Application Examples:

Differential scanning calorimeter DSC823e by Mettler-Toledo

Application
- Melting Behavior
- Glass Transition
- Crystallization
- Oxidation Stability
- Kinetics
- Purity
- Specific Heat

The test materials
Polymers
 Rubber
Vegetable Oil
Alloys
Minerals, mineral raw materials
Mineral oils
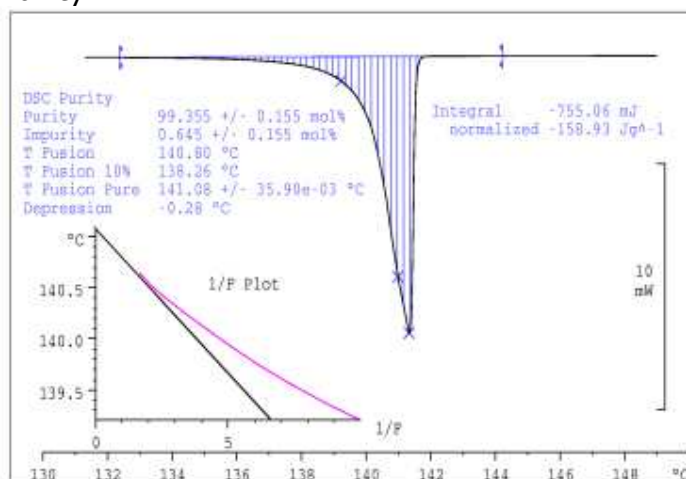**Building materials**
Ceramics
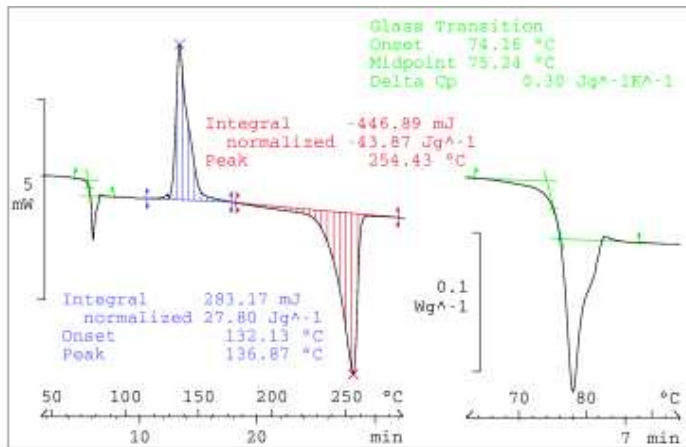**Wood**
Chemicals
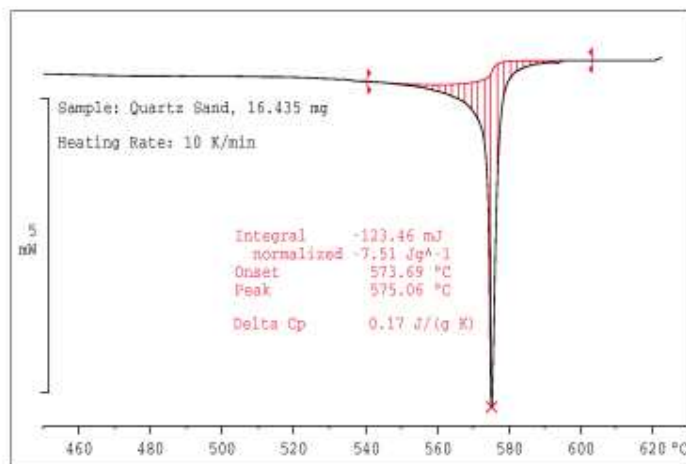**Pharmaceutical materials**

Application Examples:

Purity

The determination of purity is based on the van't Hoff equation. The STARe software algorithm not only calculates the purity, but also yields the melting point of the sample as well as the melting temperature at which ,of the sample has melted. If the melting process is observed visually 10% this "melting temperature" corresponds to the temperature at which a change in the appearance of the sample can first be seen. The melting point of the pure substance is obtained by extrapolation of the 1/F plo

Polyethylene Terephthalate

Glass Transition
Onset   74.16 °C
Midpoint 75.24 °C
Delta Cp   0.30 Jg^-1K^-1

Integral   -446.89 mJ
   normalized -43.87 Jg^-1
Peak   254.43 °C

Integral   283.17 mJ
   normalized 27.80 Jg^-1
Onset   132.13 °C
Peak   136.87 °C

0.1
Wg^-1

5
mW

50   100   150   200   250 °C
      10   20   min

70   80   °C
                7 min

PET exhibits a glass transition accompanied by noticeable thermal

relaxation. The sample then crystallizes (exothermic peak) and finally melts

at about 230 °C. The slight slope of the baseline is caused by a gradual

increase in the specific heat.

Phase Transition of Quartz

Sample: Quartz Sand, 16.435 mg

Heating Rate: 10 K/min

5
mW

Integral   -123.46 mJ
   normalized -7.51 Jg^-1
Onset   573.69 °C
Peak   575.06 °C

Delta Cp   0.17 J/(g K)

460   480   500   520   540   560   580   600   620 °C

α-quartz or crystalline silicon dioxide is a widely occurring mineral. The α-
modification, which is stable at room temperature, changes to β−quartz at
575 °C (solid-solid phase transition). The transition enthalpy is 7.5 J/g.
The phase change is also accompanied by a change in specific heat.