

NETZSCH

Proven Excellence.



Fire-Testing Systems

Methods & Instrumentation

Analyzing & Testing



Product	Heat release	Smoke development	Flame spread	Flaming droplet	Non-combustibility	Ignitability	Burning time/speed	Time to ignition	Mass loss
KBT	X	X	X	X					
SBI	X	X	X	X			X		
TBB		X	X						
TNB					X				
KBK						X			
TCC	X	X						X	X
UL 94				X			X		
LOI									
HBK							X		
TRDA/TRDL		X							

Fire-Testing Systems

For Investigating Nearly Any Kind of Material

Fire-testing products have been increasing in importance in recent times. It is essential that products and materials are as flame-resistant as possible for reasons of safety and regulations. It is also important that a product generate as little smoke as possible in the event that it does ignite; this can help save lives. The main issues which should be taken into consideration in product development are:

- Adhering to local, state or national product standards
- Producing low-flammability products
- Preventing products from igniting quickly and burning rapidly
- Knowing how flammable products behave
- Generating the least amount of smoke possible

Heat of combustion	Combustion gas	Oxygen index	Euro classification/ Euro fire testing lab	Industry	Standards	Page
				Cables	EN 50399, IEC 60332-3	6
			x	Building	EN 13823	8
			x	Building	EN ISO 9239-1	10
			x	Building	DIN EN ISO 1182	12
			x	Building	DIN EN ISO 11925-2	14
x	x		x	Building, Automotive, Polymers	ISO 5660-1, ASTM E 1354	16
			x	Electronics, Polymers	UL 94, DIN EN 60695-11, ISO 9773	18
		x		Polymers	ISO 4589-2, DIN 22117, ASTM D 2863	20
				Automotive	MVSS 302, GB 8410, IS 15061, CMVSS 302, U.T.A.C. 18-502, FAR 25.853	22
			Mostly integrated	Single/Stand-alone	DIN 50055	24

Fire Testing Prevents Fire Fighting

In accordance with Euro Classification
DIN EN 13501-1 (A1 to F)

Preventive Fire Protection

In order to prevent fires or keep them from spreading, it is essential to choose materials and components appropriately. The basis for such decisions are fire tests in accordance with German, European and international standards used to classify the flammability and burn rate of materials for the construction, textile, automobile and electrical industries.

Building Materials

Especially relevant for the construction industry are the resistance to fire of building components as well as the reaction to fire of building materials, with the resulting parameters of flammability, flame spread, flaming droplets, combustibility, heat release, calorific value, smoke production and toxicity.

Materials and Structures Used for Construction

It is possible to test the reaction to fire of all materials and structures used for construction such as facades, building and insulation material, plastics, gaskets and floor coverings. Tests with regard to fire resistance can be performed on various components such as ceilings, walls, doors, windows, protective barriers, bracings, fire protective glazing and fire protection shutters.



Mobility

Tests in the field of mobility focus on the flammability and flame spread rate of materials are for the interior of vehicles. Such materials include those used to produce the interior lining and trim, seats and floor coverings of aviation vehicles, railed vehicles, road vehicles and ships.

Electrical Industry/Cable

Reactions to fire – especially issues such as flame spread and flaming droplets for electronic and electrical parts, smoke density, insulation integrity and the formation of corrosive gases upon flame impact for electrical, control and data cables – form the basis for fire tests in the field of electrical industry and cable products.

Textile Products

Textile products such as upholstery fabrics, curtains and drapes, decorative materials, floor coverings and protective clothing are primarily tested and classified for flammability, reaction to fire, and dripping behavior. Designed in accordance with the European classification system for these, NETZSCH instruments are based on the standards DIN EN 13501-1 (reaction to fire) and DIN EN 13501-2 (fire resistance).

COMBUSTIBILITY

RATE OF FLAME
SPREAD

REACTION OF FIRE

SMOKE GAS DENSITY

FLAMMABILITY

FLAMING DROPLET
BEHAVIOR

FIRE RESISTANCE

KBT – Fire-Testing System for Cables

Fire-testing system for measuring the heat release and smoke production during flame spread tests on vertically mounted bunched cables and insulated wires, in accordance with EN 50399 and IEC 60332-3-10 (testing device)

Easy operation & intuitive user guidance!

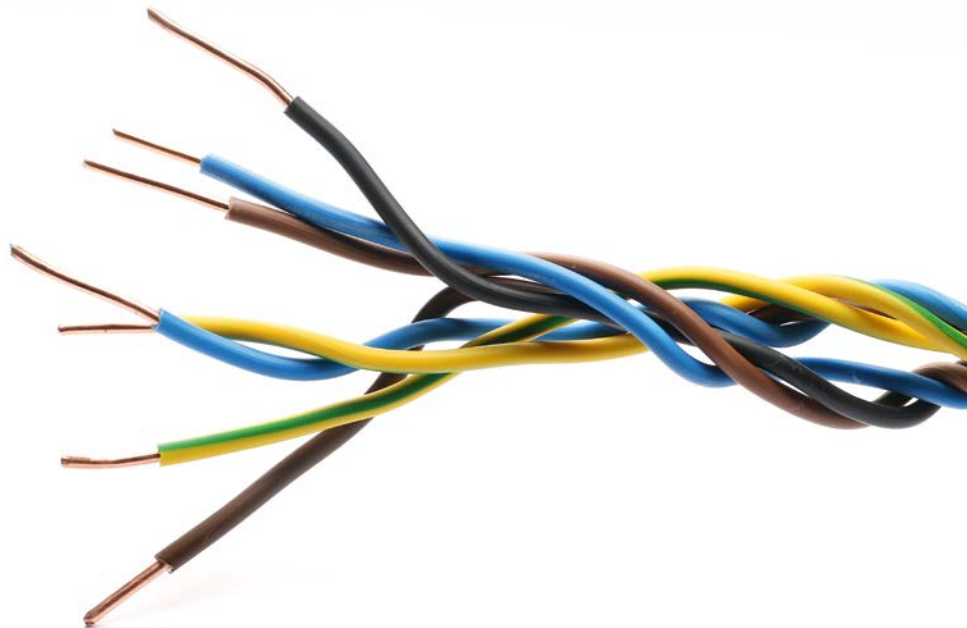
The KBT from NETZSCH TAURUS Instruments GmbH is easy to operate, offering innovative control and data acquisition options in an intuitive format with ample user guidance. The high-resolution color touch display on the “KBT Control” cabinet allows for measuring and control with the integrated Single Board Computer, Windows operating system and KBT software. There is thus no longer any need for manual controls such as switches, controllers or buttons; the status of the testing system is clearly displayed and the system prevents any critical operating errors. The storage, analysis and recording of all test data is handled entirely via the control unit.

Well thought-out details along with the use of high-quality materials guarantee the KBT test system a long product life and a low degree of wear and tear.



Features at a Glance

- KBT test chamber with sample holder, hood, collector, measuring tube, gas installation, burner, air supply and sensors
- Double-walled test chamber, stainless steel with mineral wool insulation, opening for air supply at the bottom, opening for smoke extraction, rail guides on the back wall for easy mounting of sample holders, electric winch assembly, stainless steel door with fire-resistant glazing
- Cable winch with electric drive, ramp and option for easier transport of the sample holder
- Exhaust gas fan with flow control for constant exhaust gas flow
- Modules for data acquisition and control of all processes
- Extensive options and accessories for enhancing the exhaust system and for calibrating the KBT test unit
- Stainless steel extraction hood and collector for protection against aggressive gases
- Measuring duct section with bidirectional probe, NiCrNi thermocouples, light measurement system and gas sampling probe
- Ribbon propane burner with venturi mixer, piezoelectric igniter, flame detector, folding mechanism and stainless steel protective cover
- Gas installation with digital gas flow controller, pressure controller and magnet valves
- Supply air process fan with frequency converter and digital control module
- Exhaust air process fan with frequency converter and digital control module
- "KBT Control" measuring and control unit with SBC, 32-GB SSD, Windows 10, 10.1" color touch screen, SIEMENS gas analyzer, measuring gas processing, measuring and control modules and RS232/USB interfaces
- 19" PC rack, monitor, printer, PC (option)
- Single license for the KBT software



SBI – Single Burning Item

Fire-testing system for determining the reaction of building products to fire when exposed to thermal attack by a single burning item, in accordance with EN 13823

The SBI from NETZSCH TAURUS Instruments GmbH is easy to operate, offering innovative control and data acquisition options in an intuitive format with ample user guidance. The high-resolution color touch display on the "SBI Control" cabinet allows for measuring and control with the integrated Single Board Computer, Windows operating system and SBI software. There is thus no longer any need for manual controls such as switches, controllers or buttons; the status of the testing system is clearly displayed and the systems prevents any critical operating errors. The storage, analysis and recording of all test data is handled entirely via the control unit. Well thought-out details along with the use of high-quality materials guarantee the SBI test system a long product life and a low degree of wear and tear.



SBI for classification into the classes A2, B, C and D!



Features at a Glance

- Base frame with calcium silicate lining
- Furnace with specimen trolley, exhaust hood, collector, measuring section, gas installation (gas installation with digital gas flow controller, pressure regulators and magnet valves), burners and sensors
- Test chamber, drywall installation with 2 windows, door, security ladder and railing (accessible)
- Specimen trolley with calcium silicate lining
- Insulated extraction hood and collector made of stainless steel for protection from aggressive gases
- Main and auxiliary burners of stainless steel with filling, ignition device and flame detector
- Test chamber with 2 windows, door and handrail, accessible for service purposes
- Exhaust radial fan with volume flow control for constant exhaust flow
- Components for measuring data acquisition and control of all processes
- High-resolution color display with intuitive icons and menu functions
- Insulated measuring tube section with bidirectional probe, NiCrNi thermocouples, light measurement system and gas sampling probe
- Process fan with frequency converter and digital control module
- "SBI Control" measuring and control unit with SBC, 32-GB SSD, SIEMENS gas analyzer, measuring gas processing, measuring and control modules and RS232 interface
- 19" PC rack, PC, monitor, printer
- Various options and accessories for extension of the exhaust system and calibration of the SBI system
- Single license for the SBI software



TBB – Floor Radiant Panel

System for the reaction of floorings to fire tests – determination of the burning behavior using a radiant heat source in accordance with EN ISO 9239-1

For classification in accordance with Euro classes A2, B, C and D!

The TBB from NETZSCH TAURUS Instruments GmbH is easy to operate, offering innovative control and data acquisition options in an intuitive format with ample user guidance. The high-resolution color touch display on the "TBB Control" cabinet allows for measuring and control with the integrated Single Board Computer, Windows 10 IoT Enterprise 2019 LTSC operating system and TBB software. There is thus no longer any need for manual controls such as switches, controllers or buttons; the status of the testing system is clearly displayed and the systems prevents any critical operating errors.

Well thought-out details along with the use of high-quality materials guarantee the TBB test system a long product life and a low degree of wear and tear.



Features at a Glance

- Test chamber with calcium silicate lining, flap with fire-resistant glazing, extractable mounting plate for sample holder, exhaust pit with light measurement system, 2 NiCrNi mantle thermocouples, bidirectional probe, hot-wire anemometer, radiation pyrometer, heat flow meter in accordance with Schmidt-Boelter and linear guided burning distance recorder
- Furnace with sample holder, flap with glass panel, hood, frame, gas installation, radiant panel, burner and sensors; entire furnace made of stainless steel to ensure long product life span and resistance to emissions
- Exhaust radial fan with flow rate control for constant exhaust flow
- Stainless steel exhaust hood for protection against aggressive gases
- Gas-fueled radiant panel, aluminum, steel, silicate with check valve
- Stainless steel row gas burner with pneumatic shifting option with ignition device, flame detector and check valve
- Stainless steel sample holder with 4 quick-release fasteners for easy sample insertion
- Gas installation with digital gas flow controllers, pressure controllers and magnet valves
- "TBB Control" measuring and control unit with SBC, 32-GB SATA, Windows 10 IoT Enterprise, measuring and control modules and Ethernet interfaces
- 19" PC rack, PC, monitor, printer
- Single license for the TBB software
- Various options and accessories for extension of the exhaust system and calibration



TNB – Non-Combustibility Test Device

Fire-testing device for non-combustibility tests on building products with electrical heating tube in accordance with DIN EN ISO 1182

The "TNB Control" measuring and control unit – with its integrated Single Board Computer with Windows operating system, TNB software and high-resolution color touch display – is used for setting parameters and controlling the test furnace in stand-alone mode. Automatic digital control and monitoring for a linear increase in furnace temperature guarantee an extended product lifespan for the heating element. The use of innovative digital measuring technology ensures a high degree of stability and reproducibility.

Numerous interfaces enable connectivity to peripheral devices for the fast and convenient export and transfer of data. Connection to an external PC or notebook allows for extensive data analysis and printing of test reports as per the relevant standards.

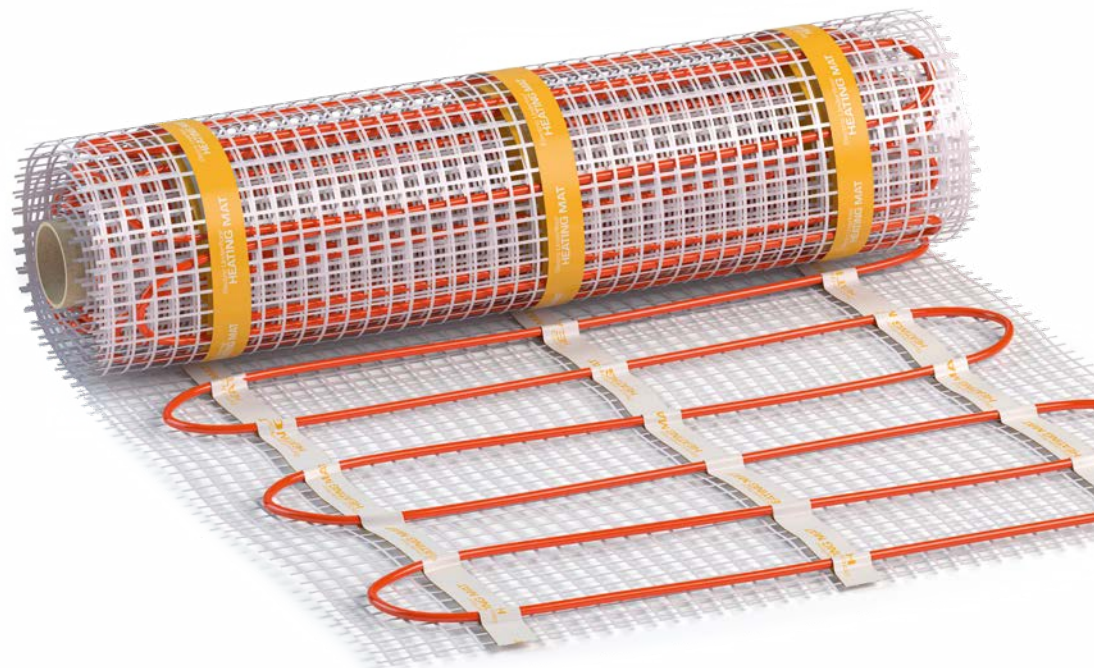
The highly stable power supply of the TNB test system is suitable for use with any of the customary power networks worldwide and completely compensates for supply voltage fluctuations. Well thought-out details along with the use of high-quality materials guarantee the TNB test system a long product life and a low degree of wear and tear.

For classification into the classes A1 and A2!



Features at a Glance

- High-quality coated steel base frame for stable positioning of the furnace
- Stainless steel casing with precision heating tube for long-term maintenance-free use and long product life
- Power supply designed for any power grid worldwide with full compensation of voltage fluctuations
- Metal mirror with stand for safe observation of the sample
- Sample holder with basket made of heat-resistant CrNi alloy
- Copper calibration block with NiCrNi thermocouple
- 4 NiCrNi thermocouples for measuring the furnace temperature
- "TNB Control" measuring and control unit with SBC, 32-GB SSD, Windows, color touch screen, measuring and control modules and interfaces 1x RS232, 2x USB, 1x Gigabit Ethernet
- Single license for TNB software
- Long product life of the heating element thanks to automated control, monitoring and linear heat-up
- High stability and reproducibility
- Protocol creation in accordance with DIN EN ISO 1182
- High data storage capacity directly in the device
- Ability to outsource data on a USB stick and via network in many data formats
- Programmable acoustic signal for monitoring of the device
- Transfer of error messages via network
- Accessories for standard tests included (options according to technical specifications)



KBK – Small Burner Box

Fire-testing system for determining the ignitability of building products subjected to direct impingement of flame – part 2: single-flame source test in accordance with DIN EN ISO 11925-2 for classification into Euroclasses B, C, D and E

Well thought-out details along with the use of high-quality materials guarantee the KBK small burner box a long product life while reducing the need for cleaning and maintenance, increasing safety and greatly simplifying day-to-day work at the laboratory.

High-quality, precise manufacturing
for ease-of-operation and
a long service life!



Features at a Glance

- Burner box with exhaust hood and stainless steel grid for long life and maintenance-free use of the device
- Furnace made of stainless steel for resistance to corrosive gases and long life
- Fire-resistant glass doors with locks for smooth opening on the front and on the right-hand side of the device
- Main gas supply valve mounted on the front for easy accessibility
- Gas pressure adjuster with pressure indicator mounted on the front for easy accessibility
- Fine control valve for the burner flame mounted on the front for easy accessibility
- Shifter for burner with cover to prevent pollution
- Metal mirror on the back wall of the device to monitor the back of the sample
- Sample holder horizontally and vertically adjustable
- Sample holder for vertical orientation, additional sample holders optionally available
- Integrated exhaust air fan with adjuster for setting precise exhaust air speed
- Gauges for flame height, edge and surface exposure
- Digital anemometer for controlling the exhaust air flow speed
- Digital stop watch for recording time as per standard specifications
- Metal template for sample preparation
- Filter paper tray with filter paper for collecting flaming droplets/particles
- Supplied with all accessories to allow for immediate operability



TCC – Cone Calorimeter

Determination of the heat release rate, the dynamic smoke production and the mass-loss rate of specimens in horizontal orientation in accordance with to ISO 5660-1

A cone calorimeter is used for studying the fire behavior of small samples of various materials. It is widely used in the field of fire safety engineering.

Safe measurement of smoke emissions with helium neon laser measuring system!



Features at a Glance

- Conical radiant heating with high performance, max. 5 kW
- Exhaust system, hood, collector, measuring tube made of stainless steel for a long life
- Optical measuring section with helium-neon laser
- Exhaust radial fan with mass-flow control for a constant exhaust flow
- Gas analyzer for O₂ and CO₂, CO (option)
- Measuring and control cabinet with gas analyzing system, SBC, 10.1" color touch display and assemblies for recording measured values and controlling all processes
- Operator guidance entirely via touch screen
- High-resolution touch screen with brilliant colors
- Intuitive icons for menu items
- Control panel with PC, monitor and laser printer
- TCC software
- Extensive set of options and useful accessories for expansion and calibration of the calorimeter (options according to separate technical datasheet)



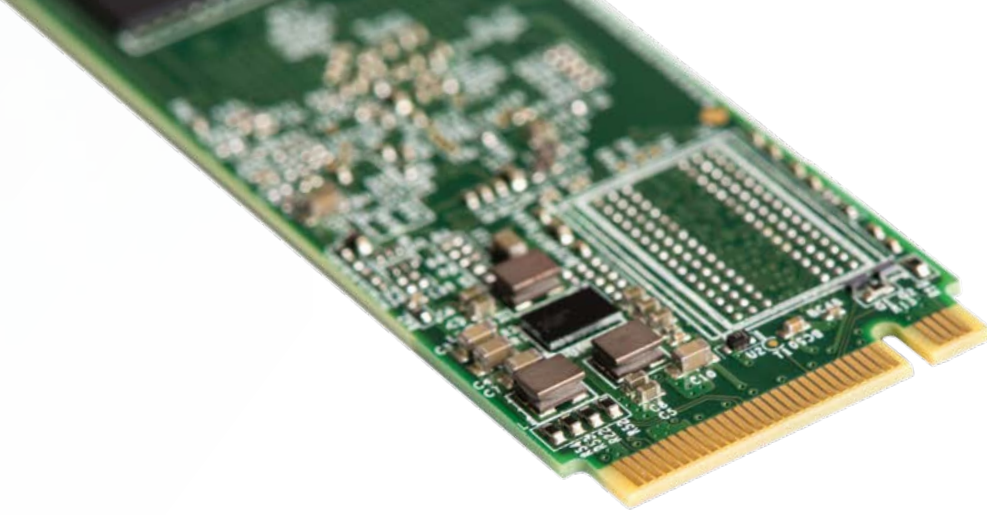
UL94 – Fire-Testing System

Test device in accordance with UL94 5th edition, DIN EN 60695 part 11-10, DIN EN 60695 part 11-20, DIN EN 60695 part 11- 3, DIN EN 60695 part 11-4, and ISO 9773

For more safety with respect to plastic materials and electronic components!

Well thought-out details along with the use of high-quality materials guarantee the UL94 a long product life while reducing the need for cleaning and maintenance, increasing safety and greatly simplifying day-to-day work at the laboratory.





Features at a Glance

- Sample holder for rod-shaped and flat samples
- Semi-automatic calibration
- Automated measurement process
- Operator guidance via high-resolution 10" touch screen with brilliant colors and catchy icons for menu functions
- Accessories for standard tests included (options see separate technical datasheet)
- Closed combustion chamber with exhaust fan, black interior walls and mirrors
- Material: stainless steel, bead blasted
- Large sliding window with fire-resistant glazing on the front door
- Adjustable burners with adjustable tilt angle (0°, 20°, 45°)
- Calibration aid for burner flame
- Semi-automatic operation: Electrically driven spindle system for positioning the samples and the burner for horizontal and vertical tests including frame and wire mesh
- Additional manual operation: Two openings with panels on the front for manual access allowing manual positioning and adjustment of the burner
- **Sample holder for horizontal and vertical tests**
- Processor-controlled timer
- Remote control with reset button for time measurement
- Metal dipstick
- **Processor-controlled flowmeter, pressure regulator and pressure gauge**
- Gauges for flame height and samples
- Base frame with rolls and drawer (option)
- Exhaust piping, aluminum link hose with draft diverter (option)

LOI – Oxygen Index Analyzer

Testing system for determining the burning behavior of plastics by oxygen index at ambient temperature in accordance with ISO 4589-2, DIN 22117 and ASTM D 2863

Compact and lightweight, the device features a high-resolution touch display for intuitive user guidance. The fully automatic calibration and testing functions make it easy to operate the device.

All relevant data such as temperature, flow rate and time are displayed during the test. Except for the test gases (O_2 / N_2), all necessary accessories for performing standard tests are included with the device and greatly simplify day-to-day work at the lab.

User guidance for facilitating comfortable analysis of the burning behavior of plastics!



Features at a Glance

- Sample holders available for rod-shaped and flat samples
- Easily replaceable borosilicate glass column
- Propane igniter
- Fully automatic calibration
- Automated testing procedure
- User guidance via high-resolution 7" touch display with brilliant colors and intuitive menu icons
- All necessary accessories for standard tests included with the device (options see separate technical datasheet)
- Single board computer with Windows operating system
- Single license for the LOI software



HBK – Horizontal Burner Box

Fire-testing system for determining the reaction to fire of materials used for vehicle interiors when exposed to a single flame source, in accordance with ISO 3795, DIN 75200, FMVSS 302, GB 8410, IS 15061, CMVSS 302, U.T.A.C. 18-502, FAR 25.853 (horizontal, aircraft interiors, ECE R 118, Annex 6)

Clever details along with the use of high-quality materials make car interiors safer!



Well thought-out details along with the use of high-quality materials guarantee the HBK system an extended product life while reducing wear and tear, lessening the need for cleaning and maintenance, increasing safety and greatly simplifying day-to-day work at the lab.

In addition, the HBK complies with the different vehicle manufacturers' works standards (see table page 23).



Sample holder in accordance with ISO 3795

Features at a Glance

- Sample holder for tests of interior fitting materials and components in accordance with car manufacturers' works standards
- Main gas valve positioned on the left side of the device for easy accessibility
- Adjustable pressure reducer for propane bottle, additional gas pressure reducer mounted directly on device
- Precise sample holder guidance for fast and easy switching of samples
- Burner box with fireproof glazing at the front, door with Bunsen burner at the side, pressure-reducing valve at the rear and top cover with handle (with optional thermometer mount); all parts made of stainless steel for long-term maintenance-free use
- Sample holder without support wires; additional sample holders available as options
- Stainless steel drip tray for collecting droplets/particles
- Gauges for flame height
- Digital stop watch for timing in accordance with standard

Brand	Works Standard
BMW	GS 97038
Daimler	DBL 5307.10-13
Ford	FLTM-BN 24-2
General Motors	GM 6090 M
Mazda	MES DF 050D
Mitsubishi	ES-X60410
Porsche	PTL 85014260 kg
Renault	D45 1333
Volvo	STD 5031, 1
VW	VW TL 1010
Hyundai/KIA	MS 300-80



TRDA – Smoke Density Test Device with Light Measurement System

Test device for determining the smoke production of materials during thermal decomposition in accordance with DIN 50055

The TRDA measuring device – thanks to its Integrated Single Board Computer with Windows operating system, TRDA software and high-resolution color touch display – can be used in stand-alone mode for setting parameters and determining optical density and transmission.

Interfaces and analog outputs enable connectivity to peripheral devices for the fast and easy export of data and facilitate use in existing fire testing systems. Comprehensive data analyses can be performed via an external PC or notebook. Optional accessories allow for use of the light measurement system on various types of exhaust duct systems and greatly simplify calibration, operation and cleaning of the components.

Use in stand-alone mode for setting parameters and determining optical density and transmission!



Features at a Glance

- TRDA measuring device with SBC, 32-GB SSD, embedded Windows, 7" color touch screen, measuring and supply modules and interfaces 1x RS232, 2x USB 2.0, 1x RS485, analog 0-1 V / 0-10 V, light emitter and light receiver
- Robust measuring light transmitter and receiver with integrated electronics for trouble-free transmission of the measuring signal up to 10 m
- Controller-based instrument with upgradeable firmware for maximum flexibility
- Operator guidance via high-resolution 7" touch screen with brilliant colors to portray all functions and measured results; intuitive icons for menu functions
- USB and RS232 interfaces for data communication with an external PC
- High on-board data storage capacity
- Data acquisition and data processing via external PC
- Extensive accessories for use in many fire-test systems
- RDG light emitter with 10-W halogen point light source and tempered, heatproof optics
- LRDE light receiver with silicon photo receiver; tempered, heatproof optics; spectral filter and integrated measuring light amplifier
- Mounting flange with connection for air purge and measurement bracket for pipe installation (option)
- Filter set for calibration, 6 optical filters, positioning cross, transport case (option)
- Single license for the TRDA software
- Also available as TRDL laser system (helium neon laser)

Additional Fire Testing Systems Are

TSP – Smoldering Test Device

Testing system with one burner in accordance with DIN EN 16733 for determining a building product's propensity to undergo continuous smoldering

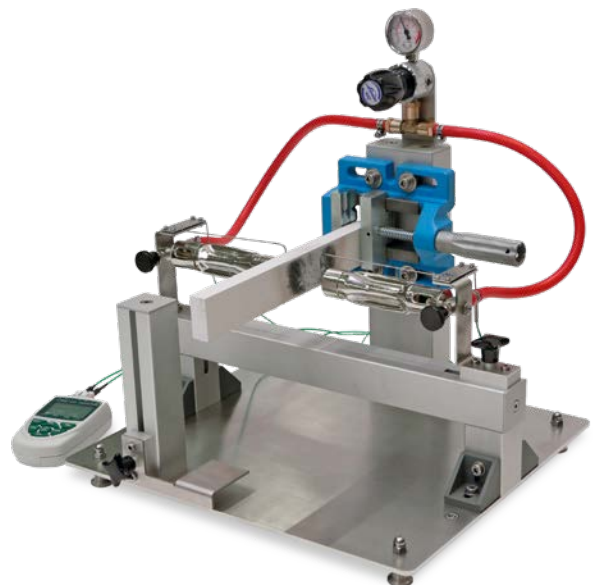
With intelligent software for recording, storing and analyzing measurement data!



FRG – Structural Cohesion Tester

Fire-resistance system with two burners in accordance with DIN EN 520

Determines the structural cohesion of gypsum products at high temperatures!

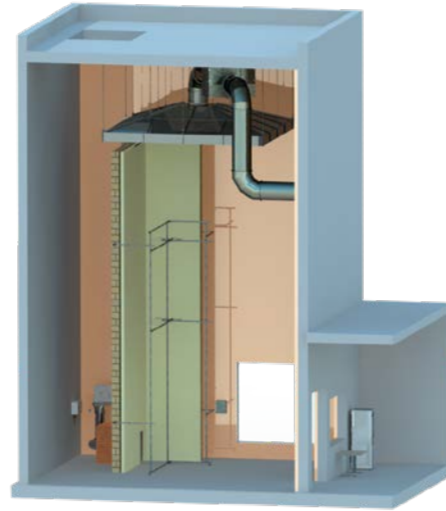


Available on Request, e.g.:

TFP – Testing System for External Cladding

Fire-Testing System for determining the reaction to fire of external cladding systems, in accordance with DIN 4102-20, ÖNORM B 3800-5 and BS 8414-1

Especially for testing fire spread across the surface of a facade!




TFB – Small Burner Box for Hoses

Fire-testing system for determining the flame resistance of fuel and oil hoses directly exposed to a single flame source, in accordance with DIN 73379

Reduces the need for cleaning and maintenance, thus increasing safety and greatly simplifying day-to-day work!





The NETZSCH Group is an owner-managed, international technology company with headquarters in Germany. The Business Units Analyzing & Testing, Grinding & Dispersing and Pumps & Systems represent customized solutions at the highest level. More than 3,800 employees in 36 countries and a worldwide sales and service network ensure customer proximity and competent service.

Our performance standards are high. We promise our customers Proven Excellence – exceptional performance in everything we do, proven time and again since 1873.

When it comes to Thermal Analysis, Calorimetry (adiabatic & reaction), the determination of Thermophysical Properties, Rheology and Fire Testing, NETZSCH has it covered. Our 50 years of applications experience, broad state-of-the-art product line and comprehensive service offerings ensure that our solutions will not only meet your every requirement but also exceed your every expectation.

Proven Excellence.■

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