



TORONTECH

# FLAME RETARDANT PAPER AND CARDBOARD BURNING TESTER



# Flame Retardant Paper and Cardboard Burning Tester — ToronFT™ FR-PCB

ToronFT™ FR-PCB Flame Retardant Paper and Cardboard Burning Tester is a precision combustion testing instrument designed for the burning performance evaluation of flame retardant-treated paper and cardboard products with a thickness less than 1.6 mm. The instrument is applicable to two categories of flame retardant paper and cardboard: (1) raw flame retardant paper and cardboard with a thickness less than 1.6 mm, and (2) flame retardant paper and cardboard of flame retardant products with a thickness less than 1.6 mm that has been coated or printed — covering the full range of thin paper and cardboard substrates treated or coated with flame retardant systems.

The flame retardant paper and cardboard burning tester features a high-precision pressure regulating valve for accurate gas pressure adjustment, a CNC-machined and painted box body for durability and dimensional accuracy, and compatibility with liquefied propane or natural gas (purity  $\geq 95\%$ ) — providing a complete, standard-compliant burning test platform for thin flame retardant paper and cardboard qualification.

## APPLICATIONS

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### Flame Retardant Paper and Cardboard Burning Tester — ToronFT™ FR-PCB Applications

- Flame retardant paper and cardboard manufacturers: burning performance qualification for treated or coated paper and cardboard products (thickness  $< 1.6$  mm)
- Packaging and printing manufacturers: fire performance testing of flame retardant-coated or flame retardant-printed paper and cardboard packaging

- Third-party fire testing and certification laboratories: flame retardant paper and cardboard burning performance testing per applicable standards
- Quality assurance departments: production-lot sampling of flame retardant paper and cardboard burning performance compliance
- R&D departments: evaluation of new flame retardant coatings, treatments, and printing systems applied to paper and cardboard substrates



# Standards

The ToronFT™ FR-PCB supports flame retardant paper and cardboard burning tests in compliance with internationally recognized fire performance standards, including:

- ISO 6940: Textile fabrics — Burning behaviour — Determination of ease of ignition of vertically oriented specimens (reference methodology for thin material burning)
- ASTM D1360: Standard test method for fire retardancy of paints (cabinet method)
- EN 13501-1: Fire classification of construction products and building elements — Classification using data from reaction to fire tests
- ISO 11925-2: Reaction to fire tests — Ignitability of building products subjected to direct impingement of flame
- TAPPI T461: Flame resistance of treated paper and paperboard

## FEATURES

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### Flame Retardant Paper and Cardboard Burning Tester — ToronFT™ FR-PCB Key Features

- Suitable for flame retardant paper and cardboard with thickness < 1.6 mm — covering both raw flame retardant material and coated or printed flame retardant products
- High-precision pressure regulating valve for accurate, standard-compliant gas pressure adjustment — maintaining consistent flame characteristics
- Gas source: liquefied propane or natural gas (purity  $\geq 95\%$ ) — flexible gas supply compatibility
- Box body: CNC machine tool-machined, painted surface finish — dimensional precision, corrosion resistance, and long service life
- Compact, bench-top design for efficient laboratory and production quality assurance integration

- Covers both raw flame retardant paper/cardboard and coated/printed flame retardant products in the same instrument platform

## THEORY & METHOD

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### Theory and Method

The flame retardant paper and cardboard burning test evaluates the ignitability and flame spread resistance of treated or coated thin paper and cardboard specimens under controlled flame exposure. The specimen is mounted in the test chamber of the CNC-machined box body, and the burner — supplied with liquefied propane or natural gas at the standard-specified pressure (set by the high-precision pressure regulating valve) — is applied to the specimen for the defined ignition time.

After igniter withdrawal, the afterflaming time, afterglowing time, and any damage (char length, hole formation, or drip ignition) are measured and compared against the acceptance criteria of the applicable standard. The high-precision pressure regulating valve maintains the gas supply pressure within the tolerance required by the standard throughout each test, ensuring consistent flame characteristics. The CNC-machined and painted box body provides the dimensional precision required for standard-compliant specimen positioning and airflow geometry.

## TECHNICAL SPECIFICATIONS

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### Flame Retardant Paper and Cardboard Burning Tester — ToronFT™ FR-PCB Technical Specifications

| Parameter | Specification   |
|-----------|-----------------|
| Model     | ToronFT™ FR-PCB |

| Parameter                     | Specification                                                                                                     |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Applicable Material Thickness | < 1.6 mm                                                                                                          |
| Applicable Products           | Flame retardant paper/cardboard (raw); flame retardant-coated/printed paper/cardboard of flame retardant products |
| Gas Pressure Control          | High-precision pressure regulating valve                                                                          |
| Gas Source                    | Liquefied propane or natural gas (purity $\geq$ 95%)                                                              |
| Box Body Construction         | CNC machine tool-machined; painted surface                                                                        |
| Standard Reference            | TAPPI T461; ISO 11925-2; EN 13501-1                                                                               |



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