

WONDERSTONE-PYROPHYLLITE

Wonderstone Limited
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General Description

Description: Light Grey Pyrophyllite Powder (-500 + 63 micron)
Crystallinity: Laminar to semi-massive
Specific Gravity: 2.7 to 2.85 g/cm³
PCE (ASTM C-24): 29 to 30
pH: 4.85
Bulk Density: 1.25 – 1.45 g/cm³
Tap Density: 1.45 – 1.65 g/cm³
Coefficient of Thermal Expansion: $3.6 \times 10^{-6} \text{ }^{\circ}\text{C}^{-1}$
Melting Point: 1680 °C
Softening Temperature: 1600 °C

XRF Analysis - Typical Composition (Calculated as oxides)

Elements	Percentage (%)
SiO ₂	57.35
Al ₂ O ₃	32.75
TiO ₂	1.70
K ₂ O	0.70
Fe ₂ O ₃	0.70
P ₂ O ₆	0.14
CaO	0.02
MgO	0.01
NaO ₂	0.07
V ₂ O ₆	0.05
C	0.12
LOI	6.33



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XRD Analysis (%)

Pyrophyllite	Quartz	Kaolinite	Muscovite	Rutile	Cristobalite	Gibbsite
78 - 85	trace	1 -6	1 -6	1 - 2	0 - 1	trace

Particle Size Distribution (PSD) Specification:

Wonderstone Standard Pyrophyllite Powder			
	Specification Range		
Screen (microns)	Min (WT%)	Max (WT%)	Typical Sample (WT%)
+500	0	0	0
+300	28	38	30
+125	45	60	57
+63	12	25	14
-63	0	4	2

Wonderstone Refractory Grade Pyrophyllite is a high-quality raw material for use in:

- 1) Insulating firebrick
- 2) Kiln refractories
- 3) Metal casting & pouring refractories
- 4) Monolithic refractories (Alumina-silica):
 - Ramming mixes
 - Gunning mixes
 - Castable mixes
- 5) Foundry washes
- 6) Ceramic Filters

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Wonderstone pyrophyllite powders for refractory applications have the following useful characteristics:

1. Expands permanently on firing (650°C to 870°C) during dehydration of pyrophyllite
2. Low reversible thermal expansion
3. Excellent stability when reheated after firing
4. Good insulating properties – low thermal conductivity
5. Resists corrosion by molten metals and slags
6. Low deformation under hot load
7. When firing above 1050°C, transformation of pyrophyllite to mullite occurs with significant improvements in mechanical properties such as hardness, compressive strength and flexural strength.