LIFT, IMO Spread of Flame Apparatus

(ISO 5658; IMO FTP Part 5; ASTM E1317; ASTM E1321)

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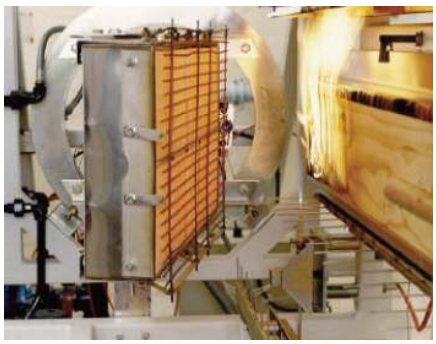
The Spread of Flame Apparatus is an important test for comparing the performance of essentially flat materials, composites or assemblies, which are used primarily as the exposed surfaces of walls. Comparative test data is generated from measurement of the lateral spread of flame along the surface of a specimen of a product vertically orientated. The specimen is subject to radiated heat in the presence of a pilot flame.

ISO 5658 and ASTM E1321 allow wider use of the test beyond marine applications. The major differences between ISO 5658 and the IMO test are that ISO 5658 is limited in scope to testing the spread of flame over vertical specimens and does not include the stack for estimating heat release rate.

The **FTT** Spread of Flame Apparatus uses a gas-fired radiant heat panel with pilot flame ignition to ignite a test specimen. Following ignition, any flame front which develops is noted and a record is made of the progression of the flame front horizontally along the length of the specimen in terms of the time it takes to travel to various distances. The results are expressed in terms of the flame spread distance/time history, the critical heat flux at extinguishment, the average heat for sustained burning and the flame front speed.



Panel box assembly with reverberatory screen as mounted in equipment test frame.

To meet the IMO specification a stack is fitted complete with thermopile for estimating heat release rate. The **FTT** Spread of Flame Apparatus is supplied with all necessary controls, flux meter and specimen holder. The complete test apparatus consists essentially of three main components, a radiant panel support framework and a specimen support framework which are linked together to bring the test specimen into the required configuration in relation to the radiant panel, and the specimen holder, which carries the test specimen. The radiant heater system is fully automatic, with spark ignition and safety interlocks.

The IMO software

The **FTT** Spread of Flame Apparatus is a sophisticated instrument, designed to make the calibration and use of the instrument very user-friendly. The IMOSoft software package acquires test data, assists with calibration routines and automatically generates test reports.

The software interfaces with the IMO apparatus via a multi-channel A/D converter, into which all the required signals are connected. This interface unit connects to the computer via a USB cable.

The user interface is a Microsoft Windows based system with push button actions and standard Windows data entry fields, drop down selectors, check boxes and switches.

The Software has the following features:

1. View of Transducer Signals
2. Heat Release Rate Calibration
3. Automatic File Naming
4. Data Collection
5. Data Presentation

Features and Benefits

- The control panel is located on the radiant panel frame. This incorporates all of the electrical indicators and controls for daily use and connections for the computer.
- Fitted to the rear of the radiant panel is a type-K thermocouple which monitors the temperature of the assembly. Should a blowback occur in the chamber of the radiant panel, the temperature rise will be sensed by the thermocouple and will cut-out the gas supply to the unit.
- The mass flow meter is used during calibration of the stack for heat release rate measurements. This can be connected to the computer if supplied or a chart recorder.
- The On/Off Controls for the Sample Pilot Flame, Radiant Panel and Air Blower are located along the lower edge of the radiant panel frame.
- User friendly IMOSoft software package acquires test data, assists with calibration routines and automatically generates test reports. It allows for a more efficient use of the instrument, leading to a larger daily throughput of testing and enhanced quality data presentation.

TECHNICAL SPECIFICATIONS	
Measuring principle	Measurement of flame spread over a vertically orientated material subject to uniform radiant heat flux Measurement of heat release rate using a calibrated thermopile system
Calibration burner	The output from the mass flow meter is calibrated for 0-5V = 0-25slpm of methane gas
Software	IMOSoft, Windows PC
Flux meter	Schmidt-Boelter heat flux meter for measuring the flux profile along the specimen
Dimensions	1600mm (W) × 900mm (D) × 1650mm (H excluding chimney) A minimum ceiling height of 2400mm is required to accommodate chimney and extraction hood
A minimum floor space of 4m × 2m is required to allow for removal of calibration burner	

Due to **FTT**'s continuous development policy specifications could change without prior notice.

SERVICES	
Extraction	A ceiling mounted fume exhaust system with a capacity of at least 0.5m^3/s
Power	230 VAC at 50/60 Hz 10 Amp
Gas	Radiant Panel requires Propane or Methane at least 4 Bar and a flow rate of up to 0.6g/s Pilot Flame Acetylene gas at least 0.5 l/min at 1 bar (24.5 psi) Calibration Burner Methane gas of at least 95% purity with a maximum flow of 25 l/min at a maximum pressure of 30 psi. (IMO Only) Not supplied with ISO 5658
Air	For the radiant panel an air flow up to 11g/s at 100psi is required
Water	200-300 ml/min water flow through the heat flux meter at room temperature, i.e. 15-30°C

Unrivalled Experience in Design and Manufacturing

FTT's site in East Grinstead, is home to the largest group of fire scientists and instrumentation design engineers working on fire testing instrumentation, and is at the heart of our design and manufacturing. For almost 30 years **FTT** has provided the highest quality instruments and service for fire testing and research professionals worldwide, directly and through its extensive global sales and support network.

Quality

- World-class manufacturing in accordance with multiple international and national standards, including: EN, ISO & ASTM
- ISO 14001, ISO 9001 certified

Integrity

- A dedicated team passionate about fire testing instrumentation and continuous product improvement
- Delivering reliable, robust and easy-to-use instruments for the past 30 years

Excellence

- A world-class team made up of qualified fire scientists, mechanical, electrical and electronic fire instrument design engineers and production, installation and maintenance engineers

Global

- World-wide distribution network for global sales, installations, training, maintenance and technical support
- Leading global supplier of the Cone Calorimeter, Large Scale Calorimeter, NBS Smoke Chamber and Oxygen Index