



MATERIAL SAFETY DATA SHEET

Product Name : HRPB1000

Emergency Telephone Number
+82-61-688-6375 (24 hours)

Established Date 1998.01.20.

Revision No. : 4 -02 (Revision Date:2012.01.01)

1. IDENTIFICATION

A. PRODUCT NAME

- HRPB1000

B. Recommended Use and Restriction on Use

- General use : Not available
- Restriction on Use : Not available

C. Information of Manufacturer

- Company Name : Daelim Industrial Co., Ltd.
- Address : 511-2 Junghung-dong, Yeosu city, Jeonnam, 555-719 Korea
- Person in charge : Team of PB production, Person in charge of MSDS
- Telephone number : +82-61-688-6310
- Fax number : +82-61-688-6379

2. HAZARD IDENTIFICATION

A. GHS Classification : Not Classifiable

B. GHS label elements

- Hazard symbols : Not Classifiable
- Signal word : Not Classifiable
- Hazard statement : Not Classifiable
- Precautionary statements : Not Classifiable

C. Other hazards which do not result in classification

- May causes irritation if contact with eyes, skin, mucous membranes.

- If contact with non-refrigerated product, may causes burns.
- NFPA Classification(0~4 steps) : Health=1, Flammability=1, Reactivity=0
- HMIS Classification(0~4 steps) : Health=1, Flammability=1, Reactivity=0

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Generic name	CAS No. or Reference No.	Contents (%)
Polyisobutylene	PIB	9003-27-4, KE-28918	100

Reference No. : KE(Registration number of Korean Existing Chemicals List)
RTECS No. : UD1010000

4. FIRST-AID MESURES

A. Eye Contact

- Heated material : Immediately flush eyes with plenty of water at least 15 min.
If on eyes, get medical advice for removing this material.
- Refrigerated material : Immediately flush eyes with plenty of water or saline solution till remove perfectly. If eye irritation persists, get medical advice.

B. Skin Contact

- Heated material : Remove immediately all contaminated clothing, flush the contact part with cool water at least 15 min. Call a physician.
- Refrigerated material : Flush contaminated part with plenty of water and soap completely. Wash contaminated clothing before reuse.
If experiencing symptoms, get medical advice.

C. Inhalation

- If inhaled, remove to fresh air.
- Perform artificial respiration if stop breathing.
- Use supplied-oxygen respirator if difficulty in breathing
- Call a physician if necessary.

D. Ingestion

- Do not induce vomiting. Lay the patient down as head would be lower than body for suffocation prevention if occur vomiting.
- Do not give anything to mouth if patient is unconscious.
- Rinse the mouth and give 2~4 glasses of milk or water if patient is conscious. If patient be conscious, rinse the mouth.
Call a physician if necessary.
- If large quantities of this material are swallowed, call a physician immediately.

E. Delayed and immediate effects and also chronic effects from short and long term exposure

- May occur stomach stimulus and diarrhea if ingestion.
- May causes irritation slightly if contact with skin.
- Repeated exposure may cause skin dryness or cracking. Heated material can cause thermal burns.
- Exposure to aerosols or particulates from heated material may cause adverse lung effects if high concentrations are inhaled.

F. Notes to Physician

- Medical personnel may leave this material in place to minimize physical damage to the skin or cover the material with a burn gel to prevent adhesion of the dressing to the material.
- Treatment may vary with condition of victim and specifics of incident.

5. FIRE FIGHTING MEASURES

A. Suitable (Unsuitable) extinguishing media

- Extinguishing media : Chemical powder, CO₂, Water fog, foam
Use normal extinguisher, water spray in conflagration.
- Unsuitable extinguishing media : indoor or outdoor hydrant facilities, sprinkler, water jet

B. Specific hazards arising from the chemical

- Irritating and highly toxic gases, carbon oxides such as carbon dioxide, carbon monoxide may be generated by thermal decomposition or combustion.
- During a fire, thermal depolymerization may produce flammable vapor.

C. Fire fighting procedures and equipments

- Fire-fighting protective equipment : Full firefighting turn-out gear(bunker gear), Supplied-air respirator(full facepiece), Self-contained breathing apparatus(pressure-demand or other positive-pressure mode in combination)
- Move container from fire area if it can be done without risk.
- Do not scatter spilled material with high-pressure water streams.
- Fire may be spread by water use.
- Do not inhale the material or its combustion products.
- Go against the wind and keep out of low areas.

6. ACCIDENTAL RELEASE MEASURES

A. Personal Precautions, Protective Equipment and Emergency procedures

- Perform in accordance with 『 See section 8 . EXPOSURE CONTROLS/PERSONAL PROTECTION 』 . Put on appropriate personal protective equipment.
- No entry to unauthorized persons and isolate from dangerous area.
- Wash thoroughly after handling.

B. Environmental Precautions

- Avoid dispersal of spilt material and runoff and contact with waterways, drains and sewers. If large spills, advise emergency services.

C. Methods and materials for containment and cleaning up

- Remove all source of ignition around the leak – sparks, flames, No smoking.
- Stop leak if safe to do so.
- For indoor spills, provide increased ventilation as required to minimize exposure.
- For small spills, absorb spilled material with sand or non-combustible material.
- For large spills dike spilled material or otherwise contain material to ensure runoff dose not reach a waterway.
- If water spill, remove from surface by skimming or with suitable absorbent.
- Place absorbent and other waste in an appropriate container for disposal.
- Dispose in accordance with The Waste Control Law.

7. HANDLING AND STORAGE

A. Handling

- Perform in accordance with ¶ See section 8 . EXPOSURE CONTROLS/PERSONAL PROTECTION ¶ . Put on appropriate personal protective equipment.
- Maintain below flash point, protect to leak of liquid or vapour.
- Keep away from open flames, shut off the production of source of ignition (electricity·static electricity sparks·heat·material of high-temperature)
- Ground/bond all container and receiving equipment, use equipment of prevention of explosion.
- Do not breathe vapour or mist when using this material. Avoid prolonged or repeated contact with skin. Avoid contact with eyes.
- Empty containers may contain harmful, flammable/combustible or explosive residue or vapours.
- Wash thoroughly after handling.

B. Storage Precautionary Statements :

- Keep container tightly closed in a cool, well-ventilated place.
- Keep container tightly closed before use.
- Avoid contact with incompatible materials.
- Keep away from heat, sparks, open flames, source of ignition.
- Suitable storage materials : mild steel/ carbon steel

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

A. Exposure Limits

- Exposure limit under ISHL : Not available
- ACGIH : Not available
- Biological exposure limits : Not applicable

B. Engineering Controls

- A system of local and/or general exhaust is recommended to keep employee exposures above the Exposure Limits. 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. The use of local exhaust ventilation is recommended to control emissions near the source.

C. Personal Protective Equipment

- Respiratory Protection : Use the respirator be given official approval by Korea Occupational Safety & Health Agency. Under conditions of frequent use or heavy exposure, Respiratory protection may be needed. Respiratory protection is ranked in order from minimum to maximum. Consider warning properties before use.
When take shelter
 - Any chemical cartridge respirator with organic vapour cartridge(s).
 - Any chemical cartridge respirator with a full facepiece and organic vapour cartridge(s).
 - Any air-purifying respirator with a full facepiece and an organic vapour canister.For Unknown Concentration or Immediately Dangerous to Life or Health
 - Self-contained breathing apparatus(pressure-demand or other positive-pressure mode in combination), supplied-air respirator with full facepiece
- Eye Protection : Wear primary eye protection such as splash resistant safety goggles with a secondary protection faceshield. Provide an emergency eye wash station and quick drench shower in the immediate work area.
- Hand Protection : Wear chemical resistant protected gloves if there is hazard potential for direct skin contact. Wear heat resistant protected gloves to withstand the temperature of molten product.
- Body Protection : Wear chemical resistant protected clothing if there is hazard potential for direct contact.

9. PHYSICAL AND CHEMICAL PROPERTIES

- A. Appearance : transparent viscous liquid
- B. Odor : Not available
- C. Odor threshold : Not available
- D. pH : Not available
- E. Melting point/Freezing point : Not available
- F. Initial Boiling Point/Boiling Ranges : Not available
- G. Flash point : 220 (COC), 170 (PM)

- H. Evapourating Rate : Not available

- I. Flammability(solid, gas) : Not available
- J. Upper/Lower Flammability or explosive limits : Not available
- K. Vapour pressure : Not available
- L. Solubility : < 0.1%
- M. Vapour density : Not applicable
- N. Relative density : 0.895(15.6)
- O. Partition coefficient of n-octanol/water : Not available
- P. Autoignition Temperature : Not available
- Q. Decomposition Temperature : Not available
- R. Viscosity : 190(at 100 , cSt)
- S. Molecular weight : 1,000(Mn)

10. STABILITY AND REACTIVITY

A. Stability

- This material is stable under recommended storage and handling conditions

B. Possibility of Hazardous Reaction

- May not occur under normal temperature and pressure.

C. Conditions to Avoid

- Avoid to heat, open flames, sparks and other source of ignition.
- Avoid to contact with incompatible materials.

D. Materials to Avoid

- Strong oxidizing agent : Hazard of fire and explosion

E. Hazardous Decomposition Products

- Combustion may produce carbon oxides such as carbon monoxide, carbon dioxide.
- During a fire, thermal depolymerization may produce flammable vapour.

11. TOXICOLOGICAL INFORMATION

A. Information on the likely routes of exposure

- (Respiratory tracts) : Not Classifiable

- (Oral) : Not Classifiable

- (Eye · Skin) : Not Classifiable

B. Delayed and immediate effects and also chronic effects from short and long term exposure

- Acute toxicity :
 - Acute oral toxicity
Polyisobutylene :
 - LD50(rat) \geq 10,000 mg/kg B.W. [Korea Test&Research Institute]
 - Acute dermal toxicity
Polyisobutylene :
 - LD50(rat) \geq 5,000 mg/kg B.W. [Korea Test&Research Institute]
 - Acute Inhalation toxicity
Polyisobutylene :
 - LD50(rat) $>$ 850 mg/kg [Korea Occupational Safety&Health Agency]
- Skin corrosion/irritation :
 - Polyisobutylene :
 - P.I.I.(rabbit) = 0/8.0 [Korea Test&Research Institute]
- Serious eye damage/irritation : Not available
- Respiratory sensitization : Not available
- Skin sensitization : Not available
- Carcinogenicity
 - Not classify to be carcinogenic substance(A1) and carcinogenic substance of presumed in Public notice
 - Not Classifiable as a carcinogen in NTP, IARC, OSHA.
- Germ cell mutagenicity : Not available
- Reproductive toxicity : Not available
- Specific target organ toxicity(single exposure) : Not available
- Specific target organ toxicity(repeated exposure) : Not available
- Aspiration hazard : Not available
- Chronic effect : Not available

C. Calculation the classification of the mixture; the acute toxicity estimate etc. : Not applicable

12. ECOLOGICAL INFORMATION

A. Ecotoxicity :

- Acute aquatic toxicity(Fish toxicity, Daphnia toxicity, Algae toxicity)
 - Acute fish toxicity :
LC50 > 1000 mg/kg(96hrs), Trout

B. Persistence and degradability : This material is not expected to be readily biodegradable.

C. Bioaccumulative potential : This material is not expected to be bioaccumulated by environmental food chain.

D. Mobility in soil : This material is not likely to move rapidly with surface or groundwater flows.

E. Other adverse effects : Not available

13. DISPOSAL CONSIDERATIONS

A. Disposal methods

- The user of this product must properly characterize the waste/container generated from the use of this product in accordance with all applicable federal, state and/or local laws and regulations in order to determine the proper disposal of the waste in accordance with all applicable federal, state and/or local laws and regulations.

B. Special precautions for disposal :

- The user of this product must disposal by oneself or entrust to waste disposer or person who other's waste recycle and dispose, person who establish and operate waste disposal facilities.
- Dispose of waste in accordance with local regulation.

14. TRANSPORT INDORMATION

A. UN number : Not applicable

B. Proper shipping name : Not applicable

C. Hazard class : Not applicable

D. Packing group : Not applicable

E. Marine pollutant : Not applicable

F. Special precautions for user related to transport or transportation measures

- Local transport follows in accordance with Dangerous goods Safety Management Law.
- Package and transport follow in accordance with Department of Transportation (DOT) and other regulatory agency requirements.

15. REGULATORY INFORMATION

A. Regulations

- Rotterdam Convention on Harmful Chemicals & Pesticides : Not applicable
- Stockholm Convention on Persistent Organic Pollutants : Not applicable
- Montreal Protocol on Substances That Deplete the Ozone Layer : Not applicable
- Information of EU Classification
 - European Inventory of Existing Chemical Substances(EINECS/ELINCS) :
All of the monomers in this polymer are on the EU Inventory, so this product is excepted in registration object.
 - Classification : Not applicable
 - Risk Phrases : Not applicable
 - Safety Phrases : Not applicable
- Information of U.S.A
 - OSHA regulation(29CFR1910.119) : Not applicable
 - CERCLA 103 regulation(40CFR302.4) : Not applicable
 - EPCRA 302 regulation(40CFR355.30) : Not applicable
 - EPCRA 304 regulation(40CFR355.40) : Not applicable
 - EPCRA 313 regulation(40CFR372.65) : Not applicable
 - TOXIC SUBSTANCES CONTROL ACT(TSCA) :
This product is on the TSCA Inventory.
 - U.S. Food and Drug Administration(FDA) :
This product is approved for use under the following sections of 21 CFR :
 - 175.105** As a component of adhesives for use in packing, transporting, or holding food.
 - 175.125** As a component of pressure-sensitive adhesives be used as the food-contact surface of labels and/or tapes applied to food.

- 175.300** As a component of resinous and polymeric coatings for food contact surfaces use in producing, packing, transporting, or holding food.
- 176.170** As a component of the uncoated or coated paper and paperboard intended for use in manufacturing aqueous and fatty foods.
- 176.180** As a component of the uncoated or coated food-contact surface of paper and paperboard intended for use in manufacturing dry food.
- 176.210** As a component of defoaming used in the manufacture of paper and paperboard intended for use in packaging, transporting, or holding food.
- 177.1430** As components of articles intended for use in contact with food.(Isobutylene-butene copolymers)
- 177.2800** As a component of textiles and textile fibers be used as articles or components of articles intended for use in producing, packing, transporting, or holding food.
- 177.1520** As articles or components of articles intended for use in contact with food.(olefin polymers)
- 177.1640** As components of articles intended for use in contact with food.(Polystyrene and rubber-modified polystyrene)
- 177.2260** As components of Resin-bonded filters be used in producing, manufacturing, processing, and preparing food.
- 178.3570** As Lubricants with incidental food contact be used on machinery used for producing, packing, transporting, or holding food.
- 178.3910** As surface lubricants used in the manufacture of metallic articles that contact food.
- 178.3740** As plasticizers in polymeric substances used in the manufacture of articles or components of articles intended for use in producing, packaging, transporting, or holding food.
- NSF International :
 - This product is acceptable as a lubricant with incidental food contact(H1) and an ingredient for use in lubricants with incidental food contact(HX-1) for use in and around food processing areas by NSF International.
- Japan Inventory of Existing Chemicals List):
 - Polybutene (containing Hydrogenated polybutene)
 - Chemical Substances Control Law No.6-774
- Australia Inventory of Chemical Substances(AICS) :
 - 2-methyl-1-Propene homopolymer
- China Inventory of Existing Chemical Substances :
 - : 2-methyl-1-Propene homopolymer
- OECD Representative List of High Production Volume(HPV) Chemicals :
 - : No. 2205

16. OTHER INFORMATION

A. Reference

- This MSDS is prepared based on the MSDS provided by Daelim Industrial Co., Ltd, Korea Test & Research Institute, and many other databases and translated into English in accordance with ISHL Article 41 and MOL Public notice 2008-01. This information only concerns the above-mentioned product and does not need to be valid if used with other(s) or in any process. The information is to our best present knowledge correct and complete and is given in good faith but without warranty. It remains the user's own responsibility to make sure that the information is appropriate and sufficiently complete for their particular use of this product.