NETZSCH

Adiabatic Reaction Calorimetry

Leading Thermal Analysis.

MMC 274 Nexus™

Multi Modular Adiabatic Calorimeter MMC 274 *Nexus*™

The MMC 274 *Nexus*™ can be used in conjunction with the DSC and the Accelerating Rate Calorimeter where its special features better match the application. The MMC 274 *Nexus*™ is used for measuring heats of reaction, reaction rates, endotherms, heat capacities, phase changes, gas generation rates and vapor pressures.

Like a DSC, the MMC 274 *Nexus*™ can:

- Measure sample power output as a function of temperature
- Measure endothermic and exothermic events
- Run in scanning modes or isothermal mode
- Utilize short test time
- Measure heat capacities

Like an Accelerating Rate Calorimeter, the MMC 274 Nexus™ allows:

- Mixing, injection, venting
- Collection of pressure data as a function of sample temperature
- Adiabatic operation, including low thermal inertia tests
- Working with larger multi-phase samples

Modular System

The MMC 274 *Nexus*™ consists of two parts: the base unit with electronics and the exchangeable calorimeter module. This guarantees maximum flexibility.

Exchangeable calorimeter modules are available for different applications:

- Accelerating Rate Calorimeter type module for safety testing
- *VariPhi*™ module for fire exposure and other tests
- External sample heater module for scanning tests
- Special modules for battery testing

Multiple Testing Modes

The MMC 274 *Nexus*™ can work in different testing modes. The scanning methods provide sensitivities comparable to Accelerating Rate Calorimeter tests in a fraction of the time it would take to run a Heat-Wait-Search test.

- Scanning Mode
  - Constant temperature range
  - Constant power
  - Fire exposure
- Isothermal
- Adiabatic (Heat-Wait-Search)

Key Features of the MMC 274 *Nexus*™

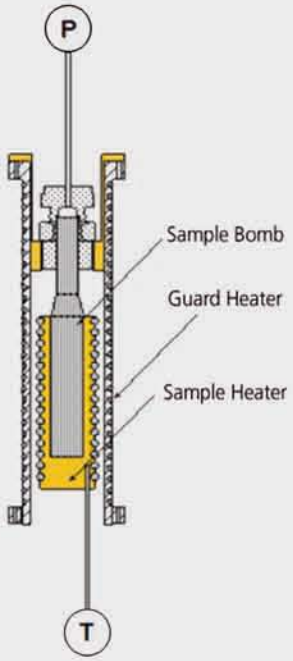
- Internal sample heater
- Stirring of the sample
- Injection of liquid sample
- Venting of the sample bomb
- Pressure measurement

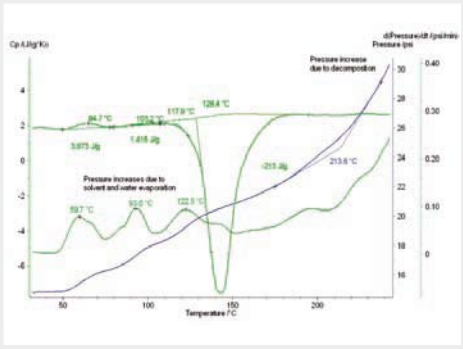
Remote Calorimeter Options:

- Humidity-controlled container
- Refrigerated container
- Explosion-proof container

MMC 274 *Nexus*™ – Application Examples

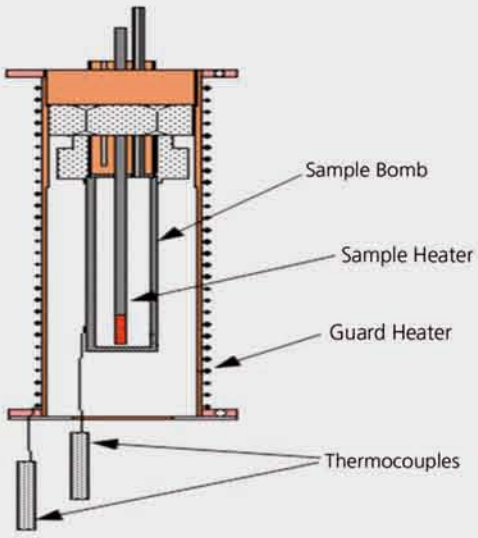
MMC 274 *Nexus*™ operating like a DSC.
Epoxy adhesive at constant power input to sample

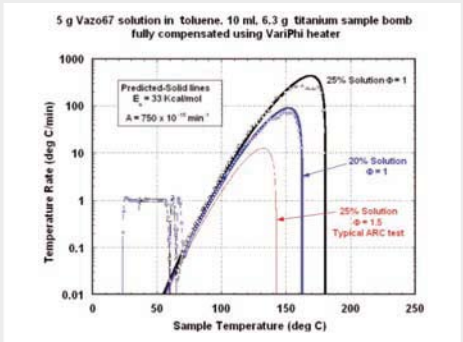


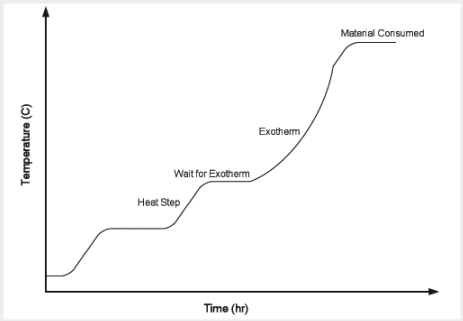


Pressure signal gives more information on solvents and decomposition compared to conventional DSC.

MMC 274 *Nexus*™ operating like a an Accelerating Rate Calorimeter.
5 g Vazo67 solution in toluene. 10 ml titanium sample bomb fully compensated, to Φ=1.0 using *VariPhi*™ heater.







Technical Data

The MMC 274 *Nexus*™ can be used for a wide range of applications in different areas, e.g.:

- Chemical Processing Industries
  - · Process development and safety
  - · Kinetics, □Hr
  - · Vapor pressures, VLE
- Storage and Transportation of Chemicals
- Physical Properties Measurements
- Batteries
  - · Thermal stability of whole cells
  - · Component testing (cathode materials, electrolytes)
- Energetic Materials Testing

	MMC Operating Mode		
Parameter	Scanning	H-W-S	Isothermal
Temperature Scanning Rate (K/min)	up to 2	up to 2	NA
Sample Size (g)	0.1 to 5	0.1 to 5	0.1 to 5
Sample Volume (ml)	0.1 to 6	0.1 to 6	0.1 to 6
Sensitivity Heat Flow (µW/g)	250	200	25
Sensitivity (temp. rate) (K/min)	0.02		
Dynamic Range (W)	0.00006 to 0.5	0.0001 to 350	0.0000125 to ND
Temperature Range (°C)	25 to 500		
Pressure Range (bar)	0 to 150		
Sample Composition	Multi-Phase		
Adiabatic Tracking Rate - Fast module (K/min)	up to 200		
Adiabatic Tracking Rate - Standard module (K/min)	up to 25		
Options	Injection, Stirring, High Temp. Application Specific Containers		

Exchangeable calorimeter module

Technical specifications subject to change

Leading Thermal Analysis.

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