



## Flint Hills Resources Expandable Polystyrene **Grade 54**

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### **I. GENERAL DESCRIPTION**

FHR Grade 54 expandable polystyrene is a modified grade resin used for block and shape molding operations, designed for use in a wide range of engineered building applications. It is available in a variety of bead sizes and blowing agent (VOC) content. This product contains a (non HBCD) flame retardant and the molded expanded polystyrene has been tested to ASTM C578 Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation and ASTM D-6817 Standard Specification for Rigid Cellular Polystyrene Geofoam.

FHR grade 54 has been classified by Underwriters Laboratories, Inc. for ASTM E-84 and UL-94 properties and by Underwriters Laboratories of Canada for CAN/ULC - S102.2-M88 properties. Expanded polystyrene manufactured from Flint Hills Resources Modified Grade 54 expandable polystyrene complies with the building codes of the United States and Canada, as well as many industrial, military, and federal specifications.

Evaluation of compliance of materials molded from FHR grade 54 resins to the building codes is covered in **UL evaluation report UL ER7503-01** and **ICC-ES report ESR-1634**.

# Flint Hills Resources Expandable Polystyrene Grade 54

## II. PROPERTIES OF GRADE 54 EXPANDABLE POLYSTYRENE

Type	Bead Size	Typical* Unexpanded Particle Size, (mm)	% Blowing Agent Content	Recommended Density Range** (lbs./ft <sup>3</sup> )	Recommended ASTM C-578 Type - use	Method of Processing and Benefits
I3354	A	1.100 – 1.700	3.50 ± 0.30 Ultra low	1.3 - 3.0	I, VIII, II, XIV, XV	Block Grade Fast cycles short prepuff age smooth wire cut surface
S5354	B	0.700-1.400	3.50 ± 0.30 Ultra low	1.00 – 2.00	I, VIII, II, IX	Shape/Block grade Fast mold cycles at High densities smooth wire cut surface
I5354	B	0.700-1.400	3.50 ± 0.30 Ultra low	1.5-3.0	I, VIII, II, IX, XIV, XV	Shape / Block grade Very fast cycling Smooth wire cut surface
S7354	C	0.400 – 0.800	3.50 ± 0.30 Ultra low	1.25 – 2.00	VIII, II, IX	Shape grade Very fast cycles, excellent part appearance

\* Typical indicates at least 95% of product falls within the given particle size range

\*\* Low density on low pentane products attainable with batch or double pass pre-expansion.

# Flint Hills Resources Expandable Polystyrene Grade 54

## II. PROPERTIES OF GRADE 54 EXPANDABLE POLYSTYRENE – cont.

Type	Bead Size	Typical* Unexpanded Particle Size, (mm)	% Blowing Agent Content	Recommended Density Range** (lbs./ft <sup>3</sup> )	Recommended ASTM C-578 Type use	Method of Processing and Benefits
3454	A	1.100 – 1.700	4.7 ± 0.4 Low	0.90 – 1.25	I, VIII	Block grade - Low density
S3454	A	1.100-1.700	4.7 ± 0.4 Low	0.90-1.25	I,VIII	Block - fast cycling short pre-puff age
S5454	B	0.700 – 1.400	4.8 ± 0.3 Low	0.90 – 2.00	VIII, II, IX	Block Grade - fast cycling short pre-puff age Low – Medium density.
S7454	C	0.400 – 0.800	4.8 ± 0.3 Low	1.15 – 2.50	II, IX, XIV	Block / Shape grade Medium to High density - smooth wire cut surface fast Block cycles.
I7454	C	0.400 – 0.800	4.8 ± 0.3 Low	1.15 – 2.50	VIII,II, IX, XIV	Shape grade Medium to High density fast cycles

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\*\* Low density on low pentane products attainable with batch or double pass pre-expansion.

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## II. PROPERTIES OF GRADE 54 EXPANDABLE POLYSTYRENE – cont.

Type	Bead Size	Typical* Unexpanded Particle Size, (mm)	% Blowing Agent Content	Recommended Density Range** (lbs./ft <sup>3</sup> )	Recommended ASTM C-578 Type -use	Method of Processing Benefits
3654	A	1.100 – 1.700	6.5 ± 0.4 Standard	0.90 – 1.25	I, VIII	Block grade low density
5654	B	0.700 – 1.400	6.6 ± 0.4 Standard	0.90 – 1.25	I, VIII	Block grade - Low densities Good wire cut surface
S5654	B	0.700- 1.400	6.6 ± 0.4 Standard	0.90-1.25	I,VIII	Block Fast cycling short pre-puff age time.
7654	C	0.400 –0.800	6.4 ± 0.4 Standard	0.90 – 1.50	I, VIII, II	Block grade smooth wire cut surface fabrication
S7654	C	0.400-0.800	6.4 ± 0.4 Standard	0.90-1.50	I,VIII,II	Shape molding fast cycling in the mold.

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## III. APPLICATIONS

Grade 54 modified expandable polystyrene resins have gained broad acceptance in the production of consistent, high quality molded products, requiring assembly fire ratings or code approvals. Compliance of materials molded from FHR grade 54 resins to the building codes is covered in UL evaluation report **UL ER7503-01** and **ICC-ES report ESR-1634**.

Grade 54 resins have been used in a wide range of engineered building applications including but not limited to Geofoam, Insulated Concrete Forms, Structural Insulated Panels, Roofing, Exterior Insulated Finishing Systems, Slope Stabilization, Highway Embankments and Shallow Foundation Frost protection.

To help assure that Flint Hills Resources products are not misapplied, or used in any manner which they may not have been intended or tested, we suggest a review of proposed applications with Flint Hills Resources personnel to assist in dealing with safety considerations. Your Flint Hills Resources Sales Representative can arrange for the proper contact with our Technical Staff for such review.

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## IV. SHIPPING AND HANDLING PRECAUTIONS

Expandable polystyrene contains a flammable blowing agent and is consequently regulated by the United States Department of Transportation as a CLASS 9-MISCELLANEOUS MATERIAL. These products are shipped in regulation UN 2211, 2204 - pound flexible bulk packages. Each container is lined with a hydrocarbon barrier liner to decrease the emissions of volatiles. **For further information, please refer to Technical Bulletin TEC-I-002, "Recommended Safety, Health and Environmental Guidelines" and to the Flint Hills Resources Material Safety Data Sheet for product code "Grade 54" name "Expandable Polystyrene (EPS),"** a copy of which is provided with the first shipment or upon request. Printed, Fax, or Electronic File copies of individual SDS may be requested by contacting our Customer Service representatives, Mon – Fri 8:00 AM to 5:00 PM EST, at 1-800-972-1010 or by going to our website, [www.fhr.com](http://www.fhr.com).

## V. EXPANDABLE POLYSTYRENE MANUFACTURING LOCATIONS

Peru, Illinois

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