

## Grade ECW™ Extruded Graphite

Since 1886, UCAR Carbon Company has been supplying quality carbon and graphite products, skilled technical service, and experienced application assistance worldwide.

### Advanced Graphite Materials

#### Grade ECW™ Extruded Graphite

UCAR® Grade ECW is a highly purified, extruded graphite. Machined UCAR Grade CS™-based material is halogen gas processed to typically less than 10 ppm.

#### Typical Applications

- CZ silicon crystal growth parts
- Purified electronic fixturing
- Polysilicon seeds chucks
- Quartz processing

#### Sizes

ECW Extruded: Post machining gas purification of finished shapes to <10 ppm total impurities.

### Typical Properties at Room Temperature

|                       | <u>ENGLISH</u>               | <u>WG</u> | <u>AG</u> | <u>METRIC</u>        | <u>WG</u> | <u>AG</u> |
|-----------------------|------------------------------|-----------|-----------|----------------------|-----------|-----------|
| Density               | lbs/ft <sup>3</sup>          | 108       |           | g/cm <sup>3</sup>    | 1.74      |           |
| Maximum Particle Size | inches                       | 0.03      |           | mm                   | 0.76      |           |
| Specific Resistance   | 10 <sup>-4</sup> Ω in.       | 2.8       | 3.7       | μΩm                  | 7.1       | 9.4       |
| Flexural Strength     | psi                          | 3050      | 2250      | kg/cm <sup>2</sup>   | 215       | 160       |
| Young's Modulus       | 10 <sup>-6</sup> psi         | 1.59      | 1.20      | kg/mm <sup>2</sup>   | 1120      | 840       |
| Tensile Strength      | psi                          | 2150      | 1600      | kg/cm <sup>2</sup>   | 150       | 110       |
| Compressive Strength  | psi                          | 6600      | 6600      | kg/cm <sup>2</sup>   | 470       | 470       |
| Permeability          | Darcy                        | 0.05      | 0.04      | Darcy                | 0.05      | 0.04      |
| Hardness              | Rockwell "R"                 | 83        |           | Rockwell "R"         | 83        |           |
| C.T.E. (to 100 °C)    | 10 <sup>-6</sup> /°F         | 1.4       | 2.2       | 10 <sup>-6</sup> /°C | 2.5       | 3.6       |
| Thermal Conductivity  | BTU-ft/hr ft <sup>2</sup> °F | 90        | 85        | W/mK                 | 160       | 145       |
| Elemental Content     | ppm                          | <10       |           | ppm                  | <10       |           |
| Elemental Analysis    | Ca                           | <2.0      |           | Fe                   | <2.0      |           |
|                       | Al                           | <0.2      |           | Ni                   | <0.2      |           |
|                       | Si                           | <2.0      |           | Ti                   | <0.2      |           |
|                       | Mg                           | <0.2      |           | Cu                   | nd        |           |
|                       | V                            | <0.2      |           | B                    | nd        |           |

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P.O. Box 2230 Clarksburg, WV 26302-2330  
 Phone 1-800-842-8805; Fax 1-304-624-1269  
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