

**Mitsubishi Chemical Advanced Materials Borotron® HD050 5% Boron-filled Polyethylene (ASTM Product Data Sheet)**
**Categories:** Polymer; Thermoplastic; Polyethylene (PE); High Density (HDPE)

**Material Notes:** Quadrant Engineering Plastic Products is now Mitsubishi Chemical Advanced Materials.

| Physical Properties | Metric    | English   | Comments  |
|---------------------|-----------|-----------|-----------|
| Specific Gravity    | 1.01 g/cc | 1.01 g/cc | ASTM D792 |

| Mechanical Properties            | Metric     | English        | Comments            |
|----------------------------------|------------|----------------|---------------------|
| Hardness, Shore D                | 71         | 71             | ASTM D2240          |
| Tensile Strength                 | 16.60 MPa  | 2407 psi       | ASTM D638           |
| Tensile Strength at 65°C (150°F) | 2.76 MPa   | 400 psi        | ASTM D638           |
| Elongation at Break              | 4.0 %      | 4.0 %          | ASTM D638           |
| Tensile Modulus                  | 0.7667 GPa | 111.2 ksi      | ASTM D638           |
| Flexural Strength                | 29.1 MPa   | 4220 psi       | ASTM D790           |
| Flexural Modulus                 | 0.8729 GPa | 126.6 ksi      | ASTM D790           |
| Compressive Strength             | 6.60 MPa   | 957 psi        | 10% Def.; ASTM D695 |
|                                  | 11.70 MPa  | 1697 psi       | 2% Def.; ASTM D695  |
|                                  | 19.1 MPa   | 2770 psi       | 5% Def.; ASTM D695  |
|                                  | 24.50 MPa  | 3553 psi       | 10% Def.; ASTM D695 |
| Compressive Modulus              | 0.6718 GPa | 97.44 ksi      | ASTM D695           |
| Izod Impact, Notched             | 0.481 J/cm | 0.900 ft-lb/in | ASTM D256           |

| Electrical Properties          | Metric          | English         | Comments  |
|--------------------------------|-----------------|-----------------|-----------|
| Surface Resistivity per Square | >= 1.00e+12 ohm | >= 1.00e+12 ohm | ASTM D257 |

| Thermal Properties                          | Metric                                     | English                                      | Comments   |
|---|--|--|------------|
| CTE, linear                                 | 198 µm/m·°C<br>@Temperature -40.0 - 150 °C | 110 µin/in·°F<br>@Temperature -40.0 - 302 °F | ASTM E831  |
| Melting Point                               | 128 °C                                     | 262 °F                                       | ASTM D3418 |
| Deflection Temperature at 1.8 MPa (264 psi) | 46.7 °C                                    | 116 °F                                       | ASTM D648  |

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

| Chemical Resistance Properties  | Metric       | English      | Comments |
|---------------------------------|--------------|--------------|----------|
| Acids, Strong (pH 1-3)          | Acceptable   | Acceptable   |          |
| Acids, Weak                     | Acceptable   | Acceptable   |          |
| Alcohols                        | Acceptable   | Acceptable   |          |
| Alkalies, Strong (pH 11-14)     | Acceptable   | Acceptable   |          |
| Alkalies, Weak                  | Acceptable   | Acceptable   |          |
| Chlorinated Solvents            | Unacceptable | Unacceptable |          |
| Conductive / Static Dissipative | Yes          | Yes          |          |
| Continuous Sunlight             | Limited      | Limited      |          |
| Hot Water / Steam               | Limited      | Limited      |          |
| Hydrocarbons - Aliphatic        | Unacceptable | Unacceptable |          |
| Hydrocarbons - Aromatic         | Unacceptable | Unacceptable |          |
| Inorganic Salt Solutions        | Acceptable   | Acceptable   |          |
| Ketones, Esters                 | Unacceptable | Unacceptable |          |



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