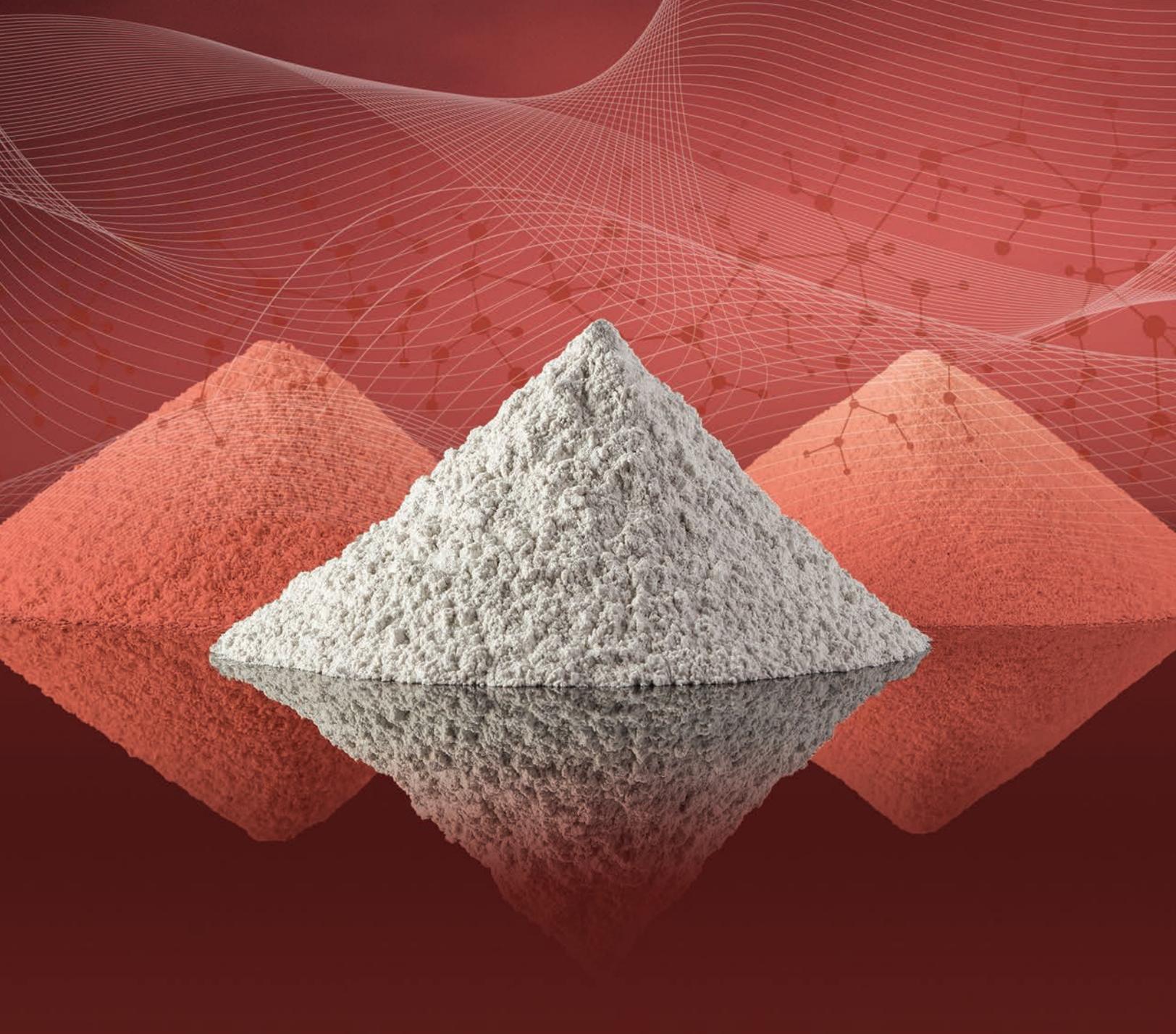


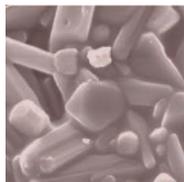
VIRGINIA MULLITE™ | $3\text{Al}_2\text{O}_3 \cdot 2\text{SiO}_2$

INVESTMENT CASTING



KYANITE MINING CORPORATION

Consistent Purity • Abundant Supply • Personalized Service



What is Virginia Mullite™?

Virginia Mullite is formed by calcining Virginia Kyanite™ in a rotary kiln at 1450°C. Virginia Mullite differs in particle shape and amount of impurities when compared to mullite

formed by calcining clay minerals.

High Temperature Casting Capability

Virginia Mullite is lower in iron oxide, glass, and other impurities than most other mullite aggregates, leading to enhanced creep resistance. This improves the dimensional stability of the casting, creating improved yields and can reduce finishing labor costs. Knockout is also improved due to the lower impurity level. Virginia Mullite can be used in direct metal contact up to 1600°C and to higher temperatures in backup coats. Virginia Mullite flours and stuccos have been used in equiax, directional, and single crystal castings.

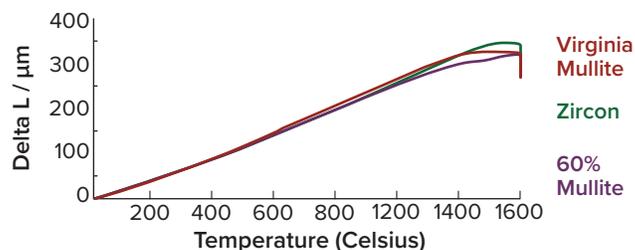
Particle Shape

The “blade-like” shape of Virginia Mullite acts to mitigate cracks in the shell and helps to reduce failure during dewaxing.

More Information

Kyanite Mining Corporation is committed to helping you succeed when using our products. Our knowledgeable sales and technical staff is ready to assist you with your needs. Please contact us for more information.

Thermal Expansion of Virginia Mullite



Typical Chemical Analysis (%)

| | |
|--------------------------------|------------------|
| Al ₂ O ₃ | 57.0 *(55.0 min) |
| SiO ₂ | 40.2 |
| TiO ₂ | 1.1 |
| Fe ₂ O ₃ | 0.5 (0.75 max) |
| CaO | <0.04 |
| MgO | <0.03 |
| Na ₂ O | <0.04 |
| K ₂ O | <0.07 |
| P ₂ O ₅ | <0.15 |

Mineralogy (%)

Typical

| | |
|--------------|-------|
| Mullite | 79–85 |
| Amorphous | 8–12 |
| Quartz | 4–8 |
| Cristobalite | <1 |

Specific Gravity

3.00 g/cm³

Typical Screen Specification of Virginia Mullite Grains

| | 20m (800 μm) | 30m (600 μm) | 40m (420 μm) | 50m (300 μm) | 70m (245 μm) | 100m (150 μm) | 140m (106 μm) | Pan |
|--------|-----------------|-----------------|-----------------|-----------------|---------------------------|------------------|----------------------------|-----|
| 20x50 | 1 max +20m | 93 min | | | 6 max -50m 1 max -140m | | | |
| 50x100 | 5 max +50m | | | 89 min | | | 6 max -100m 1 max -140m | |

Typical Screen Specification of Virginia Mullite Flour

| | 20m (800 μm) | 325m (45 μm) |
|----------|------------------------------|--------------|
| 200 Mesh | 10 max (typical d50=28 μm)** | |
| 325 Mesh | 10 max (typical d50=15 μm)** | |

Grain Screen Analysis is reported on US Standard sieves for 20x50 and 50x100. Flour Screen Analysis reported on either air sieve or MicroTrac**

* The coarse sizing of the 20x50 particles may increase the quartz content in the product and reduce the Al₂O₃ content to below the typical minimum of Virginia Mullite (55%)

** MicroTrac Laser Particle Size Analysis available with an added fee