

| 特性项目 Items | | 材料 Materials | | 氧化铝 Al ₂ O ₃ | | | | 氧化锆 ZrO ₂ | 氧化钇 Y ₂ O ₃ | 增韧氧化铝 ZTA | 氧化铝 AlN | | 碳化硅 SiC | | | 氮化硅 Si ₃ N ₄ | 可加工陶瓷 Machinable Ceramics | | | | | | | | | | | | |
|---------------------------------|--|---|--|--|--|---|---|--|--|--|-------------------|--|-------------------|--|-----------------|--|---------------------------|---|-------------------|---|--|---|--|---|--|--|--|---|--|
| 产品编号 KamaTek NO. | | NMT-97 | KMT998 | KI | KMT-999 | KMT-ZrO ₂ (Y) | KMT-Y ₂ O ₃ (D) | KMT-Y ₂ O ₃ (H) | KMT-2TABS | KMT-AN180 | KMT-AN200 | KMT-SSiC(R) | KMT-SSiC | KMT-SiSiC | KMT-SiN | KMT-MC | | | | | | | | | | | | | |
| 颜色 Color | | 白 White | 象牙色 Ivory | 象牙色 Ivory | 象牙白 Whitish-Ivory | 白色 White | 半透明 Translucent | 白色 White | 灰白色 Off-White | 灰色 Gray | 灰色 Gray | 黑色 Black | 黑色 Black | 黑色 Black | 黑色 Black | 白色 White | | | | | | | | | | | | | |
| 主要成分含量 Main Content Percentage | | 97%氧化铝 97%Al ₂ O ₃ | 99.8%氧化铝 99.8%Al ₂ O ₃ | 99.8%氧化铝 99.8%Al ₂ O ₃ | 99.9%氧化铝 99.9%Al ₂ O ₃ | 95%氧化锆 95%ZrO ₂ | 97%氧化钇 97%Y ₂ O ₃ | 99.9%高纯度氧化钇 99.9%Y ₂ O ₃ | 85%氧化铝 85%Al ₂ O ₃ | 96%氧化铝 96%AlN | 96%氮化铝 96%AlN | 99.9%碳化硅 99.9%SiC | - | - | - | - | | | | | | | | | | | | | |
| 主要特征 Main Characteristics | | 良好的金属化特性、耐磨。 Good for Metallization, Wear Resistance. | | | | 优异的耐等离子腐蚀、高耐磨。 Excellent Anti-Plasma Property, High Wear Resistance. | | | | 高机械强度、耐磨、耐热。 High Mechanical Strength, Good Wear and Heat Resistance. | | 卓越的耐等离子腐蚀特性。 Excellent Plasma Resistance. | | 卓越的耐等离子腐蚀特性。 Excellent Plasma Resistance. | | 增强的韧性、相对较高的机械强度、耐磨、耐腐蚀。 Enhanced Fracture Toughness, Good Mechanical Strength, Wear and Corrosion Resistance. | | 高热导率、抗热震性、优异的耐等离子体侵蚀性能。 High Thermal Conductivity, Excellent Thermal Shocking Resistance, Excellent Plasma Resistance. | | 高阻高热、耐腐蚀。 High Thermal Conductivity, High Temperature Resistance, Excellent Plasma Resistance. | | 较高的高温强度、耐腐蚀、好的热导率。 High Temperature Strength, High Chemical Resistance, Good Thermal Conductivity. | | 耐磨、耐腐蚀、耐高温。 Good Chemical and Abrasive Resistance, High Heat Resistance. | | 轻质、耐磨、耐高温。 Light Weight, High Wear Resistance and High Heat Resistance. | | 易加工、优秀的电绝缘性、优秀的热绝缘性、精密加工。 Precision Machinability, Excellent Electrical and Heat Insulation. | |
| 主要用途 Main Applications | | IC封装、电子部件、机械部件- IC Packaging, Electronic Parts, Mechanical Parts. | | | | 半导体设备部件、耐磨损、耐腐蚀性。 Semiconductor Equipment Parts, Wear & Corrosion Resistant Parts. | | | | 耐磨、耐热部件、如磨砂机配件。 Wear and Heat Resistant Parts. | | 半导体设备部件、精密仪器。 Semiconductor Equipment Parts, Precision Instruments. | | 半导体设备部件、精密仪器。 Semiconductor Equipment Parts, Precision Instruments. | | 具有一定强度和温度要求的耐磨、耐腐蚀。 Wear and Heat Resistant Parts at High Temperatures When Mechanical Strength is Required. | | 散热部件、耐侵蚀部件。 Heat Dissipating Parts, Plasma Resistant Parts. | | 半导体设备部件。 Semiconductor Equipment Parts. | | 耐磨部件、密封件、耐高温件。 Semiconductor Equipment Parts, Sealing Parts, Anti-Heat Parts. | | 耐磨件、耐磨损件、耐磨部件。 Abrasives and Corrosion Resistant Parts. | | 耐热件、耐磨损件、耐磨部件。 Heat, Wear and Corrosion Resistant Parts. | | 电绝缘件、热绝缘件。 Electrical and Heat Insulation Parts. | |
| 密度 Bulk Density | | g/cc | ASTM-C20 | 3.70 | 3.92 | 3.92 | 3.95 | 6.02 | 4.95 | 4.90 | 4.15 | 3.30 | 3.30 | 3.16 | 3.15 | 3.02 | 3.20 | 2.52 | | | | | | | | | | | |
| 吸水率 Water Absorption | | % | ASTM-G373 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | | | | |
| 机械特性 Mechanical Characteristics | 维氏硬度 Vickers Hardness(Load 500g) | | GPa | ASTM G1327-03 | 13.8 | 17.3 | 18.0 | 18.5 | 13.0 | 6.0 | 5.7 | 16.0 | 10.0 | 9.5 | 24.0 | 28.0 | 20.0 | 13.9 | - | | | | | | | | | | |
| | 抗弯强度 Flexural Strength | | MPa | ASTM C11161-02C | 350 | 350 | 350 | 350 | 800 | 110 | 100 | 500 | ≥350 | ≥325 | 450 | 380 | 250 | 610 | 94 | | | | | | | | | | |
| | 抗压强度 Compressive Strength | | MPa | ASTM C773 | 2250 | 2450 | 2500 | 2600 | 5690 | - | - | 2580 | 2500 | 2500 | - | 3900 | - | 3850 | 345 | | | | | | | | | | |
| | 杨氏模量 Young's Modulus of Elasticity | | GPa | ASTM G1198-01 | 330 | 360 | 365 | 380 | 210 | 140 | 130 | 337 | 320 | 320 | 420 | 410 | 330 | 290 | 25.5 | | | | | | | | | | |
| | 泊松比 Poisson's Ratio | | - | ASTM G1198-01 | 0.23 | 0.23 | 0.22 | 0.23 | 0.31 | - | - | 0.23 | 0.24 | 0.24 | - | 0.14 | - | 0.28 | 0.29 | | | | | | | | | | |
| 热学特性 Thermal Characteristics | 断裂韧性 Fracture Toughness | | MPa·m ^{1/2} | ASTM C1421-01b (Kevron notchef beam) | 3 | 4~5 | 4~5 | 4~5 | 6~7 | - | - | - | - | - | 4 | - | 5 | - | | | | | | | | | | | |
| | 线性膨胀系数 Coefficient of Linear Thermal Expansion | | 40-400°C | X10 ⁻⁶ /°C | ASTM C372-94 | 7.1 | 8.2 | 8.1 | 8.2 | 10.0 | 8.0 | 7.4 | 7.0 | 4.8 | 4.6 | 4.2 | 4.0 | 4.5 | 2.6 | 9.0 | | | | | | | | | |
| | 热导率 Thermal Conductivity | | 20°C | W/(m·K) | ASTM C408-88 | 25 | 30 | 32 | 32 | 3 | 14 | 14 | 24 | 180 | 200 | 170 | 120 | 45 | 23 | 1.46 | | | | | | | | | |
| | 比热 Specific Heat | | J/(Kg·K) | X10 ³ | ASTM 1269 | 0.78 | 0.80 | 0.80 | 0.78 | 0.46 | 0.45 | 0.46 | - | 0.74 | 0.74 | - | 0.65 | - | 0.66 | 0.79 | | | | | | | | | |
| | 抗热冲击能力 Thermal Shocking Resistance | | °C | Note 1 | 200 | 220 | 220 | 220 | - | - | - | - | - | - | - | - | - | 550 | - | | | | | | | | | | |
| 电学特性 Electrical Characteristics | 体积电阻率 Volume Resistivity | | 20°C | Ω·cm | ASTM D257-99 | >10 ¹⁴ | >10 ¹⁵ | >10 ¹⁵ | >10 ¹⁵ | - | ≥10 ¹² | ≥10 ¹² | ≥10 ¹⁴ | ≥10 ¹⁴ | 10 ⁹ | 10 ^{22-10²³} | - | ≥10 ¹⁴ | ≥10 ¹⁷ | | | | | | | | | | |
| | 介电强度 Dielectric Strength | | KV/mm | ASTM D149-97 | 16 | 17 | 17 | 17 | - | - | - | - | ≥15 | ≥15 | - | - | - | 13 | 45 | | | | | | | | | | |
| | 介电常数 Dielectric Constant(1MHz) | | - | ASTM D150-98 | 9.0 | 9.8 | 9.8 | 9.7 | - | - | - | - | 9.0 | 8.8 | - | - | - | - | 6.0 | | | | | | | | | | |
| | 介电损耗系数 Loss Tangent(1MHz) | | X10 ⁻⁴ | ASTM D150-98 | 3 | 1 | 1 | 1 | - | - | - | - | 5 | 5 | - | - | - | - | 4 | | | | | | | | | | |
| 化学特性 Chemical Characteristics | 硝酸 Nitric Acid(60%) | | 90°C | - | - | <0.12 | <0.05 | - | - | 0 | - | - | - | - | - | - | - | <1.00 | - | | | | | | | | | | |
| | 硫酸 Sulphuric Acid(95%) | | 95°C | 重量损失 WT Loss (mg/cm ² /day) | - | <0.30 | <0.23 | - | - | <0.04 | - | - | - | - | - | - | - | - | <0.40 | - | | | | | | | | | |
| | 氢氧化钠 Caustic Soda(30%) | | 80°C | - | - | <0.90 | <0.04 | - | - | <0.08 | - | - | - | - | - | - | - | - | <0.36 | - | | | | | | | | | |

注意1: 将加热到不同温度的试样浸入室温的水中, 在测试试样的抗弯强度, 出现急剧降低的温度就是材料的抗热冲击能力。
Note1: Data is obtained by quenching samples into water from different temperatures. The change in temperature, where a sharp decrease in flexural strength is observed is listed as ΔT. (Thermal Shocking Resistance)

注意2: 表中数据是样品测试的特性值, 特性值会随产品的制造过程和形态有所差异。
Note2: The Values listed above are typical materials properties obtained by sample testing, and may vary with manufacturing processes and configurations of products.