PREMIUM GRADE

VIRGINIA KYANITE™ | $Al_2O_3 \cdot SiO_2$

VIRGINIA KYANITE MULLITE

KYANITE MINING CORPORATION

Consistent Purity • Abundant Supply • Personalized Service

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KYANITE MINING CORPORATION | Direct Sales 434.983.2043 • www.kyanite.com • sales@kyanite.com

Premium Grade Virginia Kyanite™

Premium Grade Virginia Kyanite™ is a low iron kyanite with an iron oxide content of <0.19% (0.6% typical). This reduced iron content increases high-temperature properties, such as reduced glass formation and enhanced creep resistance.

Kyanite and its Properties

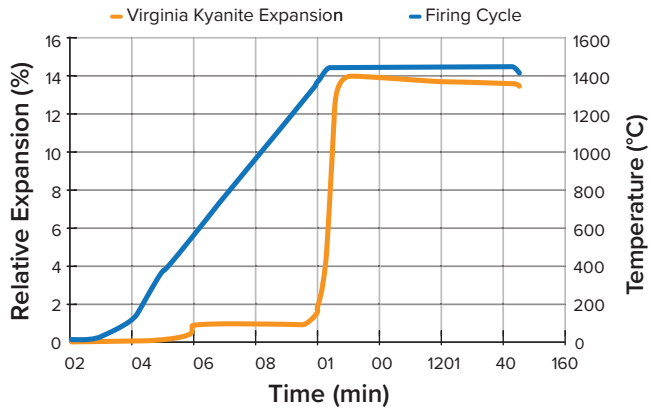
Virginia Kyanite™ is a naturally occurring polymorph of Al2O3·SiO2 with elongated "blade-like" crystals. This "blade-like" structure and other unique properties make it a valuable raw material in refractory and ceramic products.

Kyanite decomposes into mullite, (3Al2O3·2SiO2) at 1200°C -1450°C, depending on the hold time. During this conversion, Virginia Kyanite™ undergoes a large, irreversible volume expansion. This expansion is used by refractory and ceramic manufacturers to counterbalance the firing shrinkage of clays, cements, and other binders. Volume expansion is particle size dependent and ranges from over 25% for 35 mesh material to about 3% for 325 mesh. The "blade-like" shape of Virginia Kyanite™ crystals enhances the green strength of ceramics and refractories.

Uses

Premium Grade Virginia Kyanite™ undergoes the same beneficial and predictable amount of expansion during mullite decomposition as traditional Virginia Kyanite™. It is used in applications where a lower impurity level is critical. Reducing the amount of iron oxide creates a ceramic part with better hot properties by lowering the amount of available flux that can react with silica to form glass, leading to creep. Applications include refractories, ceramic parts, foundry coatings and sprays, brake shoes, grinding wheels, kiln furniture, ovenware, sanitaryware, and tiles.

Linear Expansion of Virginia Kyanite™



Typical Chemical Analysis (%)

Al_2O_3	57.5 *(55.0 min)
SiO_2	40.3
TiO_2	1.2
Fe_2O_3	0.6 (0.85 max)
CaO	<0.04
MgO	<0.03
Na_2O	<0.04
K_2O	<0.07
P_2O_5	<0.15

Mineralogy (%)	Typical
Kyanite	92–98
Quartz	2–8

Screen Analysis Specification of Virginia Kyanite™

	40m (425 microns)	50m (300 microns)	100m (150 microns)	140m (106 microns)	200m (75 microns)	325m (45 microns)	Pan	Total % Volume Expansion at Approximately 7% Addition
35 Mesh	15–30	10–30	20–40				15–45	8–9%
48 Mesh		6–16	10–29	5–26	5–26		23–60	4–5%
100 Mesh			5–10	5–15	8–20		55–82	2–3%
200 Mesh					10 max		90 min	1–2%
325 Mesh						10 max	90 min	1–2%

Screen analysis is reported on US standard sieves. Pan designates material passing the last reported screen. All analysis are expressed in weight %.

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