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# MATERIAL DATA SHEET

## Material type: Silicon Nitride

# SN240

### Properties of Microstructure

| | | | |
|---|---|---|---|
| Alumina Content | | % | - |
| Density | JIS R 1634 | g/cm³ | 3.3 |
| Water Absorption | | % | 0 |
| Mean Grain Size | | µm | - |

### Mechanical Properties

| | | | |
|---|---|---|---|
| Hardness (HV 9.807N) | JIS R 1610 | GPa | 14 |
| Compressive strength | JIS R 1608 | MPa | - |
| Flexural strength | JIS R 1601 | MPa | 1020 |
| Modulus of Elasticity | JIS R 1602 | GPa | 300 |
| Poisson's ratio | JIS R 1602 | | 0.28 |
| Fracture toughness | JIS R 1607 | $MPa*m^{1/2}$ | 7 |

### Thermal Properties

| | | | |
|---|---|---|---|
| Specific Heat 20°C | JIS R 1611 | J/kgK | 0.65 |
| Thermal Conductivity | JIS R 1611 | W/mK | 27 |
| Expansion coefficient 40-400°C | JIS R 1618 | $10^{-6}/K$ | 2.8 |
| Expansion coefficient 40-800°C | JIS R 1618 | $10^{-6}/K$ | 3.3 |
| Thermal Shock Temperature Difference (in water) | JIS R 1648 | °C | 800 |

### Electrical Properties

| | | | |
|---|---|---|---|
| Dielectric strength | JIS C 2141 | kV/mm | 13 |
| Specific Resistance 20°C | JIS C 2141 | Ω•cm | $>10^{14}$ |
| Specific Resistance 300°C | JIS C 2141 | Ω•cm | $10^{12}$ |
| Specific Resistance 500°C | JIS C 2141 | Ω•cm | $10^{10}$ |
| Dielectric constant (1 MHz) | JIS C 2141 | | 9.6 |
| Dielectric Loss Angle (1 MHz) | JIS C 2141 | $10^{-4}$ | 19 |
| Typical Colour | | | black |

The values are typical material properties and may vary according to products configuration and manufacturing process.