

Floor Tiles

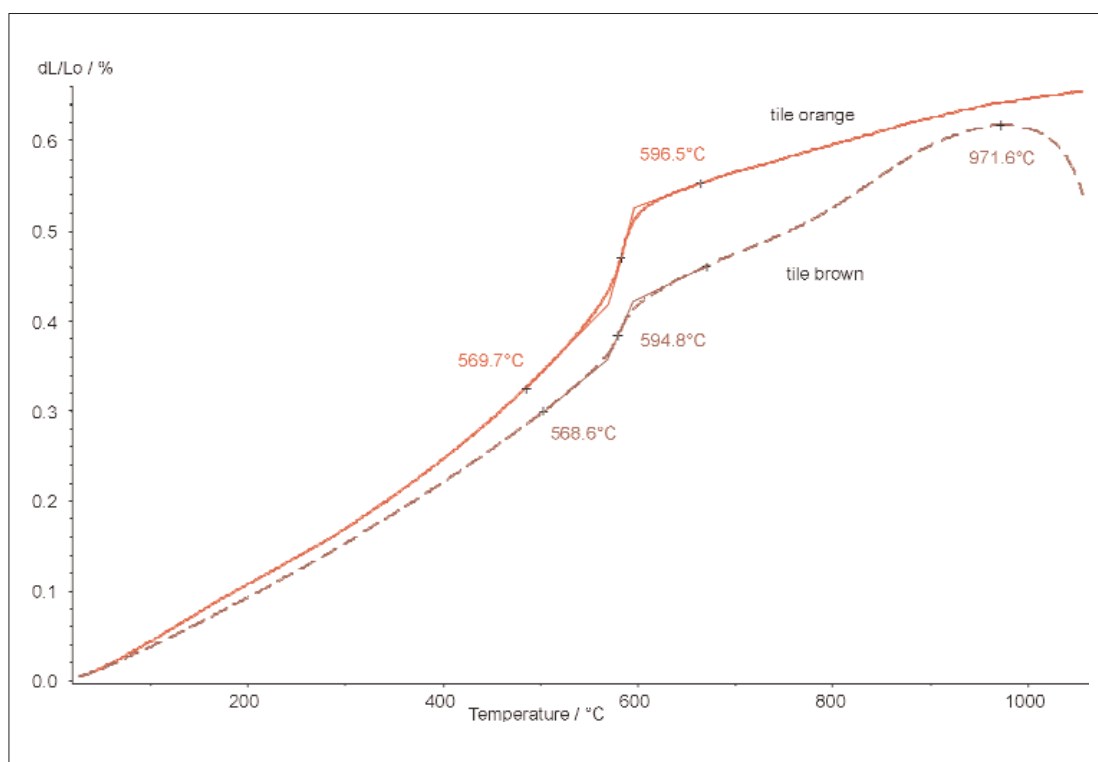
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Tiles are often used to form wall and floor coverings, and can range from simple square tiles to complex mosaics. Tiles are most often made from ceramic. The raw material is mainly based on mixtures of clay minerals, quartz, calcite and feldspar. For cost efficiency, mainly local mineral deposits were used to reduce transportation costs. Therefore, the mineral content could be very different. After the forming process, the tile raw material has to be fired to approx. 1000°C to produce the final product. The firing temperature influences also the porosity of the tile.

Test Conditions:

Temperature range: RT ... 1050°C
Heating/cooling rates: 5 K/min
Atmosphere: Air, static

Sample length: 25 mg
Sensor: Alumina



Results:

Two different tiles were simultaneously measured with the Double Dilatometer DIL 402 CD. Both tiles show the phase transition of the quartz amounts indicated by the expansion increase starting at approx. 570°C. The "orange" tile seems to have a higher quartz amount since the step is more distinctive. The "brown" tile shows a shrinkage starting at approx. 972°C most probably due to a high amorphous amount in the material. The DIL 402 CD allows very fast and precise characterization of ceramic products because of the high resolution and the possibility to measure two samples simultaneously.