

Petrothene®

LR 7340

High Density Polyethylene
Blow Molding Grade

Melt Index 0.38 Density 0.953

Applications

The PETROTHENE LR 7340 series of polyethylene resins exhibits good stiffness and environmental stress crack resistance. Typical applications include bottles for household chemicals.

Certification

The base resin LR 7340 meets the requirements of the Food and Drug Administration regulation 21 CFR 177.1520. This regulation allows the use of this olefin polymer in "...articles or components of articles intended for use in contact with food..." Specific limitations or conditions of use may apply. Contact your Equistar sales representative for more information about the use of specific products for specific applications.

Processing Techniques

Specific recommendations for processing LR 7340 can only be made when the processing conditions, equipment and end use are known. For further suggestions, please contact your Equistar sales representative.

Physical Properties

| Property | Nominal Value | Units | ASTM Test Method |
|--|---------------|-----------|------------------|
| Melt Index | 0.38 | g/10 min | D 1238 |
| Density | 0.953 | g/cc | D 1505 |
| Tensile Strength @ Yield | 4,000 | psi | D 638 |
| Elongation @ Break | >500 | % | D 638 |
| Flexural Modulus | 176,000 | psi | D 790 |
| Tensile Impact | 131 | ft-lb/in. | D 1822 |
| Low Temperature Brittleness, F ₅₀ | <-76 | °C | D 746 |
| Heat Deflection Temperature @ 66 psi | 75 | °C | D 648 |
| Vicat Softening Point | 127 | °C | D 1525 |
| Hardness, Shore D | 67 | | D 2240 |
| Environmental Stress Crack Resistance, F ₅₀ | 25 | hrs | D 1693 |
| | >500 | hrs | D 2561 |

| Product | LR 7340-01 | LR 7340-11 | LR 7340-45 |
|----------|------------|------------|------------|
| Antistat | None | High | None |
| Stearate | None | None | High |

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More detailed safety and disposal information on our products is contained in the Material Safety Data Sheet (MSDS). All users of our products are urged to retain and use the MSDS. A MSDS is automatically distributed upon purchase/order execution. You may request an advance or replacement copy by calling our MSDS Hotline at (800) 700-0946.

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6739-10/0201



EQUISTAR

Petrothene

LR734045

High Density Polyethylene

Blow Molding Grade

Melt Index 0.38 Density 0.953

Applications

Petrothene LR734045 is a high density polyethylene resin that exhibits good stiffness and environmental stress crack resistance. This product contains stearate as a core rod release for the injection-blow molding process. Typical applications include bottles for household chemicals.

Regulatory Status

LR734045 meets the requirements of the Food and Drug Administration regulation 21 CFR 177.1520. This regulation allows the use of this olefin polymer in "...articles or components of articles intended for use in contact with food..." Specific limitations or conditions of use may apply. Contact your Equistar sales representative for more information about the use of specific products for specific applications.

Processing Techniques

Specific recommendations for processing LR734045 can only be made when the processing conditions, equipment and end use are known. For further suggestions, please contact your Equistar sales representative.

Typical Properties

| Property | Nominal Value | Units | ASTM Test Method |
|--|---------------|-----------|---------------------|
| Melt Index | 0.38 | g/10 min | D 1238 |
| Density | 0.953 | g/cc | D 1505 |
| Tensile Strength @ Yield | 4,000 | psi | D 638 |
| Elongation @ Break | >500 | % | D 638 |
| Flexural Modulus | 176,000 | psi | D 790 |
| Tensile Impact | 131 | ft-lb/in. | D 1822 |
| Low Temperature Brittleness, F ₅₀ | <-76 | °C | D 746 |
| Heat Deflection Temperature @ 66 psi | 75 | °C | D 648 |
| Vicat Softening Point | 127 | °C | D 1525 |
| Hardness, Shore D | 67 | | D 2240 |
| Environmental Stress Crack Resistance, F ₅₀ | 25 | hrs | D 1693 ¹ |
| | >500 | hrs | D 2561 |

¹ 100% Igepal® CO-630, 50°C

® Igepal is a registered trademark of Rhône-Poulenc Co., Inc.

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Lyondell Chemical Company
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P.O. Box 2583
Houston, Texas 77252-2583
800.615.8999
<http://www.lyondell.com>

HPB-0354 High Density Polyethylene

MELT - 0.35

DENSITY - 0.954

HPB-0354 is a certified prime grade Phillips Process BLOW MOLDING copolymer designed to meet end-use requirements of containers for packaging of Household Industrial Chemicals (HIC). **HPB-0354** features medium swell, easy and consistent processability in conventional continuous or intermittent extrusion equipment, and excellent balance of bottle ESCR, impact strength and stiffness. **HPB-0354** recommended processing temperature is 160 to 180°C, with mold at 10 to 30°C. **HPB-0354** complies with FDA regulation 21CFR 177.1520 (c) 3.1 (a) + 3.2(a) and with most international regulations concerning the use of Polyethylene in contact with food articles. **HPB-0354** has a mold temperature of 50.0 to 86.0°F with melt temperature of 320 to 356 °F.

Features:

- Detergent resistant
- Good chemical resistance
- Good processability
- High density
- High ESCR
- High impact resistance
- High stiffness

Typical Applications:

- Medium size containers for detergents, bleach, antifreeze, and motor oil
- Ice chests

| PROPERTIES | ASTM | UNIT | VALUES |
|--|-------|-----------------------|--------|
| PHYSICAL | | | |
| Density | D1505 | g/cm ³ | 0.954 |
| Melt Flow Rate (190°C, 2.16kg) | D1238 | g/10 min | 0.35 |
| Melt Flow Rate (190°C, 21.6kg) | D1238 | g/10 min | 30 |
| Env. Stress Cracking Resistance (122°F, F50) | D1693 | hr | 35.0 |
| MECHANICAL | | | |
| Tensile Strength (Yield) Comp. Mold | D638 | psi | 3900 |
| Tensile Elongation (Break) Comp. Mold | D638 | % | >700 |
| Flexural Modulus - 1% Secant Comp. Mold | D790 | psi | 195k |
| Tensile Impact Strength (Comp. Mold) | D1822 | ft-lb/in ² | 98.0 |
| HDT | D648 | °F | 165 |
| Brittleness Temperature | D746 | °F | < -130 |
| Vicat Softening Temperature | D1525 | °F | 261 |

For more information and technical assistance contact:

Chevron Phillips Chemical Company LP
P.O. Box 4910
The Woodlands, TX 77387-4910
800.231.1212



PREMIUM EXTRUSION AND RIGID PACKAGING RESINS

Marlex® HHM 5502BN

HIGH DENSITY POLYETHYLENE

This high molecular weight, hexene copolymer is tailored for lightweight blow molded containers that:

- Require excellent stiffness
- Require exceptional processability
- Are durable and recyclable for sustainability

Typical blow molded applications for HHM 5502BN include:

- Ice chests and coolers
- Household and industrial chemical containers
- Food packaging
- Pharmaceuticals

This resin meets these specifications:

- ASTM D4976 - PE 235
- FDA 21 CFR 177.1520(c) 3.2a, use conditions B through H per 21 CFR 176.170(c)
- Listed in the Drug Master File

| NOMINAL PHYSICAL PROPERTIES ⁽¹⁾ | English | SI | Method |
|---|-------------|-------------------------|------------|
| Density | --- | 0.955 g/cm ³ | ASTM D1505 |
| Melt Index, 190/2.16 | --- | 0.35 g/10 min | ASTM D1238 |
| Tensile Strength at Yield, 2 in/min, Type IV bar | 4,000 psi | 27 MPa | ASTM D638 |
| Elongation at Break, 2 in/min, Type IV bar | 600% | 600% | ASTM D638 |
| Flexural Modulus, Tangent - 16:1 span:depth, 0.5 in/min | 200,000 psi | 1,370 MPa | ASTM D790 |
| ESCR, Condition B (100% Igepal), F ₅₀ | 35 h | 35 h | ASTM D1693 |
| Brittleness Temperature, Type A, Type I specimen | <-103°F | <-75°C | ASTM D746 |

1. The nominal properties reported herein are typical of the product, but do not reflect normal testing variance and therefore should not be used for specification purposes. Values are rounded. The physical properties were determined on compression molded specimens that were prepared in accordance with Procedure C of ASTM D4703, Annex A1.

MSDS #240370

Revision Date May, 2007

Another quality product from



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For more information and technical assistance contact:

Chevron Phillips Chemical Company LP
P.O. Box 4910
The Woodlands, TX 77387-4910
800.231.1212



PREMIUM EXTRUSION AND RIGID PACKAGING RESINS

Marlex® HHM 5502BZ

HIGH DENSITY POLYETHYLENE

This high molecular weight, hexene copolymer with zinc stearate is tailored for lightweight blow molded containers that require:

- Consistent mold-release properties
- Excellent stiffness
- Exceptional processability

Typical applications for HHM 5502BZ include:

- Pharmaceuticals
- Injection blow molding

This resin meets these specifications:

- ASTM D4976 - PE 235
- FDA 21 CFR 177.1520(c) 3.2a, use conditions B through H per 21 CFR 176.170(c)
- Listed in the Drug Master File

| NOMINAL PHYSICAL PROPERTIES ⁽¹⁾ | English | SI | Method |
|---|-------------|-------------------------|------------|
| Density | --- | 0.955 g/cm ³ | ASTM D1505 |
| Melt Index, 190/2.16 | --- | 0.35 g/10 min | ASTM D1238 |
| Tensile Strength at Yield, 2 in/min, Type IV bar | 4,000 psi | 27 MPa | ASTM D638 |
| Elongation at Break, 2 in/min, Type IV bar | 600% | 600% | ASTM D638 |
| Flexural Modulus, Tangent - 16:1 span:depth, 0.5 in/min | 210,000 psi | 1,440 MPa | ASTM D790 |
| ESCR, Condition B (100% Igepal), F ₅₀ | 35 h | 35 h | ASTM D1693 |
| Brittleness Temperature, Type A, Type I specimen | <-103°F | <-75°C | ASTM D746 |

1. The nominal properties reported herein are typical of the product, but do not reflect normal testing variance and therefore should not be used for specification purposes. Values are rounded. The physical properties were determined on compression molded specimens that were prepared in accordance with Procedure C of ASTM D4703, Annex A1.

MSDS #240370

Revision Date April, 2004

Another quality product from



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B53-35H-100 Polyethylene Copolymer

B53-35H-100 is a high density polyethylene copolymer developed for injection blow molding. Zinc Stearate is incorporated in the formulation as a release agent. It is recommended for use in applications which require a combination of high top load strength and good environmental stress crack resistance (ESCR). This material meets the Food and Drug Administration requirements of 21CFR 177.1520.

Typical Properties¹

| | Values | | ASTM Method |
|---------------------------------------|---------------|----------------------|-------------|
| | English Units | SI Units | |
| Resin | | | |
| Density | — | 0.955 g/cc | D4883 |
| Melt Index 190°C/2.16 kg | — | 0.33 g/10 min | D1238 |
| Compression Molded Samples | | | |
| Tensile Strength (2 in/min) | | | D638 |
| @ Yield | 4,000 psi | 27 MPa | |
| @ Break | 2,500 psi | 17 MPa | |
| Elongation (2 in/min) | | | D638 |
| @ Yield | 9% | 9% | |
| @ Break | >600% | >600% | |
| Flexural Modulus | | | D790A |
| Tangent Method | 210,000 psi | 1,450 MPa | |
| 2% Secant Method | 150,000 psi | 1,035 MPa | |
| Notched Izod Impact Strength | 3.2 ft-lbf/in | 16 kJ/m ² | D256 |
| Hardness (Shore D) | 64 | 64 | D2240 |
| Vicat Softening Point | 261 F | 127 C | D1525 |
| Brittleness Temperature | <-103 F | <-75 C | D746 |
| Heat Deflection Temperature | | | D648 |
| @ 66 psi (455 kPa) | 167 F | 75 C | |
| @ 264 psi (1,820 kPa) | 118 F | 48 C | |
| Environmental Stress Crack Resistance | | | D1693 |
| Condition B, 100% Igepal F50 (hrs.) | 30 hrs | 30 hrs | |

¹ Properties will vary and are not to be used for specification purposes.

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INEOS
Olefins & Polymers USA



B53-35H-100 Polyethylene Copolymer

Regulatory Information

The product and uses described herein may require global product registrations and notifications for chemical inventory listings, or for use in food contact or medical devices. For further information, call + 1-800-527-5419.

Health and Safety Information

The product described herein may require precautions in handling and use because of toxicity, flammability, or other consideration. The Material Safety Data Sheet (MSDS) contains the available product health and safety information for this material and can be found at www.ineos-op.com. Before using any material, a customer is advised to consult the MSDS for the product under consideration for use.

The Material Safety Data Sheet for this product contains shipping descriptions and should be consulted, before transportation, as a reference in determining the proper shipping description. If the material shipped by INEOS is altered or modified, different shipping descriptions may apply and the MSDS of the original material should not be used.

For additional information, samples, pricing and availability, please contact:

INEOS Olefins & Polymers, USA

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INEOS
Olefins & Polymers USA



POLYBATCH® COLOR White LL8425

POLYBATCH® LL8425 is an advanced performance white color concentrate containing 45% TiO₂ based in LLDPE. This product has been specifically engineered to provide improved resistance to phenolic yellowing/pinking, while optimizing whiteness and thermal stability. POLYBATCH® LL8425 AP also provides optimum dispersion and opacity with excellent letdown mixing. POLYBATCH® LL8425 AP is recommended for use in extrusion film and sheet as well as injection molding applications.

| Properties | Standard | Parameters | Unit |
|--------------------------|------------|-----------------|--------------|
| Appearance | | | |
| Pellet Count | | 30 | pellets/gram |
| Chemical | | | |
| Moisture (Water Content) | | 1000 max | ppm |
| Total Ash | | 70 | % |
| General | | | |
| Melt Flow Rate | ASTM D1238 | 190°C/2.16kg 14 | g/10 minutes |
| Specific Gravity | | 1.93 | |

Reported values pertain only to natural resins: pigmenting may vary properties. Pellet cut, size, color, and other properties may vary depending on the manufacturing location.

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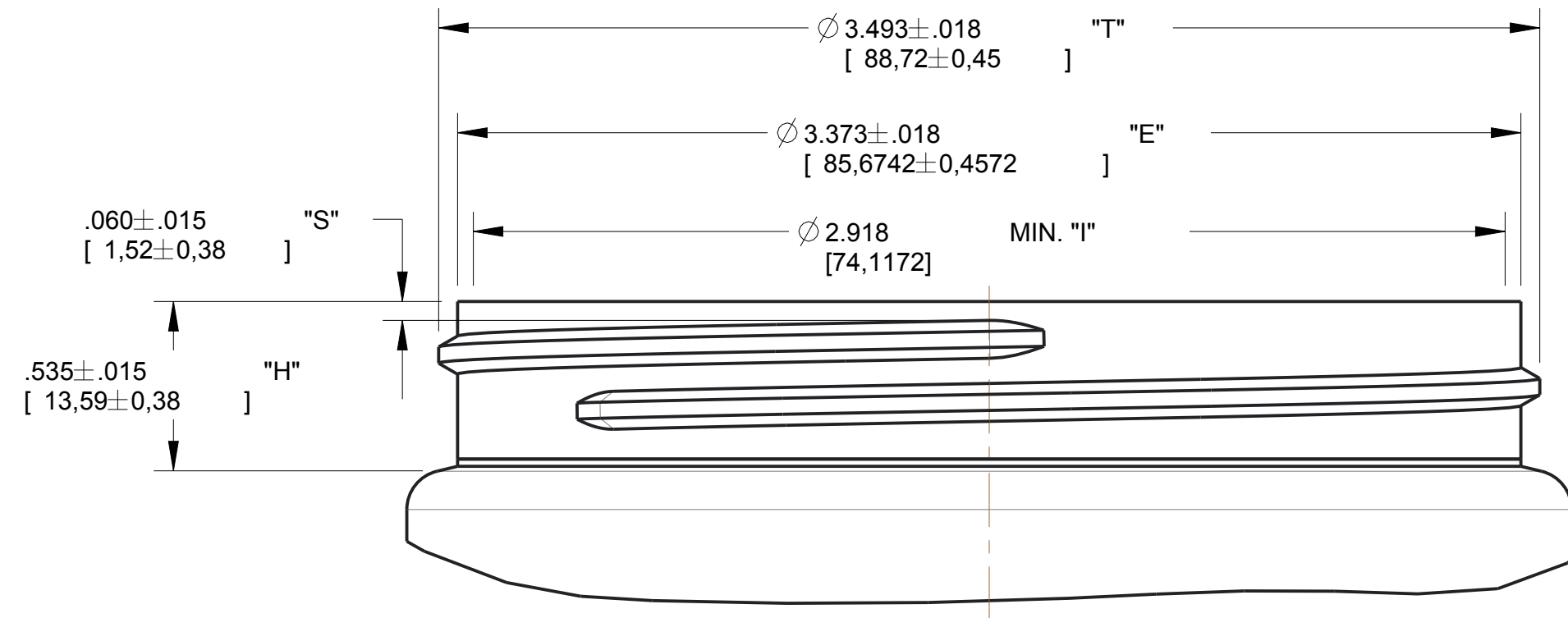
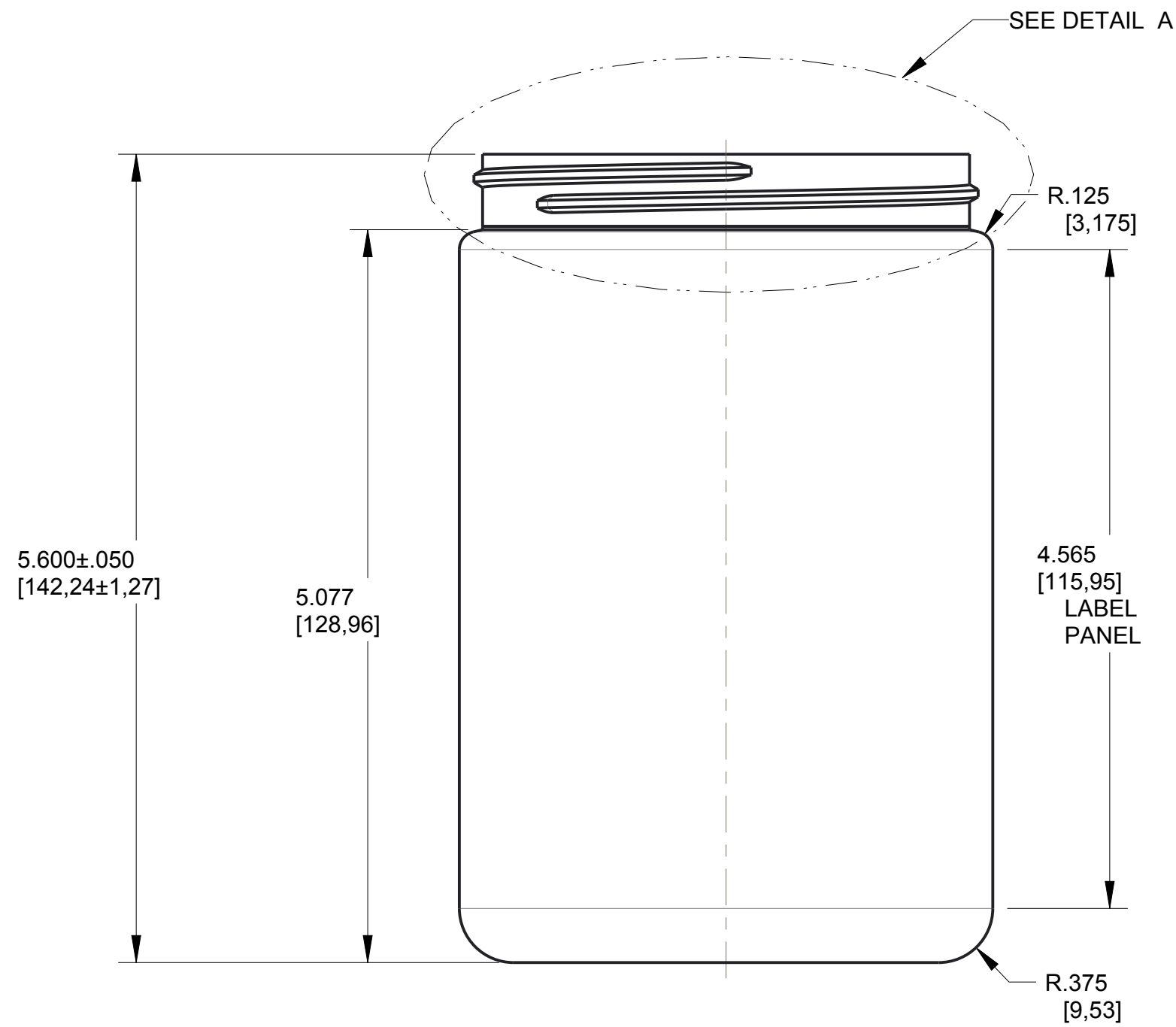
POLYBATCH® COLOR White LL8425

- Regulatory Info:** POLYBATCH® LL8425 is made only from FDA recognized materials regulated according to 21 CFR 175.300, 177.1520(c), 178.2010, 178.3297, and 184.1191.
- Storage:** Although no known shelf life has been determined for this concentrate, A. Schulman recommends that inventories are rotated and used within 12 months of purchase for optimum performance.
- Packaging:** POLYBATCH® LL8425 is typically packaged in polyethylene lined gaylords or in polyethylene bags.
- Safety:** POLYBATCH® LL8425 is not known to contain any hazardous materials as outlined by current OSHA regulations. Please refer to the MSDS for additional safety information.

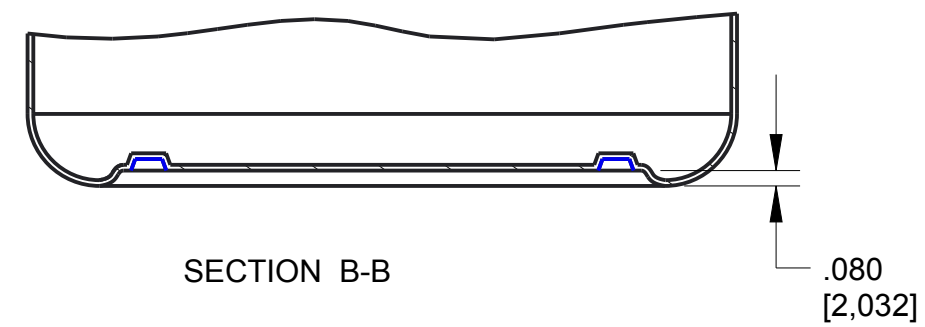
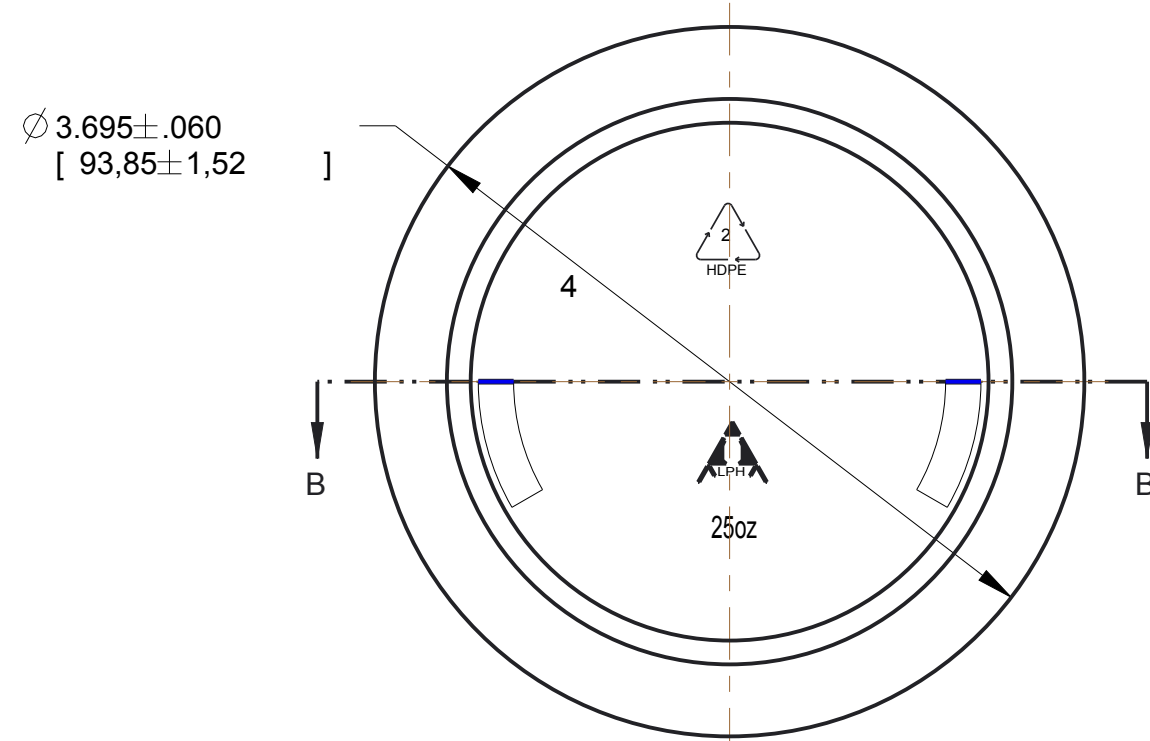
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| REV | E.C.N. | DESCRIPTION | BY | DATE |
|-----|--------|---------------------------------------|-----|------------|
| A | | WEIGHT CHG. | SJ | 11-15-99 |
| B | | STD. PRINT FORMAT | SJ | 04-17-00 |
| C | | OVERFLOW VOLUME WAS 873.0cc | SJ | 10-23-03 |
| D | | DOC. CHANGE ONLY | SCT | 10-11-05 |
| E | | REVISE PU CONFIG. PER ATC JOB #1936 | | |
| F | | "E" TOLERANCE WAS .008 | JAZ | 26-JUNE-14 |
| G | 171 | WEIGHT WAS 485 2.0g & UPDATED DRAWING | JAZ | 23-AUG-17 |



DETAIL A
89-400 NECK FINISH
5 T.P.I., 1 THREAD TURN
SCALE 2/1



| | | | | |
|--|----------------|---|---------------|--|
| Alpha Packaging, Inc. | | DISCLAIMER: Alpha Packaging assumes no responsibility for form, fit and function of closures, accessories, and/or shelf life and compatability of intended contents with this bottle. | | |
| Specification General: | Min. Thk (in.) | Weight (g) | Overflow (mL) |  (314) 427-4300 / (800) 421-4772 |
| All measurements are in inches, [mm] | .015 | 50.0± 3.0g | 907.0± 15.0cc | |
| Base engraving is subject to change location & size. | | | | Scale: 1/1 NPD #: Drawn By: Date: |
| Tolerance where not shown: | NECK FINISH: | 89-400 | | 25 OZ. JAR-HDPE 89-400 CT, IBM 25J89 |
| Decimal ±0,05 [1,27] Angular ±1° | MATERIAL: | HDPE | | Approved By: Drawing Number: CGR 25JR2XX89L400 |