

Quadrant EPP TIVAR® H.O.T. UHMW-PE Premium Heat Stabilized/Anti-Oxidant Filled (ASTM Product Data Sheet)
Categories: Polymer; Thermoplastic; Polyethylene (PE); HDPE; High Density Polyethylene (HDPE), UHMW PE Ultra High Molecular Weight

- Material Notes:**
- Inhibits oxidation, extends material wear-life
 - Extended operating temperature range
 - Abrasion-, corrosion-, chemical- and moisture-resistant
 - Excellent release characteristics
 - Meets FDA guidelines, USDA and 3-A Dairy compliant

| Physical Properties | Metric | English | Comments |
|--------------------------------|------------|------------|-------------------------------|
| Specific Gravity | 0.940 g/cc | 0.940 g/cc | ASTM D792 |
| Water Absorption | <= 0.010 % | <= 0.010 % | Immersion, 24hr; ASTM D570(2) |
| Water Absorption at Saturation | <= 0.010 % | <= 0.010 % | Immersion; ASTM D570(2) |

| Mechanical Properties | Metric | English | Comments |
|----------------------------------|-----------------|-----------------|------------------------------|
| Hardness, Shore D | 68 | 68 | ASTM D2240 |
| Tensile Strength | 46.9 MPa | 6800 psi | ASTM D638 |
| Elongation at Break | 300 % | 300 % | ASTM D638 |
| Tensile Modulus | 0.500 GPa | 72.5 ksi | ASTM D638 |
| Flexural Strength | 26.2 MPa | 3800 psi | ASTM D790 |
| Flexural Modulus | 0.552 GPa | 80.0 ksi | ASTM D790 |
| Compressive Strength | 20.7 MPa | 3000 psi | 10% Def.; ASTM D695 |
| Compressive Modulus | 0.552 GPa | 80.0 ksi | ASTM D695 |
| Shear Strength | 33.1 MPa | 4800 psi | ASTM D732 |
| Izod Impact, Notched | NB | NB | ASTM D256 Type A |
| Coefficient of Friction, Dynamic | 0.12 | 0.12 | Dry vs. Steel; QTM55007 |
| Sand Slurry | 10 | 10 | 1018 Steel = 100 |
| Limiting Pressure Velocity | 0.105 MPa-m/sec | 3000 psi-ft/min | 4:1 safety factor; QTM 55007 |

| Electrical Properties | Metric | English | Comments |
|--------------------------------|--------------------|--------------------|-----------------------|
| Surface Resistivity per Square | >= 1.00e+13 ohm | >= 1.00e+13 ohm | ASTM D257 |
| Dielectric Constant | 2.3 | 2.3 | ASTM D150 |
| | @Frequency 1e+6 Hz | @Frequency 1e+6 Hz | |
| Dielectric Strength | 90.6 kV/mm | 2300 kV/in | Short Term; ASTM D149 |
| Dissipation Factor | 0.00050 | 0.00050 | ASTM D150 |
| | @Frequency 1e+6 Hz | @Frequency 1e+6 Hz | |

| Thermal Properties | Metric | English | Comments |
|---|---|---|-------------------------------|
| CTE, linear | 198 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$ | 110 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$ | ASTM E831 |
| | @Temperature -40.0 - 149 $^\circ\text{C}$ | @Temperature -40.0 - 300 $^\circ\text{F}$ | |
| Thermal Conductivity | 0.409 W/m-K | 2.84 BTU-in/hr-ft ² - $^\circ\text{F}$ | |
| Melting Point | 135 $^\circ\text{C}$ | 275 $^\circ\text{F}$ | Crystalline, Peak; ASTM D3418 |
| Maximum Service Temperature, Air | 135 $^\circ\text{C}$ | 275 $^\circ\text{F}$ | Long Term |
| Deflection Temperature at 1.8 MPa (264 psi) | 46.7 $^\circ\text{C}$ | 116 $^\circ\text{F}$ | ASTM D648 |
| Flammability, UL94 | HB | HB | 1/8 inch (Estimated Rating) |

| Compliance Properties | Metric | English | Comments |
|-----------------------|--------|---------|----------|
| 3A-Dairy | Yes | Yes | |
| Canada AG | No | No | |
| FDA | Yes | Yes | |
| NSF | No | No | |
| USDA | Yes | Yes | |
| USP Class VI | No | No | |

| Chemical Resistance Properties | Metric | English | Comments |
|---------------------------------|------------|------------|----------|
| Acids, Strong (pH 1-3) | Limited | Limited | |
| Acids, Weak | Acceptable | Acceptable | |
| Alcohols | Acceptable | Acceptable | |
| Alkalies, Strong (pH 11-14) | Acceptable | Acceptable | |
| Alkalies, Weak | Acceptable | Acceptable | |
| Chlorinated Solvents | Acceptable | Acceptable | |
| Conductive / Static Dissipative | No | No | |
| Continuous Sunlight | Limited | Limited | |

| | | |
|--------------------------|--------------|--------------|
| Continuous Drying | Limited | Limited |
| Hot Water / Steam | Limited | Limited |
| Hydrocarbons - Aliphatic | Acceptable | Acceptable |
| Hydrocarbons - Aromatic | Unacceptable | Unacceptable |
| Inorganic Salt Solutions | Acceptable | Acceptable |
| Ketones, Esters | Limited | Limited |

Descriptive Properties

| | | |
|---------------|-------|---------------------------|
| Color | White | |
| Machinability | 3 | 1-10, 1=Easier to Machine |