

**FORM MDS-1 MATERIAL DATA SHEET (SI UNITS)**

**Grade Designation**

Material Grade \_\_\_\_\_ Material spec. ID \_\_\_\_\_ ASTM spec. \_\_\_\_\_

Max. grain size (mm) \_\_\_\_\_ Designation \_\_\_\_\_

**Temperature-Dependent Parameters**

Property	Units	Orientation	20°C	200°C	400°C	600°C	800°C	1 000°C [Note (1)]
Bulk density	kg·m <sup>-3</sup>	...	_____	_____	_____	_____	_____	_____
Strength – tensile	MPa	WG, AG	_____	_____	_____	_____	_____	_____
Strength – flexural (4-point)	MPa	WG, AG	_____	_____	_____	_____	_____	_____
Strength – compressive	MPa	WG, AG	_____	_____	_____	_____	_____	_____
Elastic modulus (dynamic)	GPa	WG, AG	_____	_____	_____	_____	_____	_____
Elastic modulus (static)	GPa	WG, AG	_____	_____	_____	_____	_____	_____
Coefficient of thermal expansion	°C <sup>-1</sup>	WG, AG	_____	_____	_____	_____	_____	_____
Thermal conductivity	W/m·k	WG, AG	_____	_____	_____	_____	_____	_____

**Temperature-Independent Parameters**

Poisson's ratio \_\_\_\_\_ Anisotropy factor \_\_\_\_\_ Critical stress intensity factor K<sub>IC</sub> MPa·m<sup>1/2</sup> \_\_\_\_\_

**Design Strength and Material Reliability Curve Values**

Ratio of compressive to tensile strength ( $R_{tc}$ ) \_\_\_\_\_ Ratio of flexural to tensile strength ( $R_{tf}$ ) \_\_\_\_\_  $S_{c_{0.05}}$  MPa \_\_\_\_\_  $m_{0.05}$  \_\_\_\_\_

$S_g$  (10<sup>-4</sup>) MPa \_\_\_\_\_  $S_g$  (10<sup>-3</sup>) MPa \_\_\_\_\_  $S'_{c_{0.05}}$  MPa \_\_\_\_\_  $m'_{0.05}$  \_\_\_\_\_

$S_g$  (10<sup>-4</sup>) MPa \_\_\_\_\_  $S_g$  (10<sup>-3</sup>) MPa \_\_\_\_\_  $S_g$  (10<sup>-2</sup>) MPa \_\_\_\_\_  $S_g$  (5 × 10<sup>-2</sup>) MPa \_\_\_\_\_

**Property Degradation Versus Weight Loss % in Uniformly Oxidized Graphite**

Property	Units	2%	4%	6%	8%	10%
Strength [.]	_____	_____	_____	_____	_____	_____
Elastic modulus (dynamic) [.]	_____	_____	_____	_____	_____	_____
Thermal conductivity [.]	_____	_____	_____	_____	_____	_____

**Irradiated Graphite**

Property	Units	WG	AG
Dimensional change [.]	_____	_____	_____
Creep coefficient [.]	_____	_____	_____
Coefficient of thermal expansion [.]	_____	_____	_____
Strength [.]	_____	_____	_____
Elastic modulus [.]	_____	_____	_____
Thermal conductivity [.]	_____	_____	_____

GENERAL NOTES:  
 (a) WG, AG refers to the with- and against-grain direction of the material.  
 (b) [.] indicates a dimensionless quantity.

NOTE:  
 (1) If the maximum intended use temperature exceeds 1 000°C, then the temperature dependent data shall be extended to cover the property values at the maximum intended use temperature.