

Flame Test Manikin



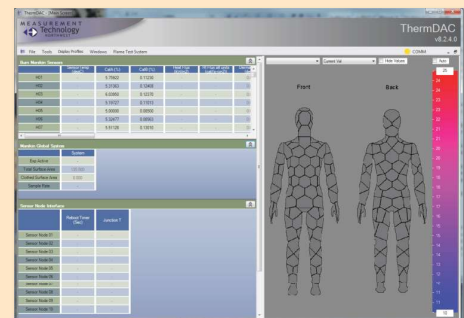
Thermetrics' advanced Flame Test Manikin system is a complete turn-key package, with articulated manikin form, control electronics, modular burn chamber, PC computer and burn prediction software, allowing the operator to characterize the performance of garments or protective clothing ensembles in a simulated flash fire environment having controlled heat flux, flame distribution, and duration.

The manikin meets ASTM F1930 and ISO 13506 testing standards, and is based on our 50th percentile "Newton" body form. The manikin is jointed at the shoulders, elbows, hips, knees, and ankles, with an exclusive non-degrading ceramic composite shell containing 126 copper calorimeter sensors – which are integrated into the manikin shell for protection against damage during dressing / undressing and manikin manipulation.

A modular burn chamber is also available, featuring fire-proof construction, a computer controlled gas delivery and burner network, as well as ventilation, fire suppression, and safety systems. Chamber design includes large viewing windows and a safety window in the access door. A video monitoring system is also included for safety and visual documentation of flame and garment response

FEATURES AT A GLANCE

- Manikin shell is constructed from a ceramic composite material that is completely fireproof and will not degrade with use.
- Manikin joints feature adjustable settings to allow posing in fixed positions.
- Cable connections and manikin support can be configured through the top of the head, side or back of neck, or another alternate location per customer request.
- Data acquisition components are located within the manikin body to digitize signals near their source for highest accuracy measurements.
- Copper disc sensors do not degrade with use and provide a better match to human skin response.
- Hands disassemble for easy dressing and undressing of the manikin.
- Chamber includes gas distribution system and 8 or 12 torch array to apply a uniform flame front onto the manikin. Chambers feature a pre-engineered ventilation system to supply oxygen for combustion, and to vent the heated chamber space after a burn.



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Standard Specifications

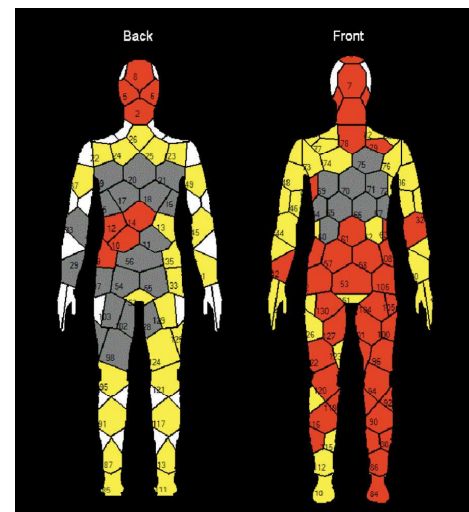
- Flame Test Manikin meets the ASTM F1930 and ISO 13506 test standards. Body dimensions conform to ASTM D6240.
- Manikin construction utilizes a non-degrading, flame-proof ceramic-composite body form.
- Manikin jointed at the shoulders, elbows, hips, knees, and ankles. Mounting support and cable connection can be at the top of head, or side/back of neck to minimize penetrations in the test garment.
- 126 precision calorimeter heat sensors measure the incident heat flux over a range from 0.0 to 4.0 cal/cm²•s (167 kW/m²)
- A hand-held heat flux gun with NIST traceable reference sensor is provided for in-situ calibration of the manikin's sensors
- Burn chamber ignition controls are integrated with the ventilation system to prevent buildup of explosive gases and quickly ventilate the chamber after a burn cycle is completed.
- Torch array is designed to provide a uniform heat flux of at least 2.0 cal/cm²•s (84 kW/m²)
- Redundant electronic and manual gas shutoff valves protect the system and operators, and the chamber is also equipped with approved fire suppression systems.
- Burn chamber includes mesh screens and activated charcoal filters to remove soot and any combustion byproducts/pollutants to ensure that local air quality is not affected.
- Chamber size is larger than the ASTM F1930 minimum dimensions to provide better combustion and ventilation, more uniform flame exposure, and sufficient space for safe movement around the manikin.

Site Requirements

The burn chamber design can be installed as a stand-alone exterior unit or installed inside an existing facility with the oversight and approval of local regulatory agencies.

ThermDAC Control Software

ThermDAC Burn Model software incorporates data logging, real time statistics and data analysis, plus diagnostic and calibration functions. Software processes sensor data and calculates the degree and total area of predicted burn injury.



*Modular Burn Chamber
Left: Outside (back) view
Right: Inside view, toward windows*