

Purity • Consistent Quality • Abundant Supply • Expert Customer Service

Quality Kyanite

Kyanite Mining Corporation is the largest and oldest producer of high quality kyanite in the world. KMC is a family owned and operated company with over 60 years of experience in supplying kyanite and its calcined derivative, Mullite, to the global marketplace. Its mining and processing facilities are located in central Virginia, near the town of Dillwyn.

Mining and Crushing

The Kyanite ore is extracted from two adjacent quarries in central Virginia. The host quartzite rock contains between 20-40% kyanite. In addition to quartz, various other impurities are present such as mica, rutile and a variety of forms of iron oxides and clays. The hard rocks containing kyanite are selectively mined and then crushed in several stages to reduce the size to approximately 1 inch or less. During each stage of crushing the ore is mixed to minimize the natural variances in the deposit. The blended ore is then fed to the processing plant in a controlled manner.

Beneficiation Process

Once inside the processing plant, the ore is further ground in a wet rod mill to reduce the particle size down to about 20 mesh and finer. It is necessary to pre-crush the material to this size to fully liberate the kyanite and impurities from the parent rock. The slurry from the rod mill is then de-slimed to remove all clay matter. This material is then fed to a hydro-sizer for further classification of the feed. The product from the hydro-sizer is fed to several flotation circuits for beneficiation. In the first bank of float cells all pyrite impurities are removed, and the second bank removes all sand and mica. The material at this stage has about 90-92% kyanite, 5-8% quartz, and about 2-3% of various iron oxides.

The material is then dewatered and sent to a fluidized bed for final drying and roasting. The reduced atmosphere roast converts most of the iron oxide impurities to a form that is suitable for magnetic separation. After magnetic separation the iron content is reduced to about 0.6%.

During each step in this long beneficiation process samples are taken and analyzed to determine the process effectiveness and quality of the product produced.



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High Capacity

For approximately each ton of kyanite produced, 4 tons of ore has to be mined. The current capacity of the two plants is about 150,000 tons per year. At that rate of consumption, the proven reserve will last at least 50 years, if not longer. The plant capacity could be increased significantly and relatively quickly, if necessary.

Sintering for Mullite

The basic kyanite product produced by the two beneficiation plants is "35 mesh by Down" (35m). This base material is then dry ball milled, air classified and screened to produce 48 mesh, 100 mesh, 200 mesh and 325 mesh material. The basic 35m kyanite material is also used as a feed to obtain mullite, by sintering in a rotary kiln to a temperature in excess of 1450 °C. The product of this sintering process is sold as Mullite 35 mesh by Down product. This product is also ball milled, air classified and then screened to produce 48 mesh, 100 mesh, 200 mesh and 325 mesh mullite powders.



TAKE THE KYANITE AND MULLITE CHALLENGE, AND IMPROVE YOUR FINISHED PRODUCT PERFORMANCE.

Refractories



Investment Castings



Kiln Furniture



IT CAN TAKE THE HEAT.

"Take advantage of the high volume expansion of our kyanite to counteract shrinkage in your product."

