

ELFOAM[®] P400

POLYISOCYANURATE FOAM

October 2024

Product Description

ELFOAM P400 is a 4.0 lb/ft³ (64 kg/m³), rigid, unfaced, closed cell polyisocyanurate foam supplied as blocks, sheets and fabricated shapes for a variety of insulation, core material and carving applications. Polyisocyanurate foam (polyiso) is similar to polyurethane foam but offers greater dimensional stability over a wider service temperature range.

ELFOAM P400 is manufactured in bunstock form 21" (53 cm) thick; 48" (122cm) wide; and 96" (244cm) long. Cut sheets are offered in thicknesses from 1/8" to 8" (.32cm to 20cm) in 1/32" (.08cm) increments. Custom sizes and fabricated parts up to 21" (53cm) thick, 48" (122cm) wide and 192" (488cm) in length are available for customers wanting to eliminate in-house cutting, handling, and scrap disposal. Contact the Indianapolis Sales Office for additional information.

Design Considerations

ELFOAM P400 is designed for use in environments where temperatures range from -297 to +300°F (-183 to +149°C). However, in non-laminated applications where temperatures exceed 140°F (60°C) and/or have relative humidity above 70% as well as in processes where frequent and severe thermal cycling occurs, allowances for foam dimensional changes may need to be incorporated into engineering design. Regardless of operating conditions, a qualified design engineer should review all foam applications.

ELFOAM, like all cellular plastics, will degrade with prolonged exposure to sunlight. To prevent such degradation, foam materials should be covered. Other barriers to protect exposed foam surfaces from the elements and to meet applicable fire and safety regulations may also be required.

Environmental Data

ELFOAM P400 is specifically formulated to provide excellent physical properties without the use of chlorofluorocarbon (CFC) or hydrochlorofluorocarbon (HCFC) blowing agents. In compliance with the Montreal Protocol and the Clean Air Act, ELFOAM P400 is manufactured with hydrocarbon blowing agents which have no ozone depletion or global warming potential.

Applications

Typical products incorporating ELFOAM P400 include:

- Laminated wall and roof panels
- Truck/Trailer bodies, shipping containers and railcars
- FRP panels, tanks and shelters
- Pultrusion and infusion processes
- Pipe, tank and vessel insulation
- Plugs, patterns and carved products

Note that application testing is often required to determine suitability of the foam for a specific application. Potential users should perform pertinent testing to determine the suitability of the product for the intended application. Final determination of fitness of the product for any particular use is the responsibility of the buyer.

Compliances and Approvals

ELFOAM P400 meets industry standards, specifications, regulations and technical guidelines put forth by numerous commercial, federal and military entities including ASTM International, Underwriters Laboratories, and the US Departments of Transportation and Defense. Contact the Indianapolis Sales Office for additional information.

Safety

All persons who work with ELFOAM products should follow proper handling procedures. The ELFOAM Safety Data Sheet (SDS) contains information about proper handling, storage and use of this material. A copy of this document may be downloaded at elliottfoam.com or obtained by calling the Indianapolis Sales Office.

Availability

All ELFOAM product support, samples, pricing and orders are coordinated by the Indianapolis Sales Office. Please call **(800) 545-1213** for details. ELFOAM product data sheets may also be downloaded at elliottfoam.com.

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Manufacturer/Fabricator of ELFOAM Polyiso & Polyurethane Products

Product Description

ELFOAM P400 is a rigid, closed cell, preformed, unfaced, polyisocyanurate foam material (polyiso). This CFC and HCFC free product provides outstanding physical properties in applications having a service temperature between -297 and +300°F (-183 and +149°C). ELFOAM P400 is yellow in color and is available in blocks, sheets and fabricated shapes.

| Physical Properties ^{1, 2} | ASTM Method | Typical Values ³ | |
|--|-------------|--|--|
| | | English | Metric |
| Density | D1622 | 4.0 lb/ft ³ | 64.0 kg/m ³ |
| Thermal Conductivity, k-factor ⁴ Initial at 75°F (24°C) Aged 10 days at 158°F (70°C) | C518 | 0.170 (BTUin)/(hrft ² F) 0.185 (BTUin)/(hrft ² F) | 0.025 W/(m°C) 0.027 W/(m°C) |
| Thermal Conductivity, R-value per inch ⁴ Initial at 75°F (24°C) Aged 10 days at 158°F (70°C) | C518 | 5.9 (hrft ² F)/BTU 5.4 (hrft ² F)/BTU | 1.04 (m ² C)/W 0.96 (m ² C)/W |
| Compressive Strength / Modulus Parallel to Rise Perpendicular to Rise ⁵ | D1621 | 85 / 2,100 lb/in ² 62 / 1,400 lb/in ² | 585 / 14,469 kPa 427 / 9,646 kPa |
| Shear Strength / Modulus Parallel to Rise Perpendicular to Rise ⁵ | C273 | 55 / 850 lb/in ² 50 / 750 lb/in ² | 379 / 5,856 kPa 344 / 5,167 kPa |
| Tensile Strength / Modulus Parallel to Rise Perpendicular to Rise ⁵ | D1623 | 80 / 2,700 lb/in ² 59 / 1,560 lb/in ² | 551 / 18,603 kPa 406 / 10,748 kPa |
| Flexural Strength / Modulus Parallel to Rise Perpendicular to Rise ⁵ | C203 | 119 / 2,872 lb/in ² 80 / 1,809 lb/in ² | 820 / 19,788 kPa 551 / 12,464 kPa |
| Closed Cell Content (by volume) | D6226 | | 95% |
| Water Absorption (by volume) | C272 | | 0.5% |
| Water Vapor Transmission | E96 | 2.0 permsin | 2.9 ng/Pasm |
| Dimensional Stability ⁶ (length / volume change) +158°F(70°C), 97 ± 3% relativity humidity, 14 days -40°F(-40°C), ambient relativity humidity, 14 days +212°F(100°C), ambient relative humidity, 14 days | D2126 | | +1.1 / +2.3% +0.1 / -0.1% +0.2 / +0.0% |
| Coefficient of Linear Thermal Expansion 0 to +250°F (-17 to +121°C) | E228 | 35 x 10 ⁻⁶ in/in°F | 63 x 10 ⁻⁶ mm/mm°C |
| Hot Surface Performance at 300°F (149°C) | C411 | | Pass |
| Surface Burning Characteristics ⁷ Flame Spread, thicknesses up to 4 in (10.2 cm) Smoke Developed, thicknesses up to 4 in (10.2 cm) | E84 | | 25 <450 |
| Polyisocyanurate Insulation Requirements | C591 | | Grade 2, Type V compliant |

1 Data shown are typical values obtained from representative production samples. For specific property ranges, consult the Indianapolis Sales Office.
 2 All properties measured at 73 ± 4°F (23 ± 2°C) unless otherwise indicated.
 3 To be used only as a guide for design engineering purposes. Potential user is responsible for performing pertinent tests required to determine product suitability for the intended application.
 4 k-factors and R-values vary with age and use conditions. Contact Indianapolis Sales Office for values at other mean temperatures.
 5 Represents the lowest typical value across all axes related to Perpendicular to Rise performance. Contact the Indianapolis Sales Office for additional information.
 6 Frequent and severe thermal cycling can produce dimensional changes significantly greater than those stated here. Special design consideration must be made in applications that cycle frequently.
 7 Published data is not intended to reflect hazards represented by this or any other material under actual fire conditions. This material is combustible when exposed to large fire sources.
 For more information, contact the Indianapolis Sales Office.

NOTE: Because use conditions and applicable laws may differ from one location to another and may change with time, Buyer is responsible for determining whether the product and information in this document are appropriate for Buyer's use and for ensuring that Buyer's related products, workplace and disposal practices are in compliance with applicable laws and other government enactments. Elliott Company of Indianapolis, Inc. assumes no obligation or liability for the information in this document. NO WARRANTIES ARE GIVEN: ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED.

FOR MORE INFORMATION OR PRODUCT SAMPLES CALL

800-545-1213
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