

Sapphire, only Diamond is Harder

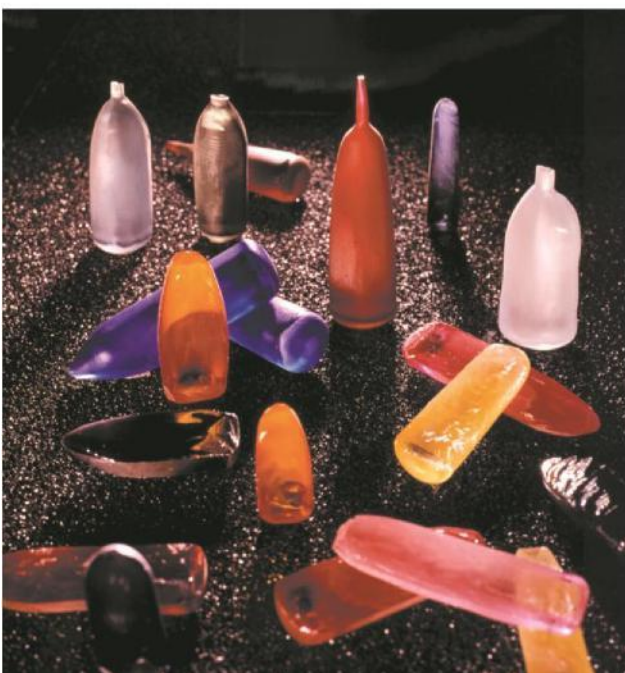
Sapphire is a corundum, therefore an aluminum oxide. Its chemical formula: Al_2O_3

In the production of sapphire, aluminum oxide is melted at a temperature of over 2000 degrees Celsius within an oxyhydrogen flame. The drops fall onto a small piece of sapphire within a chamber. The continuous process makes the sapphire slowly grow, which is similar to the growth of stalagmites. The pear shaped workpieces grow up to a size of 3 to 4 cm in diameter and 11 to 14 cm in length. This process, called Verneuil process is named after its inventor and goes back to the year of 1902.

Derived from the nature

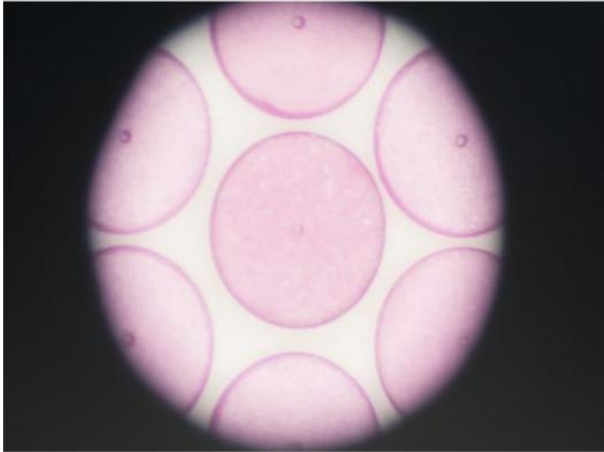


The annealed powder is put bit by bit and in small portions into the Verneuil burner, where it drops through a cylinder with the influx of oxyhydrogen. What takes millions of years to be built by nature is, because of the very high temperatures, formed within 212 hours: a pear shaped corundum crystal.



From scratch, the sapphire is with his purity of 99.99% transparently colorless. His different colors are given with the addition of metal oxides. In the case of a ruby it is chromium, in the case of a blue sapphire it is titan and iron, to a purple sapphire it is vanadium, and to a yellow or green one it is iron, which is added.

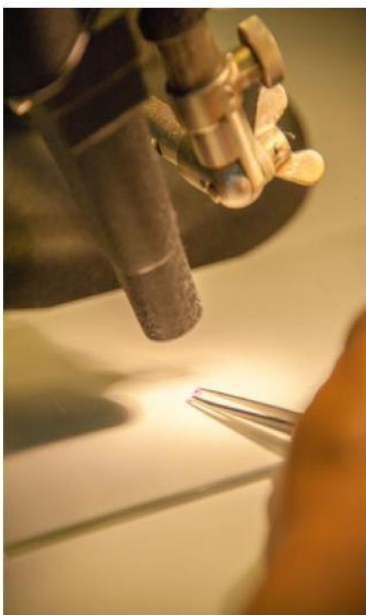
At least 12 more complex working steps and quality checks are conducted, depending on shape and purpose, until the sapphires reach their final shape and are ready to be built into the nozzle body.



Nozzle drills of only a few microns are possible



The polishing of the stones is one of the most important operations which significantly determines the quality of the final product.



A lot of experience and a trained eye is needed for the final eye check to detect and separate out possible aberrations and faulty stones.

