

THERMAL ANALYSIS

Differential scanning calorimetry tester

NETZSCH
DSC 214 Polyma

The DSC 214 Polyma is an instrument used to identify and characterize materials, by analysing their thermal properties. Its working is based on a specific thermal scanning program that highlights the temperature ranges at which the tested material undergoes a thermal event i.e. melting, crystallization, glass transition, or chemical reactions. Moreover it allows to determine the specific heat of the material.

These information are of utmost importance in predicting the materials' behaviour during technological processes, and on this base determine compliance of materials a process that is sensible to thermal characteristics.

The DSC analysis is mainly used for polymeric materials, and polymer based composites, but it's also suitable for inorganic materials.

The analysis consists in subject a sample and a reference to a specific thermal program in a specific atmosphere. The instrument measures the difference in heat flow needed to maintain sample and reference at nearly the same temperature, indicating the occurrence of exothermic or endothermic events.

Thermal Characteristics Which Can Typically Be Detected by Using DSC

- Melting temperatures and enthalpies (heats of fusion)
- Crystallization temperatures and enthalpies
- Glass transition temperatures
- Oxidative-induction time (OIT) and oxidative-onset temperature (OOT)
- Degree of crystallinity
- Reaction temperatures and enthalpies
- Cross-linking reactions (curing)
- Degree of curing
- Specific heat capacity
- Distribution of crystal molecular weight (qualitative, via peak shape)

DSC 214 Polyma

TEMPERATURE RANGE	-170°C to 600°C
HEATING/COOLING RATE	0.001 K/min to 500 K/min*
INDIUM RESPONSE RATIO	> 100 mW/K**
RESOLUTION (TECHNICAL)	0.1 µW
ENTHALPY PRECISION	± 0.1% for indium ± 0.05% to ± 0.2% for most samples
SPECIFIC HEAT DETERMINATION	Equipped
TEMPERATURE MODULATION	Equipped
COOLING DEVICE OPTIONS	Compressed air cooling (RT to 600°C) IC40 (-40°C to 600°C) IC70 (-70°C to 600°C) LN2, automatically controlled (-170°C to 600°C)
GAS ATMOSPHERES	Inert, oxidizing, static and dynamic operation
GAS CONTROLLER	Switches for 3 gases included MFC for 3 gases, optional

