

APPLICATION SHEET

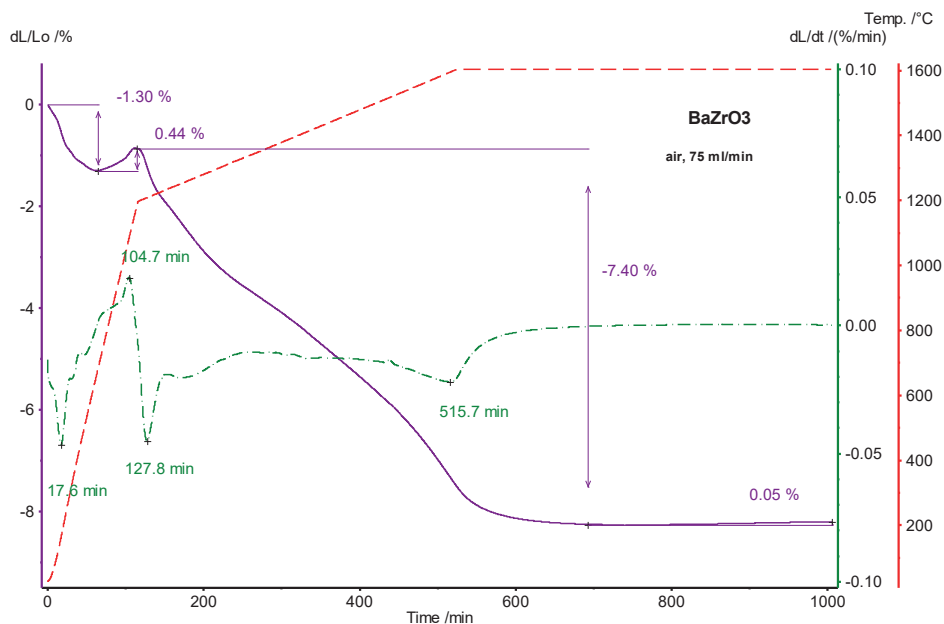
Ceramics · Chemical Industry
DIL 402

BaZrO₃

Introduction

BaZrO₃ crystallizes in the ideal cubic perovskite structure. The melting point of BaZrO₃ is higher than 2500°C. It is interesting as crucible material for crystallization of

the high-temperature superconductor material group of the Y-Ba-Cu-oxides due to its chemical stability of paraffin in the solid and liquid state including the range of phase change.



Test Conditions

Temperature range: RT ... 1590°C
Heating rates: 10 K/min, 1 K/min
Atmosphere: Air at 50 ml/min
Sample length: 3 mm
Sample carrier: Alumina

Test Results

A pressed powder pellet of BaZrO₃ was measured with the high-temperature dilatometer 402 in air at a special temperature program. After the binder burnout during heating to 1000°C, sintering of the sample started and was not finished after the 2nd heating ramp at 1 K/min to 1590°C. During the isothermal segment, the sample length further decreased during 3.5 hours. Then, an expansion occurred most probably due to grain growth. The grain growth might reduce the density of the sample again and the isothermal segment had then to be stopped. With the dilatometer results, the sintering behavior can be studied and helps optimize the properties of the fired ceramic.