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July 2020



# Kemwell Tecwool® F Cementitious Spray System

A fire protection range of spray systems to meet the stringent requirements of the multi-storey commercial and industrial steel framed market



SAVING LIVES | PROTECTING BUILDINGS & CONTENTS | MAINTAINING VITAL SERVICES

## PASSIVE FIRE PROTECTION

Specialists for the construction, infrastructure, transport, energy, industrial and commercial sectors.

[www.kemwell-fire.com](http://www.kemwell-fire.com)



## Structural Steel Protection Spray Systems

Kemwell Tecwool® F is a rock wool and cementitious spray specifically engineered for fire protection of all types of building structures and faces. It can be used with Kemwell Tecbor Board systems and has been developed for a wide range of applications in today's demanding construction industry.

Steel structures are used for building purposes worldwide. One of the main advantages is that they have great resistance per weight unit, which provides them with huge versatility and the possibility of creating complex yet light structures.

However, the thermal conductivity of steel represents a disadvantage. Therefore, in the event of a fire, the gradual increases in temperature plus steel high heat transmission result in a substantial reduction of the structure's bearing capacity and mechanical resistance. The resistance and elastic limit are modified above 250°C, and above roughly 500°C the drop in resistance is significant enough not to support its design capacity.

Kemwell Tecwool® F has been tested in laboratories and is certified by ENAC or similar to UNE, EN and ASTM or standards. Likewise, real scale tests have been performed in tunnels under particularly limiting conditions such as American UL curve.

You can specify Kemwell Tecwool F® Spray with confidence.

### SUPPORT

Our project team provides expert support services throughout all stages of any construction project, including:

- Technical advice
- Supply of data sheets and certification
- Product selection and application consultation
- Site-visits
- Installation advice
- On-site and off-site Educational Seminars
- Benefit from years of industry knowledge and experience

We understand the complex and stringent requirements of the building and construction industry and our products provide architects, developers, and contractors with adaptability and performance benefits to enable safe and innovative designs to be easily realised.

Please contact us to discuss your project or requirements further.

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## COMPOSITION

Kemwell Tecwool® F is manufactured with inorganic components such as rock wool, classified according to European Directive 67/548 CEE, as Xi; R.38 (health risk-free).

Likewise, it is neither toxic nor pathogenic; it does not contain asbestos or crystalline silica.

## APPLICATIONS

- Column encasement
- Beam encasement
- Wind posts
- Cellular beams
- Castellated sections

## SECTORS

- Commercial offices
- Warehouses
- Factories
- Multi-storey car parks
- Retail and leisure
- Petrochem
- Powergen



# APPLICATION AND USAGE

### Spraying machine

Kemwell Tecwool® F application is made by pneumatic spraying machines. It neutralises and mixes in nozzle application where the mortar is mixed with spray water at the nozzle head.

The application machine supplies a flow between 3.2 and 18 kg/min. Mortar is applied with a spreading gun perpendicular to the support at a distance between 50 and 150 cm. The ratio water/mortar shall be 1.5/1 kg.

### Prior to application:

Before mortar is applied on any surface, the following aspects should be considered:

- The substrate to be protected should be free from dust, oil, waste, poorly attached particles, release agents, paint residue, etc.
- It is recommended to use water with the application hose to wash dirt away from the faces. This will also help achieve a thermal balance between the mortar and the applied surface.
- Kemwell Tecwool® F can be applied

directly over surfaces with a temperature between 2 °C and 45 °C.

### Application substrate:

- **Wood:** A wire mesh must be fixed to the support before mortar is applied.
- **Asbestos cement:** The surface must be clean and free of cracks between sheets.
- **Galvanised or pre-lacquered metal sheet:** Prior to mortar application an adhesive primer must be spread.
- **Synthetic plastic:** Prior to mortar application an adhesive primer must be spread.
- **Plaster surfaces:** Plenty of water must be applied on the surfaces before mortar is sprayed. If the exposed face of the structure to be protected is too smooth, it must be keyed to improve Tecwool® F adherence. In any case, for applications more than 3 cm thick a wire mesh should be fixed to the support.
- **Bricks or porous substrates:** Plenty of water must be applied on the surfaces before mortar is sprayed.
- **Steel metal structure:** Directly applied

to support. Compatible with anti-rust primers.

- **Concrete:** Directly applied to surface.

Once the mortar has been applied, water should be sprayed to ensure optimum curing. As a general rule, regardless of the substrate to which the mortar is applied, for thickness greater than 55 mm a wire mesh should be used.

All warnings regarding cement apply to Tecwool® F. Application of this product on non-ferrous metals is prohibited.

### Finishes

Kemwell Tecwool® F can provide different finishes: rugged, smooth, painted, etc., according to different aesthetic requirements. Once the spraying is completed and in order to obtain a smooth finish, a roller could be used and pressed slightly over the wet mortar until the desired finish is obtained.

It is possible to paint the mortar with elastic acrylic coatings to form a steam barrier. Before painting the mortar should be completely dry (28 days).

# MORTAR THICKNESS SPECIFICATION CHART

Mortar thickness specification chart according to the required fire resistance and the profile's section factor

Massivity (m -1)	15 min	30 min	45 min	60 min	90 min	120 min	180 min	240 min	300 min
63	[15]	[15]	[15]	[15]	[17]	[23]	[35]	[47]	[59]
70	[15]	[15]	[15]	[15]	18	24	36	49	61
80	[15]	[15]	[15]	[15]	20	26	38	51	[64]
90	[15]	[15]	[15]	[15]	21	27	40	53	---
100	[15]	[15]	[15]	[15]	22	28	42	55	---
110	[15]	[15]	[15]	16	23	29	43	56	---
120	[15]	[15]	[15]	17	24	30	44	57	---
130	[15]	[15]	[15]	17	24	31	45	58	---
140	[15]	[15]	[15]	18	25	32	45	59	---
150	[15]	[15]	[15]	18	25	32	46	60	---
160	[15]	[15]	[15]	19	26	33	47	61	---
170	[15]	[15]	[15]	19	26	33	47	62	---
180	[15]	[15]	16	19	26	34	48	62	---
190	[15]	[15]	16	20	27	34	48	[63]	---
200	[15]	[15]	16	20	27	34	49	[63]	---
210	[15]	[15]	17	20	27	35	49	[64]	---
220	[15]	[15]	17	20	28	35	49	[64]	---
230	[15]	[15]	17	21	28	35	50	[64]	---
240	[15]	[15]	17	21	28	35	50	[65]	---
250	[15]	[15]	17	21	28	36	50	[65]	---
260	[15]	[15]	17	21	28	36	51	[65]	---
270	[15]	[15]	18	21	29	36	51	---	---
280	[15]	[15]	18	21	29	36	51	---	---
290	[15]	[15]	18	22	29	36	51	---	---
300	[15]	[15]	18	22	29	37	51	---	---
310	[15]	[15]	18	22	29	37	52	---	---
320	[15]	[15]	[18]	[22]	[29]	[37]	[52]	---	---
330	[15]	[15]	[18]	[22]	[29]	[37]	[52]	---	---
340	[15]	[15]	[18]	[22]	[30]	[37]	[52]	---	---

The information in this chart is based on ETA 11/0185 dated 05.08.2019.  
Valid chart for 500 °C design temperature on steel pursuant to UNE ENV 13381-4.

**Table for upgrading Reinforced Concrete Floor Slabs and Walls using Tecwool F  
for fire resistance at 500°C**

Thickness of reinforcement cover mm	Period of Fire Resistance						
	30mins	60mins	90mins	120mins	180mins	240mins	
10 to 14	12	12	12	12	12	17	Thickness of Tecwool F
15 to 19	0	12	12	12	12	17	
20 to 24	0	12	12	12	12	17	
25 to 29	0	0	12	12	12	16	
30 to 34	0	0	12	12	12	15	
35 to 39	0	0	0	12	12	15	
40 to 44	0	0	0	0	12	14	
45 to 49	0	0	0	0	12	13	
50 to 54	0	0	0	0	12	12	
55 to 59	0	0	0	0	0	12	
60 to 64	0	0	0	0	0	12	
65 to 69	0	0	0	0	0	12	
70 to 74	0	0	0	0	0	0	

**Table for upgrading Reinforced Concrete Beams and Columns using Tecwool F  
for fire resistance at 500°C**

Thickness of reinforcement cover mm	Period of Fire Resistance						
	30mins	60mins	90mins	120mins	180mins	240mins	
10 to 14	12	12	12	12	16	22	Thickness of Tecwool F
15 to 19	12	12	12	12	16	22	
20 to 24	0	12	12	12	13	18	
25 to 29	0	12	12	12	13	18	
30 to 34	0	12	12	12	12	15	
35 to 39	0	0	12	12	12	15	
40 to 44	0	0	12	12	12	12	
45 to 49	0	0	12	12	12	12	
50 to 54	0	0	0	12	12	12	
55 to 59	0	0	0	12	12	12	
60 to 69	0	0	0	0	12	12	
70 to 74	0	0	0	0	12	12	
75 to 79	0	0	0	0	0	12	
80 to 84	0	0	0	0	0	12	
85 to 89	0	0	0	0	0	12	
90 to 94	0	0	0	0	0	0	



# TECHNICAL CHARACTERISTICS AND SPECIFICATIONS

Composition	Cement, rock wool and additives
Fire Reaction	Non-combustible Euroclass A1
Bulk Mortar Density	250 Kg/m <sup>3</sup> ± 10%
Cured Mortar Apparent Density	328 Kg/m <sup>3</sup> ± 10%
Sprayed Finish Mortar Apparent Density	464 Kg/m <sup>3</sup> ± 10%
Thermal Conductivity	0.053 W/mk
Alkalinity (Ph Value)	12.4
Bulk Product, Dried at 105 °C	0.68% of H <sub>2</sub> O
Stream Permeability	2.1 (μ)
Resistance to Fungi	Immune
Protection Against Steel Corrosion	Yes
Flexural Strength	0.09 Mpa
Compressive Strength	0.24 Mpa
Wind Erosion Resistance	15 m/s β=90K y β= 15°
Toxic/Pathogenic	No
Free Crystalline Silica Asbestos	No
Weighted Sound Absorption Ratio	(X w=0.8 (H)
Acoustic Absorption Class	Class B
Adherence	0.011 N/mm <sup>2</sup> failure
Packaging	25 Kg sacks in 600 Kg pallets



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