

DESCRIPTION

Apex Polymer Solutions High Density Polyethylene (HDPE) has excellent impact properties at very low temperatures. It has very good chemical resistance, and is easy to thermoform and fabricate. It has very good stiffness, being the most rigid of the Polyethylene range. It is particularly resistant to stress whitening when bent. Additional additives are added to this material to ensure that it has a V2 flame retardant rating and some UV protection. The UV is limited due to the V2 rating required.

APPLICATIONS

Automotive, industrial, construction, tanks, containers, handling trays, mass transit and low temperature applications.

KEY FEATURES

Certification/Approvals

The certification is available on request and must be specified during ordering.

Thermoforming

Excellent thermoforming ability.

Printing/Painting

Due to its high chemical resistance it needs to be corona treated or primed for ink adhesion. It is not recommended.

Conversion

Glueing: Hot - melt or PUR glue, corona treatment is recommended. Welding preferred option.

Cutting: Guillotine, Band-saw, Circular-Saw, Routing

Welding: Thermal, Ultrasonic and Hot Gas.

PRODUCT SPECIFICATIONS

Colour

Various Colours and colour matching.
Metro Grey Standard.

Thickness

1.5mm to 9mm

Finish

Leather Grain and a collection of embossed finishes.

Sheet Size Specifications

Gauge	Width
1.5 to 9mm	350-1850 mm

NB: Available sizes vary depending on gauge, colours, and order size, please ask confirmation to sales department.

TYPICAL PHYSICAL PROPERTIES*

Properties	Unit	Standard	Method	Value
Density #	g/cm ³	ISO 1183	-	0,98
Impact Notched	KJ/m ²	ISO 179	1eA at 23 °C	29
Tensile strength at Break	MPa	ISO 527	50 mm/min	23
Tensile Modulus	MPa	ISO 527	1 mm/min	>600
Elongation at Yield	%	ISO 527	50 mm/min	>10
Vicat Softening Poibt	°C	ISO 306	B50/oil	74
Heat Distortion Temp	°C	ISO 75	HDT/B 0,45 Mpa	70
Flaming Rating	Rating	UL94	2mm	V2

#The density quoted should only be used as a guide. This value can change depending upon the type and quantity of pigments or additives used.

PRODUCT AVAILABILITY

Fabrication

Compared to High Impact Polystyrene (HIPS), HDPE tends to require greater heating and cooling cycle times. It is also susceptible to distortion and shrinkage, therefore Vacuum forming equipment with good heating and vacuum control are recommended. HDPE has very low moisture absorption, and pre-drying is not normally required. HDPE has a particularly high shrinkage, and is known to have distortion problems. To reduce distortion issues the tool should be Aluminium, which is temperature controllable. Having a moat and sandblasting the tool will further improve processing. Typical mould temperature of 40-75°C, and the moulded article temperature should be below 80°C before removing from the mould. Mould shrinkage is typically 1.8 to 3.5%.

Fabrication

It can be facricated using standard plastic methods of fixing and machining. Sheet can be cut with a band/circular saw, and drilled using standard metal working tools. HDPE can be riveted, welded and punched.

Adhesives: Polyethylene belongs to the group of high-polymer paraffins. This group is chemically slow-acting and possesses a low surface energy, which prevents the moistening of the surface with a substrate, which is a prerequisite for any adhesion. For By corona treating the surface, treating it with a primer or dipping it in a chromium sulphuric acid bath, contact adhesives (PUR, synth. Rubber) or two-component adhesives (EP, PUR) can be used.

Welding: HDPE can also be welded. Usual method are hot gas welding (warm air temp 300 - 350 °C) and hot plate welding (weld butt temp 190 - 210 °C). High frequency welding is not possible.

Cleaning and Maintenance

Typical detergents and soaps dissolved in warm water can be used to effectively clean surface contamination from the surface. For the more stubborn marks organic solvents such as isopropyl alcohol and n-heptane will be more effective.

UV Resistance

In outdoor or strong UV light conditions, HDPE can become brittle in a matter of months. Black pigmentation will improve UV resistance. The addition of UV stabiliser additives will significantly improve longevity. The UV additives and the Flame Retardant additives do counter act each other. The material does have limited UV additives to improve lifespan.

#Please contact the sales office to discuss any further requirements.

CHEMICAL RESISTANCE

Chemical resistance is influenced by many factors, including concentration, temperature, exposure time and material stress. Therefore the data below should only be used as a guide.

Reagent	Chemical Resistance	Reagent	Chemical Resistance
Acetone	Very Good	Beer	Excellent
Acid - weak	Excellent	Brake Fluid	Very Good
Acid - strong	Very Good	Coffee	Excellent
Alcohol	Very Good	Detergent	Excellent
Anti-freeze (glycol free)	Excellent	Diesel	Good
Base - weak	Excellent	Foodstuffs	Excellent
Base - strong	Good	Lubrication Oil	Good
Battery Acid	Very Good	Petrol	Good

***NOTE** The information contained in this leaflet is based on our present technical knowledge and experience. In view of the large number of factors that may influence the processing and use of our products, the information does not relieve the processors and manufacturers of the need to carry out their own tests and experiments. Our information does not constitute a legally binding assurance of product availability, of properties or of a suitability for a particular end use. Patent rights that may exist must be duly observed.

ADDITIONAL INFORMATION

Apex® Polymer Solutions (Pty) Ltd*

Website: www.apexpolymers.co.za

Tel: 087 562 9800

Email: info@apexpolymers.co.za

**Previously trading as Perspex SA*