



WONDERSTONE TECHNICAL DATASHEET

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TYPICAL PHYSICAL PROPERTIES				
PROPERTY	ASTM TEST	UNIT	LGWS	DGWS
Density	Archimedes's principle method	g/cm ³	2.66	2.79
Porosity (25 to 600 °C)	Open	%	4.82	2.03
Water Absorbtion	SANS497:2011 standard	%	1.79	0.93
Specific Gravity	Mintek	-	2.76-2.85	
Softening Temperature (@ normal pressure)	-	°C	1600	
Linear Coefficient of: Thermal Expansion	-	Per°C		
25 °C to 100 °C	-		2.9 x 10 ⁻⁶	
25 °C to 600 °C	-		3.6 x 10 ⁻⁶	
Specific heat capacity	-	J/kg.°C		
Pyrophyllite – 25 °C	-	25 °C	1220	
Pyrophyllite – 500 °C	-	500 °C	1306	
Energy Density	-	kJ/m ³ .°C		
Pyrophyllite – 25 °C	-	25 °C	3420	
Pyrophyllite – 500 °C	-	500 °C	3655	
Colour(Air fired)	-	-	Pinkish	
Safe operating temperature (Continuous heat @ normal pressure)	-	°C	1100	
Thermal Conductivity (Approx values)	-	[W/mK]		
Unfired			1,5	
Fired to 900 °C			1.67	
Fired to 1200 °C			2,5	

*LGWS is Light Grey Wonderstone

*DGWS is Dark Grey Wonderstone

Updated 30/04/2022

Disclaimer: The values given are indicative only as the material is a natural mineral with variations in chemical composition.

TYPICAL MECHANICAL PROPERTIES				
PROPERTY	ASTM TEST	UNIT	LGWS	DGWS
Hardness	Rockwell	Rockwell C	66-72	72-86
Hardness after firing to 1300 °C	-	Moh's Scale	6.0	6.0
Flexural Strength	Cermalab	Mpa	59.0	68.0
Uniaxial Compressive Strength (UCS)	UCS	Mpa	93.7	114.9
<i>isostatically pressed, fired to 800 °C</i>			82.0	84.8
<i>isostatically pressed, fired to 1300 °C</i>			86.6	141.6
Young Modulus (E)	UCM	Gpa	20.3	42.0
Poisson's Ratio (ν)	UCM	ν	0.2	0.3
Strengthening parameter (β)			3.6	3.8
Cohesion (Co) MPa		Mpa	17.4	26.8
Friction angle (φ)			34.7	35.6
Tensile Strength	Cermalab	Mpa	1.3	1.4
<i>isostatically pressed, fired to 800 °C</i>			1.300	1.40
<i>isostatically pressed, fired to 1300 °C</i>			1.200	1.40
Resistance to Impact (6.35 mm rod or 1/4 ")	D667-42T	inch- lbs	3.30	
Thermal shock resistance <i>isostatically pressed, fired to 1000 °C</i>	Cermalab	-	Excellent	Excellent

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TYPICAL ELECTRICAL PROPERTIES

PROPERTY	ASTM TEST NUMBER	UNITS	WONDERSTONE
Dielectric strength <i>(Step 60 cycles)</i>	<i>D667-42T</i>	Volts per mil	100.000
Dielectric Constant (Relative Permittivity) <i>60 cycles</i> <i>1 MHz</i> <i>10 MC</i> <i>100 MC</i>	D667-42T		- 5.300 5.300 5.200
Power Factor <i>60 cycles</i> <i>1 MC</i> <i>10 MC</i> <i>100 MC</i>	D667-42T		- 0.010 0.009 0.007
Loss factor <i>60 cycles</i> <i>1 MC</i> <i>10 MC</i> <i>100 MC</i>	D667-42T		- 0.053 0.048 0.036
Te Value		°C	0.700
Volume Bulk Resistivity at temperatures <i>25 deg C</i> <i>100 deg C</i> <i>300 deg C</i> <i>500 deg C</i> <i>700 deg C</i> <i>900 deg C</i>		Ohms per centimeter cube	$> 1.0 \times 10^{14}$ 6.0×10^{11} 2.0×10^9 5.0×10^6 3.5×10^5 5.0×10^4

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TYPICAL CHEMICAL ANALYSIS		
COMPOUND	DGWS (WT%)	LGWS (WT%)
SiO ₂	57.433	58.900
Al ₂ O ₃	31.433	31.367
Fe ₂ O ₃	0.970	1.300
TiO ₂	1.850	1.917
CaO	0.045	0.029
MgO	0.237	0.063
Na ₂ O	0.207	0.193
K ₂ O	0.627	0.707
MnO	0.006	0.001
P	0.073	0.055
Ba	0.012	0.013
Cr	0.047	0.021
Cu	0.001	0.001
Ni	0.001	0.001
Sr	0.007	0.008
V	0.029	0.032
Zn	0.001	0.001
LOI	6.700	6.133
C	0.797	0.243
S	0.011	0.013
TOTAL	100.487	100.999

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