



TORONTECH

RAILWAY VEHICLE MATERIAL FLAME SPREAD TESTER



Railway Vehicle Material Flame Spread Tester — ToronFT™ FS-RV

ToronFT™ FS-RV Railway Vehicle Material Flame Spread Tester is a precision fire performance testing instrument designed for the evaluation of flame spread performance of non-metallic materials used in railway vehicles — including single and composite rigid materials, materials with adhesive coatings, and flexible materials with a thickness greater than 5 mm. Using radiation (without burning) for rigid materials and electric burner flame exposure for soft materials, the ToronFT™ FS-RV covers the full range of railway vehicle interior material types in a single, versatile test platform.

The railway vehicle material flame spread tester features a 0.5 m³ fume hood (test box) with an electrostatic high-temperature baking paint finish and integrated smoke exhaust fan, a square stainless steel vertical bracket, an adjustable U-shaped specimen clamp, and a standard Bunsen burner with a 10 mm nozzle diameter — providing the precise, standard-compliant flame spread test environment required for railway vehicle interior material certification per NF P92-504.

APPLICATIONS

Railway Vehicle Material Flame Spread Tester — ToronFT™ FS-RV

Applications

- Railway vehicle interior material manufacturers — flame spread performance qualification for rigid panels, composite boards, adhesive-coated materials, and flexible materials
- Third-party fire testing and certification laboratories — railway vehicle material flame spread testing per NF P92-504
- Train and rolling stock manufacturers (OEMs) — incoming material flame spread qualification for interior lining systems
- R&D departments — evaluation of new railway interior materials and flame retardant coating systems for flame spread resistance

- Quality assurance programs — production-lot and incoming inspection flame spread sampling for railway vehicle materials



Standards

The ToronFT™ FS-RV supports railway vehicle material flame spread testing in compliance with internationally recognized rail fire safety standards, including:

- NF P92-504 is a French national standard (NF) used to evaluate the reaction to fire of building and furnishing materials by measuring flame spread rate.

Specifically, it is a complementary test used when a material does not perform deterministically during the primary electrical burner test (*ébrleur électrique*) or when assessing materials that melt or drip. It helps determine the final M-rating (from M1 for non-flammable to M4 for highly flammable) commonly required for materials used in public buildings in France.

FEATURES

Railway Vehicle Material Flame Spread Tester — ToronFT™ FS-RV Key Features

- Dual test mode: radiation mode (rigid materials — no burning during radiation) and electric burner mode (soft materials) — covering all railway vehicle material types in one instrument
- Fume hood (test box): 0.5 m³ internal volume; steel with electrostatic high-temperature baking paint finish; top smoke exhaust fan discharges gases outside at test completion
- Vertical bracket: square stainless steel, 20 mm × 20 mm — robust, corrosion-resistant specimen support
- Model stand: crossbar approximately 420 mm long with 12 mm square cross-section — standardized specimen positioning geometry

- U-shaped specimen clamp: accommodates both soft and hard materials; height-adjustable on the vertical stand — versatile for all material types and thicknesses
- Bunsen burner: 10 mm nozzle diameter — standard flame source for soft material flame impact testing
- Compliant with NF P92-504— the primary French railway vehicle fire safety standards

THEORY & METHOD

Theory and Method

Railway vehicle material flame spread testing uses two different test modes depending on the material type. For rigid materials, the test subjects the specimen to a defined radiant heat source without applying a flame — evaluating whether the specimen ignites from radiation alone (radiation mode). For soft materials, the specimen is exposed to a direct flame from the Bunsen burner (electric burner test mode), evaluating how rapidly flame spreads across the surface and whether the material self-extinguishes after ignition.

The specimen is mounted vertically on the adjustable U-shaped specimen clamp, which is secured to a crossbar approximately 420 mm long with a 12 mm square cross-section on the vertical bracket (made of 20 mm × 20 mm square stainless steel). The Bunsen burner (10 mm nozzle diameter) is positioned to apply the standard flame impact to the specimen surface. The 0.5 m³ fume hood (internal volume) captures all combustion gases and smoke through the top-mounted smoke exhaust fan, which discharges gas and smoke to the outside at the end of each test — maintaining a clean test environment between specimens.

TECHNICAL SPECIFICATIONS

Railway Vehicle Material Flame Spread Tester — ToronFT™ FS-RV

Technical Specifications

Parameter	Specification
Applicable Materials	Rigid materials, adhesive-coated materials, flexible/soft materials (thickness > 5 mm); railway vehicle interior
Test Modes	Radiation mode (rigid materials); Electric burner mode (soft materials)
Fume Hood Internal Volume	0.5 m³
Fume Hood Material / Finish	Steel, electrostatic high-temperature baking paint
Smoke Exhaust	Top-mounted fan; discharges to outside at test end
Vertical Bracket	Square stainless steel, 20 mm × 20 mm
Model Stand (Crossbar)	~420 mm long, 12 mm square cross-section
Specimen Clamp	U-shaped; for soft and hard materials; height-adjustable
Bunsen Burner Nozzle Diameter	10 mm
Standard Compliance	NF P92-504



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