

APPLICATION SHEET

Ceramics – Chemicals

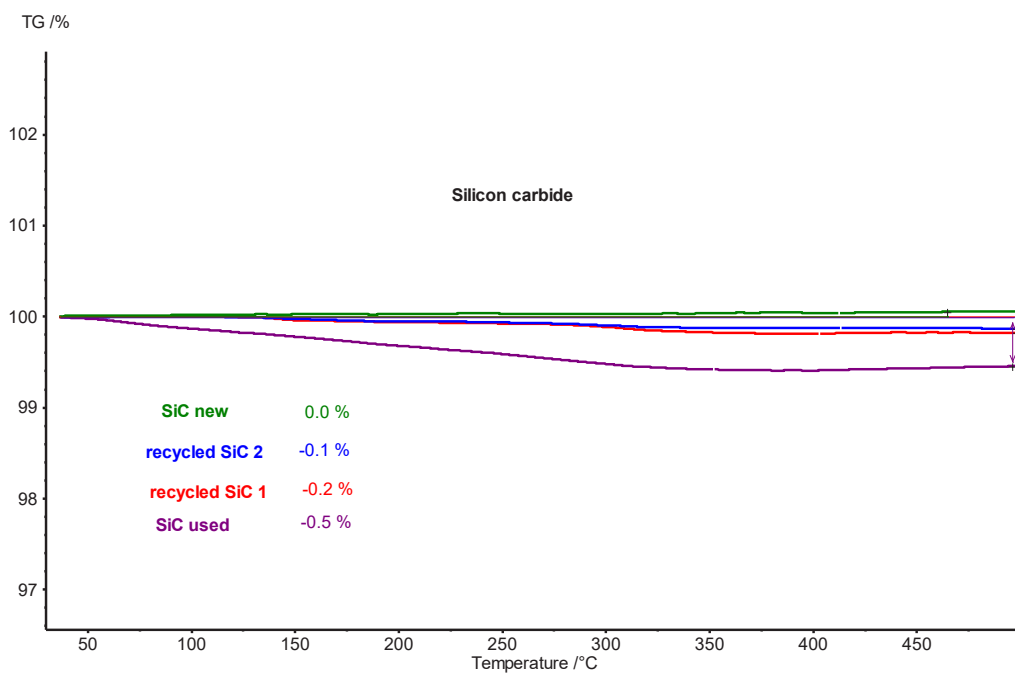
TG 209 F3 Tarsus

Silicium Carbide

Introduction

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 of 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.



Test Conditions

Temperature range: RT ... 500°C
Heating rate: 10 K/min
Atmosphere: Nitrogen at 50 ml/min
Sample mass: 34 mg
Crucible: Alumina
Sensor: Platinel

Test Results

The above figure shows the TGA 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.