

POLYETHYLENE

Description

Polyethylenes are semi-crystalline materials with excellent chemical resistance, good fatigue and wear resistance and a wide range of properties. Polyethylenes are easy to distinguish from other plastics because they float in water. Polyethylenes provide good resistance to organic solvents, degreasing agents and electrolytic attack. Polyethylene is used more than any other thermoplastic polymer. There are a wide variety of grades and formulations available that have an equally wide range of properties.



Benefits

- Durability
- Easily fabricated
- Chemical resistance
- Abrasion resistance
- Good electrical properties
- Impact resistance
- Low coefficient of friction
- Moisture resistance

Applications

- Packaging
- Skid
- Plates
- Conveyer Systems
- Tanks
- Containers
- Truck liners

POLYETHYLENE GRADES

Low Density Polyethylene (LDPE)

This extruded material offers good corrosion resistance and low moisture permeability. It can be used in applications where corrosion resistance is important, but stiffness, high temperature, and structural strength are not. A highly flexible product, LDPE is used widely in orthopaedic products, or where mobility without stress fatigue is desired. LDPE is also frequently used in consumer packaging, bags, bottles, and liners.

Benefits

- Lightweight
- Formable
- Impact Resistant
- Good electrical properties
- Easily cleaned
- Easily Fabricated

Applications

- Chemical resistant tank and containers
- Food storage containers
- Laboratory equipment
- Corrosion resistant work surfaces
- Vacuum formed end caps and tops
- Moisture barrier

POLYETHYLENE GRADES

High Density Polyethylene (HDPE)

Representing the largest portion of the polyethylene applications, HDPE offers excellent impact resistance, light weight, low moisture absorption, and high tensile strength. HDPE is also non-toxic and non-staining and meets food processing.

Benefits

- Abrasion Resistant
- High impact resistance
- Low coefficient of friction
- Abrasion resistance
- Scratch and marki
- Chemical resistant
- Water and moisture resistant

Applications

- Food cutting boards
- Corrosion resistant covers
- Pipe flanges
- Radiation shielding
- Self-supporting containers
- Prosthetic devices

TYPICAL PROPERTIES OF POLYETHYLENE

TEST PROPERTY	TEST METHOD	MINIMUM VALUES				
Thickness (mm)	ASTM D 751/1593/5199	0.250	0.300	0.400	0.500	0.750
Density (g/cm ³)	ASTM D 792/1505	0.94	0.94	0.94	0.94	0.94
Tensile Properties (each direction) Strength at Break (kg/cm ²) (N/mm) width Strength at Yield (kg/cm ²) (N/mm) width Elongation at Break % Elongation at Yield %	ASTM D 638, TYPE IV DUMBELL, 2IMP Gauge lengths per Nsf Std.54	10 3 900 20	10 3 900 20	11 4 900 20	12 5 900 20	15 7 900 20
Tear Resistance, kg (N)	ASTM D 1004	10-20	10-20	20-50	50-80	80-150
Puncture Resistance, kg (N)	FTMS 1014 method 2065	50-100	50-100	100-150	150-250	200-350
Roll Width (approximate)		2.5-8M	2.5-8M	2.5-8M	2.5-8M	2.5-8M
Low Temp. Brittleness, F (°C)	ASTM D 746, Cond B	<-107(-77)	<-107(-77)	<-107(-77)	<-107(-77)	<-107(-77)
Carbon Black Dispersion	ASTM D 3015	A1/A2	A1/A2	A1/A2	A1/A2	A1/A2
Dimensional Stability (each direction), %	ASTM D 1204, 100C 1HR	±2	±2	±2	±2	±2
Melt Flow Index (g/10minutes)	ASTM D 1238, COND.190/2.16kg	≥1.0	≥1.0	≥1.0	≥1.0	≥1.0
Ozone resistance	ASTM D 1149, 7 DAYS 100PPM	No cracks				
Water Absorption, %wt. change	ASTM D 570	Max 0.1				
UV Resistance HP-OIT retained after 1.600h %	GRI-GM11 ASTM D5885	≥50	≥50	≥50	≥50	≥50
Surface		Both sides smooth				

BENEFITS

Durability
Easily fabricated
Chemical resistance
Abrasion resistance
Electrical properties
Impact resistance
Low coefficient of friction
Moisture resistance

APPLICATIONS

Tanks and containers
Food storage containers
Laboratory equipment
Disposable formed products
Surface structures
Vacuum formed end caps and tops
Moisture barrier