

APPLICATION SHEET

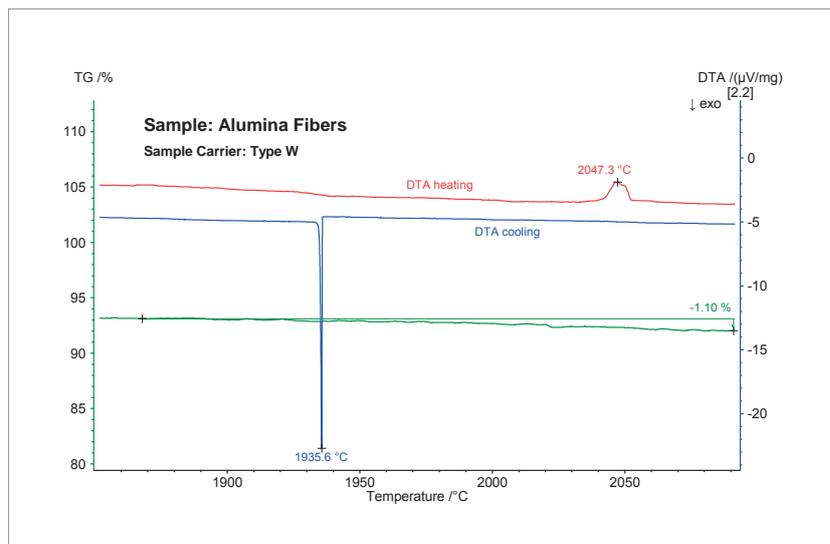
STA Accessories – Tungsten Low-Mass Sample Carrier

Alumina Fibers at the Highest Temperatures

The low-mass tungsten sample carrier has well-defined heat flow paths and a split geometry for high calorimetric sensitivity. The conical sample crucible fits safely into the massive sample carrier plate. The thermocouple connection is designed such that no welding is necessary. It is thus possible to measure the temperature and DTA signal directly and with high accuracy. Additionally, this sample carrier allows for a “crucible-in-crucible” arrangement in order to handle critical samples.



TGA-DTA tungsten sample carrier and crucibles made of tungsten, see also *Accessories for Differential Scanning Calorimeters and Thermobalances*



Melting and crystallization of alumina fibers observed in the DTA signal. Small mass loss indicates evaporation of the sample (STA 449 **F1** Jupiter®).

Tungsten has a lower vapor pressure compared to graphite and is therefore the material of choice when very high-end temperatures are required. This TGA-DTA measurement was performed with the tungsten furnace and sample carrier W3%Re/W25%/Re. Alumina fibers (6.8 mg) in the tungsten crucible were heated to 2100°C and then cooled

in a helium atmosphere. Upon heating, an endothermic effect occurred at 2047°C (peak temperature) which can be attributed to melting of the alumina fiber sample. Upon cooling, recrystallization occurred at 1936°C (peak temperature). A slight mass loss was detected above 1900°C which was probably due to partial evaporation of the sample.