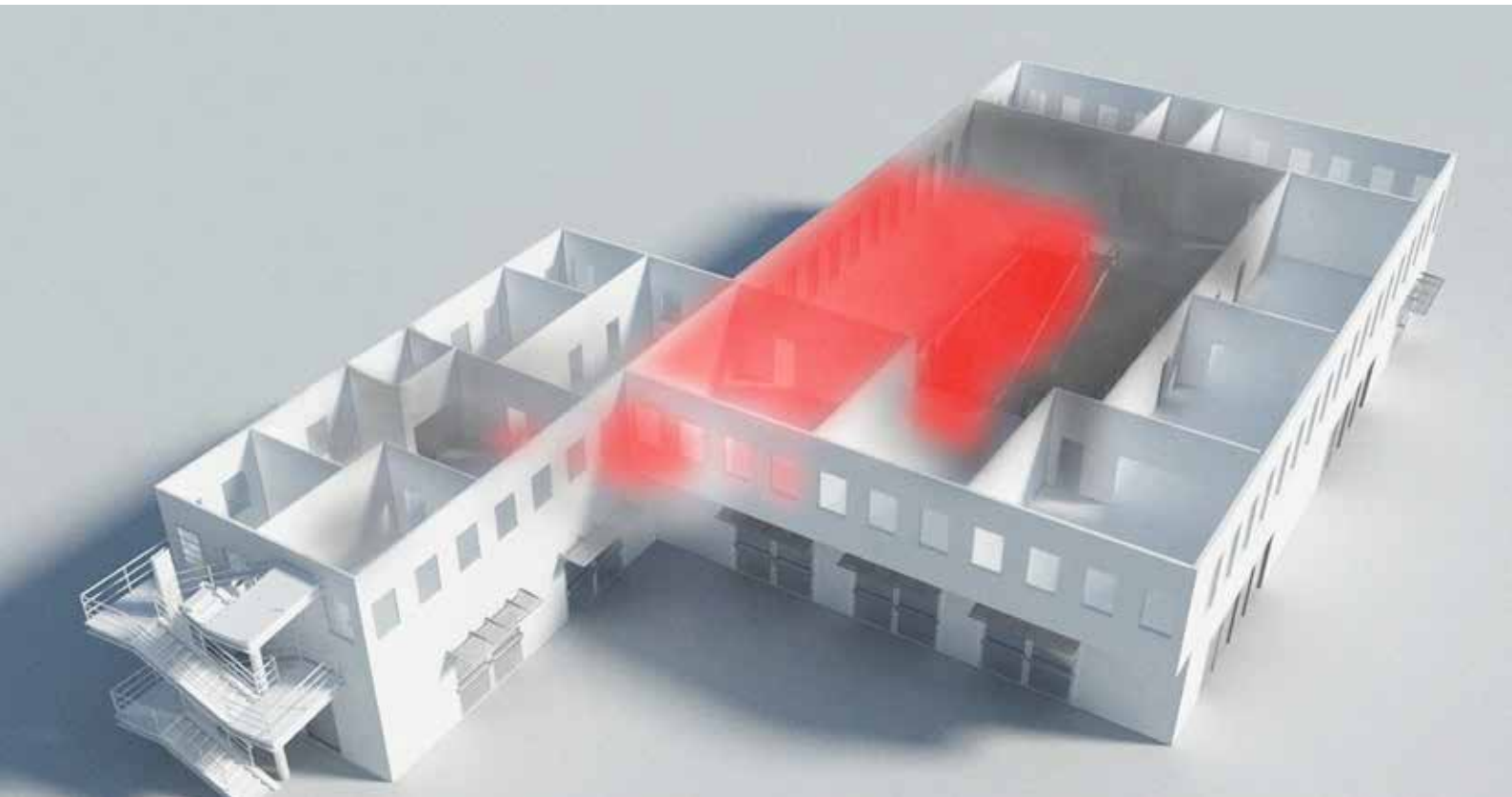


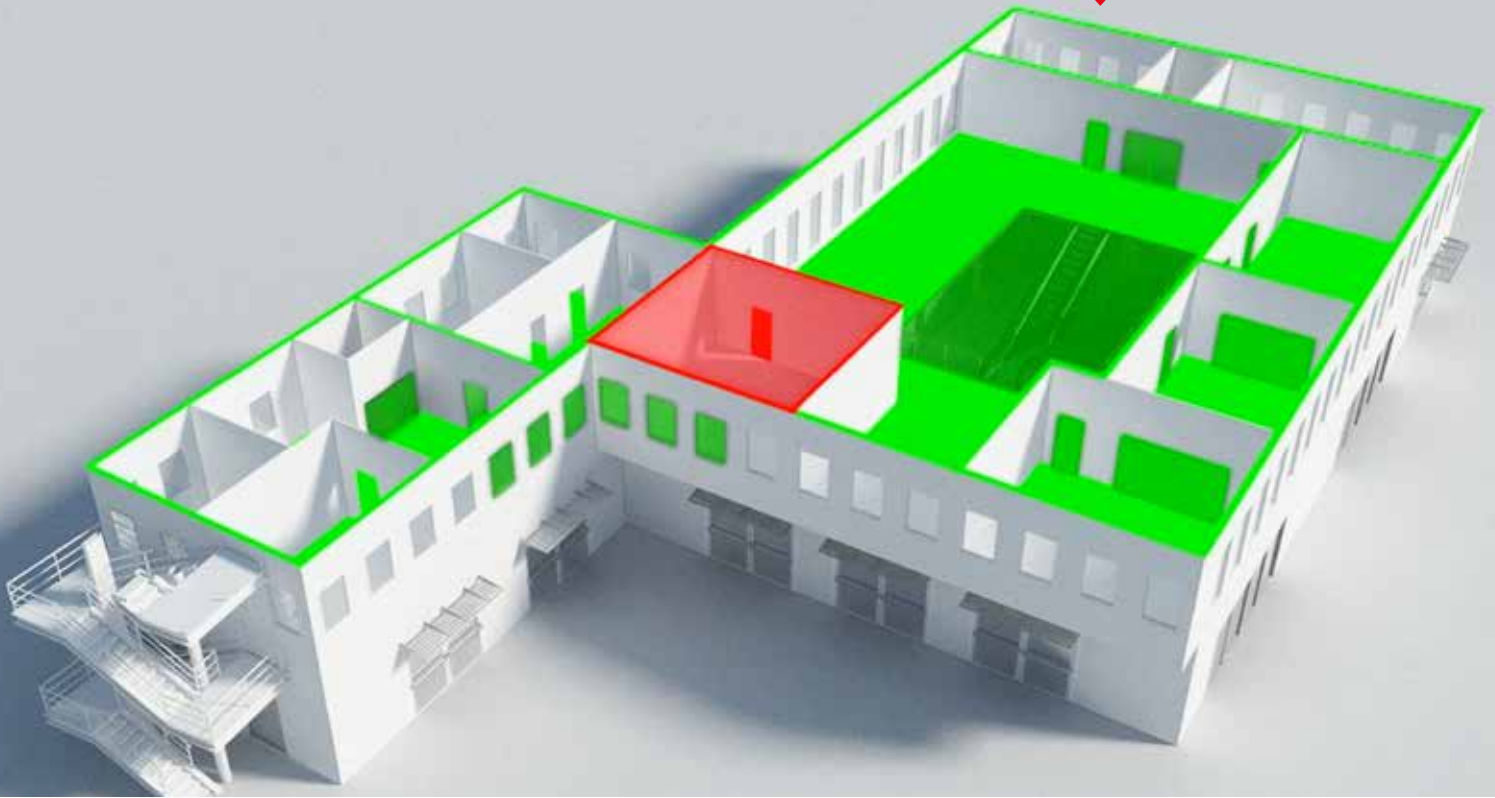
Flexible, textile smoke and fire protection systems



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- **Reliable protection against flames and smoke.**
- **Successful since 1980.**
- **Safety through engineering.**
- **Global market leader “Made in Germany”.**



Global market leader for building-based fire protection

The company Stöbich Brandschutz GmbH develops, manufactures and installs custom made and standard structural fire protection solutions around the world and is one of the most innovative global leaders in the industry. Since 1980 this German based family owned company has been making its mark in the field of fire and smoke protection systems. The developments began 40 years ago with the invention of the first fire protection closures for non-separated continuous transport systems.

In addition to the conveyor system closure division, Stöbich has also become a specialist and market leader in textile fire protection over the past 20 years. Using state-of-the-art high-performance fabrics at the production site in Goslar, Lower Saxony, the company produces textile fire protection solutions for almost all application areas which must take into consideration, flexibility in terms of design and architecture.



SMOKE CURTAINS

90 % of all fire casualties are killed by smoke.

Smoke curtains DIN EN 12101-1

A smoke curtain is part of a smoke clearance system which is comprised of other parts such as natural smoke and heat extraction units (EN 12101-2) and mechanical smoke and heat extraction units (EN 12101-3). Smoke curtains limit the movement of fire vapours within a building in the event of fire. Smoke clearance primarily involves protecting persons by maintaining good visibility, whilst heat extraction primarily focuses on protecting the building and the safety of the fire fighters when battling fires. However, the benefits of smoke and heat extraction should always be seen in combination in the context of escape routes and the protection of property. For instance, ensuring good visibility not only serves the rescue of persons, but also early and targeted extinguishing of the fire by the fire department, which ultimately helps to preserve the building.

Minimum building regulation requirement

CE symbol

In Part B of the List of Construction Rules in section 1.17.3, CE conformity with EN 12101-1 is specified as proof of usability.

According to test standard EN 12101-1, the following tests are required:

Fire test, endurance function test, fabric leak test and building materials class of the entire smoke curtain with respect to the fire behaviour.

EXCERPT OF SMOKE CURTAINS



The smoke extraction concept and the associated requirements for the smoke curtains can be defined based on calculation method and model tests according to DIN 18232-2 and DIN 18232-5

Residual opening in the overlap area

We supply smoke curtains up to 50 metres in one piece, therefore 0% leak rate in the overlap area. This prevents a possible residual opening.

Residual opening near the edge

Rod guide guarantees perfect sealing of the fabric edge using clamps across the entire height. Therefore 0% leakage near the edge under compression load is achieved. Residual openings under compression load near the edge are avoided.

Residual opening through deflection

The heavy weight of the closure strips of 4.6 to 13.5 kg/m means that they do not sway as much and prevents any leakage problems.

Space requirements

Our construction is designed for minimum space requirements across the entire width. For our systems with corresponding control system and higher drive output, regardless of

the unrolling length and 30 m system width, one does not require a drive unit for every module.

Ceiling closure and closing direction

Our system also offers a more attractive closure strip stopper to the ceiling height with a spring-bound closure strip or slot grooved joint. The systems can close in different directions and fits into your protection concept.

Reaction time and unwinding length

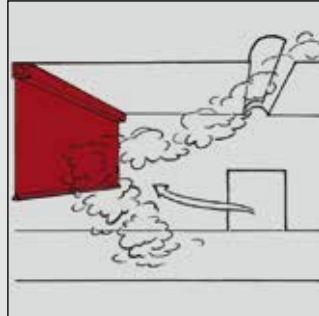
Unwinding speeds are achieved that reach an unwinding length of 8,5 m to 20 m in 60 seconds.

Temperature class

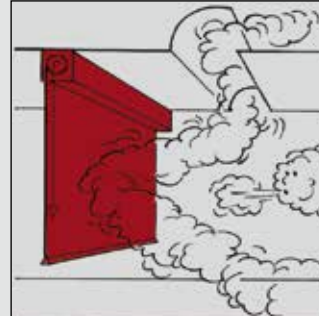
Our systems outperform the set standards and can be supplied in various temperature and time classes.



Creation of safe escape routes



Optimised smoke removal systems



Cross currents are influenced



Escape routes

Protection objectives

Our smoke curtains offer **safety for escape and emergency routes**. The systems can be adapted to the local standards in order to meet the requirements of the smoke curtain classification in terms of leakage, temperature and time classifications.

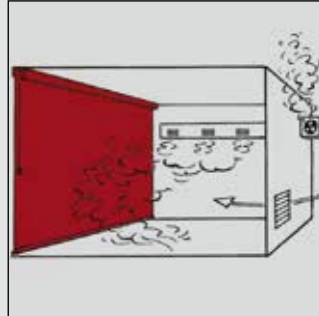
Smoke curtains optimise the efficiency of **smoke extraction systems**. Higher the layer of smoke, the smaller the exhaust air opening surfaces must be and 1.5 times larger than the air supply opening surfaces area.

In the case of **cross-currents** that hinder the extraction of the smoke, due to weather - especially in high rooms - smoke curtains are used to ensure the creation of safe currents.

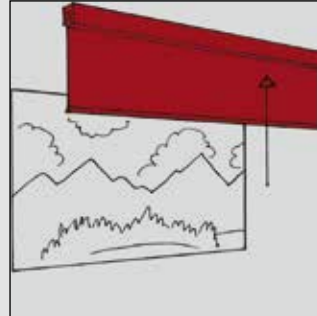
If there are unfavorable situations in buildings the **escape routes** need to be combined with smoke curtains, then the continuous system Stripecoil is a passable alternative. Large numbers of people can flow through (depending on the width of the system, approx. 200 person/minute) the curtain with no significant restrictions. Handicapped persons with mobility equipment or baby strollers can also escape without any additional effort through the separately designed fabric strips of the Stripecoil system.



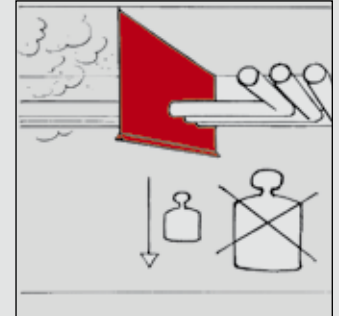
Assist fire department



Room division for mechanical smoke extraction



Clearance of the field of vision



Very low weight

The formation of smoke sections prevents smoke spreading throughout the room. This makes it easier to identify the actual source of the fire, and the fire department can **fight the fire** more easily.

Smoke curtains serve to **divide rooms for mechanical smoke extraction**, resulting in much lower investment costs.

Hidden smoke curtains not only satisfy architectural standards in terms of function and protection, they also ensure that the **field of vision remains clear**.

Permanently installed smoke curtains made of textile structures

have the advantage of being very lightweight, about 1 kg/m², and allowing continuous tubes, ventilation ducts or cable trays to be protected easily.



SMOKE PROTECTION CURTAINS

70 % of all damage is caused by smoke.

Smoke protection curtains

DIN EN 18095 acc. to approval Z-6.62-2264

When closed, smoke curtains prevent smoke from entering adjacent rooms during the beginning phase of the fire, the room behind the smoke curtain can be used to rescue humans and animals and there is enough time to save property without having to use respiratory equipment.



Small or large **openings in walls** can be sealed in a smoke-tight manner even if there is little space available and without compromising the architectural concept.

These automatic system are very small and therefore very easy to integrate. If there are additional fire-resistance requirements, fire protection textiles are used to achieve the protection objectives up to E 120, EW 90 and up to EI 120 in connection with compensation measures.

In the case of **openings in fire compartment ceilings**, it is possible to close these in a smoke-tight manner in line with the protection objectives despite there being little space or architectural considerations. Thanks to its small size, little space is required to install these automatic system and they satisfy the wishes of design-conscious architects ideally (additionally tested based on DIN EN 1634-3 und DIN EN 1363-1).

Low entrance openings in underground garages can be sealed off by subdividing large rooms, while still taking into consideration the limited space available in the camber and at

the side of the opening, for example entrances or exits of the garage. Stöbich systems ensure that smoke cannot be transferred from one storey to the next or from one room to another via the **elevator shafts**.

Fire loads in escape routes according to local Building Codes are not allowed. In the event of fire, our products guarantee safety, even if there are **drink or snack dispensing machines** in **niches** in corridors or screens installed in walls thereby creating a certain fire load.

Also, safe sealing off of **nurses' rooms or receptions** is achieved without the need for the usual walls or glass panes which would disturb communication required for day-to-day operations.

The connection between **kitchens and canteens in hazardous areas** can be sealed securely with smoke curtains without any great restrictions.



Smoke tight

The systems main feature is to be smoke tight, thus reducing or preventing the passage of smoke from one side of the door to the other. The following performance levels are defined:

DIN EN 13501-2:

S_{200} : if the largest leak rate, measured both at the ambient temperature and also at 200°C and up to a pressure of 50 Pa is not exceeded for a single-leaf door system 20m³/h and for a two-leaf door system 30m³/h

Products: Fiberseal-RS-1, Fiberseal-H

S_a : if the maximum leak rate, measured at ambient temperature and up to a pressure of just 25 Pa does not exceed the value of 3m³/h per meter gap length between the fixed and mobile parts of the door unit (e.g. between the door leaf and door frame), except the leakage at the sill.

Products: Fiberseal-RS-1, Fiberseal-H

DIN 18095-3:

RS: The leakage rate of the door with respect to the normal state at a differential pressure during the test between 0 and 50 Pa may not be greater than 200°C both at room temperature (between 10°C and 40°C) and also at the test medium (air) temperature

- 20 m³/h for single-leaf smoke curtain doors
- 30 m³/h for two-leaf smoke curtain doors.
- 50 m³/h for single and two-leaf smoke curtain gates

Smoke curtains should be handled in the same way as single-leaf smoke protection doors.

Products: Fiberseal-RS-1, Fiberseal-H



Differences between textile closure systems and gates

Fire protection doors and gates are generally used for standard situations. However, the use of textile closure systems offers significant benefits over conventional solutions:

- 1. A curtain needs little space.** The fabric is placed in small cases so that they can be fitted into and onto existing ceiling systems and hidden. There are no swivel areas that need to be kept free, and also no valuable space is required compared to a sliding gate.
- 2. A further advantage of the fabric technology is that it can close very large openings.** Stöbich Brandschutz has a general building authority approval for up to 7 x 4.5 m.
- 3. A smoke curtain has a very low weight.** Just a few dozen kilograms per running meter need to be taken into account in the plans. Our systems can also be installed on lightweight wall systems.
- 4. There are significant costs savings** to be made if textile systems are used to close large openings.
- 5. There is a high functional reliability** due to no wear during the closing process which could negatively impact the sealing function on the system.



FIRE PROTECTION CURTAINS

Invisible fire protection.

Fire protection curtains

Fire protection curtains serve to close wall and ceiling openings in the event of a fire. Their constructional design (rolling and folding technologies) and the use of various fabrics opens up a wide application spectrum and different protection objectives or classifications and time classes. Casings and side guides of the flexible systems are concealed almost invisibly into the building structure and offer architects ample design freedom for complex open room concepts.

Large openings in walls and ceilings that create fire compartments can be closed while conforming with protection objectives even though there is little space available or architectural requirements need to be considered. These automatic systems are very small and therefore very easy to integrate into the architecture. The demands on fire protection curtains are high, especially in buildings with representative architectural concepts. They should be installed almost invisibly and seal off the room. Also, in some cases **room-creating** curtains need to go around corners, so that several walls or glass panels are not needed. This can be achieved without restriction by using lateral side guides or columns. The fire protection curtain Fibershield-S creates a polygon-like room without the need for obstructive side guides that are needed to achieve the required level of tightness.

FIRE PROTECTION CURTAINS



The flat case design (12 cm in standard model) allows easy integration into the ceiling.

If a **building or part of a building meet at corners or facade openings which do fulfil building distance requirements and are separated by a fire wall**, no openings are permitted within a distance of 5 m from the fire wall. This does not apply if the buildings or building parts come together at an angle of more than 120° over the corner.

This requirement can be achieved by using Fibershield-P and Fibershield-F systems: designed for inside and outside buildings which has been realised thousands of times over. In these tight and self-closing protection systems, standard safety glass windows without fire protection panes are used. The user profits from the unrestricted use of the windows and room comfort.

Roofs from adjacent buildings which are connected to **walls with openings** or to walls that are not at least fire-retardant,

need to be as fire resistant as the ceilings of the connected building within a distance of 5 m from these walls.

Textile fire protection closures are installed in the building to prevent the **transfer of fire from one storey to another** and are controlled by fire alarm systems automatically, for instance by means of thermal triggers in the event of a fire.

Fire risks for machines and systems that are at special risk are limited by the **creation of sections** within fire compartments, the Fibershield closure can be used to create these necessary walls and ceilings. Also, the rooms created in this way are flooded with high-pressure sprinklers extinguishing systems or gas extinguishing systems to put out the fire. The Fibershield closure systems are designed depending on the allowed leakage. Due to the strict leakage requirements for gas extinguishing systems, systems with side guides are used.



Integral partition (E)

Has the capability to withstand fire so that the penetration of flames or hot vapours can be prevented.

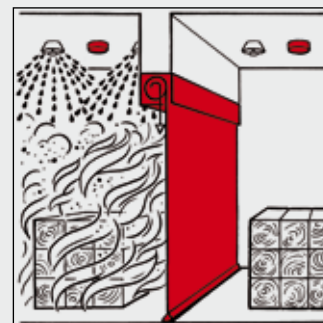
E 90, E 120, E 240



Integral partition with limited radiation penetration (EW)

Radiation limitation is the ability to reduce fire transfer to neighbouring materials by means of radiated heat.

EW 30, EW 60, EW 90, EW120



Heat insulation in case of exposure to fire with dense sprinkler protection (E + Sprinkler)

Heat insulation is the ability to prevent fire transfer by means of radiated heat. The transfer must be limited so that neither the surfaces facing away from the fire nor materials close to these surfaces ignite and persons can be protected.

Protection objectives such as:
EI 90, EI 120, EI 180

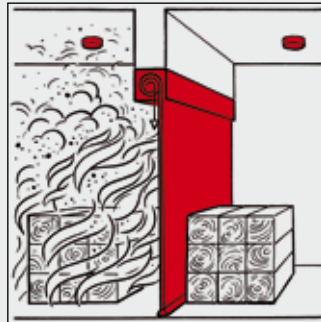
Protection objectives/classifications

The creator of the fire protection certificate must observe the technical building provisions and achieve the general protection goals and the technical fire protection objectives. It is possible to deviate from these technical building provisions if the protection objectives can be implemented equivalently using a different solution (e.g. a fire protection curtain, possible in connection with compensation measures).



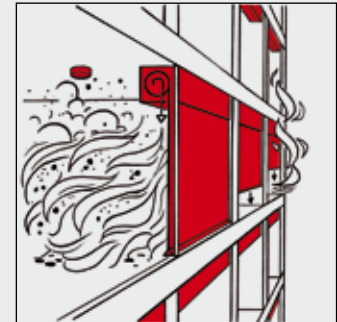
**Heat insulation
in case of exposure to fire with
water film (E + Water film)**

(surface temperature is less than
the allowed limit values)
EI 90, EI 120, EI 180



**Heat insulation
fire exposure
without water (EI dry)**

EI 30, EI 60, EI 90, EI 120

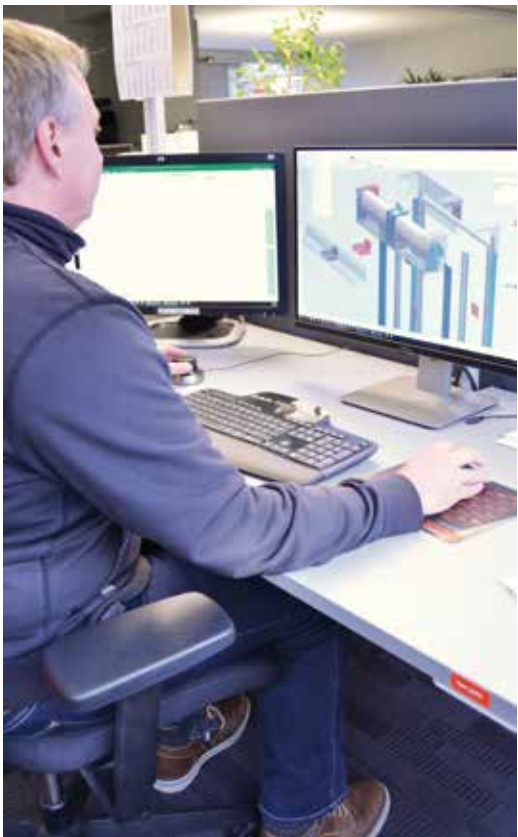


**Prevention of
flames spreading from storey
to storey (with) railing (storey
spread)**

The necessary 1m high railing
(camber) is automatically
created in the event of a fire.

In accordance with the general building approval Z6-60-2127 the fire protection curtain is able to prevent flames and smoke from entering for 90 minutes (see E 90 according to DIN EN 13501 Part 2, tested to DIN EN 1634 Part 1). Any thermal insulation effect required to reach the protection goal can be realised alternatively by means of the described measures. Proof of suitability is provided by one or several test reports. The following table describes which protection goals (not

classifications) that are conventionally reached in compliance with the technical building provisions (stated classifications according to DIN EN 13501 Part 2, tested to DIN EN 1634 Part 1), can be implemented alternatively by the installation of a fire protection curtain.





One-stop-shop

The company Stöbich Brandschutz GmbH is part of the Stöbich Group. Thanks to the numerous upstream and downstream activities by other companies within the group, we are able to bundle and insure the quality of our competence, know-how and work in all processes and to ensure the quality of our actions. One-stop-shop!



Stöbich Brandschutz

Pracherstieg 6
38644 Goslar
Germany

+49 5321 5708-0

info@stoebich.com
www.stoebich.com

