

PRODUCT APPLICATION

Knauf Insulation Fire Insulation System
for ventilation ducts

MANUFACTURER

Knauf Insulation d.o.o.
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Novi Marof
42220 Croatia



INTRODUCTION

Knauf Insulation Fire Insulation System consists of Fire-teK WM 908 GGA insulations and specified fastenings and sealants. The insulation system is used for fire insulation of circular ventilation ducts.

Fire-teK WM 908 GGA insulations with ECOSE® technology are wired mineral wool mats with glass fibre reinforced aluminium coating. In this certificate the installation principles and fire resistance capability of the assembled system for three insulation thicknesses, 60 mm, 80 mm and 100 mm, are presented. The suitable product thickness for each application is selected based on the required fire resistance class of the ventilation duct.

CE-marking according to EN 14303 does not cover the intended use of technical insulations as fire insulations.

CERTIFICATION PROCEDURE

This certificate has been issued by VTT Expert Services Ltd, which is a certification body (S017) accredited by FINAS.

This certificate is based on certification criteria no. VTT SERT R045/15 including an initial type assessment of the product application and quality assurance according to section 3. The general certification procedures are based on the certification system of VTT Expert Services Ltd.

The conditions of validity of this certificate are described in section 11.

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REGULATIONS, STANDARDS AND INSTRUCTIONS

1 Regulations and product requirement standards

According to the assessment of VTT Expert Services Oy, the products presented in this certificate meet the essential requirements given in the following parts of the National Building Code of Finland and standards that are essential to their use provided that also design of the construction project and installation are according to the requirements:

- E1 *Structural fire safety, Regulations and guidelines 2011*, in accordance with section 7 of this certificate
- E7 *Fire safety of ventilation installations, Guidelines 2004*, in accordance with section 7 of this certificate.

2 Other standards and instructions

The manufacturer of the products has stated that the products meet the requirements of the following guidelines and standards:

- SFS 3978 Insulation of pipes, vessels and equipment. Application of thermal insulation, paragraph 4.
- EN 14303 Thermal insulation for building equipment and industrial installations – Factory made mineral wool (MW) products - Specification
- VTT SERT R045/15 VTT Expert Services Ltd certification rules based on tests according to EN 1366-1 and partly applying EXAP EN 15882-1:2011.

PRODUCT INFORMATION

3 Products, marking and quality control

In the ventilation duct fire insulation system covered by this certificate the following products are used:

Mineral wool insulation	Fire-teK WM 908 GGA, product thickness 60 mm, 80 mm and 100 mm
Opening insulation	Stone wool, nominal density 80 kg/m ³
Opening sealing	Knauf Insulation FireSTOP Fix
Fixing accessories	As specified in installation instructions

The Fire-teK WM 908 GGA insulations are CE-marked according to EN 14303 and the essential characteristics are declared in the manufacturer's declaration of performance, available on the manufacturer's web pages.

Products are identified through the markings on the packages which include product name, dimensions, manufacture's name and other country specific information connected to product and approvals.

The manufacturer performs internal quality control for insulation materials according to EN 14303. Manufacturer has an ISO 9001 quality system and an ISO 14001 environmental management system certified by Bureau Veritas Certification.

Quality control of the Knauf Insulation Fire Insulation System consists of following components:

- Installation instruction manual and this certificate are made readily available by the certificate holder.
- No changes to the fire insulation system are made without VTT Expert Services Ltd's approval.
- Products included in the fire insulation system are clearly marked with product label.
- Installation companies document the installation using the installation report according to Annex 1.
- A copy of the installation report together with the copy of this certificate is delivered for filing in the construction documentation.
- The fire insulated duct is identifiable.

The inspection of the installation work or the final assembly is not covered by this certificate.

4 Delivery and storage on site

The insulations are packed into plastic and are delivered and stored on site according to the manufacturer's instructions.

DESIGN INFORMATION

Design information given in this certificate is based on the assumption that constructional solutions, installation methods and other initial data are in compliance with this certificate and that given requirements, instructions and standards are followed.

5 Installation

The fire insulation system is installed according to the manufacturer's installation guide, available at the manufacturer's web pages. Figures concerning the installation principles are given in Annex A2. The installation company shall prepare an installation report according to Annex A1.

6 Structural performance

The fire insulation system has no influence on the structural performance of the building. The structural engineer shall verify that the fastenings of the insulated ducts are according to the requirements and instructions of the duct supplier.

7 Fire safety

The requirements for the fire safety of buildings and of products used in them are given in the National Building Code of Finland, part E1, Structural fire safety in buildings, Regulations and guidelines 2011. Guidelines concerning fire safety of ventilation installations are given in the National Building Code of Finland, part E7, Fire safety of ventilation installations, guidelines 2004.

The reaction to fire class of the insulation materials, shown in table 1, is declared by the manufacturer in the declaration of performance no.T4305EPCPR.

Fire resistance classes of steel or steel sheet ducts insulated with Knauf Insulation Fire Insulation System are presented in Table 2. The tests have been carried out with internal and external fire exposure in horizontal and vertical duct orientation and system is classified according to EN 13501-3. The test results are valid provided that the ducts meet the requirements given in the National Building Code of Finland part E7, the requirements given in this regulation are fulfilled, and the fire insulation of the ducts has been performed according to the manufacturer's instructions and as described in Annex A2.

Table 1. Reaction to fire class of Fire-teK WM 908 GGA insulation.

Insulation	Reaction to fire class, EN 13501-1	Nominal density	Coating
Fire-teK WM 908 GGA	A1	80 kg/m ³	Glass fibre reinforced aluminium foil and galvanized wire mesh

Table 2. Fire resistance classes against internal and external fire of circular ventilation ducts insulated with Knauf Insulation Fire Insulation System.

Insulation	Thickness	Nominal density	Fire resistance class
Fire-teK WM 908 GGA	60 mm	80 kg/m ³	EI 30 (ve ho o ↔ i)
	80 mm	80 kg/m ³	EI 60 (ve ho o ↔ i)
	100 mm	80 kg/m ³	EI 60 (ve ho o ↔ i)

The diameter or the longer cross section of the duct shall be ≤ 1000 mm, the thickness of the duct wall ≥ 0,7 mm and the tightness class of the circular ventilation duct shall be at least D.

The fire resistance of the separating structure shall be equal to or higher than the fire resistance of the insulated duct (EI 30 / EI 60 or greater). The minimum thickness of the flexible or rigid fire compartment wall shall be 75 mm in fire resistance class EI 30, and 100 mm in fire resistance class EI 60. The minimum thickness of the rigid fire compartment slab shall be 150 mm. The minimum density of rigid separating structures shall be 600 kg/m³.

Maximum gap between the duct and the supporting construction is 30 mm.

In vertical direction the distance between duct supporting constructions shall not exceed 5 m.

The ratio between the length of the duct exposed in the compartment to the smallest lateral dimension across the outside face of the duct (or outer diameter) shall not exceed 8:1 (distances between lateral supports: shortest duct dimension (length, width or diameter)), unless additional lateral supports are provided.

In cases where additional supports are provided, the ratio of the distance between the additional supports, or the distance between the supports and the supporting construction to the smallest lateral dimension across the outside face of the duct (or outer diameter) shall not exceed 8:1.

The largest distance between suspension devices shall not exceed 1500 mm.

The distance between the suspension device and the closest innermost duct joint shall be 315 mm and shall not be exceeded with a tolerance of 100 mm.

The distance between the suspension device and the closest joint of the insulation material on the underside is 650 mm and shall not be exceeded with a tolerance of 100 mm.

Fire insulation can only be installed when the ducts are as rigid as tested spiral folded ventilation ducts.

Test results cover the forms of T-pieces, branches and direction changing pieces using the same jointing technique as tested and installed according to manufacturer's installation instructions.

Maximum tensile stresses in suspension for vertical suspension devices for horizontal ducts shall be maximum 9 (N/mm²) and shearing stress in screws of property class 4.6 according to EN ISO 898-1 in maximum 15 (N/mm²).

TECHNICAL SURVEY

8 Initial assessment

The fire resistance of the insulated ventilation ducts has been tested according to the methods determined in the certification rules and the insulation thicknesses in each fire resistance class are given in Table 2.

9 Other material

Material safety data sheet of the insulation materials and manufacturer's installation guide are available on the manufacturer's web pages.

VALIDITY OF THE CERTIFICATE

10 Validity period of the certificate

This certificate is valid until July 13, 2021.

Real time information about the validity of the certificate can be found on www.vtt-todistus.fi.

11 Conditions of validity

The certificate is valid assuming that no changes are made to the products or installation instructions, the system is installed according to this certificate and no changes are made to the assembled system.

12 Other conditions

The references made in this certificate to standards and instructions are valid in the format used at the time the certificate was signed.

The recommendations in this certificate concerning the safe use of this product are minimum requirements that shall be satisfied when using the product. The certificate does not override current or future requirements imposed by laws and statutes. In addition to the issues presented in this certificate, design, manufacturing and use shall follow appropriate construction methods.

In awarding this certificate, VTT Expert Services Ltd does not bind itself to indemnification liability concerning personal injury or other damage that may directly or indirectly result from using the product described in this certificate.

VTT Expert Services Oy finds Knauf Insulation ventilation duct fire insulation system based on Fire-teK WM 908 GGA wired mats to be suitable for use in construction as described in this certificate.

This updated certificate VTT-C-11669-16 (issued first on July 14, 2016) has been granted as described above to Knauf Insulation d.o.o.

On behalf of VTT Expert Services Ltd on July 5, 2017



Tiina Tirkkonen
Product Manager



Heli Välimäki
Senior Expert

This document has been signed electronically

ANNEX A1

INSTALLATION REPORT

PRODUCTS: Marketed / manufactured by Knauf Insulation d.o.o.:

- Fire-teK WM 908 GGA 60 mm, Fire-teK WM 908 GGA 80 mm and Fire-teK WM 908 GGA 100 mm mineral wool wired mats
- Opening insulation material: stone wool, nominal density 80 kg/m³
- Opening sealing: Knauf Insulation FireSTOP Fix
- Installation screws as specified in the installation instructions

VTT-certificate no. VTT-C-11669-16

Installation destination: _____

Address: _____

Installation company information:

Name	
Address	
Phone/fax	
E-mail/ Internet address	

Installer	
Installation time	
Type of the product, size, other identifying information	
Installation place identification (building part/floor/rooms)	
Other information:	

Products have been installed according to installation instructions of the manufacturer.

Place and date: _____, _____.20____

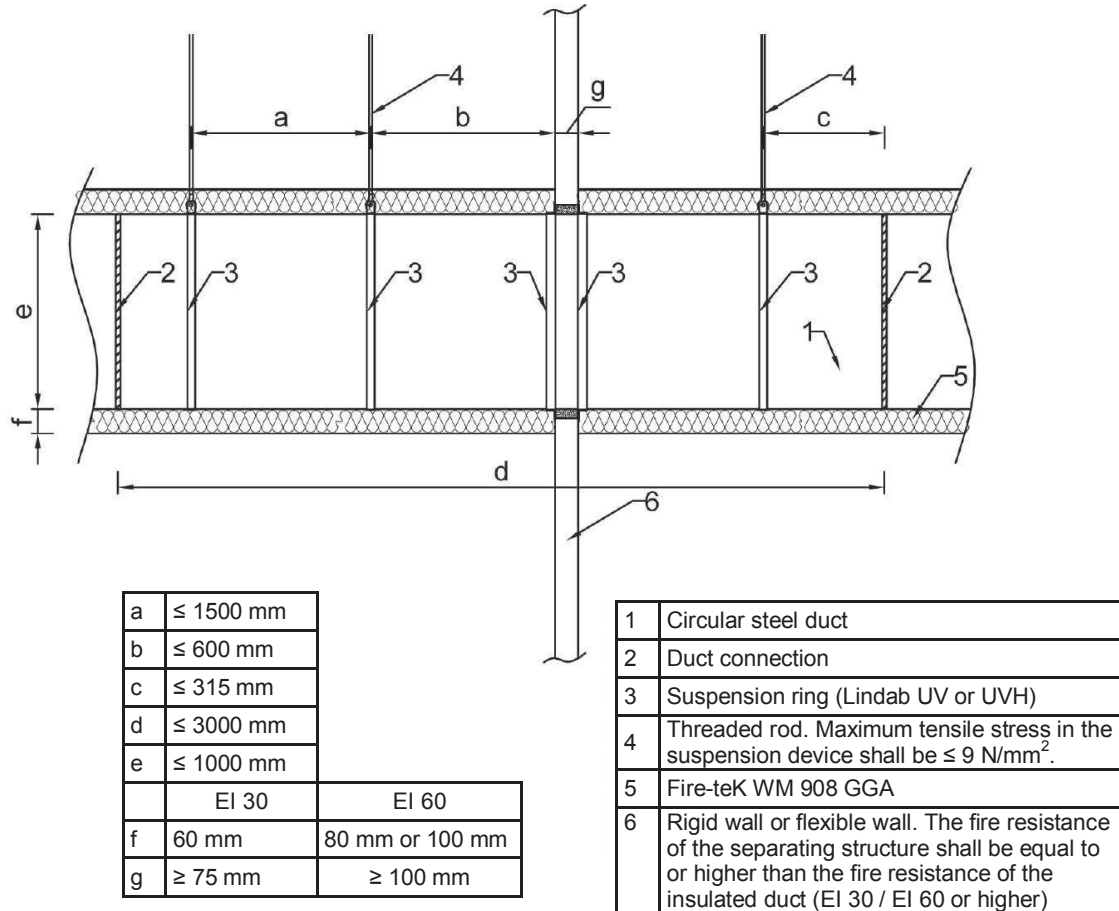
Signature: _____

Name in printed text: _____

ANNEX A2

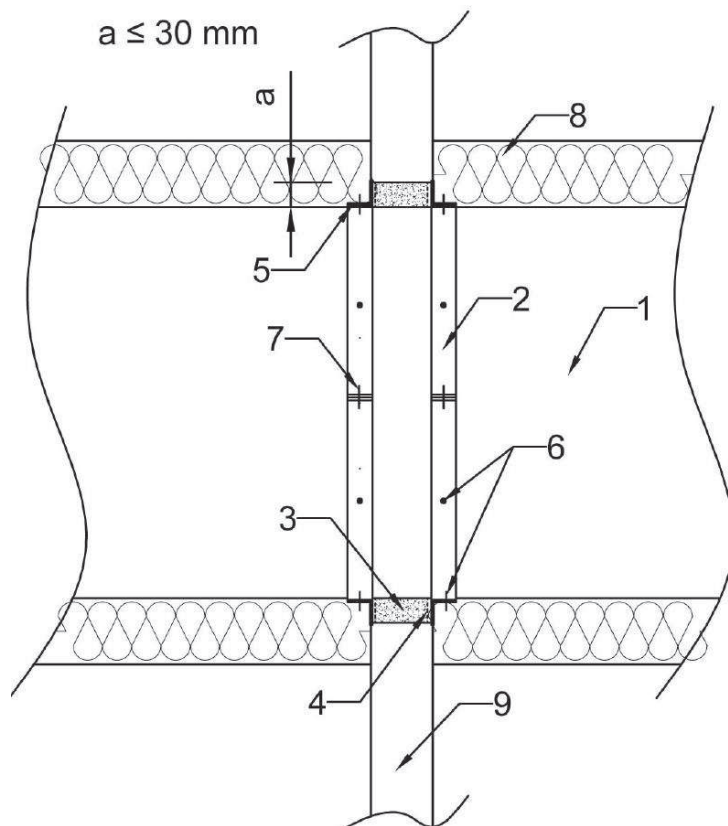
FIRE INSULATION DETAILS

Horizontal mounting



- Wired mat joints are stitched with galvanized steel wire, diameter 0,9 mm.

Wall/ceiling penetration



1	Circular steel duct
2	Suspension ring (Lindab UVH)
3	Loose mineral wool density 80 kg/m ³
4	Knauf Insulation FireStop Fix, thickness 5 mm
5	Steel L-profile 30x30x3 mm
6	Self -drilling screw Ø 4.2x19 mm
7	Bolt + Nut M8
8	Fire-teK WM 908 GGA
9	Rigid or flexible wall or rigid floor/ceiling. The fire resistance of the separating structure shall be equal to or higher than the fire resistance of the insulated duct (EI 30 / EI 60 or higher)

- Duct is positioned in the opening of the separating structure. In case of flexible wall, the opening shall be reinforced with a steel L-profile (30x30x3 mm) installed on all four sides.
- In penetration the gap (gap width $d \leq 30$ mm) between the circular duct and the separating structure shall be insulated using stone wool, nominal density ≥ 80 kg/m³.
- The joint between the separating structure and the duct is sealed with FireSTOP Fix silicate glue with layer thickness of approx. 5 mm. The joint shall be sealed from both sides of the structure.
- The duct is fixed by screwing the suspension ring (Lindab UVH) to the duct on each side of the wall/ceiling. The upper and lower L-profiles (30x30x3 mm) are fixed to the duct by using self-tapping screws (Ø 4,2x13 mm) and to the separating structure by fire rated screws/anchors. Side L-profiles (30x30x3 mm) are fixed to the ring by using nuts and bolts (M8). Steel L-profiles shall be fixed on both sides of the structure.