



SMOKE DENSITY CHAMBER



**DESIGN AND PRODUCTION OF
INSTRUMENTS AND APPARATUS
FOR QUALITY CONTROL
ON MATERIALS**



These instruments are made in compliance with CE health and safety requirements



Scope

The SMOKE DENSITY CHAMBER is the instrument designed and developed by CEAST S.p.A. company to perform smoke density tests on different flammable solid materials or flammable materials assembly.

It can be used to test a wide range of materials commonly used in various fields: building, automotive, railways and aeronautics industries and any others where a fire hazard is present, even if the results cannot be directly related to actual large scale fire hazards.

Test Method

The test consists in the measurement of light beam attenuation due to smoke accumulated in a closed chamber. The smoke is generated either by a pyrolytic non flaming decomposition or by a flaming combustion of the specimen obtained from the material under test.

The test results are expressed in terms of Specific Optical Density, which is a dimensionless value derived from the measurement of the light beam attenuation and the geometric dimensions of the test enclosure and specimen.

This test method should be used to compare the S.O.D. of the smoke generated by different materials under test, thus the values obtained can only be referred to the specimens and not to the material itself.

Standards

Designed and built to meet the following standards:

Code 6752.000	Code 6753.000	Code 6754.000
ASTM E 662, BS 6401	ISO 5659-2	ASTM E 662, BS 6401, ISO 5659-2

and others equivalent.

Technical Features

- Test cell inner dimensions 914 x 610 x 914 mm (L x D x H)
- Test cell access front door with rubber sealed glass window
- Safety blowout panel located on the cell floor (500 x 150mm)
- Specimen positioning system automatic via software
- Radiant furnace body made of stainless steel
- Radiant furnace control AC voltage stabilizer and adjustable supply control
- Furnace voltage monitoring 7 segment LED display
- Radiant furnace calor flux adjustable 0 ÷ 2.5 W/cm²
- Radiometer exposed surface 38 mm
- Radiometer temperature control by compressed air inlet, solenoid-valve controlled through a micro processor based regulator
- Photometric system vertically oriented, composed of:
 - a) Incandescent certified lamp, located in a light tight box under the cell floor, provided with diffusor and lens to collimate the light path
 - b) Photodetector of S4 spectral sensitivity located in a light-tight box over the cell ceiling provided with focusing system
- Light beam length 914 ± 3 mm
- Light beam diameter 38 ± 3 mm
- Burner (for flaming tests only) multiple (six jets) air propane type
- Burner air supply compressed air dust-free and dry
- Air flow control by cone flowmeter with in-built needle valve
- Burner gas supply 95 purity propane
- Propane flow control by cone flowmeter with in-built needle valve
- nner pressure monitoring water U-tube manometer
- U-tube manometer range 0 ÷ 150 mm
- Venting system automatically driven via software, composed of: pneumatically operated inlet and exhaust disk valves and exhaust fan
- Acces ports for over pressure relief or smoke-generated sampling (for differite analysis) total of four, located on the cell ceiling

Acquisition System and Automatic Test Driving

CEAST software, designed to:

- Light transmittance continues monitoring
Photometric system and wall thermocouple monitoring directly via software
Automatic transmittance scale change via software
- Automatic conversion to Specific Optical Density
- Numeric data table printing (Specific Optical Density versus time)
- Analog curve drawing (Specific Optical Density versus time)
- Data storage and export by "Access" database

Utilities (main unit)

- Compressed air supply 1 ÷ 3 bar, dustfree and dry
- Propane 0.05 bar, 95% purity
- Voltage 230 V
- Frequency 48 ÷ 62 Hz
- Rating 1.2 kW

Ancillary Equipments

Smoke Analysis Option - code 6752.002 (to be used only with code 6752.000 or 6754.000)

Separate device to carry out off-line smoke analysis over the smoke generated during the test run. Test according to ASTM E 662 and others equivalents. Complete with:

- Vacuum pump membrane type
- Smoke filtering microporous paper
- Connections, piping and fittings stainless steel or silicone rubber
- Vacuum gaskets with external rubber attachments N. 3 in PTFE
- Paper filter anti-powder
- N. 2 bags to drawing gas 25 l
- Cock pin range 0.5 l/min

Charge Cell - code 6753.002 (to be used only with code 6753.000 or 6754.000)

Charge cell 0-600 g to perform tests according to ISO 5659-2 standard.
Repeatability 0.02% B.S.

Technical Characteristics

Overall dimensions (LxDxH) [mm]	1000 x 635 x 2080
Weight [kg]	300 approx.
Supply	230 V - 50 Hz - Singlephase (110 V - 60 Hz on request)
Power [W]	1200
Paint	fuchsia RAL 4006 - gray RAL 7035

"Due to the continuous development policy of CEAST's Research and Development Department, changes may be introduced without notice"



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