.

2) Disposal precaution:

- All the generated waste shall be disposed in accordance with the specific standard and method prescribed in the Act so that the environmental pollution may be minimized in the course of collecting, carrying, keep and disposing the waste.
- The waste shall not flutter or flow out, and a bad smell shall not be diffused.
- The pollutants shall be disposed below the allowable exhaust standard.
- Without just reason, the waste shall not be discarded in a place other than the designated places.
- The waste shall be disposed in the waste disposal facility.

14. Transport information

UN Number: Not applicable

UN Proper shipping name: Not applicable

Transport Hazard class: Not applicable

Packing group: Not applicable

Marine pollutant: Not applicable

Special precautions

- In case of fire: Not applicable
- In case of leakage: Not applicable

15. Regulatory information

Korea:

- Occupational Safety and Health Regulation: Not applicable
- Toxic Chemical Control Act: Not applicable
- Dangerous Material Safety Management Regulation: Not applicable

If synthetic resins are kept and treated 3,000 kg or more, these are classified into special combustibles. In this case, information such as required on label "product name", "maximum quantity" and "inflammables or use fire prohibited". The installation height and width, the distance between the products, and the firefighting facility may be restricted.

- Wastes Control Act: Public Controlled Waste (Polyvinyl chloride resin) (01-01-03)

EU classification:

- Classification: Not applicable
- Risk phrases: Not applicable
- Safety phrases: Not applicable
- EU REACH SVHC Free Certified(Candidate list Updated by ECHA on 30th March, 2010)

U.S.A management information:

- **OSHA**(29CFR1910.119): Not applicable

- **CERCLA103** 규정(40CFR302.4): Not applicable
- **EPCRA 302**(40CFR355.3): Not applicable
- **EPCRA 304**(40CFR355.4): Not applicable
- **EPCRA 313**: Not applicable

Substance of Roteradame Protocol: Not regulated

Substance of Stockholme Protocol: Not regulated

Substance of Montreal Protocol: Not regulated

16. Other information

Information source and references:

- ECB:ESIS (European chemical Substances Information System): <http://ecb.jrc.it/esis>
- IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT (Multivolume work)., p. S7 216 (1987)
- REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008
- Korea Occupational Health & Safety Agency: <http://www.kosha.net>
- ACGIH, TLV and BEIs # 0108, 2008
- Society for Occupational Health Recommendation of Occupational Exposure, 1993
- Waste Control Act enforcement regulation attached [1]
- National chemicals information systems (<http://ncis.nier.go.kr>)

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