

FAA Micro Calorimeter

(ASTM D7309)

firetesting
technology



Accurate and cost effective micro calorimetry using a Pyrolysis Combustion Flow Calorimeter (PCFC) ASTM D7309

The **FTT** Micro Calorimeter was developed in co-operation with the Federal Aviation Administration (FAA). It determines fundamental thermo-chemical data in seconds and predicts fire properties of materials.

The technique enables parameters such as Specific Heat Release Rate (W/g), Heat of Combustion (J/g) and Ignition Temperature (°C) to be quickly determined from very small (1-5mg) specimens. It is a low cost and accurate technique; typical repeatability is $\pm 5\%$.

Micro Calorimeter data has been shown to correlate with fire test data (Cone Calorimeter, OSU), flammability results (LOI, UL94) and combustion tests (Bomb Calorimeter) and is therefore seen as a powerful, low cost tool to assess and predict flammability properties.

The **FTT** Micro Calorimeter uses the same oxygen consumption calorimetry technique used in our bench and room scale calorimeters. The specimen is first heated at a constant rate of temperature rise (typically 1°C/s) in a pyrolyser and the degradation products are purged from the pyrolyser by an inert gas (nitrogen). The gas stream is mixed with oxygen and enters a combustor at 900°C where the decomposition products are completely oxidised. Oxygen concentrations and flow rates of the combustion gases are used to determine the oxygen consumption involved in the combustion process and the heat release rates are determined from these measurements.



Software

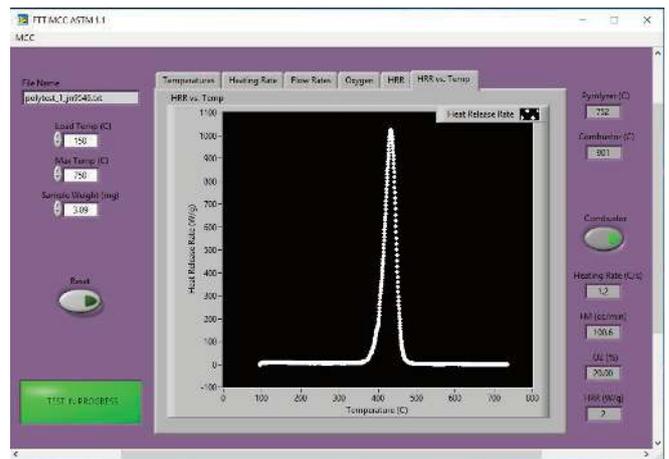
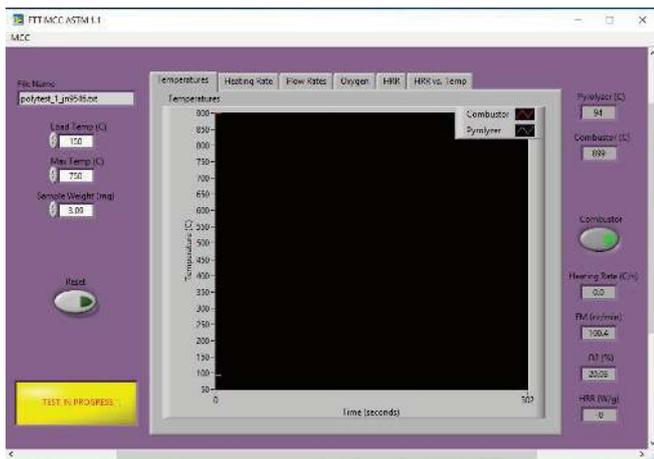
The **FTT** Micro Calorimeter is supplied with a Microsoft Windows based data acquisition and analysis software with an intuitive user interface using standard Windows data entry fields, drop down selectors, check boxes and switches.

The software enables:

- The instrument status to be shown
- Calibration of the instrument and storage of calibration results
- Collection of data generated during a test
- Calculating the required parameters
- Presenting the results in a manner approved by the Standard

Features and Benefits

- Ability to generate quantitative results in minutes
- Automatic control of temperature and gas flow rates
- Small sample size (1-5mg)
- Over temperature protection of both furnaces
- Removable rear cover to access all serviceable parts such as the Fuel Cell for ease of maintenance
- Dual voltage 96-264VAC, 50-60Hz (No need to switch)



TECHNICAL SPECIFICATIONS

Measuring Principle Pyrolysis Combustion Flow Calorimetry

Combustor operating temperature range 25 to 1000°C

Heating rate 0.4 to 4°C/s

Sample size 1 to 5mg

Detection limit 5mW

Repeatability ± 5% (1 mg sample)

Dimensions 1050mm (H) × 350mm (W) × 550mm (D)

Built in accordance with EMC 89/336/EEC, LVD 72/23/EEC, BS EN 60204-1, BS EN 746-2

Due to the continuous development policy of FTT technical changes could be made without prior notice.

SERVICES

Gas supply Pressure regulated Nitrogen (oxygen free) at approximately 2 bar
Pressure regulated Oxygen at approximately 2 bar

Power Dual voltage 96-264VAC 10A, 50/60Hz

Extraction Fume cupboard or extraction system capable of extracting a volume flow of 100cc/min

Scales With a capacity of 250 mg or greater and a sensitivity of 0.01mg, to weigh specimens or containers, or both.

Drierite Drierite is required to remove the water from the sample.

Unrivalled Experience in Design and Manufacturing

FTT's site in East Grinstead, is home to the largest group of fire scientists and instrumentation design engineers working on fire testing instrumentation, and is at the heart of our design and manufacturing. For almost 30 years

FTT has provided the highest quality instruments and service for fire testing and research professionals worldwide, directly and through its extensive global sales and support network.



Quality

- World-class manufacturing in accordance with multiple international and national standards, including: EN, ISO & ASTM
- ISO 14001, ISO 9001 certified

Integrity

- A dedicated team passionate about fire testing instrumentation and continuous product improvement
- Delivering reliable, robust and easy-to-use instruments for the past 30 years

Excellence

- A world-class team made up of qualified fire scientists, mechanical, electrical and electronic fire instrument design engineers and production, installation and maintenance engineers

Global

- World-wide distribution network for global sales, installations, training, maintenance and technical support
- Leading global supplier of the Cone Calorimeter, Large Scale Calorimeter, NBS Smoke Chamber and Oxygen Index