

CCHR (Conductive and Compressive Heat Resistance)



The Conductive and Compressive Heat Resistance (CCHR) device evaluates the potential for skin burns resulting from a fabric's conductive properties under compression.

Protective clothing materials that are exposed to heated surfaces can absorb and re-emit enough thermal energy to cause serious burn injuries when the composite fabric material is compressed against the skin.

Measuring the amount of energy transferred by a protective fabric via thermal conduction to the wearer requires specific exposure conditions and complex analysis—parameters that the CCHR device was developed to isolate, reproduce, and quantify as per NFPA 1971 and ASTM F1060.

The CCHR device features a durable stainless steel hotplate with an electronics-grade copper test surface for precise temperature control. System includes specimen holders, removable calorimeter sensor assembly, a pneumatically-actuated transfer tray and integrated compression system.

Upon initiation of a test, the specimen is exposed to the heat source, then automatically placed over the test surface and compression is applied. When the test completes, the sensor rises and the sample is moved off of the test surface.

System includes PC laptop computer with ThermDAC data acquisition and control system, with burn prediction.

ASSOCIATED TEST METHODS

- ASTM F1060
- NFPA 1971

FEATURES AT A GLANCE

- The CCHR tests textiles and materials used in protective clothing systems worn by firefighters and other first responders.
- Automatic test operation utilizes an electronically controlled specimen carriage for measurement accuracy and operator safety
- Computer controlled pneumatics apply a compressive force between 0.5 psi to 8.0 psi on the specimen.
- The pressure applied to the specimen is monitored in real time through the use of a precision load cell.
- Heated surface capable of reaching temperatures up to 371°C with an accuracy of +/- 1.5°C. *Higher temperature capabilities are available.*
- Compact size allows unit to be easily moved into and out of a fume hood.
- Precisely weighted copper calorimeter sensor is optimized for human skin response and integrated with the compression system.



Thermetrics

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Specifications

Standard

- Highly durable 8" x 8" stainless steel hot plate, adjustable for temperatures up to 371°C
- Electronics grade copper conduction test surface plate (removable for easy cleaning)
- Automatic EPC calculation, plus "Time to Pain" and "Time to Second Degree Burn" results
- Computer controlled pneumatic compression system with user-defined compression pressure up to 8.0 PSI
- Specimen sizes: variable specimen holders can accommodate sample sizes up to 6"x6" (15x15cm) square and up to 2.0" (5cm) thick
- Signal conditioning electronics and USB interface
- Power and control cabling
- Dell laptop computer with ThermDAC control Burn Model software

Additions

- Copper slug calorimeter sensors

Range / Performance / Accuracy

- Hot plate temperatures range: ambient to 371°C, with an accuracy of +/- 1.5°C
- Pneumatic compression range: 0.5 - 8.0 PSI

Model Information

- **Device Dimensions:** LxWxH – 23.4"x16.9"x26.6" (59.5 x 43 x 67.5cm)
- **Space Requirements:** LxWxH – 26.4"x19.8"x27.4" (67 x 50.5 x 70cm)
- **Power Requirements:** 208 to 265 VAC, 50/60Hz, single phase. Max nominal current 5 Amps
- **Compressed Air:** clean/dry air at 70 to 120 PSI

ThermDAC control software with Burn Prediction

ThermDAC is a Windows-based application providing full device control, fault detection, data logging and analysis capabilities:

- Burn results are shown as a real-time numerical and graphical display.
- Operators can define non-standard test conditions and custom tolerance criteria
- View multiple device and ambient variables on a single graph screen
- Apply real-time statistical functions to test data over any user-selected time range

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

