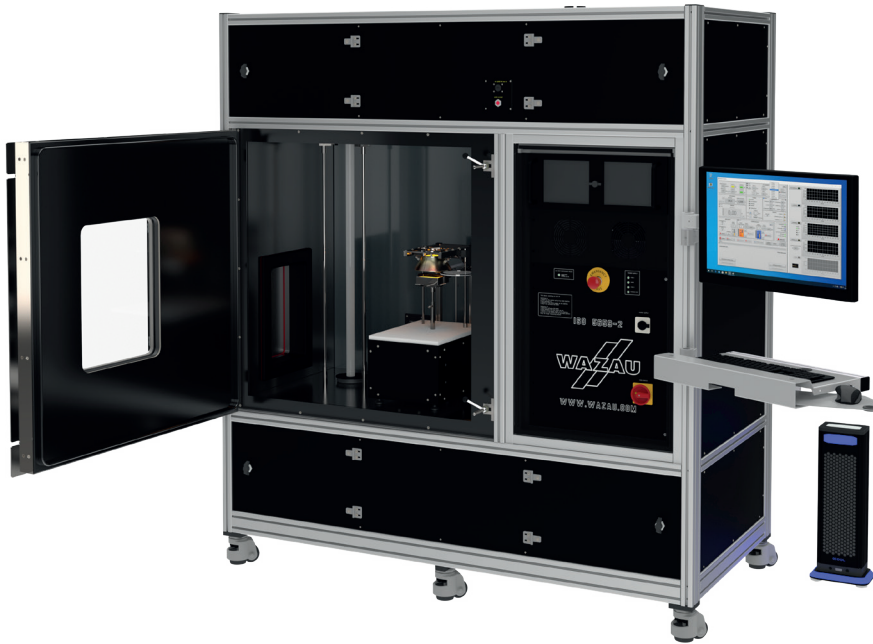


## Smoke Box - DIN EN ISO 5659-2

EN ISO 5659-2 | IMO FTP CODE Annex 1 Part 2



### SCOPE

The device is used to measure smoke generation on exposed surfaces of specimens made of materials or composites.

### PRINCIPLE

The specimens are exposed to thermal radiation of up to 50 kW/m<sup>3</sup> generated by an electric cone radiator. The gases detaching from the specimen are ignited. The resulting smoke is held in the chamber, and its density is determined using a photometric system.

Alternatively, a gas burner is used in addition to the radiation from the electric radiant heater.

If the device is used for tests according to IMO FTP CODE Annex 1, Part 2, an optional FTIR spectrometer can be connected to determine the proportion of toxic substances in the combustion gas.

In addition, the mass-based optical density can be determined during the test. This is done with the aid of an optional weighing module.

### FEATURES

Largely automated test and calibration procedures. Only the setup of the instrument and the insertion of the specimens is done manually. The recording of measured values and the calculations required by the standard are also performed automatically by means of the integrated PC. The values are output in a measurement file.

Cooling of the heat flux sensors is done with a closed cooling circuit by means of a radiator.

One-piece radiation shield with pneumatic movement

Electronic regulation of the chamber pressure

Integrated control cabinet

Heating of the chamber wall (optional)

Preparation for optional weighing device

Preparation for FTIR spectrometer

### COMPONENTS

Test device with:

Test chamber, enamelled inside

Heater unit with cone heater, radiation shield, burner, Ignition device

Smoke obscuration system

Explosion protection

Cover flap door window

Control cabinet with PC

Monitor, keyboard holder, keyboard and mouse

Inlet and outlet air valve, pneumatical

Exhaust air fan, electronically adjustable

Set of neutral density filters

Heat flux sensor type Schmidt-Boelter

Radiator with closed cooling circuit

Specimen holder

### DIMENSIONS

Width x depth x height: 1818 x 890 x 1980 (2040 top exhaust) mm\*

Weight: approx. 500 kg\*

### SUPPLIES

Electric voltage 400 VAC 50/60 Hz, Power input 5 kVA

Propane gas, purity > 95 %, inlet pressure 1 bar, Cylinder

pressure reducer to 150 mbar required

Compressed air, oil-free, inlet pressure 6-8 bar

### SPECIMEN DIMENSIONS

Max. 75 x 75 x 25 mm\*

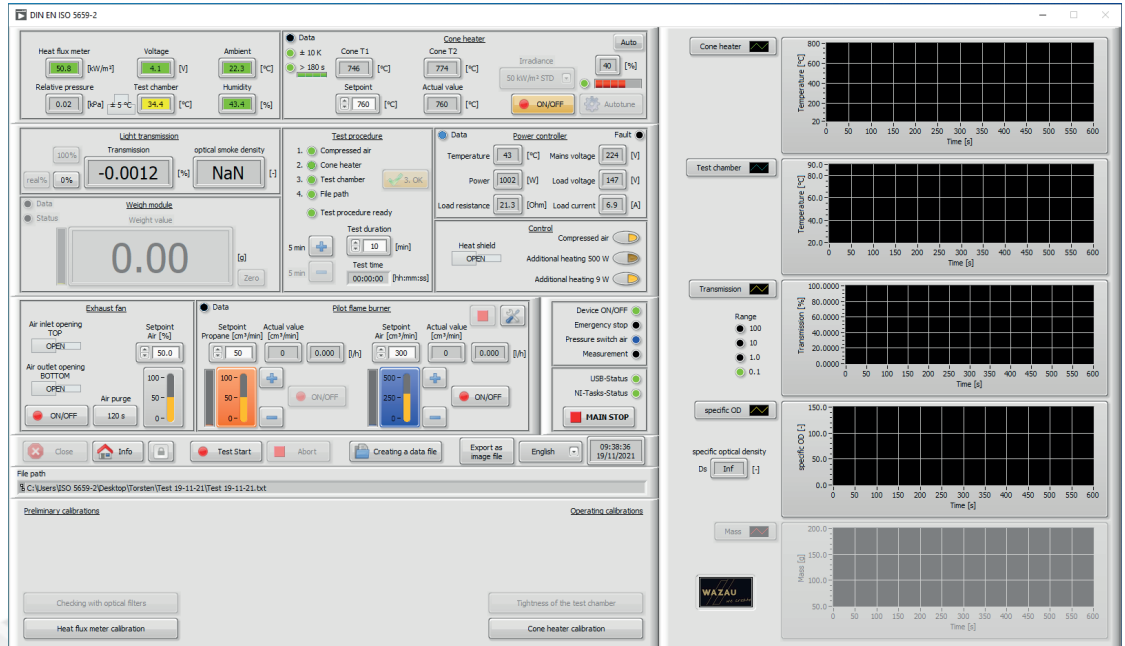
### HEATER

Heat flux 10 kW/m<sup>2</sup> - 50 kW/m<sup>2</sup>, in 5 kW-increments selectable, power consumption 2600 W

# THERMOMETRY

## Smoke Box - DIN EN ISO 5659-2

### EN ISO 5659-2 | IMO FTP CODE Annex 1 Part 2



#### CHAMBER PRESSURE MEASUREMENT

Pressure transducer, electronic

#### SMOKE OBSCURATION MEASURING SYSTEM

Adjustable lens system for colimating a light beam  
Adjustable aperture diaphragm to adjust the light the diameter of the light beam  
Adjustable lens system for focussing the light light spot in the aperture diaphragm plane;  
Slide-in unit for adjusting the gray filter compensation;  
Set of gray filters from 0.1 - 0.9 OD  
Slide-in aperture for darkening the sensor  
Sensor silicon photomultiplier

#### SENSORS

2 Thermocouples type K, heating element  
Thermocouple type K, chamber wall  
Heat flow sensor type Schmidt-Boelter, water cooled with closed cooling circuit, measuring range 0 - 75 W/m<sup>2</sup>  
Pressure measurement chamber pressure electronic  
Smoke obscuration measurement  
Electronic balance (optional)  
Flow regulators & valves Gases  
Propane pilot burner: flow regulator electronically controlled, 2/2-way solenoid diaphragm valve electric  
Compressed air: flow regulator electronically controlled, solenoid valve

#### ABLUFTANLAGE

Radial fan, capacity 149 m<sup>3</sup>/h\*, via software stepless controlled  
Pneumatic ball valve, connection dimension DN 80  
PC integrated incl. monitor/keyboard/mouse  
Operating system Windows 10  
Software: MCC DAQ & DIN EN ISO 5659-2

#### SAFETY

Emergency stop  
Externally operable ignition device burner  
Explosion protection chamber

#### OPTIONAL ACCESSORIES

Electronic balance  
Test chamber heating 500 W  
FTIR-preparation

#### TO BE PROVIDED BY THE CUSTOMER

Exhaust duct DN80  
If a residual current circuit breaker is used for the 3 ~ 400 VAC three-phase connection, it must have an extended sensitivity with trip delay for the operation of frequency converters.

#### SPATIAL REQUIREMENTS

Installation room width x depth x height: approx. 3018 x 3090 x 2500 mm  
Level (deviation max. ± 5 mm), fire resistant floor

\* Our products are constantly being further developed. For this reason, the actual dimensions may vary.