KNAUF INSULATION
Technical Solutions

Fire protection 11/2019

FIRE-TEK

Knauf Insulation Fire-teK® System for Ventilation duct EI 30 (ve ho i ↔ o) S and EI 60 (ve ho i ↔ o) S

tested in accordance with EN 1366-1

with ECOSE® TECHNOLOGY

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The Knauf Insulation Fire-teK® System

System description for ventilation ducts

The Knauf Insulation Fire-teK® system provides preventive fire protection for ventilation ducts. Mineral wool wired mats with tear-resistant aluminium foil, reinforced with glass mesh on one side, are used.
In addition to providing protection in the event of a fire, the Knauf Insulation Fire-teK® System also has good thermal and acoustic insulation properties.

The system has an insulation thickness of 60 or 80 mm. The wire mesh is already lined with mineral wool and therefore can also be installed in tight spaces. Depending on the insulation thickness used, a fire resistance of up to 60 minutes can be guaranteed.

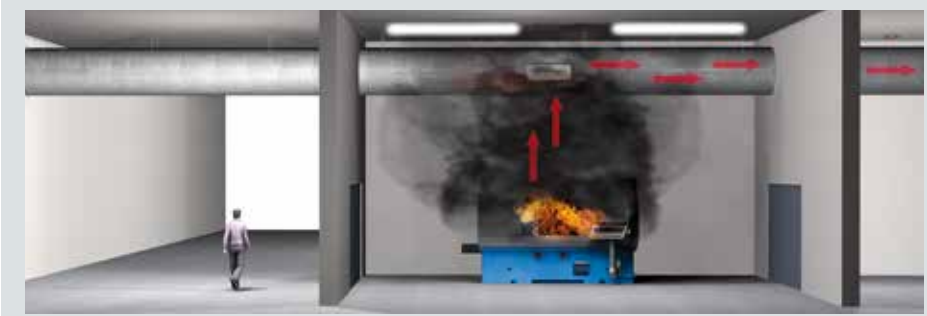
Building materials and building elements or components

Building materials, such as mineral wool wired mats, are classified according to their fire behaviour. The classification of fire behaviour of building materials is regulated by **EN 13501-1**.

Knauf Insulation Fire-teK® System mineral wool wired mats have an **A1** classification, which means that they are non-combustible and, in the event of a fire, they do not cause impaired visibility through the development of smoke.

Examples of Fire Resistance in Buildings

Fire outside duct (o→i) S
Under EN 13501-3 classification, fire outside refers to duct A, which fulfils the fire resistance requirements from the outside to the inside of the duct.



Fire inside duct (i→o) S
Under EN 13501-3 classification, fire inside refers to duct B, which fulfils the fire resistance requirements from the inside of the duct to the outside environment.

Fire-resistant lines such as channels insulated in accordance with fire safety are components classified in accordance with **EN 13501-3**. Here, for instance, the following information may be given:

- Fire resistance duration
- The orientation of the class of fire resistance duration
- Vertical / horizontal installation of the building element or component
- Smoke insulation

The Knauf Insulation Fire-teK® System

FIRE-TEK

Knauf Insulation Fire-teK® WM 908 GGA

Product name	Application of round components	Fire resistance class	Density (kg/m³)	Thickness (mm)
Knauf Insulation Fire-teK® WM 908 GGA	Solid ceiling Dry wall Solid wall	EI 30 (ve ho i ↔ o) S	80	60
		EI 60 (ve ho i ↔ o) S		80
Fire behaviour classification in accordance with EN 13501-1		CE MW-EN 14303 T2 WS1-CL10		

Application

The Knauf Insulation Fire-teK® System with wired mat Fire-teK® WM 908 GGA has been developed for use in horizontal and vertical ventilation ducts.
The maximum ventilation duct diameter is 1,000 mm.

Technical data Knauf Insulation Fire-teK® WM 908 GGA

Knauf Insulation Fire-teK® WM 908 GGA							
Properties	**Symbol**	**Description**				**Unit**	**Test method**
Reaction to fire	–	A1				–	EN 13501-1
Thermal conductivity depending on temperature	ϑ	50	100	200	300	°C	EN 12667
	λ	0.040	0.046	0.062	0.084	W/(m·K)	
	ϑ	400	500	600		°C	
	λ	0.112	0.146	0.190		W/(m·K)	
AS quality	–	≤ 10				ppm	EN 13468
Water absorption	W_p	≤ 1.0				kg/m²	EN 1609
Water vapour diffusion resistance coefficient	μ	1				–	EN 14303
Melting point of fibres	–	≥ 1000				°C	DIN 4102-17
Air flow resistance	r	≥ 40				kPa·s/m²	EN 29053
Silicon-free	–	Manufactured without silicon oil additive					

Definition of fire resistance classes in accordance with EN 13501-3:

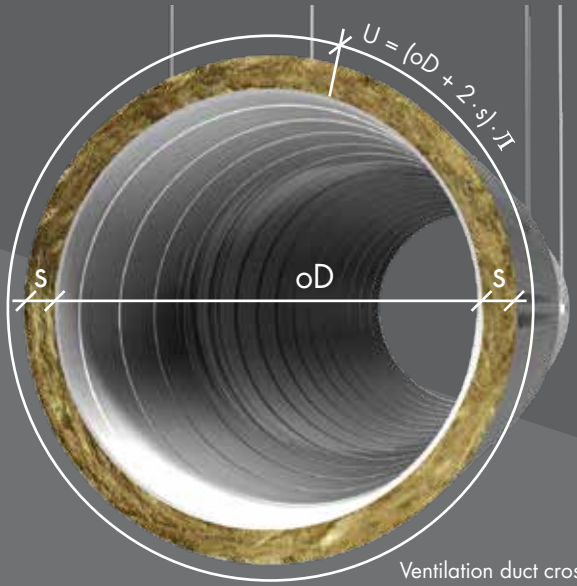
Fire resistance class EI 30 (ve ho i↔o) S

Fire-resistant ventilation duct, with a fire resistance rating of 30 minutes for vertical and horizontal ventilation ducts, with fire resistance from inside and outside the duct as well as limiting the smoke leakage.

Fire resistance class EI 60 (ve ho i↔o) S

Fire-resistant ventilation duct, with a fire resistance rating of 60 minutes for vertical and horizontal ventilation ducts, with fire resistance from inside and outside the duct as well as limiting the smoke leakage.

1. Cutting the wire mesh mats



Ventilation duct cross-section

U = Circumference of the insulation in mm
oD = External diameter of ventilation duct in mm
s = Insulation thickness of wire mesh mat in mm

Benefits of the Knauf Insulation Fire-teK® System:

- Quick and easy to use:
  - › No gluing at the joints necessary
  - › Standardized installation for EI 30 and EI 60
  - › No welding pins required
  - › Wire mesh already lined on mat
- Matching aluminium look
- Compact 60 mm or 80 mm
- No doubling layers at duct joints
- Suitable for moulded parts
- Good thermal and acoustic insulation
- Mineral wool with ECOSE® Technology
- Eurofins Certification Indoor Air Comfort Gold Standard

Example for cutting the Wired Mats

Ventilation duct with external diameter 100 mm for EI 30: **Circumferences = (100 + 2 · 60) · л = 691 mm**

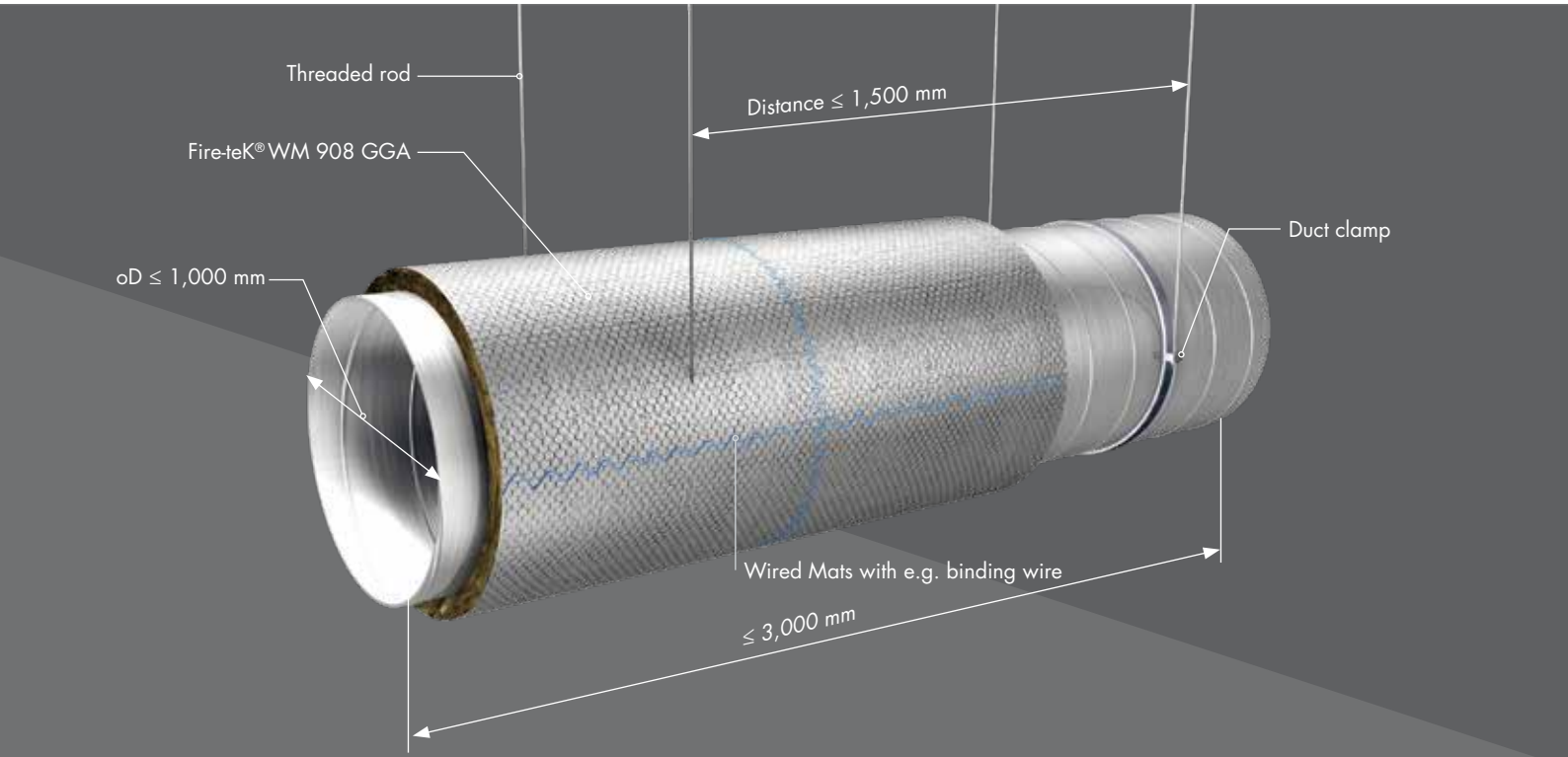
Section for Knauf Insulation Fire-teK® WM 908 GGA

oD of duct in mm	EI 30 length of the mat in mm	EI 60 length of the mat in mm	oD of duct in mm	EI 30 length of the mat in mm	EI 60 length of the mat in mm	oD of duct in mm	EI 30 length of the mat in mm	EI 60 length of the mat in mm
63	575	701	200	1005	1131	560	2136	2261
71	600	726	224	1081	1206	600	2261	2387
80	628	754	250	1162	1288	630	2355	2481
90	660	785	280	1256	1382	650	2418	2544
100	691	817	300	1319	1445	700	2575	2701
112	729	855	315	1366	1492	710	2607	2732
125	770	895	355	1492	1618	800	2889	3015
140	817	942	400	1633	1759	850	3046	3172
150	848	974	450	1790	1916	900	3203	3329
160	880	1005	500	1947	2073	950	3360	3486
180	942	1068	550	2104	2230	1000	3517	3643

Installation Instructions

The Knauf Insulation Fire-teK® System only provides the stated class of fire-resistance for ventilation ducts if installed in accordance with the installation guidelines.

2. Installation the Wired Mats



Installation steps

- Installation of the cuted Wired Mat on ventilation ducts
- Join longitudinal and crosswise joints of the wire mesh with binding wire or wire hooks
- No weld pin or aluminium adhesive necessary

Keep in mind the maximum dimensions

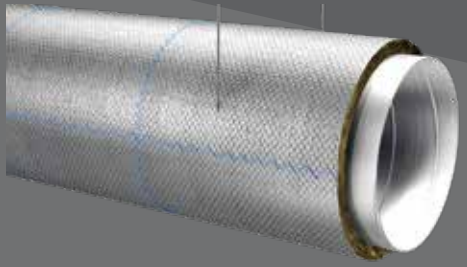
- Duct diameter ≤ 1,000 mm
- Distance between the threaded rods/suspension ≤ 1,500 mm
- Length of the individual ventilation duct ≤ 3,000 mm

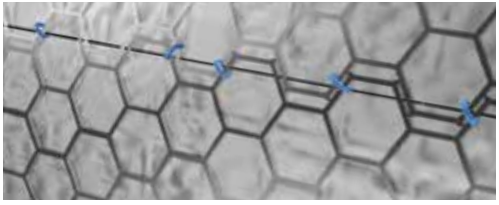
Note

The horizontal ventilation ducts are hung with threaded rods (max. tensile strength 9 N/mm²).
The suspension devices are placed in the insulation, the threaded rods must not be insulated. Use ventilation ducts with air insulation requirements in accordance with EN 12237.

Wired Mat joints

There should be no gaps in the Mineral Wool at the joints. The wire mesh must therefore be sewn in the longitudinal and cross-wise junctions with binding wire or secured with binding wire loop or mat hooks (not shown). Butt joints are not required to be stuck with aluminium adhesive band.





Weight of the insulation in kg per meter (without duct)

oD of duct in mm	EI 30	EI 60	oD of duct in mm	EI 30	EI 60
63	2.9	4.8	355	7.6	11.0
71	3.1	4.9	400	8.3	12.0
80	3.2	5.1	450	9.1	13.0
90	3.4	5.3	500	9.9	14.1
100	3.5	5.6	550	10.7	15.2
112	3.7	5.8	560	10.9	15.4
125	3.9	6.1	600	11.5	16.2
140	4.2	6.4	630	12.0	16.9
150	4.3	6.6	650	12.3	17.3
160	4.5	6.8	700	13.1	18.4
180	4.8	7.3	710	13.3	18.6
200	5.1	7.7	800	14.7	20.5
224	5.5	8.2	850	15.5	21.6
250	5.9	8.8	900	16.3	22.6
280	6.4	9.4	950	17.1	23.7
300	6.7	9.8	1000	17.9	24.8
315	7.0	10.1			

3. Installation for ducts through walls/ ceiling

The wall/ceiling must have at least the same fire resistance as the fire safety insulation.

3.1 Closing the annular gap

The gap between the ventilation duct and fire wall/ceiling must be filled with mineral wool (density: ≥ 80 kg/m³). Finally, cover the gap on both sides with a fire safety sealing compound, layer thickness approx. 5 mm.

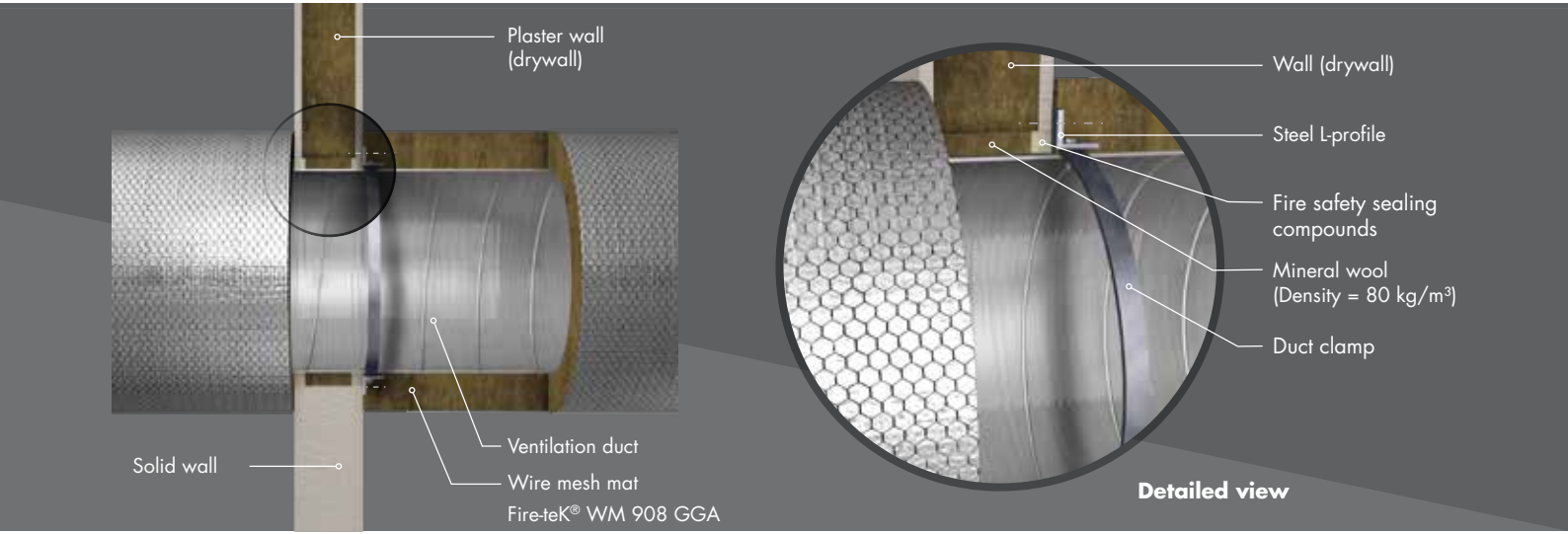
Note: Both sides of the wall must be installed as shown in the illustrations.

Note: Properties of the fire stopping compound: Only silicate based, inorganic sealants, resistant up to 1200 °C can be used.

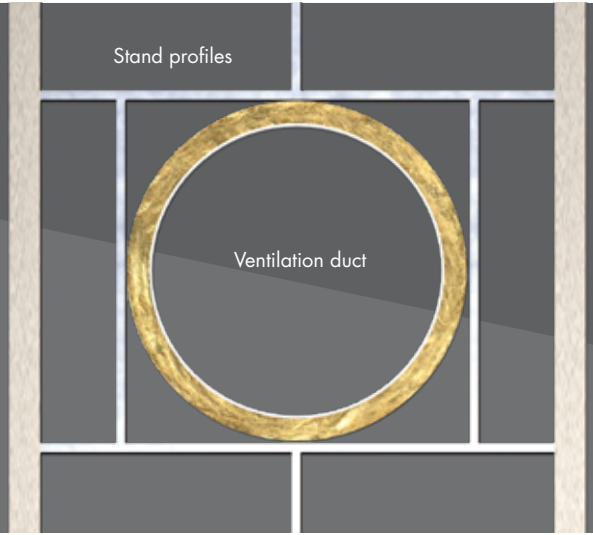
3.2 Fastening the ventilation duct

- Assembly of duct clamp directly on the intersection
- Assembly of the steel L-profiles (30 x 30 x 3 mm) for attaching the ventilation duct on all four sides
- Joining the sections with the duct clamp and wall with screws, Screws: Ø 6.0 x 60 mm

Intersection cross-section



Drywall detailed structure



Note: Vertical assembly

- Vertically-insulated ventilation ducts must be fastened at least every 5 m.
- No weld pin or aluminium adhesive necessary
- For assembly design
  › see assembly steps above
- The solid ceiling must have at least the same fire resistance as the fire safety insulation

In a drywall, the under-construction is adjusted in the intersection area as shown in the illustration. The drywall must have at least the same fire resistance as the fire safety insulation.

Our mineral wool products with ECOSE® technology!

Following the successful launch of ECOSE® technology in building insulation, Knauf Insulation has decided to extend its use of this innovative binding technology to building products.

ECOSE® technology products use a formaldehyde-free binding agent, which is made of mainly natural ingredients, thereby reducing the amount of primary energy in the insulating materials. It replaces conventional phenol-formaldehyde resin binding agents and gives the products their brown colour, because they do not contain colourants. This technology was developed for Knauf Insulation mineral wool products in order to improve their eco-friendliness without affecting the thermal and acoustic insulation properties, or the fire protection properties.

FORMALDEHYDE-FREE BINDING AGENTS

Natural raw materials are the main components of this binding agent. No formaldehyde is added during the production process. Products manufactured with ECOSE® technology **contain no phenols or acrylic resins.**

USER-FRIENDLY

Products with the ECOSE® technology are easy to cut, odourless, custom-fit and **simple to work with.**

TECHNICAL PERFORMANCE

Fire safety solutions with the ECOSE® technology are suitable for use primarily in fire safety and, with highly effective insulation materials, ensure that the solutions are energy efficient. All applicable **standards and guidelines are followed.**

ECO-FRIENDLY

Renewable raw materials in the binding agents have replaced almost all fossil fuel-based materials. We **save energy and reduce power consumption and CO_2 emissions.**

KNAUF INSULATION
Technical Solutions

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All product catalogues and application guides are available on our website.

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