

City Plastics Pty Ltd
61 East Street
Brompton 5007
South Australia

Ph: (+61) 8, 8346 6500

Fax: (+61) 8, 8346 6711

Email: info@cityplastics.com.au

www.cityplastics.com.au

ABN 20 101 181 793

ACN 101 181 793

- Sheet Plastics
- Cut to size & shape
- CNC Router cutting
- Fabrication
- Vacuum Forming
- Boat Screens & windows
- Signs & Displays
- Engineering Plastics
- Ecoscreen Plastic Lattice
- C/S Acrovyn
- Bld/Lic RL155051

updated 19/2/08

POLYETHYLENE TECHNICAL DATA AND INFORMATION SHEET

Polyethylene is used more than any other thermoplastic polymer. There is a wide variety of grades and formulations available that have an equally wide range of properties. In general, the outstanding characteristics of polyethylene are:

Toughness, Ease of processing, Chemical resistance, Abrasion resistance, Electrical properties, Impact resistance, Low coefficient of friction, near-zero moisture absorption

The three most commonly used grades of polyethylene are: Low Density, High Density and Ultra high molecular weight.

LOW DENSITY POLYETHYLENE (LDPE)

LDPE, was the first of the polyethylene's to be developed. It is a corrosion resistant, low density extruded material that provides low moisture permeability. LDPE has a fairly low working temperature, soft surface and low tensile strength. It is an excellent material where corrosion resistance is an important factor, but stiffness, high temperature and structural strength are not important considerations.

Features

Lightweight, Formable, Impact Resistant, Excellent Electrical Properties, Machinable, Weldable.

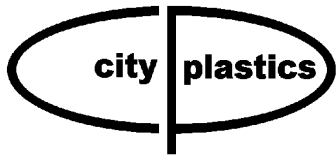
Fabrication

LDPE can be fabricated using the following techniques.

Hot gas welded, Fusion and butt welded, Ultra-sonic sealed, Die cut, Vacuum formed Thermo-formed, Machined with wood or metal working tools.

Applications

Chemical resistant tank and containers, Food storage containers, Laboratory equipment Disposable Thermo-formed products, Corrosion resistant work surfaces, Vacuum formed end caps and tops, Moisture barriers.



61 East Street
Brompton 5007
South Australia
Ph: (+61) 8, 8346 6500
Fax: (+61) 8, 8346 6711

HIGH DENSITY POLYETHYLENE (HDPE)

HDPE is more rigid and harder than lower density materials. It also has a higher tensile strength, four times that of low density polyethylene, and it is three times better in compressive strength. HDPE meets FDA requirements for direct food contact applications. It also is accepted by USDA, NSF and the Canadian Department of Agriculture.

Features

Abrasion Resistant

The extremely high molecular weight of HDPE combined with its very low coefficient of friction provides an excellent abrasion resistant product preventing gouging, scuffing and scraping.

Exceptional Impact Strength

HDPE is one of the highest impact resistant thermoplastics available and maintains excellent machinability and self-lubricating characteristics. Properties are maintained even at extremely low temperatures.

Chemical Resistant

HDPE has very good chemical resistance of corrosives as well as stress cracking resistance (with the exception of strong oxidizing acids at elevated temperatures). Certain hydrocarbons cause only a light surface swelling at moderate temperature.

Water Resistant

Moisture and water (including saltwater) have no effect on HDPE. It can be used in fresh and salt water immersion applications.

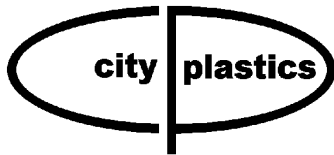
Fabrication

HDPE can be fabricated using the following techniques:

Hot gas welded, Fusion and butt welded, Ultra-sonic sealed, Die cut, Machined with wood or metal working tools, Vacuum formed, Thermo-formed

HIGH DENSITY POLYETHYLENE (HDPE) APPLICATIONS

Food cutting boards, Corrosion resistant wall coverings, Pipe flanges, Lavatory partitions
Man-hole covers in Chemical Plants, Radiation shielding, self supporting containers
Prosthetic devices



61 East Street
 Brompton 5007
 South Australia
 Ph: (+61) 8, 8346 6500
 Fax: (+61) 8, 8346 6711

Index to types of Polyethylene's listed below

HDPE 300 Black, Natural
 HMWPE 500 Natural
 UHMWPE 7000 Natural
 Ultra UHMWPE Green
 UHMWPE, Static Reduced 7000SR Black

Property Comparison Table for Polyethylene's

| Plastic Type: | Polyethylene | | | | |
|-----------------------------------------------------------------------------|---------------------|-------------|--------------------|---------------------|---------------------|
| | 7000 | Ultra | 7000SR | 500 | 300 |
| Property | | | | | |
| Specific Gravity g/cm ³ | 0.93 | 0.93 | 0.95 | 0.952 | 0.945 |
| Min/Max Service Temp in Air °C | -260 +90 | -260 +90 | -200 +90 | -100 +80 | -50 +80 |
| Tensile Strength Yield MPa | >20 | >20 | >20 | 28 | 23 |
| Tensile Strength Break MPa | >40 | >30 | >30 | 36 | 32 |
| Impact Resistance DIN 5305 Notched Impact Strength MJ/mm ² | >100 | No Break | - | >20 | - |
| Hardness Shore D | 61 | 63 | 63 | 64 | 63 |
| Coefficient of Thermal Expansion mm/(mmxK)X10 ⁻⁶ | 200 | 200 | 200 | 200 | 200 |
| Dielectric Strength KV/mm | 45 | 45 | - | 150 | 75 |
| Surface Resistivity Ohms | >1X10 ¹⁴ | - | >1X10 ⁸ | >1X10 ¹⁵ | >1X10 ¹⁵ |
| Relative Abrasion Loss by Sand Slurry compared to PE 7000=90 | 90 | 80 | 90 | 290 | 335 |

These values are representative of those obtained under standard ASTM conditions and should not be used to design parts which function under different conditions