MATERIAL SAFETY DATA SHEET

READ AND UNDERSTAND MATERIAL SAFETY DATA SHEET BEFORE HANDLING OR DISPOSING OF PRODUCT

PRODUCT CODE AND NAME : EXPANDABLE POLYSTYRENE (EPS)
DATE ISSUED : Nov. 26, 2024

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MATERIAL IDENTITY

PRODUCT CODE AND NAME .

RAW MATERIAL : EXPANDABLE POLYSTYRENE (EPS)

Chemical Name and/or Family or Description:

Product Type: All

Chemical Name: Polystyrene thermoplastic polymer

Synonym(s): Modified EPS

Molecular Formula: $(C_8H_8)_x$

COMPANY INFORMATION

SHINYUAN INDUSTRY CO., LTD.
FACTORY : NO. 88 LANE 407, MAZU ROAD, XINYUAN TOWNSHIP, PINGTUNG TAIWAN .,
TEL : 886-8-8686077 FAX : 886-8-8687280

2. COMPOSITION AND INFORMATION ON INGREDIENTS

THE CRITERIA FOR LISTING COMPONENTS IN THE COMPOSITION SECTION ARE AS FOLLOWS: CARCINOGENS ARE LISTED WHEN PRESENT AT 0.1 % OR GREATER; COMPONENTS WHICH ARE OTHERWISE HAZARDOUS ACCORDING TO OSHA ARE LISTED WHEN PRESENT AT 1.0 % OR GREATER; NON-HAZARDOUS COMPONENTS ARE LISTED AT 3.0 % OR GREATER. THIS IS NOT INTENDED TO BE COMPLETE COMPOSITIONAL DISCLOSURE. REFER TO SECTION 14 FOR APPLICABLE STATES' RIGHT TO KNOW AND OTHER REGULATORY INFORMATION. Product and/or Component(s) Carcinogenic According to:

OSHA____ IARC____	NTP____	OTHER____	NONE__X__		
Composition:					
Chemical Name			**CAS Number**	**Exposure Limits**	**Range in %**
Benzene, ethenyl-, homopolymer (Common name : Polystyrene)			9003-53-6		>92.5
Pentane			8032-32-4 或109-66-0	600 ppm TWA ACGIH	< 7.0
				1000 ppm TWA OSHA	
				750 ppm STEL OSHA	
				120 ppm TWA (Canada)	
				350 mg/m$_3$ TWA (Canada)	
Water			7732-18-5		<0.5

3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW Appearance:

Solid, white beads (0.50 to 1.80 mm diameter)

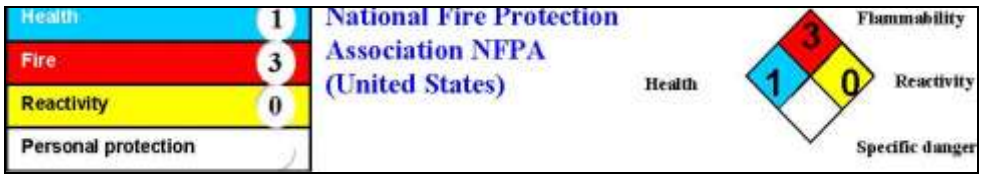
Odor:

Slight hydrocarbon odor

WARNING STATEMENT

DANGER! EXTREMELY FLAMMABLE VAPOR
VAPOR MAY CAUSE FLASH FIRE
VAPOR MAY CAUSE DIZZINESS AND DROWSINESS
VAPOR MAY CAUSE IRRITATION TO EYES AND RESPIRATORY TRACT

Hazardous Material Information System (United States)			**National Fire Protection Association NFPA (United States)**	Health	1	3	0 Flammability Reactivity



POTENTIAL HEALTH EFFECTS

Primary Route of Exposure

Eye__X__Skin__X__ Inhalation__X__ Ingestion____

Effects of Overexposure

Acute:

Eyes: Vapor may cause irritation, experienced as discomfort, with excess tear production and blinking, and seen as excess redness of the eye. Product may contain residual amounts of dust or small particulates which may cause eye irritation or abrasion experienced as mild discomfort and slight excess redness of the eye.

Skin: Product may contain residual amounts of dust or small particulates that may cause skin irritation or abrasion experienced as local redness with possible mild discomfort.

Inhalation: Vapors or mist may cause irritation of the nose and throat. Inhalation may cause dizziness, drowsiness, euphoria, loss of coordination, disorientation, headache, nausea, and vomiting. In poorly ventilated

areas or confined spaces, unconsciousness and asphyxiation may result. Prolonged or repeated overexposure may result in the absorption of potentially harmful amounts of material.

Dust may cause irritation of the nose and throat. Overexposure to high concentrations of dust may cause respiratory irritation, experienced as coughing and difficulty breathing.

Ingestion: If more than several mouthfuls are swallowed, abdominal discomfort, nausea, and diarrhea may occur.

Sensitization Properties: Unknown

Chronic:

Prolonged or repeated inhalation of dust or particulates may impair lung function or cause lung damage.

Medical Conditions Aggravated by Exposure:

Overexposure to vapor, dust or mist may aggravate existing respiratory conditions, such as asthma, bronchitis, and inflammatory or fibrotic respiratory disease.

4. FIRST AID MEASURES

Eyes:

Flush eyes with plenty of water for several minutes. Remove larger particulates from the eye as one would any foreign object. Get medical attention if eye irritation persists or particulates are difficult to remove from the eye.

Skin:

Wash skin with plenty of soap and water for several minutes. Get medical attention if skin irritation develops or persists.

Ingestion:

If more than several mouthfuls of this material are swallowed, give two glasses of water (16 oz.). Get medical attention.

Inhalation:

If inhaled, remove to fresh air. If not breathing, clear person's airway and give artificial respiration. If breathing is difficult, qualified medical personnel may administer oxygen. Get medical attention immediately.

Other Instructions:

None.

5. FIRE-FIGHTING MEASURES

Ignition Temperature - AIT (degrees C):

260 (500 F) for Pentane
471 (880 F) by ASTM D-1929 Expanded polystyrene

Flash Point (degrees C):

Not applicable

Flammable Limits % (Lower-Upper):

Lower: 1.5 for Pentane
Upper: 7.8 for Pentane

Recommended Fire Extinguishing Agents And Special Procedures:

Water may be ineffective on flames but should be used to cool fire-exposed containers and provide protection for persons attempting to stop the leak. Use water spray, dry chemical, foam or carbon dioxide to extinguish flames.

Unusual or Explosive Hazards:

Danger! Extremely flammable materials may release vapors that travel long distances, ignite, and flash back. Containers may explode in a fire. Do not expose to heat, sparks, flame, static, or other sources of ignition. When handling, use non-sparking tool, ground and bond all containers.

Explosive air-vapor mixtures may form. Fire gives off dense black smoke and acid gasses. Electrostatic discharge can be a source of ignition due to accumulated pentane vapors exceeding the L.E.L. (lower explosive limit) of 1.5% (15,000 ppm). Pentane vapors may be emitted from newly opened containers or when the product is heated. If ignited, there could be a very high rate of flame propagation.

"NO SMOKING - NO MATCHES - NO LIGHTERS - NO WELDING" rules should be enforced.

Special Protective Equipment for Firefighters:

Wear full protective clothing and positive pressure breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES (Transportation Spills: CHEMTREC (800)424-9300)

Procedures in Case of Accidental Release, Breakage or Leakage:

Avoid the generation of dust clouds. Place in appropriate containers for disposal or recycle. Avoid breathing dust. Pressure demand air supplied respirators should always be worn when the airborne concentration of the contaminant or oxygen is unknown. Otherwise, wear respiratory protection and other personal protective equipment as appropriate for the potential exposure hazard. Wear gloves, goggles, and protective clothing to avoid contact with eyes, skin, or clothing. Use vacuuming or sweeping compound for clean-up. Do not dry sweep or use methods which increase dusting. Prevent entry into sewers and waterways.

7. HANDLING AND STORAGE

Precautions to be Taken in

Handling:

Use spark-proof tools. Material may be at elevated temperatures and/or pressures. Exercise care when opening bleeders and sampling ports.

Storage:

Ground and bond shipping container, transfer line, and receiving container. Keep away from heat, sparks, flame, and other sources of ignition.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Protective Equipment (Type)

Eye/Face Protection:

Avoid eye contact. Chemical type goggles should be worn. Do not wear contact lenses.

Skin Protection:

Workers should wash exposed skin several times daily with soap and water. Soiled work clothing should be laundered or dry-cleaned.

Respiratory Protection:

Airborne concentrations should be kept to lowest levels possible. If vapor, mist or dust is generated and the occupational exposure limit of the product, or any component of the product, is exceeded, use appropriate NIOSH or MSHA approved air purifying or air supplied respirator after determining the airborne concentration of the contaminant. Air supplied respirators should always be worn when airborne concentration of the contaminant or oxygen content is unknown.

Ventilation:

Use explosion-proof equipment to maintain adequate ventilation to meet occupational exposure limits, if applicable (see below), prevent accumulation of explosive air-gas mixtures, and avoid significant oxygen displacement. Oxygen levels should be at least 19.5% in confined spaces or other work areas (OSHA value).

Exposure Limit for the Total Product:

None established for product; refer to Section 2 for component exposure limits.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:

Solid, white beads (0.50 to 1.80 mm diameter)

Odor:

Slight hydrocarbon odor

Boiling Point (degrees C):

Not applicable

Melting/Freezing Point (degrees C):

Softens and expands at 85.0-102.0 C

Specific Gravity (water=1):

1.03-1.05

pH :

Not applicable.

Vapor Pressure :

Negligible

Viscosity:

Not applicable

VOC Content :

4.0 – 7.5%

Vapor Density (Air=1) :

>1

Solubility in Water (%) :

< 0.1

Other : None

10. STABILITY AND REACTIVITY

This Material Reacts Violently With:

Air____Water____ Heat__X__ Strong Oxidizers__X__ Others____ None of these____

Comments:

None

Products Evolved When Subjected to Heat or Combustion:

Toxic levels of carbon monoxide, carbon dioxide, irritating aldehydes and ketones.

Hazardous Polymerizations:

DO NOT OCCUR

11. TOXICOLOGICAL INFORMATION

TOXICOLOGICAL INFORMATION (ANIMAL TOXICITY DATA)

Oral:
LD50 Believed to be > 5.00 g/kg (rat) practically non-toxic
Inhalation:
Not determined.
Dermal:
LD50 Believed to be > 2.00 g/kg (rabbit) practically non-toxic

IRRITATION INDEX, ESTIMATION OF IRRITATION (SPECIES)

Skin:
(Draize) Believed to be > .50 - 3.00 /8.0 (rabbit) slightly irritating
Eyes:
(Draize) Believed to be > 15.00 - 25.00 /110 (rabbit) slightly irritating
Sensitization:
Not determined.

Other:

Product may contain dust or particulates that may cause eye irritation or abrasion.

12. DISPOSAL CONSIDERATIONS:

Waste Disposal Methods:

This material should be disposed of in accordance with local, state and federal regulations.

Remarks:

Do not allow to enter drains or sewers.

13. TRANSPORT INFORMATION

Transportation DOT:

Proper Shipping

name:
Polymeric beads, expandable

Hazard Class : 9

Identification Number :
UN 2211

Packing Group:
III

Label Required:
Class 9

IMDG
Class 9 (See Section 16 for additional information)

ICAO Proper Shipping Name:
Polymeric beads, expandable

Hazard Class
9

Identification Number
UN 2211

Packing Group
III

Label Required
Class 9 (See Section 16 for additional information)

TDG Proper Shipping Name:
Polymeric beads, expandable

Hazard Class:
9

Identification Number:
UN 2211

Label Required:
Class 9 (per UN recommendations, black vertical stripes)

14. REGULATORY INFORMATION

Federal Regulations:						
SARA Title III :						
Section 302/304 Extremely Hazardous Substances						
Chemical Name				**CAS Number**	**Range in %** / **TPQ**	**RQ**
None.						
Section 311 Hazardous Categorization:						
Acute__X__	**Chronic__X__**	**Fire__X__**	**Pressure____**	**Reactive____**	**N/A____**	
Section 313 Toxic Chemical						

Chemical Name		CAS Number	Concentration
None.			

CERCLA 102(a)/DOT Hazardous Substances:

Chemical Name	CAS Number Range in % RQ
None.	

States Right-to-Know Regulations:

Chemical Name State Right-to-know	
Pentane	FL, MA, MN, NJ, PA, RI

State list: CT (Connecticut), FL (Florida), IL (Illinois), MI (Michigan), LA (Louisiana), MA (Massachusetts), NJ (New Jersey), PA (Pennsylvania), RI (Rhode Island)

California Prop. 65:
The following detectable components of this product are substances, or belong to classes of substances, known to the State of California to cause cancer and/or reproductive toxicity.

Chemical Name	CAS Number
None.	

INTERNATIONAL REGULATIONS:

TSCA Inventory Status:

This product, or its components, are listed on, or are exempt from the Toxic Substance Control Act (TSCA) Chemical Substance Inventory.

WHMIS Classification:

Not determined.

Canadian Inventory Status:

This product, or its components, are listed on or are exempt from the Canadian Domestic Substance List (DSL).

EINECS Inventory Status:

This product, or its components, are listed on or are exempt from the European Inventory of Existing Chemical Substances (EINECS) or the European List of Notified Chemical Substances (ELINCS).

Australian Inventory Status:

This product, or its components, are listed on or are exempt from the Australian Inventory of Chemical Substances (AICS).

Japan Inventory Status:

This product, or its components, are listed on or are exempt from the Japanese Ministry of International Trade and Industry (MITI) inventory.

15. ENVIRONMENTAL INFORMATION

Aquatic Toxicity:

Not applicable.

Mobility:

Not applicable.

Persistence and Biodegradability:

This product is expected to persist in the environment.

Potential to Bioaccumulate:

Not applicable.

Remarks:

Sewer/waterways obstruction; fish may eat beads and obstruct their digestive tract.

16. OTHER INFORMATION

European, ADR regulations require additional marking (see item 2912) "Keep Away From Any Source of Ignition." Vessel carriers request marking warning "No Smoking or Open Flame" on box doors.