

DYPLAST PRODUCTS

EXPANDED POLYSTYRENE

SAFETY DATA SHEET (SDS)

DYPLAST PRODUCTS, LLC, 12501 NW 38TH AVENUE, MIAMI, FLORIDA 33054

IMPORTANT: Read this SDS before handling and disposing of this product and pass this information on to employees, customers, and users of this product. This product is covered by the OSHA Hazard Communication Rule and this document has been prepared in accordance with the SDS requirements of the rule.

SECTION 1: IDENTIFICATION

Trade Name: Dyplast EPS (densities 1.00, 1.25, 1.50 and 2.00 lb/ft³)

Manufacturer: Dyplast Products, LLC

Address: Dyplast Products, LLC, 12501 NW 38th Avenue, Miami, Florida 33054

Internet: www.dyplast.com; info@dyplast.com

Telephone Number: (305) 921-0100

Other Names: EPS; Expanded Polystyrene; Foamed Polystyrene

Chemical Name: Polystyrene Foam (Ethenylbenzene homopolymer), or Polystyrene Thermoplastic Polymer, (C₈H₈)_x

Product Use: Insulation, floatation, packaging

SECTION 2: HAZARDS IDENTIFICATION

Physical hazards: Not classified.

Health hazards: Not classified.

Environmental hazards: Not classified.

OSHA defined hazards: May form combustible dust concentrations in air if converted to small particles during handling or fabrication.

Other Hazards: Low toxicity under normal conditions of handling and use.

Supplemental information Precautionary statement(s)

Hazard statement: Material may release pentanes, a flammable hydrocarbon, which may form a flammable/explosive vapor-air mixture.

This material may accumulate electrostatic charge which in some cases may cause an electrical spark (ignition source).

Prevention Prevent dust accumulation to minimize explosion hazard. Take precautionary measures against static discharge.

Section 2 Notes: Degree of Hazard:

0 - Minimal/Insignificant; 1 – Slight/Minor; 2 - Moderate; 3 – Serious/High; 4 – Severe/Extreme

	<u>Health</u>	<u>Fire</u>	<u>Reactivity</u>
NFPA Ratings:	1	3 ¹	0
HMIS Ratings:	1	3 ¹	0

Note 1: NFPA and HMIS ratings based on pentane hazards, which are dramatically diminished by the time the product reaches the end-user - - at which time the above ratings would be less.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient A: Polystyrene Foam (Ethenylbenzene homopolymer)

<u>CAS NO.</u>	<u>% WT</u>
9003-53-6	92 - 97%

Ingredient B: Pentane Isomers (n-pentane, isopentane, cyclopentane)

<u>CAS NO.</u>	<u>% WT</u>
109-66-0; 78-78-4; 287-92-3	2 - < 7%

Ingredient C: Modifiers and/or Additives

	<u>% WT</u>
Proprietary	≤ 3%

Ingredient D: Styrene (residual vinyl benzene)

<u>CAS NO.</u>	<u>% WT</u>
100-42-5	< 0.2%

Section 3 Notes: Pentane is a flammable blowing agent that offgases from product, yet EPA document 540/3-90-020 states that 85% of the pentane is emitted within 48 hours of the start of the expansion process in the factory, with the remainder emitted over time. Considering manufacturer's curing process, the vast majority of the 15% remainder of the pentane should be emitted prior to shipment, with the remainder being emitted during subsequent shipment, storage, and usage. Cyclopentane is a liquid below 120°F and isopentane liquefies at 82°F; n-pentane remains in a gaseous state above 97°F.

SECTION 4: FIRST AID MEASURES

Inhalation: No significant signs or symptoms indicative of any adverse health hazard are expected to occur as a result of inhalation exposure. Move person to fresh air. If irritation persists, seek medical attention.

Skin: No significant signs or symptoms indicative of any adverse health hazard are expected to occur as a result of absorption. Minor skin irritation is possible from abrasion.. Wash with mild soap and running water. Remove and launder contaminated clothing before reuse. If irritation develops, seek medical attention.

Eyes: May cause minor eye irritation. Flush eyes with running water for at least 15 minutes. Seek medical attention if irritation develops.

Ingestion: Ingestion of this material is unlikely. No significant signs or symptoms indicative of any adverse health hazard are expected to occur as a result of ingestion. If it does occur, do not induce vomiting; seek medical attention.

Fire: Move to fresh air. Administer oxygen and seek medical attention.

Notes To Physicians or First Aid Providers: None

SECTION 5: FIRE-FIGHTING MEASURES

Upper Flammable Limit (UFL): Not applicable

Lower Flammable Limit (LFL): Not applicable

Flash Point: 600°F to 650°F

Auto Ignition Temperature: 914°F

Extinguishing Media: Use dry chemical (ABC types), water spray, water fog, fire-fighting foam, or dry chemical or CO2 extinguishing media.

Special Fire Fighting Procedures: None

Unusual Fire And Explosion Hazards: No unusual conditions are expected after installation. Freshly expanded or heated foam may off-gas pentane, which can accumulate at hazardous concentrations above the Lower Flammable Limit (LFL) if stored in closed containers or confined areas. Electrostatic discharge can be a source of ignition of accumulated pentane vapors exceeding the LFL of 1.5% (15,000 ppm). Assure proper ventilation of storage or shipping containers to prevent accumulation of hazardous concentrations of off-gassed pentane. To prevent ignition, avoid smoking, keep from open flames and high temperatures. If heated above decomposition temperature or burned, product can emit an irritating dense black smoke and acid gases.

Hazardous Decomposition Products: Burning foam emits a dense, black, irritating smoke with acid gases. Primary combustion products are carbon monoxide, carbon dioxide and styrene. Other undetermined hydrocarbon fractions could be released in small quantities.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Land Spills: Scoop up material and put into suitable container for recycling or disposal as a non-hazardous waste.

Water Spills: This material will float on water and disperse with wind and current. Contain the material with booms, pick up or remove with a vacuum truck.

Air Release: This material will settle out of the air. Then proceed with the above measures for land or water spills

Personal Protective Equipment: Use appropriate personal protective equipment as necessary (see Section 8 for details).

SECTION 7: HANDLING AND STORAGE

Handling: Use protective equipment as described in Section 8 of this SDS when handling uncontained material. Avoid breathing dusts from this material.

Storage: Store in a well-ventilated area. Assure storage containers or areas and shipping containers are adequately ventilated. Avoid direct exposure to very high heat, open flame or other sources of ignition. Pentane vapors are heavier than air and may accumulate in low places. Keep material dry and protected from the elements. When stored outdoors, stack at least 4 inches above ground level and cover with tarpaulins or other suitable covering. Keep away from sources of ignition.

Other Precautions: None

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Avoid unnecessary dust exposures when cutting or abrading.

Ventilation: Any dust-generating process should be performed in an area provided with either natural or mechanical ventilation as necessary to maintain exposures below occupational exposure limits and to prevent accumulation of hazardous concentrations of off-gassed pentane.

Respiratory Protection: Respiratory protection is not required under normal conditions of use. Use a NIOSH/OSHA-approved mask during fabrication if necessary. If dusts are generated up to 10 times above any occupational exposure limits, use a NIOSH-approved particulate respirator (disposable filtering dust mask type) with an efficiency rating of N95 or higher (e.g. 3M's 8210, Moldex 2300). Wear an air purifying respirator with charcoal cartridges or a supplied air respirator when exposure to pentane exceeds exposure limits.

Eye Protection: Safety glasses or goggles may be worn to reduce the risk of eye injury or irritation.

Skin Protection: Gloves, long sleeved shirt and long pants may be worn, as needed, to prevent skin contact and irritation.

Other Protective Clothing or Equipment: None

Work Hygienic Practices: None other than above

Exposure Guidelines:

Polystyrene Foam Exposure Limits:	OSHA PEL	ACGIH TLV	
Inhalable:	10 mg/m ³		
Respirable:	5 mg/m ³	3 mg/m ³	
Total Particulate:	15 mg/m ³		
Pentane Isomer Exposure Limits:	OSHA PEL	ACGIH TLV	NIOSH REL
Pentane:	1000 ppm	600 ppm 610 ppm (ceiling)	120 ppm
Cyclopentane:	600 ppm	600 ppm	
Styrene Exposure Limits:	OSHA PEL	ACGIH TLV	NIOSH REL
Styrene:	100 ppm 200 ppm (ceiling) 600 ppm (5 min. peak)	20 ppm 40 ppm (STEL)	50 ppm 100 ppm (STEL)

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance: White or white-ish solid blocks, sheets, panels or forms

Odor: Prior to aging, slight hydrocarbon odor. None after aging

Physical State: Solid

pH as Supplied: Not applicable

Boiling Point: Not applicable

Melting Point: Will melt when exposed to temperatures of >400°F (204°C).

Softening or deformation may begin at temperatures as low 170°F (77°C)

Freezing Point: Not applicable

Vapor Pressure (mmHg): Not applicable

Vapor Density (AIR = 1): Not applicable (for Pentane = 2.5)

Specific Gravity (H₂O = 1): Varies with density of foam. Densities range from 0.9 pcf to 2.0 pcf

Evaporation Rate: Not applicable

Solubility In Water: None

Percent Solids By Weight: >95%

Percent Volatile: Not determined, but should be negligible after aging

Volatile Organic Compounds (VOC):

- **Pentane:** EPS manufacturing uses beads as a raw material, and EPS beads typically contain 4%-7% pentane by weight, which is defined as a VOC by the EPA. EPA document 540/3-90-020 states that 85% of the pentane contained in the EPS bead is emitted within 48 hours starting with the expansion process (which occurs within the manufacturing facility). The remaining pentane is released over time, there is likely negligible pentane content in the foam by the time of installation.
- **Styrene:** Styrene is considered a VOC by the EPA. While Certificates of Analysis from bead suppliers typically do not state a styrene monomer content of EPS bead, several EPS bead suppliers have established that EPS beads typically contain styrene monomer, 900 to 1000 ppm by weight. After pre-expansion and expansion of beads, concentration should be considerably reduced.

SECTION 10: STABILITY AND REACTIVITY

Reactivity: Reactive with oxidizing agents. Organic solvents, esters, amines and aldehydes will dissolve product.

Reactivity With Water: None

Chemical Stability: EPS is a stable material;

- **Conditions To Avoid (Stability):** Avoid sources of ignition and operation at temperatures above melting point.

Other:

- **Incompatibility:** Reactive with oxidizing agents.
- **Hazardous Polymerization:** Will not occur
- **Hazardous Decomposition Or By-Products:** Will not decompose.
- **Corrosivity:** None
- **Explosion:** Prior to aging, high temperature, poor ventilation combined with freshly expanded product may create hazardous, explosive or fire conditions.

SECTION 11: TOXICOLOGICAL INFORMATION

This product has not been tested as a separate entity. Therefore, the hazards must be evaluated on the basis of the individual ingredients, and those hazards must be assumed to be additive in the absence of complete information. The hazards described in this document have been evaluated on a threshold of 1.0% for all hazardous ingredients and 0.1% for all carcinogens.

Routes Of Exposure: During manufacture or re-grinding, inhalation or eye exposure to dust from this product dust may cause temporary irritation. Skin exposure to the product may cause mechanical irritation. Typical consumer contact would be through breathing of off-gases (i.e. pentane isomers).

Acute Effects: Acute health effects from this product are unlikely when used as intended.

Chronic Effects: Chronic health effects from this product are unlikely when used as intended.

Acute Inhalation: Breathing dust may cause temporary mechanical irritation and coughing. Overexposure to extremely high concentrations of pentane can cause narcotic effects. Signs and symptoms of overexposure to pentane include headache, nausea, dizziness, difficulty walking or sleepiness.

Chronic Inhalation: None identified.

Acute Skin Contact: Direct contact with rough cut foam can cause mechanical abrasion to exposed skin. Absorption through skin is unlikely.

Acute Eye Contact: Eye contact may cause mild mechanical irritation, redness, tearing and blurred vision.

Chronic Eye Contact: None identified.

Acute Ingestion: Ingestion of this material is unlikely if used as intended. However, ingestion of this product may produce gastrointestinal irritation and disturbances.

Chronic Ingestion: None identified.

Carcinogenicity: Styrene monomer

ACGIH: A4 – Not Classifiable as a Human Carcinogen

IARC: 2B – Possibly Carcinogenic to Humans (Vol. 60, 1994)

Medical Conditions Aggravated by Exposure: Treat symptomatically. Specific data that address medical conditions that are generally recognized as being aggravated by exposure to this product are not available. However, chronic respiratory or eye conditions may worsen from exposure to these products.

Pentane and Styrene: Neither the Agency for Toxic Substances and Disease Registry (ATSDR), the Environmental Protection Agency (EPA), nor the National Toxicology Program (NTP) define pentane, styrene, or any other chemical within EPS as a carcinogen.

Styrene Monomer: In March 1987, the International Agency for Research on Cancer (IARC) reclassified styrene as possibly carcinogenic to humans (Group 2B) due to “inadequate evidence in humans,” “limited evidence in animals” and “other relevant data.” The IARC working group determined that the weight of data on genetic and related effects, together with the consideration that styrene metabolized in humans and animals to styrene oxide for which there insufficient evidence of carcinogenicity in experimental animals and, which has been classified by the IARC as probably carcinogenic to humans (Group 2A), was sufficient reason to recommend the change in classification.

SECTION 12: ECOLOGICAL INFORMATION

Ecological Information: Based on information related to all raw materials in the finished product, it is not expected to harm eco-systems through its applied use.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal Method: This product can be recycled at an authorized EPS recycling facility where it can be re-ground and incorporated into new products or can be densified and returned as styrene bead. EPS can also be incinerated at authorized incineration or waste-to-power facilities. Otherwise, dispose in accordance with federal, state and local regulations, which is typically in a municipal or industrial landfill.

US EPA Waste Number & Descriptions: This product, as supplied, is not regulated as a hazardous waste by the US Environmental Protection Agency (EPA) under its Resource Conservation and Recovery Act (RCRA) regulations. Comply with state and local regulation for disposal. No EPA Waste Numbers are applicable for this product’s components.

RCRA Hazard Class: Not applicable.

SECTION 14: TRANSPORT INFORMATION

U.S. Department Of Transportation: For domestic transportation purposes, this product is not regulated as a hazardous material by the US Department of Transportation (DOT) under Title 49 of the Code of Federal Regulations.

SECTION 15: REGULATORY INFORMATION

U.S. Federal Regulations

- **Clean Air Act:** Clean Air Act: This product contains styrene, which is listed as a hazardous air pollutant and may be subject to section 112(r) of the Clean Air Act.
- **TSCA (Toxic Substance Control Act):** *Not applicable*
- **CERCLA (Comprehensive Response Compensation, And Liability Act):** *Not applicable*
- **SARA TITLE III (Superfund Amendments And Reauthorization Act):** SARA Title III Regulations: This product contains pentane and residual styrene monomer, which OSHA defines as a hazardous chemical. This product may be reportable under SARA sections 311 and 312, depending upon maximum on-site storage volumes. This product contains styrene, which may be subject to the reporting requirements of sections 302 and 304 of Title III of the Superfund Amendments and Reauthorization Act (SARA- 40 CFR 355). This product contains styrene, which may be subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act (SARA- 40 CFR 372).
- **311/312 Hazard Categories:** *Not applicable*
- **313 Reportable Ingredients:** *Not applicable*
- **OSHA Hazard Communication Standard:** This product is not a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

State Regulations: The states CA, MA, MN, NJ, and PA include ISO-pentane (CAS# 78-78-4) on hazardous substances lists, although since the product is manufactured in Florida, the concentration of ISO-pentane by the time the product has reached the state in question should be negligible. The states CA, MA, MI, MN, NJ, and PA include ISO-pentane (CAS# 78-78-4) on hazardous substances lists, although since the product is manufactured in Florida, the concentration of ISO-pentane by the time the product has reached the state in question should be negligible.

International Regulations: Countries other than the U.S. may have regulations governing the use of this product. The end-user should investigate local rules and regulations.

SECTION 16: OTHER INFORMATION

Other Information: None

Preparation Information: Reasonable care has been taken in the preparation of this information.

DISCLAIMER: The information in this SDS was obtained from sources which we believe are reliable. HOWEVER, THE INFORMATION IS PROVIDED WITHOUT ANY WARRANTY, EXPRESS OR IMPLIED, REGARDING ITS CORRECTNESS.



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