

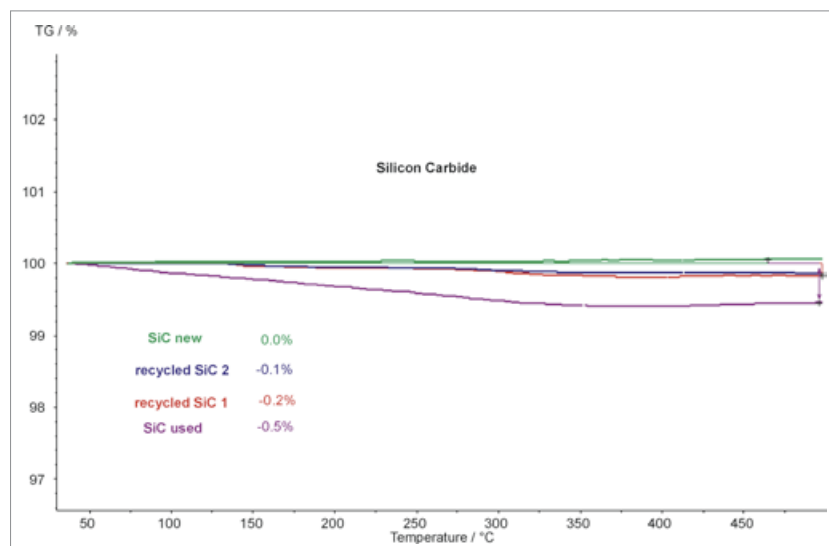
APPLICATION SHEET

CERAMICS – CHEMICALS

SILICIUM CARBIDE

SiC is a high-temperature ceramic material with a decomposition temperature above 2300°C. SiC has a very high hardness, a high thermal conductivity and also a high chemical resistivity. In pure single crystal form, SiC is a semiconductor with a band gap of 3.0 eV or higher. These extraordinary properties allow to use SiC for a lot of different applications as bearings, heating elements, high-temperature furnace

parts, cutting tools etc. A big amount of SiC is simply used as abrasive material. SiC is produced according to the Acheson method from SiO₂ and carbon. The production requires high amounts of energy and delivers various quality of SiC. Therefore, recycling of used abrasive powder is economical. To check on remaining organic cleaning agents, simply thermogravimetry can be employed.



Instrument

TG 209 **F3 Tarsus**®

Test Conditions

Temperature range	RT ... 500°C
Heating/cooling rates	10 K/min
Atmosphere	Nitrogen at 50 ml/min
Sample mass	34 mg
Crucible	Alumina
Sensor	TG type PlatineI

Results

The above figure shows the TG results of four different SiC qualities. The "new" SiC sample depicts no mass loss. At the recycled and used SiC samples some organic impurities remained which were driven out at higher temperatures. The used SiC showed the highest mass loss due to the largest impurity amount.