

# APPLICATION SHEET

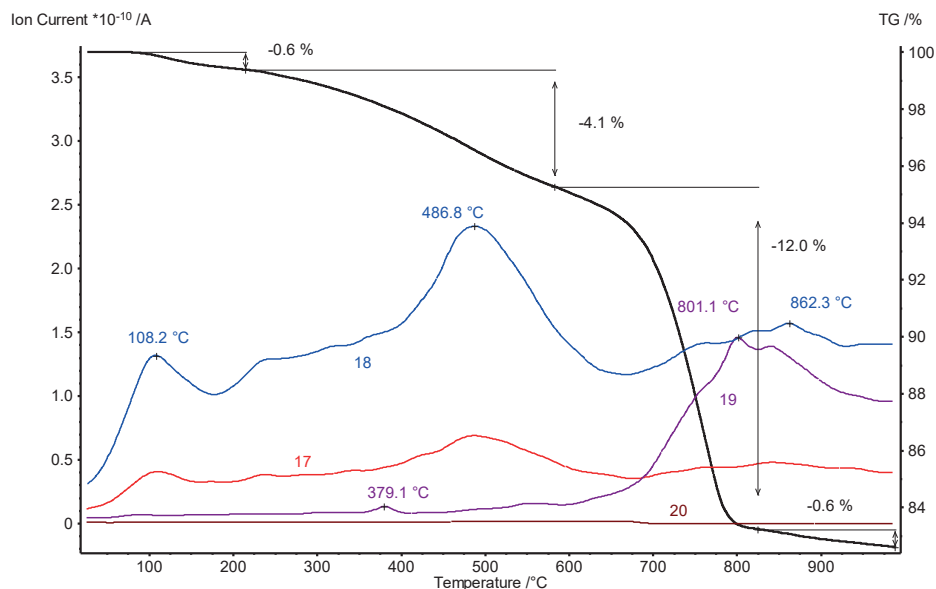
Inorganics · Building Materials  
TG 209 **F1 Libra**® - QMS **Aëolos**®

## Clay Brick

### Introduction

Clay bricks are mass-produced articles where costs have 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 highly dependent on the raw material used. Not only the emission of CO<sub>2</sub>, CO, NO<sub>x</sub>, but also the emission of HF and SO<sub>2</sub> has to be considered and limited by primary solutions (optimization of the firing process, additives, etc.) or secondary procedures (dust filter, fluorine filter, etc.)



### Test Conditions

Temperature range: RT ... 1000°C  
Heating rate: 10 K/min  
Atmosphere: Air (40 ml/min)  
Sample mass: 21.7 mg  
Crucible: Alumina  
Sensor: TGA, type Platinel

### Test Results

Clay materials used for the brick production often contain fluorine in small amounts. Detection of fluorine or HF with MS or FT-IR 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 H<sub>3</sub>O<sup>+</sup> (19 amu) and the oxygen isotope 18, this means H<sub>2</sub><sup>18</sup>O<sup>+</sup> (20 amu). The measured brick clay shows the evolution of fluorine at about 380°C and 800°C (peak temperatures) indicated by mass number 19 and no corresponding high intensity of mass number 18 representing water.