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MASK MATERIAL FLAMMABILITY TESTER

Mask Material Flammability Tester — ToronFT™ MM

ToronFT™ MM Mask Material Flammability Tester is a precision flammability testing instrument designed for the flammability evaluation of materials used in fire-fighting self-rescue respirators, self-priming filtering anti-particulate respirators, and replaceable masks — including half masks, full masks, and disposable masks. By replicating the in-use position of the mask on a metal head mold and passing the assembled mask through a defined propane gas flame at a standardized linear speed, the ToronFT™ MM accurately characterizes the real-world flammability performance of mask materials under conditions that replicate flame exposure during live firefighting or emergency response operations.

The mask material flammability tester integrates a precision metal head mold, bracket and rotation platform, propane gas burner, gas regulation and control circuit, control panel, and temperature measurement device into a complete, standardized flammability test system — providing the most realistic and reproducible mask material flammability data for PPE qualification and certification programs.

APPLICATIONS

Mask Material Flammability Tester — ToronFT™ MM Applications

- Fire-fighting respirator and self-rescue respirator manufacturers: mask material flammability qualification for firefighter and emergency responder PPE
- Industrial respirator and anti-particulate mask manufacturers: flammability testing of half masks, full masks, and disposable respirator materials
- Third-party PPE testing and certification laboratories: mask material flammability testing per NFPA 1971, EN 136, and related international standards
- Quality assurance departments: production-lot and incoming inspection mask material flammability sampling

- R&D departments: evaluation of new mask body, filter, and harness materials for improved flammability resistance


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ToronFT™ MM - Mask Material Flammability Tester

Standards

The ToronFT™ MM supports mask material flammability testing in compliance with internationally recognized PPE and respirator safety standards, including:

- NFPA 1971: Standard on protective ensembles for structural fire fighting and proximity fire fighting (flame retardant PPE components)
- EN 136: Respiratory protective devices — Full face masks — Requirements, testing, marking
- EN 140: Respiratory protective devices — Half masks and quarter masks — Requirements, testing, marking
- ISO 16900-3: Respiratory protective devices — Methods of test and test equipment — Part 3: Determination of practical performance
- ANSI/ISEA 110: American national standard for air-purifying respiratory protective devices

FEATURES

Mask Material Flammability Tester — ToronFT™ MM Key Features

- Designed for fire-fighting self-rescue respirators, self-priming filtering anti-particulate respirators, and replaceable masks: half masks, full masks, and disposable masks
- Comprehensive instrument composition: head mold of the specimen, bracket and rotation platform, propane gas burner, gas regulation and control circuit, control panel, temperature measurement device
- Metal head mold: simulates the human head geometry for authentic in-use mask positioning — reproduces real flame retardant performance of the mask when worn
- Nose tip displacement speed: (60 ± 5) mm/s linear speed or displacement speed — standardized flame exposure rate
- Gas regulation and control circuit: maintains consistent propane flame characteristics throughout every test event
- Temperature measurement device: verifies flame temperature compliance with standard-specified heat source parameters

- Rotation bracket and platform: adjustable for different mask sizes and configurations

THEORY & METHOD

Theory and Method

The mask material flammability test replicates the flame exposure experienced by a respirator mask during emergency operations. The mask specimen is fitted onto the metal head mold — which is mounted on a rotation bracket and platform that controls nose tip displacement at a defined speed. The head mold is driven past the propane gas burner at a linear speed or displacement speed of (60 ± 5) mm/s, exposing the mask to a standardized open flame for a defined duration.

The propane gas supply is regulated by the gas regulation and control circuit to maintain the required flame characteristics throughout the test. The temperature measurement device monitors the flame temperature to confirm compliance with the standard-specified heat source parameters. After flame exposure, the mask is inspected for continued burning, structural integrity, and any evidence of ignition of mask components — all of which are compared against the acceptance criteria of the applicable standard. The bracket and rotation platform supporting the head mold can be adjusted to accommodate different mask sizes and head mold configurations.

TECHNICAL SPECIFICATIONS

Mask Material Flammability Tester — ToronFT™ MM Technical Specifications

Parameter	Specification

Applicable Masks	Fire-fighting self-rescue respirators, self-priming filtering anti-particulate respirators, half masks, full masks, disposable masks
Instrument Composition	Head mold, bracket and rotation platform, propane burner, gas regulation/control circuit, control panel, temperature measurement device
Head Mold Material	Metal
Nose Tip Displacement / Linear Speed	(60 ± 5) mm/s
Fuel Gas	Propane
Temperature Measurement	Integrated device (flame temperature verification)
Standard Reference	NFPA 1971; EN 136; EN 140; ISO 16900-3

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