

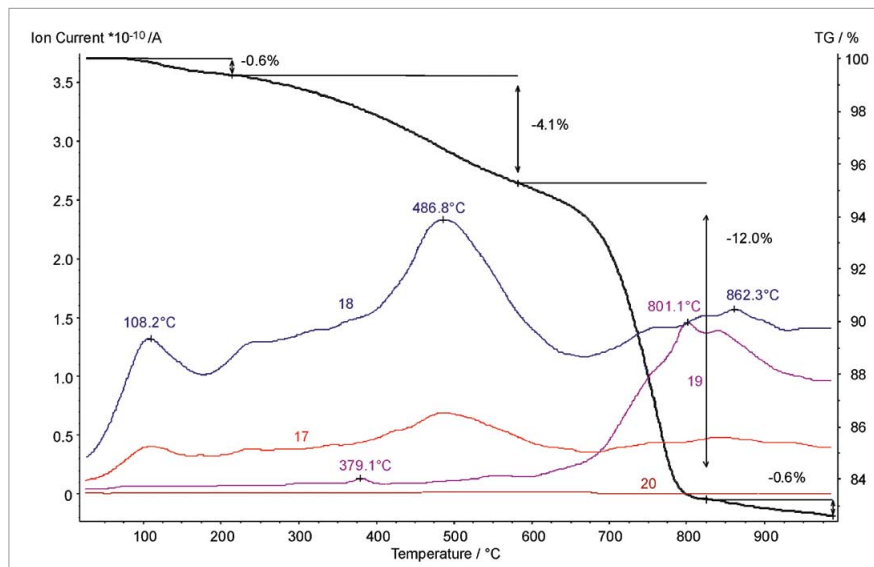
APPLICATION SHEET

INORGANICS – BUILDING MATERIALS

CLAY BRICK

Clay bricks are mass-produced articles where the costs had to be kept low. Therefore, only locally available clays are employed. The mineral content of the raw materials can be mixtures of fireclays, illites, montmorillonite, chlorite, quartz etc. After forming and drying, the raw brick is fired in kilns up to 1000°C to its final consistence. Often additives are also included like sawdust or polystyrene to increase

the porosity of clay bricks. The pollution of brick production can be very high dependent on the raw material used. Not only the emission of CO₂, CO, NO_x, but also the emission of HF and SO₂ has to be considered and limited by primary solutions (optimization of the firing process, additives etc.) or secondary procedures (dust filter, fluorine filter etc.).



Instrument

TG 209 **F1** – QMS 403 *Aëolos*®

Test Conditions

Temperature range	RT... 1000°C
Heating rate	10 K/min
Atmosphere	Air at 40 ml/min
Sample mass	21.7 mg
Crucible	Alumina
Sensor	TG type Platinel

Results

Clay materials used for the brick production often contain fluorine in small amounts. The detection of fluorine or HF with MS or FTIR is often problematic because of the small amounts evolved. Fluorine has mass number 19 and HF mass number 20. These mass numbers also occur when higher amounts of water are evolved because of the generation of H₃O⁺ (19 amu) and the oxygen isotope 18, this means H₂¹⁸O⁺ (20 amu). The measured brick clay shows the evolvement of fluorine at about 380°C and 800°C (peak temperatures) indicated by mass number 19 and no correspondend high intensity of mass number 18 representing water.