

# TPP Test Device

- Evaluates the potential for skin burns associated with a fabric's ability to block convective and radiant heat penetration.
- Automatic or manual test operation.
- Quartz tube radiant heat source, plus gas burner convective heat source.
- Supports up to three copper disk calorimeter sensor assemblies.
- Integrated air-cooled sensor stand quickly prepares calorimeter sensor for next test.
- Water-cooled shutter is pneumatically actuated for precise exposure control.
- System includes Burn Algorithm to predict the time to second degree burn following exposure.
- Burn results shown as a real-time numerical and graphical display of sample performance compared to Stoll curve.
- Full system operating manual and one year limited warrantee.



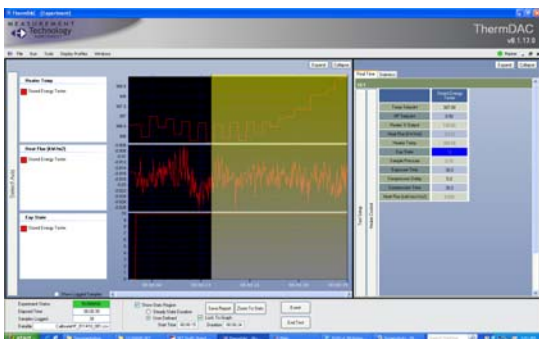
The Thermal Protective Performance (TPP) Test Device was developed to measure the time elapsed for convective and radiant heat to penetrate through a protective composite fabric system - resulting in damage to human skin.

The TPP device includes two propane burners and a 9-bulb quartz infrared heat lamp assembly, a pneumatically actuated sample carriage with water-cooled shutter, three thermocouple inputs, an integrated sensor cooling stand for improved test throughput, software safety interlocks, and mass flow controller.

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

During testing, ThermDAC control software will continuously record and display a real-time graph of the average temperature rise, depicted as a curved line representing higher and higher temperatures as heat penetrates through the composite fabric materials to the sensor. After the test is completed, the results are automatically compared to Stoll's curve, which represents the blister point of human skin as a function of heat and time. The point of intersection between these two curves provides the composite fabric's TPP rating.

Measurement Technology NW's TPP device complies with ISO 17492, ASTM F2700, ASTM F2703, NFPA 1971, and NFPA 2112.



Instruments for Textile  
and Biophysical Testing

# TPP Test Device

## Standard Specifications

Radiant heat panel with 9 quartz (500W) infrared lamps  
Propane burners (2) with flame detection auto ignition  
Includes mass flow controller and panel  
Automatic radiant heat and burner control  
Water-cooled protective shutter  
Pneumatic sample carriage and shutter assembly  
Sample holders (2) included  
(2) Calorimeter sensor assemblies (Test1, Test2)  
Calibration sensor assembly also available  
Integrated sensor cooling stand (air cooled)  
Up to 8 x 8 inch (20x20cm) sample size  
Emergency stop cuts gas flow and power to lamps  
Tinted acrylic shield (shown below) protects operator  
Software safety interlocks monitor water flow, carriage position, burner ignition

## System Includes

Dell PC and ThermDAC software w/Burn Algorithm  
Signal conditioning electronics and USB interface  
Power and control cabling, Operators manual  
One year warranty

## Lab Requirements

Requires a well-ventilated location with hood, a dry compressed air source, a cooling water supply line, and propane gas supply. Hood shutoff capability is recommended for air intake.

## Measurement Range

$\pm 0.75^{\circ}\text{C}$  temperature measurement  
 $\pm 3\%$  radiant heat flux measurement  
**Device complies with ISO 17492, ASTM F2700, ASTM F2703, NFPA 1971, and NFPA 2112 standards.**



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## Model Information

Device Dimensions: 42"x20"x18"H (107 x 51 x 46cm H)  
Space Requirements: 46"x30"x24" H (117 x 76 x 61cm H)  
Power Requirements: 200-265 VAC, 50/60Hz, Single-phase  
Maximum nominal current 20 Amps  
Compressed Air: Clean/dry air at 50-90 PSI, (100 PSI max)  
Cooling Water: Cooling water required, chiller or tap water source is acceptable  
Propane Gas: Regulated supply @ 15 PSI (minimum)

## ThermDAC™ Control Software

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. TPP system configuration and burn prediction calculations are also contained 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.

