

SILICON CARBIDE

Silicon carbide is a chemical compound of silicon and carbon with predominantly covalent bonds and belongs to the carbide group. The empirical formula is SiC. It occurs in a hexagonal α -modification (thermodynamically stable phase) and a cubic β -modification. The former is typically used in industry.



High-purity α -SiC is colorless. Technical SiC, on the other hand, is discolored due to the presence of impurities as described below.

Due to its outstanding hardness (Mohs 9.6), coupled with a pronounced thermal shock resistance and chemical inertness (especially to acids and bases), silicon carbide is suitable for use even under the most aggressive conditions.

99,8 %	light green
99,5 %	dark green
99 %	black
< 99 %	gray

It also has great potential as a semiconductor material in various fields. Thus, it even qualifies for high-temperature ranges up to 600°C, high-frequency technology and high-voltage technology in the electronics industry.

The production of α -SiC is usually carried out by means of the Acheson process. In this process, silica sand and petroleum coke are converted into the product and carbon monoxide as a by-product in an endothermic reaction at 2000-2400 °C in an electric resistance furnace by means of 10-60 m long heating conductors made of graphite. The high temperatures are realized here by appropriate voltage supply.