

Flash Fire Cylinder



This innovative benchtop instrument is designed to provide effective 3D sample evaluation and to bridge the gap between flat-specimen TPP testing and full-garment Flame Manikin tests.

The Flash Fire Cylinder developed by Thermetrics® provides an accurate and repeatable tool to quantify effects of FR fabric performance (including shrinkage and shape change) that may not be realistically represented with TPP results. By exposing a cylindrical sample to a uniform high intensity flame, the heat-transfer impacts of material shrinkage and compression can be observed visually and objectively as a predicted time-to-burn.

This instrument is based on proven technology from the Thermetrics® TPP and "Burnie" Flame Manikin systems. Operators can use the device to quickly screen a wide range of samples and identify the most promising FR fabrics, composite layers, and subassemblies prior to the costly step of building complete ensembles for comprehensive full-body Flame Manikin tests.

The Flash Fire Cylinder is not intended to replace the realism of a full-body flame manikin test. Its purpose is to add a dimensional test to the characterization and ranking of FR materials, thus speeding up design iterations.

FEATURES AT A GLANCE

- Complete turn-key system including measurement device, flame source, laptop computer and Thermetrics' exclusive ThermDAC control with data acquisition software and burn model.
- Repeatable instrument for evaluating the properties of FR fabric when subjected to convective heat exposure, and the resultant risk of skin burns.
- Eight-torch design, consisting of 4x2 adjustable propane torch arrays to expose fabric samples to a uniform 360° heat source.
- Contains 15 evenly spaced copper calorimeter sensors embedded in a flame resistant ceramic cylinder shell.
- ThermDAC software automatically collects data and performs all calculations necessary to generate the test results. Data file can be saved as a test report.
- Test specimens are easily assembled as cylindrical fabric sleeves.
- Perfect for material and component studies. Can be upgraded for FR glove testing too!
- The new Flash Fire Cylinder is designed to characterize 3-dimensional samples, but it does not replace the need for full-garment flame manikin testing.



Thermetrics

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Specifications

Standard Components

- High-temperature ceramic composite test cylinder
- 15 copper calorimeter sensors
- 8 torch nozzles on 4 stands
- Propane gas distribution and controls
- Laptop PC
- ThermDAC acquisition software with integrated burn prediction model
- Removable sample hanger for drapable samples

Optional Accessories

- Optional Flash Fire Hand is available for evaluating FR gloves. The Flame Hand is easily interchangeable with the standard test cylinder
- Additional replacement sensors available

Call for a quote on custom modifications

Range/ Performance/ Accuracy

Flame Source

- Incident heat flux adjustable up to 84 kW/m²
- Heat flux uniformity tuneable by torch position
- Manual pilot ignition with operator interlock
- Digital control of flame exposure time

Sensors

- Copper guarded disc calorimeters
- Measurement range 0-167 kW/m² (0-4.0 cal/cm²)
- Temperature measurement accuracy $\pm 0.75^{\circ}\text{C}$
- Sampling rate: 10Hz
- Absorptivity > 0.9

Burn Model

- Per ASTM F1930 and 13506
- Computes burn degree (1st, 2nd, 3rd) and time to burn for each sensor
- Compiles total burn severity based on user-selected sensor or sensor groups.

Dimensions

- Device 27" L x 22" W x 20" H (55.9 cm x 68.6 cm x 50.8 cm)
- Cylinder Height 11.25" (28.6 cm)
- Cylinder Diameter 3.6" (9.1 cm)

ThermDAC Control Software

ThermDAC is a Windows-based application providing full, data logging, analysis and visualization capabilities.

- Predefined tests are available via a convenient drop-down onscreen menu
- Users can also create their own tests with custom conditions and tolerance criteria
- View device variables on graph and tabular views
- Apply real-time statistical functions to test data over any user-selected time range
- Color coded cylinder pictorial display selectable for any variable (temperature, heat flux, burn degree, etc.)
- Intergrated burn model estimates servery of tissue damage

Service

All systems come with a one year warranty. Please ask about these service options:

- Startup installation and training
- Extended warranty
- Annual Service Care Package—a periodic maintenance and service contract designed to keep your Thermetrics equipment calibrated and in top operating condition

