

## General Information

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|--------------------------------|---|
| <b>Chemical Designation:</b>   | <i>HDPE is an acronym for High Density Polyethylene. Most commonly referred to as HDPE. It is famous for its chemical resistance, toughness, and low cost. It is also FDA, USDA and NSF compliant. It's natural color is white, but is available in black and other colors at special request. Typical applications include tanks, vessels. Food cutting boards, light duty guides and rails. Not typically used in bearing applications (As UHMW would).</i> |
| <i>POM (Polyoxymethylene)</i>  |   |
| <b>Fillers:</b>                | <i>HDPE is easily cut and (plastic) welded into custom and standard boxes and tanks for chemical storage and transport. HDPE is easily machined into custom components with standard metal working equipment, however, it has a high coefficient of thermal expansion making it difficult to hold close tolerance dimensions. Its main attributes are impact and chemical resistance.</i>   |
| <i>Unfilled</i>                |   |
| <b>Color:</b>                  |   |
| <i>White (Opaque) or Black</i> | <i>Ease of manufacturing custom components and its low cost makes HDPE a great choice for many vessel, and enclosure applications.</i>  |
| <b>Specific Gravity:</b>       |   |
| 1.41                           |   |

## Technical Information

| Specification   | Test   | Value      | Units                   |
|---|--|------------|-------------------------|
| Specific Gravity, 73°F                                | D792   | .95        | gm/cm3                  |
| Tensile Strength @ Yield, 73°F                        | D638   | 4,000      | psi                     |
| Tensile Modulus of Elasticity, 73°F                   | D638   | 120,000    | psi                     |
| Tensile Elongation (at break), 73°F                   | D638   | 600        | %                       |
| Flexural Strength, 73°F                               | D790   | 210,000    | psi                     |
| Flexural Modulus of Elasticity                        | D790   |            | psi                     |
| Shear Strength, 73°F                                  | D732   |            | psi                     |
| Compressive Strength – Ultimate                       |  | 500        | psi                     |
| Compressive Strength at 2% Deformation                | D695   |            | psi                     |
| Compressive Strength at 10% Deformation               | D695   | 1,000      | psi                     |
| Deformation Under Load                                |  |            | %                       |
| Compressive Modulus of Elasticity, 73°F               | D695   |            |                         |
| Compressive Strength $\perp$ to Laminate (Modulus)    |  | 750        | psi                     |
| Compressive Strength $\perp$ to Laminate (Yield)      |  | 750        | psi                     |
| Compressive Strength $\perp$ to Laminate (Ultimate)   |  | 750        | psi                     |
| Hardness, Durometer (Shore "D" scale)                 | D2240  | 68         |                         |
| Hardness, Rockwell (Scale as noted)                   | D785   |            | Rockwell M              |
| Izod Impact, Notched @ 73°F                           | D256 Type A  | 3.5        | ft.lbs/in. of notch     |
| Coefficient of Friction (Dry vs Steel) Static         | PTM55007   | .30-.31    |                         |
| Coefficient of Friction (Dry vs Steel) Dynamic        | PTM55007   | .20-.29    |                         |
| Maximum Static Bearing Load (P)                       | PTM55007   | 750        | psi                     |
| Maximum Unlubricated No Load Bearing Velocity (V)     | PTM55007   |            | ft/minute               |
| Maximum Limiting PV (Unlubricated)                    | PTM55007   |            | psi x ft/min.           |
| Wear Factor "K" x 10-10                               | PTM55010   |            | Cubic in.-min/ft.lbs.hr |
| Sand Wheel Wear/Abrasion Test                         |  | 90         | UHMW=100                |
| Minimum Mating Surface Hardness                       |  |            | Rockwell (Brinnell)     |
| Coefficient of Linear Thermal Expansion               | E-831(TMA)   | 6          | in/in/°F x 10-5         |
| Coefficient of Thermal Expansion // to Laminates      | E-831(TMA)   | 6          | in/in/°F x 10-5         |
| Coefficient of Thermal Expansion $\perp$ to Laminates | E-831(TMA)   | 6          | in/in/°F x 10-5         |
| Softening Point                                       |  | 180        | °F                      |
| Heat Deflection Temperature 264 psi                   | D648   | 175        | °F                      |
| Embrittlement Temperature                             |  | -180       | °F Min.                 |
| Continuous Service Temperature in Air                 |  | 180        | °F Max.                 |
| Short Term Service Temperature                        |  | 200        | °F Max.                 |
| Tg-Glass Transition (Amorphous)                       | D3418  |            | °F                      |
| Melting Point (Crystalline) Peak                      | D3418  | 260        | °F                      |
| Thermal Conductivity                                  | F433   |            | BTU-in/(hr/ft²F)        |
| Dielectric Strength Short Term                        | D149   | 45         | Volts/mil               |
| Volume Resistivity                                    | D257   |            | ohm/cm                  |
| Surface Resistivity                                   | D257   | <10 x10-14 | ohm/cm                  |
| Dielectric Constant, 106 Hz                           | D150   | 2.4        |                         |
| Dissipation Factor, 106 Hz                            | D150   |            |                         |
| Flammability @ 3.1mm(1/8 in.) UL94                    | UL94   | HB         | 1/8 inch                |
| Arc Resistance  |  |            | seconds                 |
| Water Absorption, Immersion 24 Hours                  | D570 (2)   | Nil        | %                       |
| Water Absorption, Immersion Saturation                | D570 (2)   | Nil        | %                       |
| Machinability Rating                                  |  | 3          | 1=easy, 10=difficult    |
| Rod Diameter Availability (Off the Shelf)             | .50  | 10         | inches                  |
| Sheet Thickness Availability (Off the Shelf)          | .125   | 3.5        | inches                  |
| Characteristics / Attributes                          | Excellent Chemical and Impact Resistance, Easily Welded & Machined, Low Cost |            |                         |

Thank you for your interest in our materials. All statements, technical information and recommendations presented are in good faith, based upon tests believed to be reliable and practical field experience. Poly-Tech is not responsible for its accuracy or completeness. It is our recommendation and the customer's responsibility to determine the suitability of any material for any given application.