

Safety Data Sheet

EXPANDABLE POLYSTYRENE

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1. Identification

Product identifier

EXPANDABLE POLYSTYRENE – REGULAR GRADES

34RA, 34RB, 34RC, R185B, R185C, 34RAIP, 34RBIP, 34RCIP, 34RALV, 34RBLV, 34RCLV, R175BLV, R185BLV, R185BIP, R185CIP.

Recommended use and restriction on use:

Recommended use: plastics. Used primarily for the manufacture of shape-molding for cushion packaging, produce/fish boxes, coolers, and general applications not requiring flame retardant packaging. Finished goods production is based on a variety of steam molding processes. Restrictions on use: all uses other than the identified.

Details of the supplier of the safety data sheet

Company:

BVPV Styrenics LLC

400 Frankfort Road Monaca, Pennsylvania, USA 15061

SDS Information Email: product.stewardship@styropek.com

Manufacturer / Importer: BVPV Styrenics LLC

Emergency telephone number

24 Hour Emergency Response Information

CHEMTREC: 832-446-6154

Int.: +1-703-527-3887

Site: 724-770-5555

Other means of identification

Common name(s), synonym(s): Foamable polystyrene, EPS

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2. Hazard(s) identification

Classified in accordance with 29 CFR 1910.1200

Hazard Classification Not classified.

Label Elements

Hazard symbol: No symbol.

Signal word: No signal word.

Hazard statement: Not applicable.

Precautionary Statements

Prevention: Keep away from heat/sparks/open flames. No smoking. Take action to prevent static discharges.

Storage: Store in a well-ventilated place. Keep cool.

Disposal: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Other hazards which do not result in GHS classification

In use may form flammable/explosive vapor-air mixture. Product releases pentane, a flammable vapor. Maintain adequate ventilation during processing and use. High concentration of airborne powders or dust may form explosive mixture with air.

3. Composition / Information on ingredients

Chemical Identity	Common name	CAS number	Content in percent (%) *
Polystyrene	Polystyrene	9003-53-6	92 – 97%
n-Pentane	Pentane	109-66-0	1 - 8%
Butane, 2-methyl-	Isopentane	78-78-4	0 -< 3%

* All concentrations are percent by weight.

* All pentanes (normal- and iso-) combined are present between 1 – 8 %.

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4. First-Aid measures

Ingestion: Seek medical advice. Material is not expected to be absorbed from the gastrointestinal tract so that induction of vomiting should not be necessary. Do not induce vomiting. Loosen tight clothing such as a collar, tie, belt or waistband.

Inhalation: Remove person to fresh air and keep comfortable for breathing. Loosen tight clothing such as a collar, tie, belt or waistband to facilitate breathing. Get medical attention if symptoms persist.

Skin contact: In the event of direct contact with the body, wash and rinse directly contacted body part thoroughly with soap and water. Get medical attention if symptoms persist. If burned by contact with hot material, cool molten material adhering to skin as quickly as possible with water, and see a physician for removal of adhering material and treatment of burn. Do not attempt to remove molten product, or molten product that has cooled, from skin without medical assistance.

Eyes contact: Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention if symptoms persist.

Most important symptoms/effects, acute and delayed

Symptoms: Irritating to eyes, respiratory system and skin. Gas or vapor is harmful on prolonged exposure or in high concentration. May cause nausea, headache, dizziness and intoxication.

Indication of immediate medical attention and special treatment needed

Treatment: For more detailed medical emergency support information, call phone numbers listed in first section. Treatment should be directed at the control of symptoms and the clinical condition of the patient. After adequate first aid, no further treatment is required unless symptoms reappear.

5. Fire-fighting measures

General fire hazards: Releases vapors which are flammable when exposed to lit smoking materials (cigarettes), sparks, static electricity discharges or open flame. Supports combustion. Explosion risk. When heated to decompose emits acrid smoke and irritating fumes. Vapors are flammable and heavier than air. Vapors may travel across the ground and reach remote ignition sources causing a flashback fire danger. Move containers from fire area if you can do so without risk.

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Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: Water spray, foam, dry powder or carbon dioxide. Use water spray to keep fire-exposed containers cool.

Unsuitable extinguishing media: Do not scatter spilled material with high pressure water streams.

Specific hazards arising from the chemical: Vapors are flammable and heavier than air. Vapors may travel across the ground and reach remote ignition sources causing a flashback fire danger. Powdered material may form explosive dust-air mixtures. Risk of dust-air explosion is increased if flammable vapors are present. Take action to prevent static discharges.

Special protective equipment and precautions for firefighters

Special firefighting procedures: Keep upwind. Keep unauthorized personnel away. Move container from fire area if it can be done without risk. For massive fire in cargo area, use unmanned hose holder or monitor nozzles, if possible. If not, withdraw and let fire burn out. Use water spray to cool fire exposed surfaces and to protect personnel. ALWAYS stay away from container engulfed in fire. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply.

Special protective equipment for firefighters: Emergency personnel should wear self-contained breathing apparatus. Avoid inhaling any smoke and combustion materials.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures: Keep unauthorized personnel away. Evacuate to a safe location and contact the emergency services. Avoid standing or walking on spilled product - loose beads may cause a slipping hazard. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Wear appropriate personal protective equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure that statutory and regulatory reporting requirements in the applicable jurisdiction are met.

Methods and material for containment and cleaning up: Small Spillages: In case of spills, beware of slippery floors and surfaces. Eliminate sources of ignition. Consider isolating spill or leak area immediately until ambient air sampling results indicate that the pentane vapor concentration is below the flammable range. Use appropriate non-sparking tools to put spilled solid in an appropriate waste disposal container.

Large Spillages: Flammable vapors are released from spills. Use water spray to reduce vapors or divert vapor cloud drift. Eliminate sources of ignition. Consider isolating spill or leak area immediately until ambient

air sampling results indicate that the pentane vapor concentration is below the flammable range. Prevent entry into waterways, sewer, basements or confined areas.

If containers are damaged or suspected to have been damaged during transit, open the truck trailer door slowly and ventilate for 15 minutes. No smoking. Test the atmosphere to ensure the air is free of pentane before entering.

7. Handling and storage

Precautions for safe handling:

Handle in contained and properly designed equipment systems. Handle and process this product in a cool, well-ventilated place. Use only with adequate ventilation. Avoid ingestion. Avoid inhalation of the product. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Ground container and transfer equipment to eliminate static electric sparks. Keep handling areas free of loose beads and dust accumulation. Minimize dust generation and accumulation. Small amounts of fines or dust contained in granular resins may accumulate in handling systems. Prevent dust accumulation to minimize explosion hazard. Handling and processing operations should be conducted in accordance with 'best practices' (e.g. NFPA-654). In case of spills, beware of slippery floors and surfaces. Keep away from incompatible materials such as oxidizing agents and organic materials. Risk of vapor concentration on the floor and in low-lying areas. After opening the container in a well-ventilated area, allow 15 minutes for accumulated pentane to dissipate.

Partially opened containers represent a potentially serious hazard because the insides of the container permit a space for the pentane to accumulate. Shipping containers, trucks and trailers should be ventilated for at least 15 minutes prior to unloading. Surplus and unused beads may still contain residual pentane; handle using all safety measures as if fresh product. Empty containers may contain flammable residue.

Conditions for safe storage, including any incompatibilities:

Store in tightly closed original container in a dry, cool and well-ventilated place. Protect against direct sunlight. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Do not store near spark-producing equipment. Use explosion-proof [electrical/ventilating/lighting/] equipment. Store according to applicable regulations and standards for flammable materials. Have appropriate extinguishing capability in storage area (e.g. sprinkler system, portable fire extinguishers) and flammable gas detectors. Define the storage area and vehicle traffic routes clearly. Put up clear signs. Keep storage area clean. Only allow access to authorized persons. Remove containers from storage area prior to opening. Vapors may be present in the headspace of closed containers. Containers should be opened only in well ventilated areas. All equipment used when handling the

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product must be grounded. Use non-sparking tools. Use a fall arrest system when working near open bulk containers. Re-seal previously opened container liners prior to placing partial containers into storage. Do not enter filled containers or attempt to walk over containers or spilled product due to risk of slipping and possible suffocation.

For additional transport, handling and storage information, refer to the BVPV Styrenics Expandable Polystyrene Storage and Handling Safety Guide.

8. Exposure controls and personal protection

Occupational Exposure Limits

Chemical Identity	Type	Exposure Limit Values	Source
n-Pentane	TWA	1,000 ppm	US. ACGIH Threshold Limit Values, as amended.
	PEL	1,000 ppm 2,950 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended.
	STEL	750 ppm 2,250 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended.
	TWA	600 ppm 1,800 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended.
	CEIL TIME	610 ppm 1,800 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended.
	REL	120 ppm 350 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended.
	IDLH	1,500 ppm	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values, as amended.
Butane, 2-methyl-	TWA	1,000 ppm	US. ACGIH Threshold Limit Values, as amended.

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Appropriate engineering controls:

Engineering methods to reduce hazardous exposure are preferred controls. Methods include mechanical ventilation (dilution and local exhaust) process or personal enclosure, remote and automated operation, control of process conditions, leak detection and repair systems, and other process modifications. Ensure all exhaust ventilation systems are discharged to outdoors, away from air intakes and ignition sources. Supply sufficient replacement air to make up for air removed by exhaust systems. Administrative (procedure) controls and use of personal protective equipment may also be required.

It is recommended that all dust control equipment such as local exhaust ventilation and material transport systems involved in handling of this product contain explosion relief vents or an explosion suppression system or an oxygen-deficient environment. Use only appropriately classified electrical equipment and powered industrial trucks.

Individual protection measures, such as personal protective equipment

General information:

Personal protective equipment (PPE) should not be considered a long-term solution to exposure control. Employer programs to properly select, fit, maintain and train employees to use equipment must accompany PPE. Consult a competent industrial hygiene resource, the PPE manufacturer's recommendation, and/or applicable regulations to determine hazard potential and ensure adequate protection.

Eye/Face protection:

Wear safety glasses with side shields (or goggles).

Skin protection, hand protection:

Use chemically compatible gloves when handling product.

Skin and body protection:

Wear chemical-resistant safety footwear with good traction to prevent slipping. Wear appropriate clothing to prevent any possibility of skin contact. Wear work clothes with long sleeves. Wear fire resistant or flame-retardant clothing. Synthetic clothing can generate static electricity and is not recommended where a flammable vapor release may occur. Anti-static boots.

Respiratory protection:

Air-purifying respirator with an appropriate, government approved (where applicable), air-purifying filter, cartridge or canister. Contact health and safety professional or manufacturer for specific information. Self-contained breathing apparatus. Air supplied breathing apparatus must be used when oxygen concentrations are low or if airborne concentrations exceed the limits of the air-purifying respirators.

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Hygiene measures: Avoid inhalation of dust and vapors. Use effective control measures and PPE to maintain worker exposure to concentrations that are below these limits. Provide eyewash station and safety shower. Provide for sufficient ventilation. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

9. Physical and chemical properties

Physical state:	Solid
Form:	Beads
Color:	White
Odor:	Slight hydrocarbon
Odor threshold:	No data available
pH:	Not applicable
Melting point/freezing point:	60 - 100 °C (140 - 212 °F) (base resin)
Initial boiling point and boiling range:	No data available.
Flash point:	51 - 80 °C (124 - 176 °F) (ASTM D3278) (Product) -49 °C (-56 °F) (pentane)
Evaporation rate:	No data available
Flammability (solid, gas):	Flammable (Pentane).
Flammability limit – upper (%):	8.3 %(V) (Pentane)
Flammability limit – lower (%):	1.4 %(V) (Pentane)
Vapor pressure:	400 mm Hg (20 °C (68 °F)) (pentane)
Vapor density:	2.5 (0 °C (32 °F)) (pentane)
Density:	950 - 1,050 kg/m ³
Relative density:	0.95 - 1.05 (Water=1)
Solubility in water:	Insoluble
Solubility (other):	Partially soluble in various organic solvents
Partition coefficient (n-octanol/water)	No data available
Auto-ignition temperature:	260 °C (500 °F) (pentane)
Decomposition temperature:	No data available.
Viscosity:	No data available.

10. Stability and reactivity

Reactivity: Hazardous reactions not likely when properly stored, handled and transported. In use may form flammable/explosive vapor-air mixture. Risk of dust-air explosion is increased if flammable vapors are present. May burn or react violently with fluorine/oxygen mixtures with 50-100% fluorine. Decomp by powerful oxidizing or reducing agents. Exposure to strong oxidizing agents can cause fire or explosion. Powdered material may form explosive dust-air mixtures.

Chemical stability: Material is stable under normal conditions.

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Possibility of hazardous reactions: Hazardous polymerization not likely to occur. Powdered material may form explosive dust-air mixtures. Risk of dust-air explosion is increased if flammable vapors are present.

Conditions to avoid: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Release of pentane increases with temperatures. Avoid storing or handling with UN Class 1 explosives.

Incompatible materials: Not resistant to oxidizing agents; partially dissolves in organic solvents.

Hazardous decomposition products: Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapors.

11. Toxicological information

Information on likely routes of exposure

Ingestion: Seek medical advice. Material is not expected to be absorbed from the gastrointestinal tract so that induction of vomiting should not be necessary.

Inhalation: May cause nausea, headache, dizziness and intoxication. Vapors/heated fumes may be generated during processing.

Skin contact: This product may cause irritation to the skin from repetitive handling. Molten material will produce thermal burns.

Eye contact: May cause temporary eye irritation. Molten material will produce thermal burns.

Symptoms related to the physical, chemical and toxicological characteristics

Ingestion: Product is essentially inert, however, gastrointestinal irritation and blockage of the digestive tract are possible if large amounts are swallowed.

Inhalation: May cause nausea, headache, dizziness and intoxication. Vapors may irritate the respiratory system and cause coughing, asthmatic breathing and breathlessness.

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Skin contact: Thermal burns. Contact of powder or fines with skin may cause mild irritation that is increased by mechanical rubbing or if skin is dry.

Eye contact: Contact with hot material can cause thermal burns which may result in permanent damage or blindness. May cause mechanical irritation.

Acute toxicity (list all possible routes of exposure)

Oral: Not classified for acute toxicity based on available data.

Dermal: Not classified for acute toxicity based on available data.

Inhalation: Not classified for acute toxicity based on available data.

Repeated dose toxicity: No data available.

Skin corrosion/Irritation: No data available.

Specified substance(s):

Butane, 2-methyl- Prolonged and repeated skin contact can cause defatting dermatitis with dryness, cracking, redness and blisters.

Serious eye damage/Eye irritation: No data available.

Specified substance(s):

n-Pentane Prolonged or repeated contact may cause itching, redness, and rash in some individuals.

Butane, 2-methyl- Prolonged or repeated contact may cause itching, redness, and rash in some individuals.

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Respiratory or skin sensitization: No data available.

Carcinogenicity: No data available.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans: No carcinogenic components identified.

US. National Toxicology Program (NTP) Report on Carcinogens: No carcinogenic components identified.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050), as amended: No carcinogenic components identified.

Germ Cell Mutagenicity

In vitro: No data available.

Specified substance(s):

n-Pentane No mutagenic effect was found in various tests with bacterial and mammalian cell culture.

Butane, 2-methyl- No mutagenic effect was found in various tests with bacterial and mammalian cell culture.

In vivo: No data available.

Reproductive toxicity: No data available.

Specified target organ toxicity - Single exposure: No data available.

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Specified target organ toxicity -
Repeated exposure: No data available.

Specified substance(s):

n-Pentane
Nervous System. Chronic pentane exposure may damage the nervous system causing numbness, "pins and needles" and weakness in the arms and legs.
Skin. Prolonged and repeated skin contact can cause defatting dermatitis with dryness, cracking, redness and blisters.

Butane, 2-methyl-
Nervous System. Chronic pentane exposure may damage the nervous system causing numbness, "pins and needles" and weakness in the arms and legs.
Skin. Prolonged and repeated skin contact can cause defatting dermatitis with dryness, cracking, redness and blisters.

Aspiration hazard: No data available.

Other effects: No data available.

12. Ecological information

General information: The information below is based on knowledge of the components and the ecotoxicity of similar products. Sewer/waterway obstruction: marine life may ingest beads, which may obstruct their digestive tract. Product is expected to be non-toxic, but small particles may have physical effects on aquatic and terrestrial organisms. This product contains pentane which is classified as toxic to aquatic life. However, this product was tested for aquatic toxicity and found to be not toxic for aquatic organisms.

Ecotoxicity

Fish: LC 50 (96 h): > 100 mg/L

Aquatic invertebrates: EC 50 (Daphnia magna, 48 h): > 100 mg/L

Aquatic plants: EC 50 (72 h): > 100 mg/L

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Fish and aquatic invertebrates (chronic): NOEC : > 100 mg/L

Toxicity to aquatic plants (chronic): NOEC : > 100 mg/L

Persistence and degradability

Biodegradation: The product is not expected to be biodegradable. Do not allow to enter drains, sewers or watercourses. Blowing agent is expected to rapidly volatilize from soil and water.

BOD/COD Ratio: No data available.

Bioconcentration Factor (BCF): No data available.

Partition Coefficient n-octanol / water (log Kow): No data available.

Specified substance(s):

n-Pentane 3.39

Butane, 2-methyl. 2.30

Mobility in soil: No data available.

Other adverse effects: Pentane is not classified as an ozone depleting chemical.

13. Disposal considerations

General information: This product, if discarded, is not expected to be a hazardous waste. The use, mixing or processing of this product may alter its properties or hazards. External treatment and disposal of waste should comply with applicable local and/or national regulations.

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Disposal instructions:

Incinerate or landfill. External recovery and recycling of waste should comply with applicable local and/or national regulations. External treatment and disposal of waste should comply with applicable local and/or national regulations. Do not attempt to dispose of by uncontrolled incineration. Surplus and unused beads may still contain residual pentane; handle using all safety measures as if fresh product. Since emptied containers retain product residue, follow label warnings even after container is emptied. Waste generator is advised to carefully consider hazardous properties and control measures needed for other materials that may be found in the waste.

Contaminated packaging:

Recycle only completely emptied packaging.

14. Transport information

DOT

UN Number	UN 2211
UN Proper Shipping Name	Polymeric beads expandable, evolving flammable vapor
Transport Hazard Class(es):	
Class:	9
Label(s):	9
Packing grup:	III
Marine pollutant:	No
Special precautions for user:	Product releases pentane, a flammable vapor. Keep from heat, sparks, lit smoking materials (cigarettes), static electricity discharges, open flame or any other potential ignition source. Shipping containers, trucks and trailers should be ventilated for at least 15 minutes prior to unloading. Reference Emergency Response Guidebook No. 133, latest revision.

IATA

UN Number	UN 2211
Proper Shipping Name	Polymeric beads expandable, evolving flammable vapor
Transport Hazard Class(es):	
Class:	9
Label(s):	9MI (Miscellaneous)
Packing grup:	III
Limited quantity:	-
Excepted quantity:	E1
Marine pollutant:	No
Environmental hazards:	Not regulated
Special precautions for user:	Product releases pentane, a flammable vapor. Keep from heat, sparks, lit smoking materials (cigarettes), static electricity discharges, open flame or any other potential ignition source. Shipping containers, trucks and trailers should be ventilated for at least 15 minutes prior to unloading.

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IMDG

UN Number:	UN 2211
UN Proper Shipping Name:	POLYMERIC BEADS EXPANDABLE, EVOLVING FLAMMABLE VAPOR
Transport Hazard Class(es)	
Class:	9
Label(s):	9
EmS No.:	F-A, S-I
Packing grup:	III
Limited quantity:	5.00 kg
Excepted quantity:	E1
Marine pollutant:	No
Special precautions for user:	Product releases pentane, a flammable vapor. Keep from heat, sparks, lit smoking materials (cigarettes), static electricity discharges, open flame or any other potential ignition source. Shipping containers, trucks and trailers should be ventilated for at least 15 minutes prior to unloading.

15. Regulatory information

Inventory Status

Canada DSL Inventory List: On or in compliance with the inventory.

US TSCA Inventory: On or in compliance with the inventory.

16. Other information

Disclaimer

We support worldwide Responsible Care® initiatives. We value the health and safety of our employees, customers, suppliers and neighbors, and the protection of the environment. Our commitment to Responsible Care® is integral to conducting our business and operating our facilities in a safe and environmentally responsible fashion, supporting our customers and suppliers in ensuring the safe and environmentally sound handling of our products, and minimizing the impact of our operations on society and the environment during production, storage, transport, use and disposal of our products. Although the information contained in this document is presented in good faith, based on available information believed to be reliable at the time of preparation of this document, it is provided for your guidance only. Because many factors may affect processing or application/use, we recommend that you make tests to determine the suitability of our products for your particular purpose prior to use. Styropek makes no warranties or representations with respect to the information, or the product/materials described herein, and expressly disclaims all implied warranties and conditions (including all warranties and conditions of merchantability or fitness for a particular purpose). No freedom from infringement of any patent owned by Styropek or others is to be inferred. In no case shall the descriptions, information, data or designs provided be considered a part of our terms and conditions of sale. Unless specifically agreed otherwise, Styropek does not take responsibility for use, transportation, storage, handling or disposal of the product/materials described herein. This information is subject to change without notice. Please contact Styropek for the most current version of this SDS.