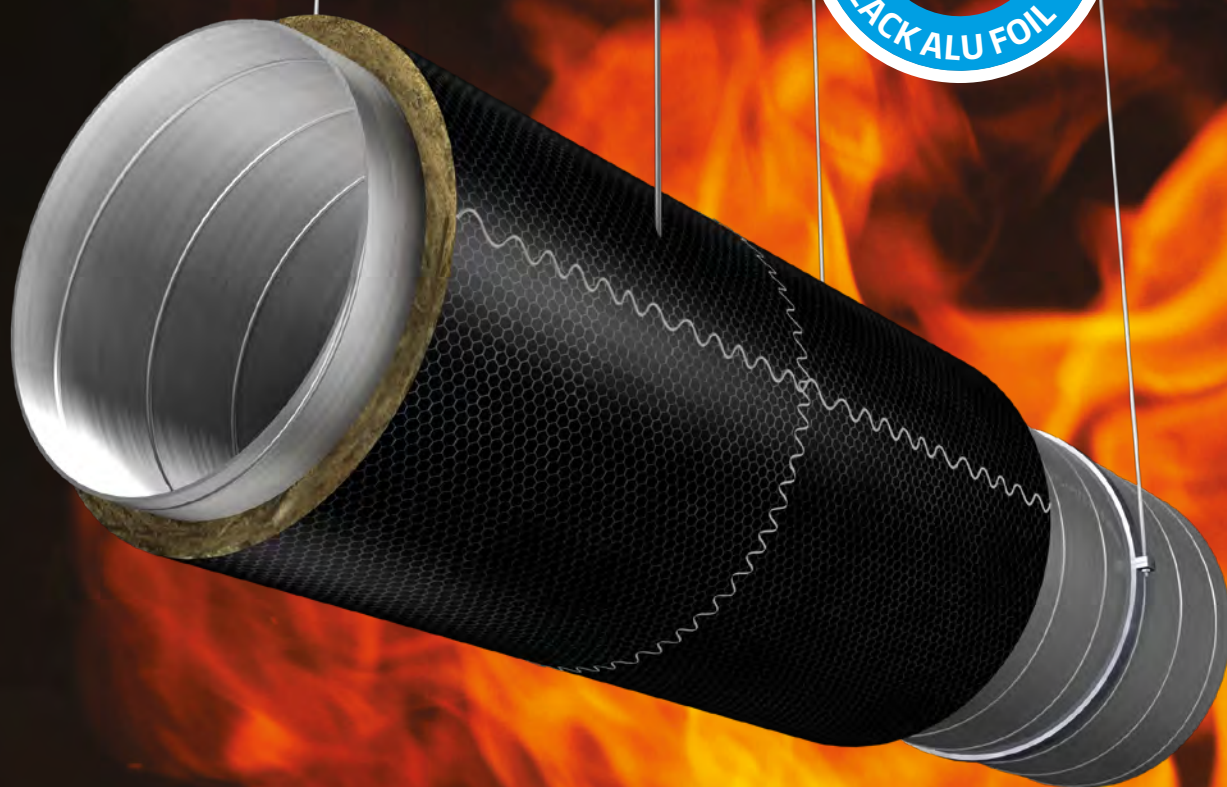


KNAUFINSULATION



Technical Solutions



INSTALLATION MANUAL: **Fire-teK® DuctProtect EI30/E60 C SYSTEM**

For ventilation duct EI30/E60 (ho i ↔ o) S tested in accordance with EN 1366-1

Build on us.

CONTENT

1. About the system	3
1.1 Application	4
1.2 Technical data	4
2. Installation of the ventilation duct	5
2.1 Dimensioning of the duct	5
2.2 Preparation of the wall	6
2.3 Mounting/fixation of the duct through the wall	6
3. Mounting of insulation mats	7
3.1 Dimensioning and cutting the mats	7
3.2 Installation of the INSULATION Mats	8
3.3 Mat joints	9
3.4 Mounting of insulation mats on wall penetration	10
Passive fire protection	11
Fire scenarios in Buildings	12

At Knauf Insulation we are
committed to sustainability.



Certificates



The Knauf Insulation Fire-teK® DuctProtect EI30/E60 C SYSTEM



1. About the system

With our Knauf Insulation Fire-teK® DuctProtect EI30/E60 C SYSTEM you decided for a system which provides passive fire protection for circular ventilation ducts.

Mineral Wool wired mats which are faced with black tear-resistant aluminium foil and reinforced with wire mesh on one side, are the main components of the system.

In addition to providing relevant protection in the event of a fire, the Knauf Insulation Fire-teK® DuctProtect EI30/E60 C SYSTEM has good thermal insulation properties.



Wired mat Fire-teK® WM 910 GGB



Non-flammable adhesive Fire-teK® STICK
(Properties of the fire stopping compound: Only silicate based, inorganic sealants, resistant up to 1200 °C can be used, like Fire-teK® STICK)



Mulcol Multimastic SP

BENEFITS OF THE KNAUF INSULATION FIRE-TEK® DUCTPROTECT EI30/E60 C SYSTEM:

- Quick and easy to use:
 - › No gluing at the duct insulation joints necessary
 - › No welding pins required
- Compact 40 mm
- Mineral Wool with ECOSE® Technology
- Eurofins Certification Indoor Air Comfort Standard



Mulcol Multimastic FB1

Product name	Fire resistance class / Reaction to fire	Thickness [mm]	Application of circular components
Knauf Insulation Fire-teK® WM 910 GGB	EI30/E60 (ho i ↔ o) S	40	Mineral Wool partition wall
Mulcol Multimastic FB1	A1	50	

1.1 APPLICATION

The Knauf Insulation Fire-teK® DuctProtect EI30/E60 C SYSTEM with wired mats Fire-teK® WM 910 GGB has been developed for use on circular ventilation ducts.

Use a circular ventilation duct with air tightness Class C or better, tested in accordance with EN 12237. The maximum duct diameter is 1,000 mm, required insulation thickness is 40 mm.

By default, Mineral Wool mats with a pre-attached wire mesh enable an installation also in tight spaces and on variable diameters.

1.2 TECHNICAL DATA

Knauf Insulation Fire-teK® WM 910 GGB

Properties	Symbol	Description								Unit	Test method
Reaction to fire	-	A1								-	EN 13501-1
Thermal conductivity depending on temperature	θ	50	100	200	300	400	500	600	660	°C	EN 12667
	λ	0,040	0,046	0,062	0,083	0,110	0,145	0,179	0,210	W/(m·K)	
Water soluble chloride ions (AS quality)	-	≤ 10								ppm	EN ISO 12624
Water absorption	W_p	≤ 1.0								kg/m ²	EN ISO 29767
Water vapour diffusion resistance coefficient	μ	1								-	EN 14303
Melting point of fibres	θ	≥ 1000								°C	DIN 4102-17
Longitudinal air flow resistance	r	≥ 40								kPa·s/m ²	EN 29053
Silicon-free fibres	-	Manufactured without silicon oil additive								-	-
Declaration of performance	-	dopki.com/T4305FPCPR								-	-

Width of the wired mats: 900 or 1000 mm

2. Installation of the ventilation duct

2.1 DIMENSIONING OF THE DUCT

The horizontal ventilation ducts are hung with threaded rods (max. tensile strength: EI30/E60: 9 N/mm²). For EI30/E60 minimum of M8 is requested.

The suspension devices are placed in the insulation, the threaded rods don't need to be insulated. The number of suspension pairs required results from the static dimensioning. For respecting the weight of wired mats see Table 1.

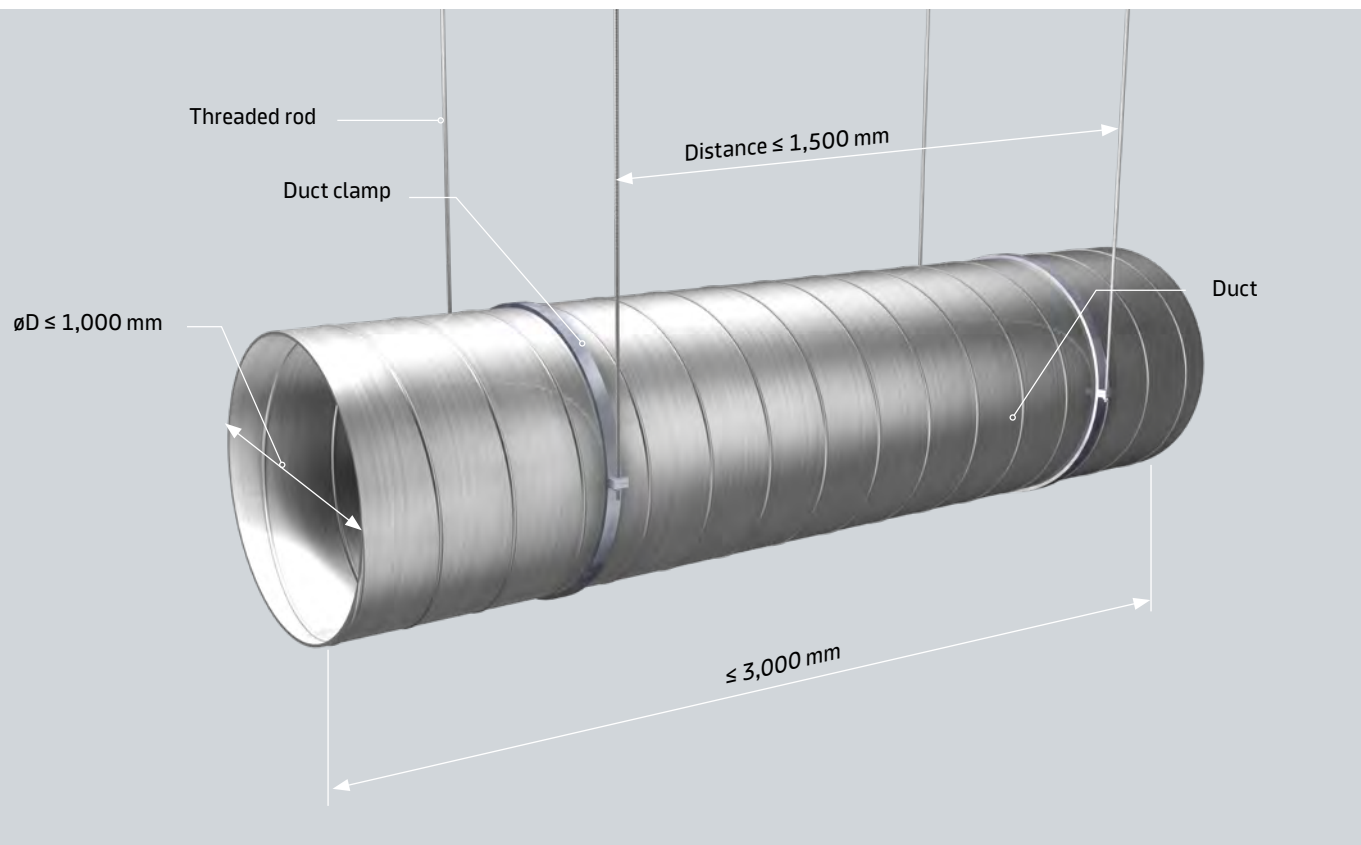


Table 1 **Basis to calculate the correct dimensioning of the required threaded rods**
Weight of the insulation material in kg per meter (without duct)

øD in mm	900 mm	øD in mm	900 mm	øD in mm	900 mm
	EI30 /E60		EI30 /E60		EI30 /E60
	40 mm		40 mm		40 mm
63	1,6	200	3,2	560	7,2
71	1,7	224	3,4	600	7,7
80	1,8	250	3,7	630	8,0
90	1,9	280	4,1	650	8,3
100	2,0	300	4,3	700	8,8
112	2,2	315	4,5	710	8,9
125	2,3	355	4,9	800	10,0
140	2,5	400	5,4	850	10,5
150	2,6	450	6,0	900	11,1
160	2,7	500	6,6	950	11,6
180	2,9	550	7,1	1000	12,2

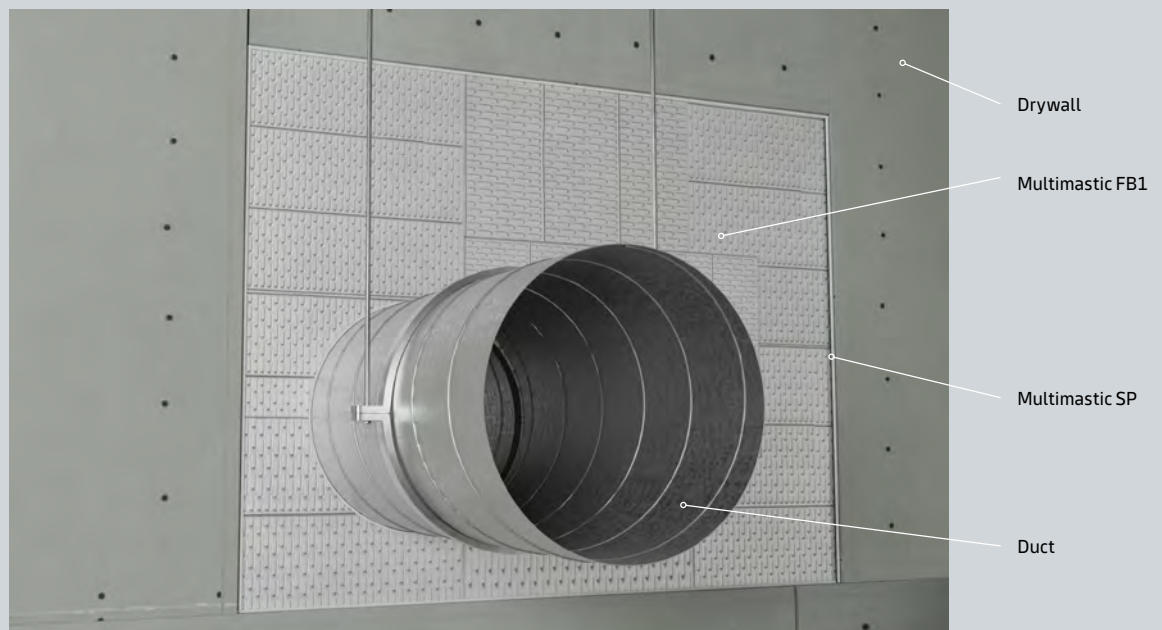
2.2 PREPARATION OF THE WALL

The system can be used for Mineral Wool partition wall. The definition of the wall penetration covers fire class EI30/E60.

- Wall is made of 2 layers of Multimastic FB1 Mineral Wool boards of min. 50 mm per layer
- Every Multimastic FB1 board joint needs to be staggered
- Every Multimastic FB1 board joint must be bonded with Multimastic SP glue
- Possible wall opening size 1900*1500 mm



2.3 MOUNTING/FIXATION OF THE DUCT THROUGH THE WALL



- Duct can be placed 25 mm from the edge of the Multimastic board.
- The cavity in the drywall outside the Multimastic board can be void and empty for as long as the the wall is of the same fire class, E60.

3. Mounting of insulation mats

3.1 DIMENSIONING AND CUTTING THE MATS

Preparation of the cut-to-size mat for installation on the ventilation duct. To simplify the work, use the table (Table 2) with most common duct diameters, which shows needed length of mats.

Ventilation duct cross-section

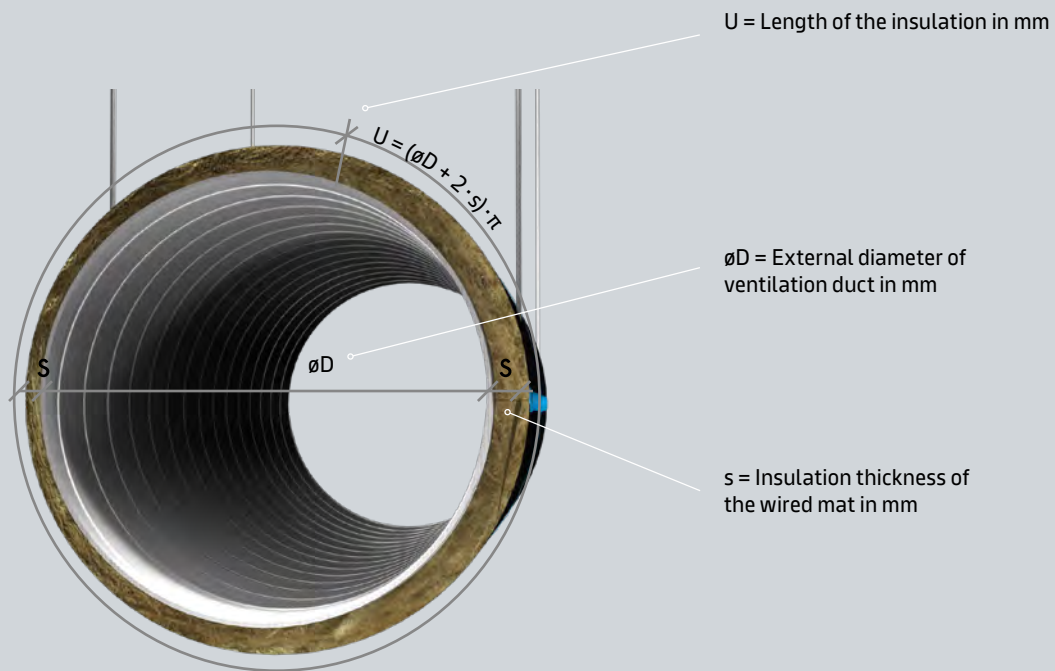


Table 2 Typical duct diameters and according lengths for the mats

Section for Knauf Insulation Fire-teK® WM 910 GGB - Length of the mat in mm

$\varnothing D$	EI30/E60 Mat length in mm for 40 mm thickness*	$\varnothing D$	EI30/E60 Mat length in mm for 40 mm thickness*	$\varnothing D$	EI30/E60 Mat length in mm for 40 mm thickness*
63	449	200	880	560	2011
71	474	224	955	600	2136
80	503	250	1037	630	2231
90	534	280	1131	650	2293
100	565	300	1194	700	2450
112	603	315	1241	710	2482
125	644	355	1367	800	2765
140	691	400	1508	850	2922
150	723	450	1665	900	3079
160	754	500	1822	950	3236
180	817	550	1979	1000	3393

* thickness and product respecting EI class

Example for dimensioning the mats

Ventilation duct with external diameter 100 mm for EI30/E60:

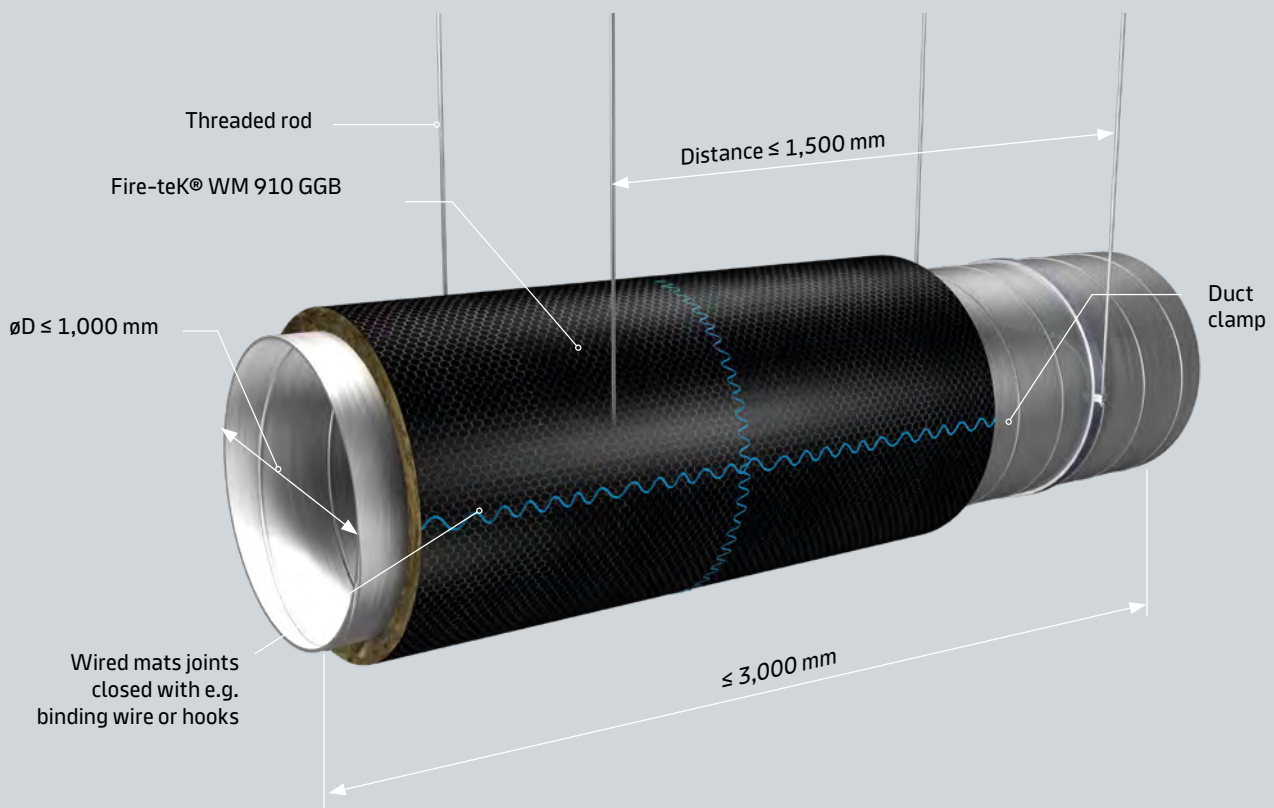
Circumferences = Length of the mat = $(\varnothing D + 2 \cdot s) \cdot \pi = (100 + 2 \cdot 40) \cdot \pi = 565$ mm

3.2 INSTALLATION OF THE INSULATION MATS

Measure and cut: Begin by measuring the circumference and length of the circular duct to determine the size of the wired mat needed and cut the wired mat to the appropriate length.

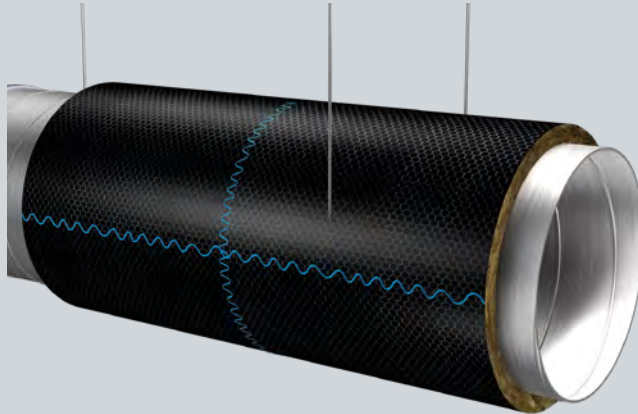
Position the mat: Wrap the cut piece of wired mat around the duct and align the edges to ensure a snug fit around the entire circumference of the duct.

Secure with wire: Use binding wire or metal ties to secure the mat in place. Start at one end and work along the length of the duct, tightening the wire or ties to hold the mat firmly against the duct.



3.3 MAT JOINTS

There are no gaps of Mineral Wool allowed at the joints. The wire mesh must therefore be sewn in the longitudinal and cross-wise junctions with binding wire (Picture 1) or secured with binding wire loops (Picture 2) or mat hooks (not shown). It is not required to close or cover the joints with additional aluminium tape.



Picture 1: Cross-wise junctions with binding wire



Picture 2: Binding wire loops

IMPORTANT NOTES

KEEP IN MIND THE MAXIMUM DIMENSIONS

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

CHECK AND FINISH

Inspect the entire duct to ensure that the mat is securely fastened, with no loose sections or exposed insulation. If necessary, add additional ties or wire to reinforce the insulation, ensuring complete coverage.

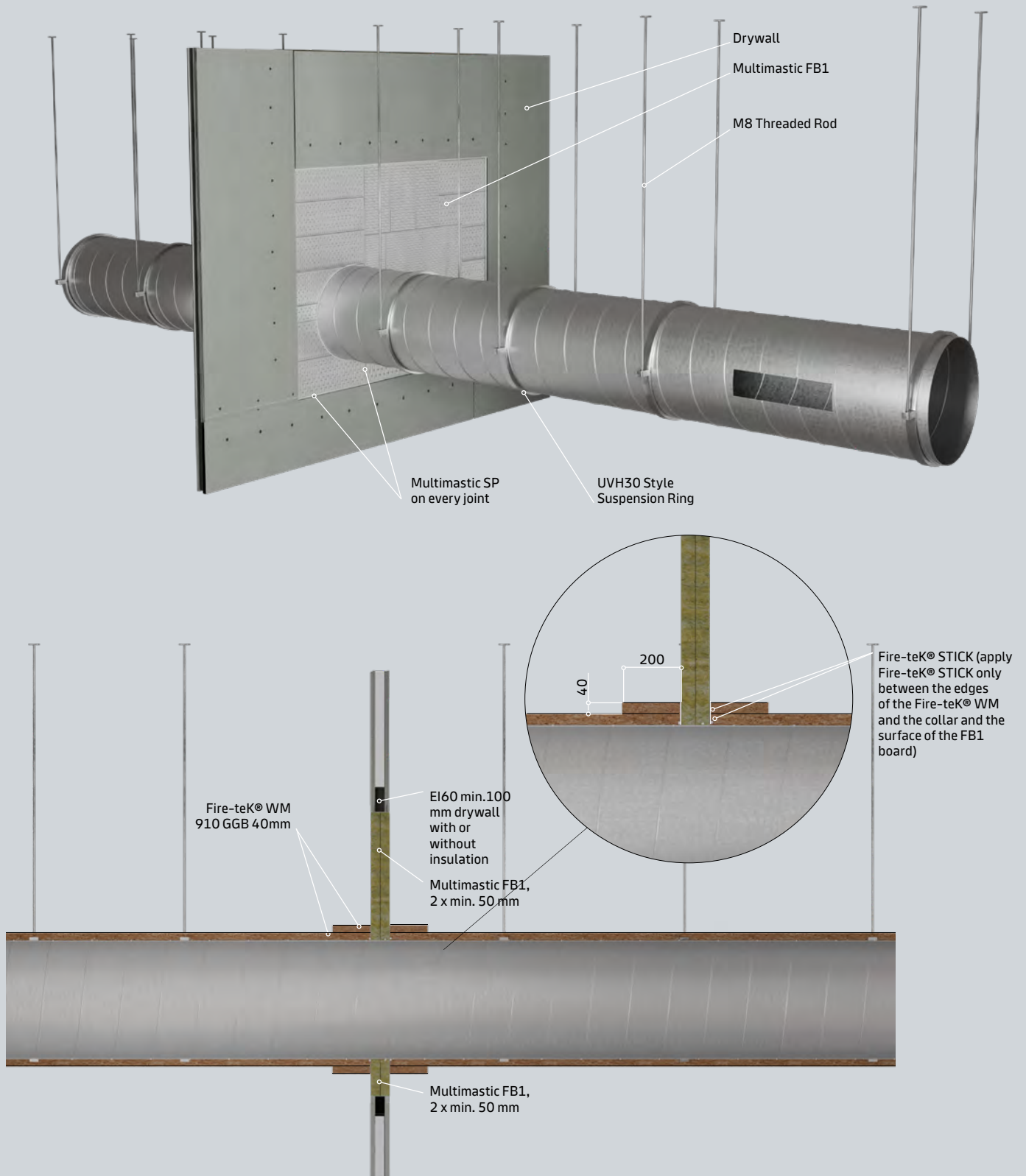
FOLLOW THE INSTALLATION INSTRUCTIONS

The Knauf Insulation Fire-teK® DuctProtect EI30/E60 C SYSTEM only provides the stated class of fire-resistance for ventilation ducts if installed in accordance with the installation guidelines.

3.4 MOUNTING OF INSULATION MATS ON WALL PENETRATION

The Mineral Wool mats are glued to the Multimastic FB1 board. On both sides of the wall a 200 mm wide collar of Fire-teK WM 910 GGB 40 mm thickness is installed. The collar is glued to the Multimastic FB1 board only, no glue shall be applied between the Fire-teK wired mat and the collar.

EI30/E60



PASSIVE FIRE PROTECTION

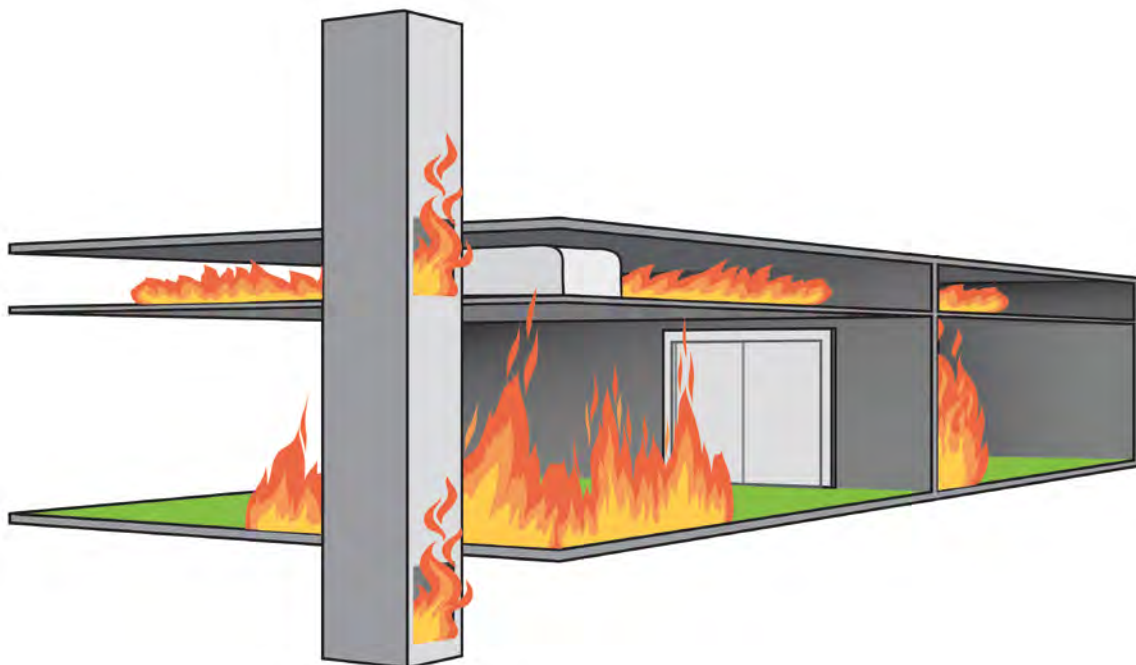
Fire-resistant lines such as ducts insulated in accordance with fire safety are components classified in accordance with **EN 13501-3**. Here, for instance, the following information may be given:

- Fire resistance duration
- The orientation of the class of fire resistance duration
- Vertical / horizontal orientation (ceiling / wall) of the building element or component
- Smoke spread

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.



Fire protection needs to applied on vertical and horizontal ducts penetrating different fire compartments

FIRE SCENARIOS IN BUILDINGS

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

Fire resistance class EI30/E60 (ho i ↔ o) S

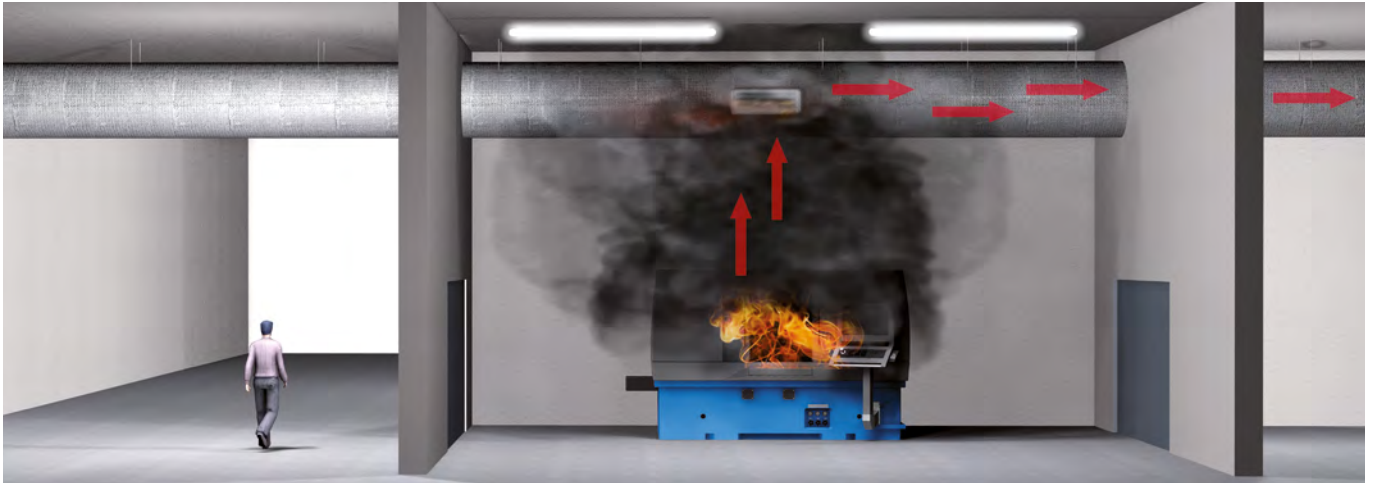
Fire-resistant ventilation duct, with a fire resistance rating of 30 minutes for horizontal ventilation ducts, with fire resistance from inside and outside the duct as well as limiting the smoke leakage.



Fire outside duct (o → i) S

Target: Avoid fire to enter the duct and capsule the fire in the room

Under EN 13501-3 classification, fire outside refers to so-called duct A, which fulfills the fire resistance requirements from the outside to penetrate inside of the duct.



Fire inside duct (i → o) S

Target: Avoid spread of fire to other rooms via the ducting system

Under EN 13501-3 classification, fire inside refers to so-called duct B, which fulfills the fire resistance requirements from the inside of the duct to the outside environment.

TIPCHECK ENERGY AUDITS

TIPCHECK, which is run by EiiF (European Industrial Insulation Foundation), is a standardized volunteer thermal energy auditing, in line with EN 16247 and ISO 50002, to evaluate the performance of industrial insulation systems of existing facilities, planned projects or retrofits.

The EiiF assesses that the annual savings potential of technical insulation for the industry and building sector is 50 TWh (4,325 ktoe) of various energy carriers, of which 23 TWh (1,980 ktoe or 2.2 billion m³) is gas.

As many as three out of four TIPCHECK clients immediately invest or plan to invest in the recommended insulation solutions after a standardised and certified TIPCHECK audit.

An improved insulation is a very attractive investment.

Knauf Insulation has **certified and highly educated TIPCHECK experts** with long-term experience in the insulation industry. Perfectly equipped to tackle all insulation challenges, they will help you to recognise the savings potential of your plant.

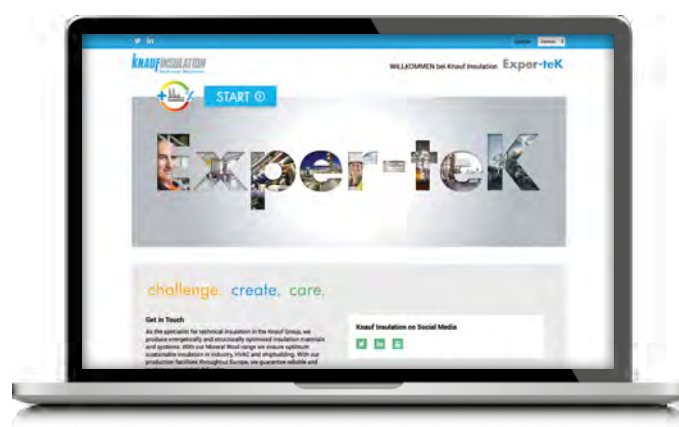
TIPCHECK



BENEFITS

- Energy cost savings
- Lower energy consumption
- Lower CO₂ emissions
- Important contribution to greener environment
- In line with the 2050 net-zero EU agenda

Apply for
TIPCHECK AUDIT
here

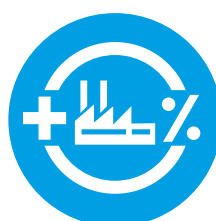


BENEFITS

- Online at any time and free of charge
- Intuitive and easy user guidance
- Uncomplicated calculation of heat losses and energy costs obtained after only 5 steps
- VDI-certified / EN ISO 12241 calculation methods
- Calculation of CO₂ savings NEW!
- Calculation of potential condensation NEW!
- Available in various languages

EXPER-TEK ONLINE CALCULATION TOOL

Exper-teK is the simplest tool for thermal calculations, calculations of CO₂ and calculations of potential condensation, highly appreciated by the specifiers. It is also the only tool that is adjusted to several different users' profiles, based on standards EN ISO 12241 / BS 5422 and VDI 2055-1 certified calculation methods and available in 20 languages.



Use
Exper-teK
tool





AT KNAUF INSULATION WE ARE COMMITTED TO SUSTAINABILITY

Sustainability is a process of continuous improvement. At Knauf Insulation we are committed to constantly finding new ways to drive change. We must do more for our people and our environment:

- with creation of our sustainability strategy "For a better world" with focus on incorporating circular economy principles and constantly campaigning for better and more sustainable buildings and applications
- by using and producing sustainable products, equipped with different important types of declarations and certificates
- by supporting the United Nations in the implementation 10 of the 17 UN Sustainable Development Goals (SDGs)

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 technical insulation products. We almost exclusively use natural materials as the basic material for our mineral wool products. With our formaldehyde-free binder ECOSE® Technology, we reduce energy consumption during manufacture and improve the energy balance of our products. With the receipt of the **Eurofins Indoor Air Comfort Award**, our insulation materials have been proven

to contribute to improved indoor air quality and are therefore ideally suited for sustainable use in building technical insulation.

Knowing that people spend 90% of their life time inside, the air quality in their working and living environment really matters.

with **ECOSE®** 

EPD-LABELLED PRODUCTS FROM KNAUF INSULATION TECHNICAL SOLUTIONS

An Environmental Product Declaration (EPD) is an independently verified and registered document that communicates transparent and comparable information about the life cycle environmental impact of products in a credible way.

EPD is the final report, which is issued after the evaluation of the product is finished. The evaluation, which considers the full value chain of the product – from extraction of the material to finished, manufactured product, its usage and

end of life – is called a life cycle assessment or LCA. The LCA is the basis for issuing the final EPD report.

Creating an EPD involves highly intensive and wide-ranging data collection, hundreds of calculations and rigorous verification, which used to take up to 6 months. In decision-making processes and market competition, all the EPD labelled products will have a great advantage over others.



Check our
EPD-labelled
products



FOR A BETTER WORLD

Our products save energy, reduce emissions, and promote environmentally friendly, healthy, and safe buildings. For over a decade, we've focused on sustainability, reducing energy use and waste, embracing circular economy principles, and advocating for more sustainable practices. We've made significant progress, benefiting our company, communities, and the environment. However, sustainability is an ongoing effort, and we must continue to do more. That's why we've launched our new strategy, "For A Better World", building on our mission to lead the change in smarter insulation solutions for a better future.

COMPANY PROFILE

Knauf Insulation is one of the most respected names in the insulation industry worldwide with over 40 years of experience and still growing fast. Over 6.000 employees in more than 40 countries and 29 manufacturing sites. Being part of the family-owned Knauf group, Knauf Insulation Technical Solutions provides solutions for customers' requirements in industry, marine applications, heating, ventilation and air conditioning. A profound market understanding and insulation know-how enables us to provide a broad range of products to meet your specific needs.

Premium member of



All rights reserved, including those of photomechanical reproduction and storage in electronic media. Extreme caution was observed when putting together and processing the information, text and illustrations in this document. Nevertheless, errors cannot be completely ruled out. The publisher and editors cannot assume legal responsibility or any liability for incorrect information and consequences thereof. The publisher and editors will be grateful for improvement suggestions and details of possible errors pointed out. For the most up-to-date document versions and product information, please always refer to our website.

CONTACT

Knauf Insulation d.o.o.
Varaždinska 140, 42220 Novi Marof, Croatia
ts@knaufinsulation.com

*For further information
visit our website
www.knaufinsulation-ts.com*



Build on us.