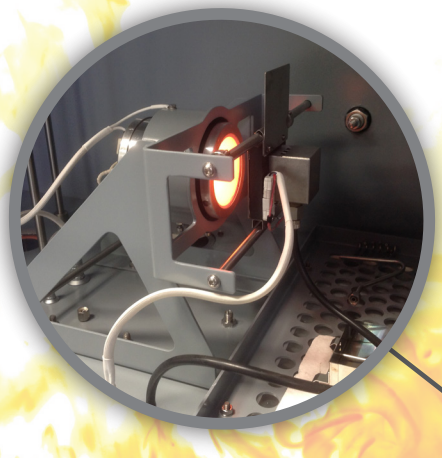
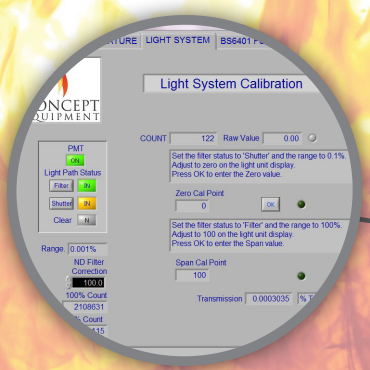
CONCEPT
EQUIPMENT

NBS SMOKE CHAMBER

BS 6401
ASTM E662
ISO 5659 PART 2





THE ULTIMATE IN FIRE TESTING

The Concept NBS Smoke Chamber

The NBS Smoke Chamber is the most widely accepted apparatus for the measurement of smoke production from the exposed surface of specimens of essentially flat materials, composites, or assemblies. Specimens are subjected to specified levels of thermal irradiance in a closed cabinet with or without the application of a pilot flame. The instrument measures specific optical density under flaming and non-flaming conditions. It is also used for the extraction of toxic gas.

The Concept NBS Smoke Chamber utilises the latest technology to offer a system that is extremely user-friendly and allows for 'hot-swapping' from the vertical BS 6401 test configuration to the horizontal arrangement specified in ISO 5659-2.

Standards

ASTM E662
- Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials

BS 6401
- Method for Measurement, in the Laboratory, of the Specific Optical Density of Smoke Generated by Materials

ISO 5659-2
- Determination of Optical Density by a Single-Chamber Test

NFPA 258-T-34
- Recommended Practice for Determining Smoke Generation of Solid Materials

JAR/FAR 25.853
- Flammability Requirements for Aircraft Seat Cushions

AITM 2.0007
- Determination of the Specific Optical Smoke Density of Component Parts or Sub-Assemblies of Aircraft Interior

AITM 2 0008
- Determination of the Optical Smoke Density of Electrical and Nonelectrical Cable

AITM 3.0005
- Determination of Specific Gas Components of Smoke Generated by Aircraft Interior Materials

NFX 10-702
- Determination of the Opacity of Smoke in a Non-Renewed Atmosphere

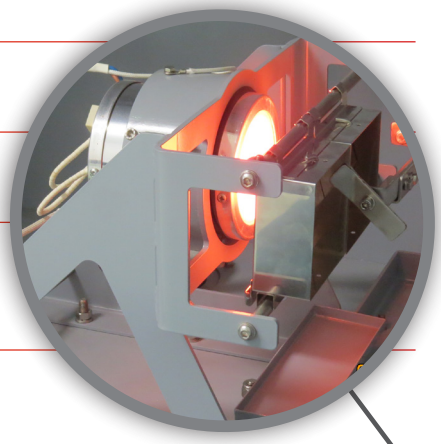
EN 45545-2 Annexe C
- Requirements for Fire Behaviour of Materials and Components for the European Railway Industry

- UKCA and CE compliant

Part Numbers: 302000/302130/302135

Features and Benefits

- Stainless-steel, corrosive coated chamber, with dimensions 914 x 914 x 610mm
- Advanced bespoke digital PMT-based vertical optical light measurement system
- Two integrated instrument panels, one mounted alongside the smoke chamber and one mounted under the chamber to allow for full visual operation of chamber modules etc.
- Three standard built-in connections to take gas sampling tubes for toxicity measurements. These can be customised to suit individual customer requirements as they are housed in a removable interface port plate
- Full access chamber door with observation window with covering door
- Heated chamber walls with user control of temperature
- Easy to replace blow-out panel
- Digital display of chamber temperature
- Digital chamber pressure sensor which allows true chamber leakage calibrations, which can also be logged if required
- Push button/software operated pneumatic upper vent
- Push button/software operated lower vent assembly with high capacity extraction fan to efficiently extract smoke following a test
- Push button/software operated vertical sample positioning system which automatically starts the test
- Vertical furnace assembly according to BS 6401 and ASTM E662
- Heat flux radiometer according to BS 6401 and ASTM E662
- Multi-tip, multi-angle burner according to BS 6401 and ASTM E662
- Horizontal cone heater assembly with thermocouples and PID temperature control, according to ISO 5659-2
- Burner and auto-ignition assembly with push button operation according to ISO 5659-2



Features and Benefits

- Precise furnace control for easy furnace calibration
- Stainless-steel horizontal sample holder including backing board according to ISO 5659-2
- 90 degree shutter assembly with push button/software actuation, which also initiates the horizontal test
- Heat flux meter assembly according to ISO 5659-2
- Control and data acquisition system with branded business computer and 24” monitor with Windows 10 software package
  - Runs various user configurable test programmes
  - Allows auto calibrations for furnace, cone heater and leak tests
  - Complete access to channel configuration
  - Records data, calculates optical density and outputs data in CSV format
  - Additional user analogue channels for additional data acquisition
- Fixed irradiance vertical oriented heater (25kW/m2)
- Vertical photometric optical system to BS6401/ASTM E662 using state of the art PMT module
- Operating manual in English

Options

- 302000, Smoke Chamber instrument for testing to ASTM E662, BS6401 and ISO5659-2

- 302130, Smoke Chamber instrument for testing to ASTM E662 and BS 6401 only. ISO 5659 test not included

- 302135, Smoke Chamber instrument for testing to ISO 5659-2 only. ASTM E662 and BS 6401 not included

- 200163, Load cell option for ISO 5659-2, including controller

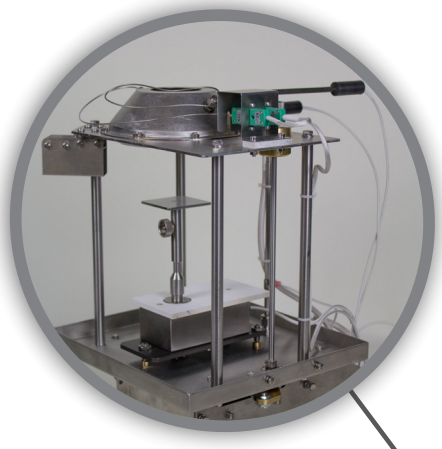
- 300350, Optional gas toxicity package according to AITM3.005 Issue 2 & ADB0031 which includes:
  – Smoke Chamber interface modification
  – NOx, CO and SO2 measurements using the gas flue analyser configuration including insulated sample line and heated filter, sample conditioning and associated valves and fittings
  – HCI, HF and HCN measurements using draeger colorimetric tubes, tube adaptor and auto sampling pumps

- 300440, Kit for wet chemical analysis (AITM3.0005)

- 300351, Gas toxicity package, vacuum method, according to Issue 1 of AITM3.0005, including:
  – Smoke Chamber interface modification
  – Vacuum chamber and pump with associated valves and fittings
  – NOx, CO and SO2 measurements using the vacuum gas sampling bag method
  – HCI, HF and HCN measurements using draeger colorimetric tubes, tube adaptor and hand sampling pump

- FTIR system to allow ISO 17084 testing using the ISO 5659-2 Smoke Chamber for railway testing according to EN 45545 Part 2

- 405500, Circulating Chiller Assembly



Technical Data

Electrical	230V AC 50Hz 16Amp / 110V AC 60Hz 32Amp, Single Phase
Ambient Temperature	Operating 10°C to 35°C
Product Dimensions	2262mm (H) x 1560mm (L) x 1184mm (D)
Shipping Details	Approx. 2300mm (H) x 1800mm (W) x 1200mm (D) – 625kg
Service/Maintenance	Concept recommend that equipment be serviced every two years in order to ensure reliable service for many years of testing
Calibration	Loadcell, radiometers and heat flux meters need calibration regularly. Daily and periodic calibrations performed on software by operator. These are also logged

Services Required

Apparatus Air Supply	Dry and filtered compressed air at nominal 45psi, 3-4 bar. Has to be regulated with an isolator valve. The air must be supplied via an approved regulator
Gas Supply	Commercial propane with a purity of 99% , capable of delivering 1 l/m at a pressure of 1 bar. Has to be regulated with an isolator valve
Water Supply	Domestic supply is usually adequate depending on ambient temperatures at location. 6mm push fit fitting, 0-1 l/m flow rate required
Water Outlet	6mm push-fit fitting to drain. Recirculating chiller also acceptable.
Extraction	Variable flow extraction hood 0-500 M^3/hour. Optional hood: size minimum 1500mm wide x 1200mm deep

Documentation

Concept Equipment Certificate of Compliance in English

User manual in English

Manufacturer's calibration certificates for the loadcell, radiometers and heat flux meters

Additional calibration certificates are available on request at the time of order

Due to Concept Equipment's policy of continuous product development, technical information is subject to change.

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