



## Duratron CU60 PBI (Celazole)

Polybenzimidazole, unfilled, compression molded

| Physical Properties            | Metric   | English                  | Comments                      |
|--------------------------------|----------|--------------------------|-------------------------------|
| Specific Gravity               | 1.3 g/cc | 0.047 lb/in <sup>3</sup> | ASTM D792                     |
| Water Absorption               | 0.4 %    | 0.4 %                    | Immersion, 24hr; ASTM D570(2) |
| Water Absorption at Saturation | 5 %      | 5 %                      | Immersion; ASTM D570 (2)      |

### Mechanical Properties

|                            |   |  |                              |
|----------------------------|---|--|------------------------------|
| Hardness, Rockwell E       | 105   | 105  | ASTM D785                    |
| Hardness, Rockwell M       | 125   | 125  | ASTM D785                    |
| Hardness, Shore D          | 94  | 94   | ASTM D2240                   |
| Tensile Strength, Ultimate | 138 MPa                                     | 20000 psi  | ASTM D638                    |
| Elongation at Break        | 3 %   | 3 %  | ASTM D638                    |
| Tensile Modulus            | 5.86 GPa                                    | 850 ksi  | ASTM D638                    |
| Flexural Modulus           | 6.55 GPa                                    | 950 ksi  | ASTM D790                    |
| Flexural Yield Strength    | 221 MPa                                     | 32000 psi  | ASTM D790                    |
| Compressive Strength       | 345 MPa                                     | 50000 psi  | 10% Def.; ASTM D695          |
| Compressive Modulus        | 6.21 GPa                                    | 900 ksi  | ASTM D695                    |
| Coefficient of Friction    | 0.24  | 0.24   | Dry vs. Steel; QTM55007      |
| K (wear) Factor            | 121 x 10 <sup>-8</sup> mm <sup>3</sup> /N-M | 60 x 10 <sup>-10</sup> in <sup>3</sup> -min/ft-lb-hr | QTM 55010                    |
| Limiting Pressure Velocity | 1.31 MPa-m/sec                              | 37500 psi-ft/min                                     | 4:1 safety factor; QTM 55007 |
| Izod Impact, Notched       | 0.267 J/cm                                  | 0.5 ft-lb/in   | ASTM D256 Type A             |

### Electrical Properties

|                                |                |                |                       |
|--------------------------------|----------------|----------------|-----------------------|
| Surface Resistivity per Square | Min 1e+013 ohm | Min 1e+013 ohm | EOS/ESD S11.11        |
| Dielectric Constant            | 3.2            | 3.2            | 1MHz; ASTM D150       |
| Dielectric Strength            | 21.7 kV/mm     | 550 V/mil      | Short Term; ASTM D149 |
| Dissipation Factor             | 0.003          | 0.003          | 1MHz; ASTM D150       |

### Thermal Properties

|   |              |                                   |                             |
|---|--------------|-----------------------------------|-----------------------------|
| CTE, linear 68°F                            | 23.4 μm/m-°C | 13 μin/in-°F                      | (-40°F to 300°F); ASTM E831 |
| Thermal Conductivity                        | 0.403 W/m-K  | 2.8 BTU-in/hr-ft <sup>2</sup> -°F | ASTM F433                   |
| Maximum Service Temperature, Air            | 316 °C       | 600 °F                            | Long Term                   |
| Deflection Temperature at 1.8 MPa (264 psi) | 427 °C       | 800 °F                            | ASTM D648                   |
| Glass Temperature                           | 399 °C       | 750 °F                            | ASTM D3418                  |
| Flammability, UL94 (Estimated Rating)       | V-0          | V-0                               | 1/8 inch                    |

### Qualitative Processing Properties

|                                   |               |                           |
|-----------------------------------|---------------|---------------------------|
| Compliance - FDA                  | Not Compliant |                           |
| Machinability                     | 10            | 1-10, 1=Easier to Machine |
| Service in Alcohols               | Acceptable    |                           |
| Service in Aliphatic Hydrocarbons | Acceptable    |                           |
| Service in Aromatic Hydrocarbons  | Acceptable    |                           |
| Service in Chlorinated Solvents   | Acceptable    |                           |
| Service in Ethers                 | Acceptable    |                           |
| Service in Ketones                | Acceptable    |                           |
| Service in Strong Acids           | Unacceptable  |                           |
| Service in Strong Alkalies        | Unacceptable  |                           |
| Service in Sunlight               | Limited       |                           |
| Service in Weak Acids             | Limited       |                           |
| Service in Weak Alkalies          | Limited       |                           |

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