MasterFlux™ ANC 918 SF

Polyester Resin Based, Anchoring Mortar

Material Description

MasterFlux™ ANC 918 SF is a two-component, thixotropic, polyester based chemical anchoring mortar. The product is specially designed for applications where light to medium loads are to be fixed in hollow blocks or solid material. Both parts of **MasterFlux™ ANC 918 SF**, packed in a single cartridge with separate compartments, are correctly mixed in the mixing nozzle while pressing the material out of the cartridge.

Areas of Application

MasterFlux™ ANC 918 SF is a universal anchoring mortar typically used for fixing:

- Gates, blinds, antennas
- Guard rails and barriers
- Air conditioning systems
- Connectors for carpentry
- Water heater systems
- Steel plates on concrete
- Street furniture

Characteristics and Benefits

- Easy to use, easy to extrude
- Suitable for dry, wet & flooded holes without loss of performance
- Quick cure system - saves time and money
- High adhesive power
- High early and final mechanical strengths
- For use with a classical silicon gun (300 ml)
- Resists to chemicals.
- Complies with European Technical Specification EAD 330499-00-0601.

Processing Method

(A) Preparation of Substrate

The substrate must be clean, structurally sound, and without substances which can have a negative effect on the adhesion of the chemical anchoring mortar. Concrete or mortars in which bolts or rods are to be fixed should be at least 28 days old.

Holes

Holes can be made using hammer drilling machines. Depth and diameter of the holes are to determined by the substrate, effective loads and the diameter of the anchor bolts or rebars. The drilled holes need to be cleaned with round brushes and oil-free compressed air directly from a compressor or using special hand pumps.

(B) Using The Cartridges

It is advised to store the cartridges in a warmer environment if the material is to be used in cold conditions, since squeezing the **MasterFlux™ ANC 918 SF** requires more effort at cold temperatures. Remove the sealing plug and fix the mixing unit onto the cartridge. Place the cartridge in the extrusion gun and squeeze.
Do not use the first few centimetres of material, until the mixed material is of uniform colour. During longer application interruptions, remove the mixing unit and put back the sealing plug.

(C) Processing

Application In Solid Material

Insert the mixing unit of the **MasterFlux™ ANC 918 SF** cartridge into the back of the hole and squeeze sufficient material while slowly pulling out. Ensure that no air is entrapped while filling the hole. Introduce the anchoring bolt or rebar by pressing and turning till the back of the hole is reached.
An excess of material needs to be visible. Respect the waiting times as shown in the tables hereafter, before the anchors or rebars are exposed to loads.

Application In Hollow Blocks

Drill a 16 mm hole, clean the hole as mentioned above and insert the sleeve specially designed for this type of application. Close the gasket of this sleeve, press the mixing unit against this gasket and inject, without entrapping air, sufficient **MasterFlux™ ANC 918 SF** for total anchoring. Introduce the anchoring bolt by pressing and turning till the back of the hole.
Do not move the bolt before final setting of the **MasterFlux™ ANC 918 SF**. Before tightening the

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anchors and exposing them to loads, respect the waiting times as shown in the tables hereafter.

Point to Consider

- **MasterFlux™ ANC 918 SF** is in hardened condition resistant to many chemicals. A list of chemicals can be be found hereafter.
- Material can be applied at temperatures from -5°C to +35°C, but cartridges have to be stored at +5°C or above.
- **MasterFlux™ ANC 918 SF** can in unhardened conditions be a pollutant for water or soil. Take the necessary precautions and clean according to local guidelines.

Cleaning of Tools

All the tools and equipments must be cleaned by soapy water or solvent after the application. After **MasterFlux™ ANC 918 SF** is hardened, it can only be removed from the surface mechanically.

Packaging

MasterFlux™ ANC 918 SF is available in cartridges of 360 ml peel pack for standard silicon gun

Shelf Life

12 months after the production date under appropriate storing conditions.

Storage

Cartridges should be stored in their original packaging, in the correct shape and in cool, dry conditions (+5°C to +25°C), protected from direct sunlight.

Health and Safety

It is dangerous to approach the application sites. During the application, a protective apparel, protective gloves, goggles and masks which comply with the Occupational Health and Safety Rules should be used. Due to the irritation effect of the uncured materials, the mixture should not come into contact with skin and eyes; in case of a contact, the affected area should be washed with plenty of water and soap; in case of swallowing, a physician should be consulted immediately. No food or beverages should be brought to the application area. The product should be stored and kept out of reach of children. For detailed information please consult the Material Safety Data Sheet.

Disclaimer

The technical information given in this publication is based on the present state of our best scientific and practical knowledge. **MBT Teknik Yapı Kimyasalları Sanayi ve Ticaret A.Ş.** is only responsible for the quality of the product **MBT Teknik Yapı Kimyasalları Sanayi ve Ticaret A.Ş.** is not responsible for results that may occur because the product is used other than advised and/or out of instructions regarding the place and the method of use. This technical form is valid only till a new version is implemented and nullifies the old ones.

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Working & Loading Times

Resin cartridge Temperature ^{0}C			T Work minutes	Base Material Temperature ^{0}C			T Load minutes
+5	to	+10	12	+5	to	+10	120
+10	to	+20	6	+10	to	+20	80
+20	to	+25	4	+20	to	+25	40
+25	to	+30	3	+25	to	+30	30
+30	to	+35	2	+30	to	+35	20
+35	to	+40	1.5	+35	to	+40	15
+40			1.5				10

Note: *T Work is the typical time to gel at the highest temperature in the range.*

Installation Parameters

Size			M8	M10	M12	M16	M20	M24
Nominal drill hole diameter	Ø d_o	[mm]	10	12	14	18	22	26
Diameter of cleaning brush d_b	d_b	[mm]	14	14	20	20	29	29
Torque moment T_{inst}	T_{inst}	[mm]	10	20	40	80	150	200
$h_{ef,min}$ =8d								
Depth of drill hole h_o	h_o	[mm]	64	80	96	128	160	192
Minimum edge distance C_{min}	C_{min}	[mm]	35	40	50	65	80	96
Minimum spacing S_{min}	S_{min}	[mm]	35	40	50	65	80	96
Minimum thickness of member h_{min}	h_{min}	[mm]	h_{ef} +30 mm ≥ 100 mm				h_{ef} + 2d_o	
$h_{ef,min}$ =12d								
Depth of drill hole h_o	h_o	[mm]	96	120	144	192	240	288
Minimum edge distance C_{min}	C_{min}	[mm]	50	60	70	95	120	145
Minimum spacing S_{min}	S_{min}	[mm]	50	60	70	95	120	145
Minimum thickness of member h_{min}	h_{min}	[mm]	h_{ef} +30 mm ≥ 100 mm				h_{ef} + 2d_o	

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Chemical Resistance

Chemical Environment	Concentration	Result
Aqueous Solution Aluminium Chloride	Saturated	√
Benzoic Acid	Saturated	√
Butyl Alcohol	100%	C
Carbon Monoxide	Gas	√
Citric Acid Aqueous Solution	Saturated	√
Diesel Fuel	100%	C
Hydrochloric Acid	10% 15% 25%	√ √ C
Lubricating Oil	100%	√
Mineral Oil	100%	√
Paraffin / Kerosene (Domestic)	100%	C
Phosphoric Acid	50%	√
Sea Water	100%	C
Sulphur Dioxide Solution	10%	√
Sulphur Dioxide (40^{0}C)	5%	√
Sulphuric Acid	10% 50%	√ √
White Spirit	100%	√

√ = Resistant to 75^{0}C with at least 80% of physical properties retained.
C = Contact only to a maximum of 25^{0}C

Theoretical Number of Fixings Per Cartridge

Applies to solid substrates

h_{ef}	M8	M10	M12	M16	M20	M24
	Drilling Ø 10 mm	Drilling Ø 12 mm	Drilling Ø 14 mm	Drilling Ø 18 mm	Drilling Ø 22 mm	Drilling Ø 26 mm
8d	106	65	43	23	13	8
10d	85	52	34	18	11	7
12d	71	43	29	15	9	5

Note: *Jobsite/contractor installations usually result in more resin being injected than the theoretical requirement resulting in lower number of fixing per cartridge. The reduction to the number of fixing per cartridge in practice is greater for smaller diameter holes and shallower embedment depths.*

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Using

Combined pullout and concrete cone failure in non-cracked concrete C20/25

Size				M8	M10	M12	M16	M20	M24
Characteristic bond resistance dry/wet concrete and flooded hole		T_{RK}	[N/mm²]	10	9,5	9,5	9	8,5	7
Partial safety factor		Y_{MO}	[-]	1.8					
Factor for concrete	C30/37	ψ_C	[-]	1,12					
	C40/45			1,19					
	C50/60			1,30					

Tension load calculations for combined concrete cone & pullout failure at various embedment depths using threaded rods in dry / wet / flooded, uncracked, C20/25 concrete. Temperature range -40°C to +80°C.

Property	Symbol	Unit	Anchor Size					
			M8	M10	M12	M16	M20	M24
Effective Embedment Depth = 8d	h_{ef}	mm	64	80	96	128	160	192
Characteristic Load (Combined Concrete Cone & Pullout Failure)	$N^0_{Rk,p}$	kN	16.08	23.88	34.38	57.91	85.45	101.34
Partial Safety Factor (Dry / Wet Concrete)	Y_{Mc}	-	1.80	1.80	1.80	1.80	1.80	1.80
Effective Embedment Depth=10d	h_{ef}	mm	80	100	120	160	200	240
Characteristic Load (Combined Concrete Cone & Pullout Failure)	$N^0_{Rk,p}$	kN	20.11	29.85	42.98	72.38	106.81	126.67
Partial Safety Factor (Dry / Wet Concrete)	Y_{Mc}	-	1.80	1.80	1.80	1.80	1.80	1.80
Effective Embedment Depth=10d	h_{ef}	mm	96	120	144	192	240	288
Characteristic Load (Combined Concrete Cone & Pullout Failure)	$N^0_{Rk,p}$	kN	24.13	35.81	51.57	86.86	128.18	152.00
Partial Safety Factor (Dry / Wet Concrete)	Y_{Mc}	-	1.80	1.80	1.80	1.80	1.80	1.80

1. Characteristic loads are valid for combined concrete cone and pullout failure as defined by TR029 only. All other failure modes, including steel failure, detailed in TR029 as well as including combined effects of tension and shear, must be considered in accordance with TR029.
2. Characteristic loads are valid for single anchors without close edge, anchor spacing or eccentric loading considerations.
3. Tabulated values are valid for temperture range -40°C to +80°C (Max LTT = +50°C; Max STT = +80°C).
4. Tabulated values are only valid for the installation conditions stated. Other conditions, such as different temperature ranges, may affect the performance of the product.
5. Long term temperatures are those that remain roughly constant over prolonged periods. Short term temperatures occur over brief intervals, eg: diurnal cycling.
6. The compressive strength of the concrete (fck,cube) is assumed to be 25 N/mm² for C20/25 concrete.
7. Tabulated values assume that the geometry of the anchor(s) and concrete member is sufficient to avoid splitting failure.

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Hollow Bricks: Type RC 40

Fixing Type		Sleeve Size mm	Drill Ø mm	Min. Drill Depth mm	Recommended Tensile Load kN	Recommended Shear Load kN	Installation Torque Nm
Threaded Bar	Socket						
M8	-	15 or 16 x 85	15 or 16	90	0.65	1.60	6
M10	-	15 or 16 x 85	15 or 16	90	0.65	1.60	6
M12	-	15 or 16 x 85	15 or 16	90	0.65	1.60	6
-	M8X80	20 x 85	20	90	0.80	1.85	6
-	M10X80	20 x 85	20	90	0.80	1.85	6
-	M12X80	20 x 85	20	90	0.80	1.85	6

Solid Bricks and Blocks

Anchor Size	Recommended Load Kn Tension or shear			
	Brickwork 20,5 N/mm²	Brickwork 7 N/mm²	Brickwork 3,5 N/mm²	Brickwork 2,8 N/mm²
M8	1.4	0.6	0.5	0.4
M10	2.9	1.3	0.9	0.7
M12	4.0	2.0	1.1	0.9
M16	5.0	3.0	Sizes above M12 are not recommended	
M20	Sizes above M16 are not recommended			
M24				

Do not install more than one fixing into a single masonry unit.

- In solid masonry, anchors should be spaced at a distance equal to or greater than 100mm centre to centre, and no less than 200mm from an edge.
- In hollow masonry, anchors should be spaced at a distance equal to or greater than 200mm centre to centre, and no less than 250mm from an edge.