

GRAFSTAR™

Diamond Drill Bit Mold Materials

World Renowned Graphite Expertise and Service



Amsted Graphite Materials is the world leader in Diamond Drill Bit (DDB) mold components, offering the technical support, service and global reach required in this demanding application. Amsted Graphite Materials has years of machining expertise for DDB mold components, and Amsted Graphite Materials' consistent reliability has been proven throughout the years.





Features

- High thermal shock resistance
- Strength increases with temperature
- Performs at high temperatures
- Superior oxidation resistance

Benefits

- Global reach
- Local machining
- Unmatched expertise and service
- Broad size range of graphite



Diamond Drill Bit Mold Materials

DBX™ Graphite

| Characteristic | Unit | WG | AG | Unit | WG | AG |
|------------------------------------|-----------------------|-------|------|----------------------|------|-----|
| Density | lbs/ft³ | 108 | | g/cm³ | 1.73 | |
| Maximum Particle Size | inches | 0.030 | | mm | 0.76 | |
| Specific Resistance | 10 ⁻⁴ Ω in | 2.7 | 3.5 | μΩm | 6.5 | 9.0 |
| Flexural Strength: 4-point bending | psi | 3200 | 2400 | MPa | 22 | 16 |
| Young's Modulus | 10 ⁶ psi | 1.5 | 1.3 | GPa | 10 | 8.9 |
| Tensile Strength | psi | 2300 | 1700 | MPa | 15 | 12 |
| Compressive Strength | psi | 6600 | 6600 | MPa | 46 | 46 |
| C.T.E. (RT to 100 °C) | 10 ⁻⁶ / ºF | 1.4 | 2.0 | 10 ⁻⁶ /ºC | 2.5 | 3.5 |
| Hardness | Rockwell "R" | 83 | | Rockwell "R" | 83 | |
| Porosity | % | 14 | | % | 14 | |
| Thermal Conductivity | BTU-ft/hr ft²ºF | 100 | 85 | W/mK | 175 | 150 |
| Ash Content | % | 0.12 | | % | 0.12 | |

DBZ™ Graphite

| Characteristic | Unit | WG | AG | Unit | WG | AG |
|------------------------------------|------------------------------|-------|------|----------------------|------|-----|
| Density | lbs/ft ³ | 103 | | g/cm³ | 1.65 | |
| Maximum Particle Size | inches | 0.030 | | mm | 0.76 | |
| Specific Resistance | 10 ⁻⁴ Ω in | 2.8 | 3.6 | μΩm | 6.8 | 9.4 |
| Flexural Strength: 4-point bending | psi | 2400 | 1900 | MPa | 17 | 13 |
| Young's Modulus | 10 ⁶ psi | 1.4 | 1.0 | GPa | 9.6 | 7.5 |
| Tensile Strength | psi | 2000 | 1300 | MPa | 13 | 8.9 |
| Compressive Strength | psi | 6600 | 6600 | MPa | 46 | 46 |
| C.T.E. (RT to 100 °C) | 10 ⁻⁶ / ºF | 1.4 | 2.0 | 10 ⁻⁶ /ºC | 2.5 | 3.5 |
| Hardness | Rockwell "R" | 70 | | Rockwell "R" | 70 | |
| Porosity | % | 18 | | % | 18 | |
| Thermal Conductivity | BTU-ft/hr ft ² °F | 95 | 80 | W/mK | 145 | 130 |
| Ash Content | % | 0.12 | | % | 0.12 | |

Notes:

^{*} Properties listed are typical and cannot be used as accept/reject specifications



Global Technical Support

Our global team of Applications Engineers are knowledgeable about graphite and applications spanning multiple industries. These include metallurgical casting, electronics, chemical, nuclear, defense/aerospace, solar, LED, semiconductor, and other high temperature processes.

Regardless of your product design phase (concept, prototyping, or mass production), we offer technical answers to some of your most challenging problems with a fast response time.

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