

Glossary of Terms and Definitions

Afterflame

Flame which persists after the ignition source has been removed.

Afterflame time

Length of time for which an afterflame persists under specified conditions.

Afterglow

Persistence of glowing combustion after both removal of the ignition source and the cessation of any flaming.

Afterglow time

Length of time for which an afterglow persists under specified conditions.

Air inlet

Device connected to outside air to allow the inlet of air from outside the construction work.

Area burning rate

Area burned per unit time under specified conditions.

Ash

Ashes mineral residue resulting from complete combustion.

Assembly

Unit or structure composed of a combination of materials or products, or both.

Burn

Intransitive verb to undergo combustion.

Burned area

The part of the damaged area of a material that has been destroyed by combustion or pyrolysis under specified conditions cf. damaged area.

Burned length

Maximum extent in a specified direction of the burned area cf. damaged length

Burning behaviour

All the physical and/or chemical changes that take place when an item is exposed to a specified ignition source

Calorific value

Cf. heat of combustion.

Char (noun)

carbonaceous residue resulting from pyrolysis or incomplete combustion.

Char (verb)

To form carbonaceous residue during pyrolysis or combustion.

Char length

length of carbonaceous residue cf. burned length.

Chimney effect

Upward movement of hot fire effluent caused by convection currents confined within an essentially vertical enclosure.

Clinker

Solid agglomerate of residues formed by either complete or incomplete combustion and which may result from complete or partial melting.

Combustible (adj)

Capable of being combusted

Combustible (noun)

An item capable of combustion.

Combustion

exothermic reaction of a substance with an oxidizer.

Commissioning

The act of ensuring that all components and the system are installed and operating in accordance with this standard.

Composite material

structured combination of two or more discrete materials.

Damaged area

Total of those surface areas which have been affected permanently by fire under specified conditions cf. burned area.

Damaged length

Maximum extent in a specified direction of the damaged area cf. burnt length.

Draught-free environment

environment in which the results of experiments are not significantly affected by the local air speed

Duration of flaming

Length of time for which flaming combustion persists under specified conditions, including flaming combustion due to the presence of an ignition source

Ease of ignition

Deprecated term cf. ignitability and minimum ignition time.

Elevated temperature

Temperatures in excess of normal ambient air, below those necessary for fire resistance testing, to which smoke and heat exhaust ducts for single compartments are tested.

End-use conditions

Intended conditions to which an item will be subjected during its normal working life, when used in accordance with the manufacturer's instructions.

Environment

conditions and surroundings that may influence the behaviour of an item or persons when exposed to fire.

Explosion

Abrupt expansion of gas which may result from a rapid oxidation or decomposition reaction, with or without an increase in temperature.

Exposure time

Length of time for which people, animals or items are exposed under specified conditions

Fire (controlled)

Self-supporting combustion which has been deliberately arranged to provide useful effects and which is controlled in its extent in time and space.

Fire(uncontrolled)

Self-supporting combustion which spreads uncontrolled in time and space.

Fire barrier

Separating element which resists the passage of flame and/or heat and/or effluents for a period of time under specified conditions.

Fire behaviour

Change in the physical and/or chemical properties of an item and/or structure exposed to fire.

Fire compartment

An enclosed space, comprising one or more separate spaces, bounded by elements of construction having a specified fire resistance and intended to prevent the spread of fire (in either direction) for a given period of time NOTE Fire compartment often has regulatory connotations. The term should not be confused with 'room of origin' or 'fire cell'.

Fire effluent

Totality of gases and/or aerosols (including suspended particles) created by combustion or pyrolysis.

Fire exposure

Extent to which persons, animals or items are subjected to the conditions created by fire

Fire gases

Gaseous part of the products of combustion cf. fire effluent.

Fire hazard

Potential for injury and/or damage from fire

Fire load

Quantity of heat which could be released by the complete combustion of all the combustible materials in a volume, including the facings of all bounding surfaces

Fire load density

Fire load per unit floor area (N.B. It is expressed in joules per square metre)

Fire model

Procedure or process intended to represent, predict or reproduce one or more phases of a fire or the transition between phases

Physical fire model

Laboratory process, including the apparatus, the environment and the test procedure intended to represent a certain phase of a fire

Natural smoke and heat control system

A smoke and heat ventilation system that utilises natural ventilation. Natural ventilation is caused by buoyancy forces resulting from differences in density of the gases at different temperatures.

Numerical fire model

Mathematical representation of one or more of different interconnected phenomena governing the development of a fire.

Fire performance

Response of an item when exposed to a specific fire cf. fire behaviour.

Fire point

Minimum temperature at which a material ignites and continues to burn for a specified time after a standardized small flame has been applied to its surface under specified conditions
cf. flash point.

Fire resistance

Ability of an item to fulfil for a stated period of time the required stability and/or integrity and/or thermal insulation, and/or other expected duty specified in a standard fire-resistance test.

Fire retardance

Deprecated term.

Fire retardant (noun)

Substance added, or a treatment applied, to a material in order to delay ignition or to reduce the rate of combustion.

Fire risk

product of - probability of occurrence of a fire to be expected in a given technical operation or state, and - consequence or extent of damage to be expected on the occurrence of a fire.

Fire scenario

detailed description of conditions, including environmental, of one or more stages from before ignition to after completion of combustion in an actual fire at a specific location or in a real-scale simulation

Fire simulation

cf. fire model

Flame (noun)

Zone of combustion in the gaseous phase, usually with emission of light

Flame, (verb)

To undergo combustion in the gaseous phase with emission of light.

Flame front

Boundary of flaming combustion at the surface of a material or propagating through a gaseous mixture.

Flame resistance

Deprecated term.

Flame retardance

Property of a material whereby flaming combustion is slowed, terminated or prevented

Flame retardant (noun)

Substance added, or treatment applied to a material in order to suppress or delay the appearance of a flame and/or reduce its propagation (spread) rate cf. fire retardant.

Flame-retardant treatment

Process during which improved flame retardance is imparted to a material or product.

Flame retarded

Treated with a flame retardant.

Flame spread

Propagation of a fire front

Flame spread rate

Distance traveled by a fire front during its propagation, divided by the time of travel, under specified conditions

Flame spread time

Time taken by a fire front on a burning material to travel a specified distance along the surface, or to cover a specified surface area under specified conditions.

Flameproof

Deprecated term, except in the context of electrical equipment for explosive atmospheres.

Flaming combustion

Combustion in gaseous phase, usually with emission of light.

Flaming debris

Flaming droplets of material separating from a burning item during the fire test procedure which continue to flame.

Flammability

Ability of a material or product to burn with a flame under specified conditions.

Flammable

Capable of flaming under specified conditions.

Flash point

Minimum temperature to which a material or a product must be heated for the vapours emitted to ignite momentarily in the presence of flame under specified conditions.

Flash-over

Transition to a state of total surface involvement in a fire of combustible materials within an enclosure.

Flashing

Existence of flame repeated for very short periods of time (e.g. between 0 s and 1 s) on or over the surface of the specimen.

Full fire development

Evolution of a fire to a state of full flaming of combustible materials.

Fully developed fire

State of total involvement of combustible materials in a fire.

Glowing

Made luminous by heat cf. incandescence.

Heat flux

amount of thermal energy emitted, transmitted or received per unit area and unit time.

Heat of combustion

Thermal energy produced by combustion of unit mass of a given substance

Effective heat of combustion

Heat of combustion of a substance under specified conditions.

Gross heat of combustion

Heat of combustion of a substance when the combustion is complete and any produced water is entirely condensed under specified conditions.

Net heat of combustion

Heat of combustion of a substance when the combustion is complete and any produced water is in the vapour state under specified conditions.

Heat release

Thermal energy that is released by the combustion of an item under specified conditions.

Heat release rate

Thermal energy released per unit time by an item during combustion under specified conditions.

Heat stress

Conditions caused by exposure to elevated/reduced temperature, radiant heat flux (85), or a combination of these factors.

'I' criterion

Cf. thermal insulation criterion 'I'.

Ignitability

Measure of the ease with which an item can be ignited under specified conditions.

Ignitable

Capable of being ignited

Ignite

Intransitive verb to catch fire with or without the application of an external heat source

Ignite

Transitive verb to initiate combustion cf. Light.

Ignited (adj)

State of an item undergoing combustion.

Ignition

Initiation of combustion.

Ignition source

Source of energy that initiates combustion

Ignition temperature

(Minimum) temperature at which combustion can be initiated under specified test conditions

Ignition time

Deprecated term. cf. Minimum ignition time.

Incandescence

Emission of light produced by a material when intensely heated cf. glowing.

Inflammability

Deprecated term cf. flammability.

Inflammable

Deprecated term. cf. flammable.

Integrity

Ability of a separating element when exposed to fire on one side, to prevent the passage of flames (60) and hot gases or the occurrence of flames on the unexposed side, for a stated period of time in a standard fire resistance test.

Integrity criterion 'E'

Criterion by which the ability of a separating element to prevent the passage of flames and hot gases is assessed cf. fire resistance.

Intermediate-scale test

Test performed on an item of medium dimensions.

Large-scale test

Test, which cannot be carried out in a typical laboratory chamber, performed on an item of large dimensions

Linear burning rate

Length of material burned per unit time under specified conditions specified actions during the relevant fire resistance test is assessed cf. fire resistance.

Mass burning rate

Mass of material burned per unit time under specified conditions.

Mass loss rate

Mass of material lost per unit time under specified conditions.

Minimum ignition time

duration of exposure of a material to a defined ignition source required for the initiation of combustion under specified conditions. cf. ease of ignition and exposure time

Multi compartment fire resisting smoke control system ducts

Fire resisting ducts for use in multi compartment application and that have been tested and met the requirements of prEN 1366-8.

Non-combustible

Not capable of undergoing combustion under specified conditions.

Non-flammable

Not capable of burning with a flame under specified conditions.

Opacity of smoke

Measure of the attenuation of a light beam passing through smoke expressed as the ratio of incident luminous flux to transmitted luminous flux through smoke under specified conditions

Optical density of smoke

measure of the attenuation of a light beam passing through smoke expressed as the common logarithm (i.e. logarithm to the base 10 of the opacity of smoke)

Oxygen index

Minimum concentration of oxygen in a mixture of oxygen and nitrogen that will just support flaming combustion of a material under specified conditions

PAS 121:2007 (Publicly available specification)

Specification for active fire curtain barrier assembly's and active fire curtain barrier assembly's with smoke rating.

Penetration seal

The product used between the smoke control system duct and the fire compartment structure to maintain the fire resistance, when tested and having met the requirements of prEN 1366-8, at the position where a smoke control system duct passes through the element

Pilot[ed] ignition

Ignition of combustible gases or vapours by a secondary source of energy, as by, for example, a flame, spark, electrical arc or glowing wire

Powered smoke and heat exhaust system

A smoke and heat ventilation system that utilises a number of hot gas fans that are suitable for handling hot gases for a limited period of time causing the positive displacement of gases.

Pressure differential systems

A system of fans, ducts, vents and other features provided for the purposes of creating a lower pressure in the fire zone than in the protected space – see prEN 12101-6

Products of combustion

Solid, liquid and gaseous materials resulting from combustion cf. fire effluent.

Pyrolysis

That part of the irreversible chemical decomposition caused solely by a rise in temperature.

Pyrophoric material

Material capable of igniting spontaneously when brought into contact with air.

'R' criterion

Cf. load-bearing criterion 'R'.

racking resistance

ability of a material to withstand a test voltage, under specified conditions, without creating conducting paths on the surface of the specimen and without the occurrence of flame
cf. electrical tracking resistance

Rate of burning

Burning rate deprecated terms. cf. area burning rate , linear burning rate , mass burning rate , flame spread rate, heat-release rate, as appropriate.

Rate of heat release

Cf. heat release rate.

Reaction to fire

Response of a material in contributing by its own decomposition by a fire to which it is exposed, under specified conditions.

Real-scale test

Test which simulates a given application, taking into account the real scale, the real way of working or installation and the environment.

Scorch (verb)

To modify the surface of material by limited carbonisation due to heat.

Screening test

preliminary test used for ascertaining whether an item is likely to exhibit (or not) certain characteristics according to a standardized test method

Self-extinguishing

Deprecated term.

Self-propagation of flame

propagation of a fire front after the removal of any applied energy source

Self-extinguishibility

Deprecated term.

Self-heating

rise in temperature in a material resulting from an exothermic reaction within the material, Electrotechnical, heat generated by a powered electrotechnical product resulting in a rise in temperature in the product

Self-ignition

spontaneous ignition resulting from self-heating

Self-ignition temperature

Deprecated term. cf. spontaneous ignition temperature.

Single compartment smoke control system ducts

ducts for use within single fire compartment application and that have been tested and met the requirements of prEN 1366-9

Small-scale test

test performed on an item of small dimensions

Smoke

visible part of fire effluent

smoke and heat exhaust ventilation system (SHEVS)

system consisting of components jointly selected to exhaust smoke and heat. The components form a system which complies with the requirements of prEN 12101-4 in order to establish a buoyant layer of warm gases above cooler cleaner air

Smoke and heat exhaust ventilator (SHEV)

device specially designed to move smoke and hot gases out of a construction work under conditions of fire

Smoke barrier

a barrier to restrict the spread of smoke and hot gases from a fire, forming part of the boundary of a smoke reservoir or used as a channelling screen, or used as a void edge boundary

Smoke control system damper

a device automatically or manually activated, which may be open or closed in its operational position, to control the flow of smoke and hot gases into, from or within a duct

Smoke control system duct

a duct used in a system to control the movement and/or containment of smoke and heat

Smoke layer

layer of smoke that stabilizes underneath the roof due to the affect of temperature gradient

Smoke logging

a condition within a building when the hot gases from a fire descend within it to a level whereby the safe escape of the occupants is hampered and the ingress of firefighters is prevented

Smoke obscuration

reduction in the intensity of light due to its passage through smoke

Smouldering

combustion of a material without flame and without light being visible cf. glowing combustion

Smoke reservoir

region within a building limited or bordered by smoke barriers or structural elements and which will, in the event of a fire, retain a thermally buoyant smoke layer

Smoke zone (zones)

areas into which a construction works is divided for the extraction of smoke and hot gases. Each zone is served by a SHEV, (or sub-system of a SHEV), which is initiated by a signal from a single or group of initiation devices associated with the zone

Soot

particulate matter produced and deposited during or after combustion

Specific optical density of smoke

measure of the opacity of the smoke produced by a specimen taking into account the optical density and factors characteristic of the specified test method cf. optical density of smoke.

Spontaneous combustion

Deprecated term. cf. self-ignition.

Spontaneous ignition

ignition resulting from a rise of temperature without a separate ignition source

Spontaneous ignition temperature

minimum temperature at which ignition is obtained under specified test conditions without any source of pilot ignition

Surface burn

combustion limited to the surface of a material cf. surface flash.

Surface flash

movement of transient flame over the surface of a material without ignition of its basic structure. cf. surface burn.

Surface spread of flame

propagation of flame away from the source of ignition across the surface of a liquid or a solid

Sustained flaming

persistence of flame on or over a surface for a minimum period of time

Temperature-time curve

(standardized) time-related variation of temperature prescribed in a specified way during a standard fire resistance test

Thermal decomposition

process whereby the action of heat or elevated temperature on an item causes changes to the chemical composition

Thermal degradation

process whereby the action of heat or elevated temperature on an item causes a loss of some properties (e.g. physical, mechanical or electrical)

Thermal insulation criterion

criterion, determined from the results of a fire resistance test, by which the ability of a separating element to prevent the passage of heat is assessed cf. fire resistance.

Thermal radiation

transfer of thermal energy by electromagnetic waves

TL50

lethal exposure time duration of exposure to a fixed concentration of toxic gas or fire effluent, that causes death to 50% of a population of a given species

Toxic hazard

potential for injury or loss of life by exposure to toxicants with respect to their potency, quantity, concentration and duration of exposure cf. fire hazard, fire risk and toxic risk.

Toxic potency

measure of the amount of toxicant required to elicit a specific toxic effect

Toxic risk

result of the multiplication of — the probability of occurrence of a toxic hazard to be expected in a given technical operation or state, and — the consequence or extent of injury to be expected on the occurrence of a toxic hazard

Toxicant

substance which causes an adverse effect upon a living organism

Toxicity

ability of a substance to produce adverse effects upon a living organism

Transitory flaming

existence of flame on or over the surface of the specimen for a period of time longer than that of surface flash but shorter than that of sustained flaming

Transmittance

through smoke ratio of transmitted luminous flux through smoke to incident luminous flux under specified conditions

Ultimate stability failure

change in the test element which is of sufficient magnitude to result in its rupture or collapse after a very short period of time in a standard fire resistance test

Wicking

transmission of a fluid through or over a particle or fibrous material by capillary action