Polyethylene

Technical Information

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Polyethylene

Polyethylene is a highly durable material that provides exceptional engineering characteristics in applications where ease of cleaning, stability, impact, wear, UV and weather resistance is desirable.

Performance

Polyethylene is available with a wide array of engineering properties to provide toughness, ease of processing, shrinkage rates, chemical abrasion and impact resistance, low coefficients of friction, durability in the elements and near-zero moisture absorption. These properties make polyethylene an ideal material for many applications.

Grades of Polyethylene

Landscape Forms utilizes the following grades of polyethylene.

LLDPE – Linear Low Density Polyethylene is strong and flexible.

Landscape Forms Applications:
- Litter receptacle liners

LMDPE – Linear Medium Density Polyethylene has the best overall properties for rotational molded components used in Landscape Forms' products. They combine good stiffness and impact strength. They have a lower melting temperature making them desirable for rotationally molding.

Landscape Forms Applications:
- Planters
- Litter receptacle tops
- Litter receptacle liners
- Litter receptacle bodies
- Seating
- Bollard sleeves

HDPE – High Density Polyethylene has greater strength and higher tensile properties. It is the primary polyethylene used for milk, food and detergent containers which are recycled and used in Landscape Forms' Polysite® seat boards, Loll HDPE products, and Escofet Air products.

Landscape Forms Applications:
- Polysite® seat boards
- Loll collaboration products
- Escofet Air products

Note, when Loll HDPE is placed in FULL direct sun, testing has demonstrated that the following Loll colors have exhibited NO significant change of color over time: Black, Charcoal Grey, and Navy Blue. Testing has also indicated that the following HDPE colors have shown increased change of color over time: Apple Red and Leaf Green. Please note that the changing of color of the HDPE can occur at a different rate than the changing of color of the powdercoated aluminum paired with Loll partner products.

UHMWPE – Ultra-High Molecular Weight Polyethylene is a high-performance material. UHMWPE has the toughest, highest impact and lowest friction properties of any polyethylene. It machines very well. Pure UHMWPE cannot be injection molded unless it is alloyed with an injection moldable grade of polyethylene.

Landscape Forms Applications:
- Glides and bumpers
- Latch mechanisms

Processing Methods

Polyethylene is formed into components for Landscape Forms' products by the following processes:
- Rotational Molding
- Injection Molding
- Extrusion
- Machining

Colors

Landscape Forms publishes a color chart that includes our standard colors for rotationally molded polyethylene.

Color and Gloss Loss UV Protection

All Landscape Forms polyethylene components that are exposed to sunlight are protected with UV inhibitors and stabilizers or pigmented with substances that screen out or block UV rays.

Testing for color and gloss loss: ASTM D2565-99 Accelerated Xenon Arc exposure.

UL Flammability Rating

UL 94HB (Horizontal Burn)

Stain Resistance

Polyethylene is one of the most chemically inert thermoplastics, meaning it does not react with most chemicals and its near-zero water absorption gives polyethylene outstanding stain resistance properties.

Scuff Resistance

Polyethylene has engineering properties that give it excellent abrasion resistance; however it is not scuff proof. Care must be taken to avoid unnecessary abrasive contact of exposed surfaces (other than glides or surfaces intended for contact with the floor) with abrasive materials like stone, concrete, brick, etc. Scuff marks left by such abrasive materials are not covered under our product warranty.

Care and Maintenance

Landscape Forms' polyethylene surfaces may be cleaned by washing with mild detergent in lukewarm water using a soft cotton cloth. Rinse well with clean water and wipe dry with a soft cotton cloth. Cleaning agents such as Scrubbing Bubbles® or Claire® Germicidal Cleaner may be used, following manufacturer's instructions. Apply

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product and wipe dry with a clean soft cloth. If stronger cleaning agents become necessary, follow the manufacturer's directions taking precaution not to expose surfaces less durable than polyethylene to stronger cleaning agents.

Do not use abrasive materials like sandpaper, steel wool or scraping tools, etc. to remove foreign substances from the surfaces of polyethylene. They can disrupt the surface texture and alter the appearance.

Samples

To receive samples, contact Landscape Forms Sales/Service team at 800.521.2546.

Recycled Content

In many instances polyethylene can consist of 100% recycled content such as litter receptacle liners and Polysite® seat boards. However, depending on the processing method and part design, many products are not processed using recycled materials because the mixture of recycled materials is not homogenous enough to achieve optimal strength. All of Landscape Forms' polyethylene however can be recycled at the end of its service life.

Mechanical Properties

LMDPE – Linear Medium Density Polyethylene for rotationally molded components is the most widely used polyethylene for Landscape Forms' products. For specific properties of other grades of polyethylene, contact Landscape Forms.

Physical	Test Method	Unit	Nominal Value
Density	ASTM D1505	g/cm^3 (Lbs/in^3)	0.935 (.0338)
Melt Mass-Flow Rate (MFR) (190°C/2.16 kg)	ASTM D1238	g/10 min	7.00
Mechanical			
Tensile Strength @ Yield	ASTM D638	psi	2600
Tensile Stress at Yield	ISO 527-1, -2	psi	2610
Tensile Elongation @ Brk	ASTM D638	%	680
Tensile Strain at Break	ISO 527-1, -2	%	680
Flexural Modulus	ASTM D790	psi	80000
Harness			
Durometer Hardness (D Scale)	ASTM D2240		57
Shore Hardness (Shore D)	ISO 868		57
Thermal			
Vicat Softening Point	ASTM D1525 °F		244
Vicat Softening Temperature (A120 (120°C/h 10N))	ISO 306 °F		244