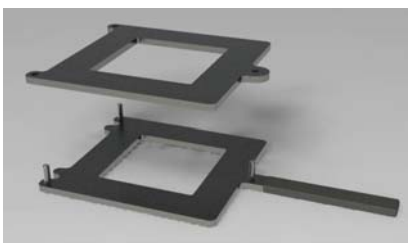
MEASUREMENT Technology NORTHWEST

4211- 24th Avenue West, Seattle, WA 98199
Phone/206-634-1308 Fax/206-634-1309
www.mtnw-usa.com

Stored Energy Test Device

- **Evaluates the potential for skin burns that may be associated with a fabric's stored thermal energy**
- **Automatic or manual test operation**
- **Radiant panel heat source (adjustable temperature) produces radiant energy matching the spectral density of a structural fire**
- **Water-cooled sample carriage, electronically actuated for precise control of exposure time over the heat source**
- **Pneumatic compressor applies 1 PSI pressure load to sample via a low conductivity mandrel**
- **System includes integrated Burn Model to predict the severity of skin damage. Estimated time to second degree burn following exposure is also calculated**
- **Burn results shown as a real-time numerical and graphical display of the epidermis-dermis layer interface temperature and burn integral Omega.**

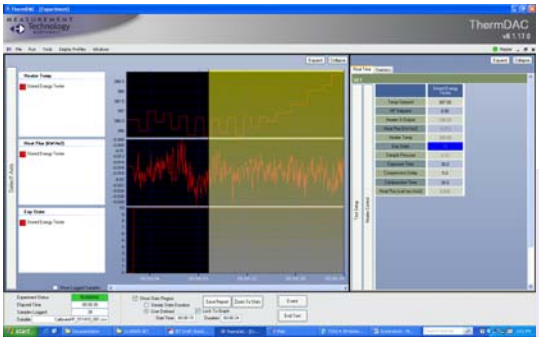


6"x6" Sample Holders

Firefighter protective clothing materials exposed to moderate levels of radiant heating can cause serious burn injuries when compressed against the skin. The amount of energy stored in a protective fabric and transferred to the wearer requires specific exposure conditions and complex analysis - parameters that the Stored Energy Test device was developed to isolate, reproduce, and quantify for ASTM F2731.

The Stored Energy Test (SET) device provides a standardized procedure and controlled radiant heat conditions to generate repeatable measurements of heat storage and transfer in protective fabric materials. These measurements allow for rapid characterizing and ranking of materials, and, through the Stored Energy Test device's integrated burn model software, provides a prediction of possible burn injury.

The Stored Energy Test device includes radiant heating source, specimen holder, calorimeter sensor assembly, pneumatically actuated transfer tray with water-cooled carriage, compressor, DAQ/control system, and burn damage analysis program.



Instruments for Textile and Biophysical Testing

Stored Energy Test Device

Standard Specifications

Radiant heat panel adjustable from 0-0.25 cal/cm2
Heat panel can be operated in two modes: temperature control or heat flux control
Water-cooled sample carriage holds the sample and copper calorimeter exposure sensor
Pneumatically controlled compression system
Sample compression force can be adjusted by varying the air pressure supplied to the cylinder
Sample size: 6x6 inch (15x15cm). Spacers of various thicknesses are provided for when minimal sample edge compression is desired

System Includes

Dell PC laptop or desktop computer
ThermDAC control software with Burn Model
Signal conditioning electronics and USB interface
Power and control cabling, Operators manual
One year warranty

Lab Requirements

Requires a well-ventilated location, a dry compressed air source, and a cooling water supply line. The SET device is designed to operate with the radiant heating source either horizontal or vertical. Recommended use is in the vertical orientation.

Measurement Range

± 1.0°C temperature measurement
± 3% radiant heat flux measurement

SET test device fully complies with the ASTM F2731 standard

Model Information

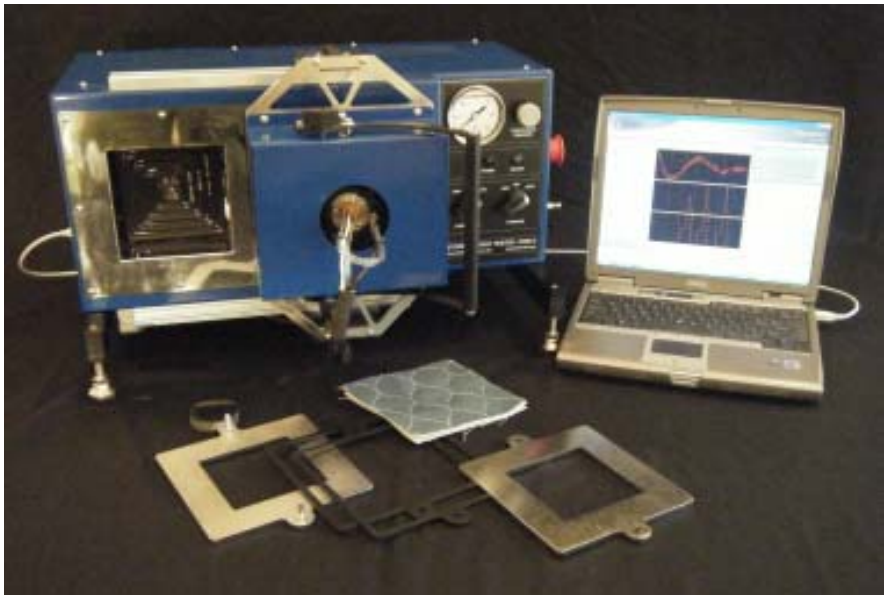
Model Size: 24.5 x 17 x 14"H (62 x 43 x 36cm)
Min. Operating Space: 36 x 20 x 16"H (92 x 51 x 41cm)
Power Requirements: 200-265 VAC, 50/60Hz, Single-phase
Maximum nominal current of 5 Amps
Compressed Air: Uses clean/dry air supplied at 50-90 PSI
Cooling Water: Water supply to device regulated to 32.5°C with a flowrate of 100 ml/min or greater (local tap water supply is also acceptable)

ThermDAC™ Control Software with Burn Model

ThermDAC was developed by Measurement Technology NW specifically for our line of thermal testing instruments. It is a user-friendly, intuitive, Windows-based application that provides full thermal control, fault detection, and data logging capabilities. System configuration and calibration are also carried out within ThermDAC.

User-defined tests allow operators to define non-standard test conditions and custom tolerance criteria. Multiple graph displays can be viewed, with zooming to view specific conditions in detail. Real-time statistical functions can be applied to the test data over any user-selected time range.

Operator training is available from Measurement Technology NW engineers or regional sales representatives to certify technicians in the use of this device.



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