MasterFlow 960 TIX

One-part, thixotropic, very fine grade cement mortar for the structural fixing of threaded rods and bars with improved adhesion. It can be applied at temperatures as low as -5°C

MATERIAL DESCRIPTION

MasterFlow 960 TIX is a one-part very fine grade cement anchoring agents, which give a highly workable mix when mixed with water, ready for anchoring threaded rods or rebars and bars with improved adhesion subject to heavy loads, in particular for fixings on the commonest construction materials. Since it contains no resin, they are more compatible with substrates, lasts longer and are easier to apply, all to the benefit of operator health.

FIELDS OF APPLICATION

MasterFlow 960 TIX is an anchoring agents for applications where high performance is required, such as:

- anchoring of bars with improved adhesion and threaded rebars on concrete, for grouting in general, for example, of safety barriers, noise barriers etc.

MasterFlow 960 TIX can also be used on a damp or wet substrate.
Being a fluid mix they can be used for applications where casting into holes is possible.
They are available in:

- MasterFlow 960 TIX thixotropic version: for horizontal installations through the use of the gun.

FEATURES AND BENEFITS

- MasterFlow 960 TIX complies with the acceptability limits indicated in UNI EN 1504 part 6.
- Application of the product is far less limited than for conventional structural resins, which create problems if used in particular at ambient temperatures below +10°C; MasterFlow 960 TIX can in fact be applied at temperatures as low as -5°C.
- High chemical compatibility and “monolithicity” with the substrate, something that often limits the use of conventional structural resins, which in any case do not guarantee a monolithic type substrate-anchoring agent result.
- Long lasting. High adhesion and in general high mechanical performance.
- Easy to use with none of the bothersome odours so typical of conventional resins.
- Quick to develop strength, thereby saving time; workability and curing times are given in the table below:

Substrate temperature	Workability time	Curing time
-5°C	16 minutes	3 hours
0°C	13 minutes	2 hours
5°C	11 minutes	2 hours
10° C	9 minutes	1 hour
20 °C	7 minutes	1 hour

- May also be used in applications with large diameter rebars and with large diameter holes.
- May also be applied on damp substrates, something that often limits use of conventional structural resin.
- Very resistant to high temperatures (e.g. in the case of impact and fire) thanks to the nature of the anchoring agent.
- Resistant to aggressive chemicals, such as those listed in the table below

Chemical substance	Permanent contact	Temporary contact	Not recomanded
Water	X		
Sea water	X		
Hot water < 60°C	X		
Petroleum	X		
Kerosene	X		
Diesel oil	X		
Methanol		X	
Acetone		X	
Calcium hydroxide (50 %)		X	
Hydrochloric acid (10 % at 20°C)		X	
Sulphuric acid (50 % at 30°C)			X
Citric acid		X	

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In compliance with the European Regulation (EU No 305/2011 and EU No. 574/2014) the product is provided with the CE marking according to UNI EN 1504-3 and 1504-6 and their relative DoP (Declaration of Performance).

CE 1305
EN 1504-3
CC mortar for Structural and non-structural repair. EN 1504-3 methods 3.1/3.2/4.4/7.1/7.2.
R4

CE 1305
EN 1504-6
Anchoring of reinforcing steel bars

CONSUMPTION

Consumption 2,0 kg/lt.

PACKAGING

MasterFlow 960 TIX (tixotropic version) available in 2 kg buckets.

STORAGE

Store in a dry, cool place at a temperature anywhere between +5°C and +30°C.

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Technical Information			
class according to EN 1504-3		R4	
Typology		CC	
Chloride ion content according to EN 1015-17		<0.05%	
Mixing ratio		0.3-0.34 l for buckets (15-17%)	
Consistency		Thixotropic	
Temperature of application		from -5°C to 35°C	
Workability		20 minuts	
Package		2 kg buckets	
Consumprion		2,0 kg/lt	
Essential characteristic in accordance to EN 1504-3 and 1504-6 with a dosage of water of 16%		**classes**	**Performances**
Adhesion to the concrete,	UNI EN 1542	-	≥ 2.0 MPa
Resistance to artificial weathering (2000 hours of UV radiation and condensation)	EN 1062/11	-	No blistering, no cracking, no flaking
Resistance to freeze-thaw cycles with de-icing salt	as adhesion UNI EN 1542 after UNI EN 13687/1 cycles on MC 0.40 type support	-	≥ 2 MPafter 50 cycles
Compressive strength	UNI EN 12190	a 28 gg ≥ 45 MPa	1 h > 10 MPa 2 h > 15 MPa 3 h > 20 MPa 1 g > 35 MPa 7 gg > 65 MPa 28 gg > 75 MPa
Modulus of elasticity	UNI EN13412	a 28 gg ≥20.000 MPa	24000±2000 MPa
Resistance to accelerated carbonation	UNI EN 13295	carbonation ≤ to that of the reference concrete type MC 0.45 according to UNI EN 1766	Outdated specification
Resistance to the extraction of bars steel - displacement relative to a load of 75 kN (mm	UNI EN 1881		<0.6
Permeability to water — under pressure,	UNI EN 12390/8		< 20 mm
Permeability to water — - as capillary absorption,	UNI EN 13057		< 0.5 $kg \cdot m^{-2} h^{-0.5}$

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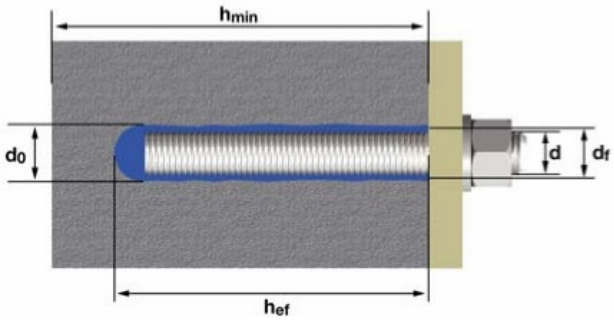
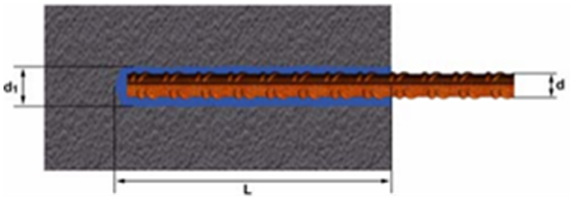
ANCHORING PERFORMANCE:

ANCHORING OF THREADED REBARS



d diameter of threaded bar
d_0 drill bit / hole diameter
d_f hole diameter in any anchor plate
h_{ef} hole depth
h_{min} minimum thickness of substrate
h_{nom} anchor depth

ANCHORING OF BARS WITH IMPROVED ADHESION



INSTALLATION DATA

material	rebar diameter	min. thickness of substrate	hole diameter	hole depth	anchor depth	typical dist. between centres	typical distance from edge	min. dist. between centres	min. dist. from edge	max. fixable thickness	fixable thick. hole diameter
	d (mm)	h_{min} (mm)	d_o (mm)	h_{eff} (mm)	h_{nom} (mm)	S_{cr} (mm)	C_{cr} (mm)	S_{min} (mm)	C_{min} (mm)	t_{fix} (mm)	d_f(mm)
CONCRETE C20/25	M8	115	10	90	85	170	85	43	43	15	9
	M12	140	14	120	110	220	110	55	55	30	14
	M16	180	20	150	215	360	180	70	70	40	18
threaded rebars class > 5.8	M20	220	24	190	170	340	170	85	85	50	22
	M24	300	30	250	230	400	200	125	120	50	22
	M30	400	38	350	320	500	250	170	150	50	22
CONCRETE C20/25	Ø 12	175	16	150	145	290	145	73	73	-	-
	Ø 16	313	20	190	180	445	223	90	90	-	-
bars with improved adhesion (FeB44k, B450C, BST500)	Ø 20	270	26	230	220	440	220	110	110	-	-
	Ø 24	350	32	290	270	500	260	135	135	-	-
	Ø 30	450	40	380	360	600	300	155	155	-	-

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LOAD DATA

material	rebar type	rebar diameter	average ultimate tensile strength**	average ultimate shear strength**
			Nrum (kN)	VRum (kN)
CONCRETE C20/25 3 hours	≥ 6.8	M8	15,7	9,5
	≥ 6.8	M12	32,0	23,5
	≥ 6.8	M16	46,0	40,0
	≥ 6.8	M20	63,8	61,0
	≥ 6.8	M24	93,0	91,0
	≥ 6.8	M30	102,0	100,0
CONCRETE C20/25 28 days	≥ 6.8	M8	31,4	11,0
	≥ 6.8	M12	65,0	26,0
	≥ 6.8	M16	125,0	49,0
	≥ 6.8	M20	195,0	76,0
	≥ 6.8	M24	210,0	97,0
	≥ 6.8	M30	245,0	115,0
CONCRETE C20/25 3 hours	bars w/improved adhesion*	Ø12	33,0	31,0
	bars w/improved adhesion*	Ø16	48,0	69,0
	bars w/improved adhesion*	Ø20	67,0	96,4
	bars w/improved adhesion*	Ø24	46,5	44,8
	bars w/improved adhesion*	Ø30	63,8	71,5
CONCRETE C20/25 28 days	bars w/improved adhesion*	Ø12	66,0	36,0
	bars w/improved adhesion*	Ø16	98,5	76,0
	bars w/improved adhesion*	Ø20	134,1	101,0
	bars w/improved adhesion*	Ø24	169,0	110,0
	bars w/improved adhesion*	Ø30	205,0	122,0

** FeB44k, B450C, BST500*

***tests conducted in real scale, it is advisable to adopt a safety factor 3.*

Notes:

- *To obtain best performance, the concrete or mortars in which the bolts or rebars are to be fixed, must have been cured for at least 28 days and have no cracks.*
- *The loads indicated in the LOAD DATA table are valid for single fastenings or anchors, and the distance from the edge and between centres should be such that the stress areas of the individual anchors do not overlap.*

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APPLICATION SHEET

TEMPERATURE

MasterFlow 960 TIX may be used when the temperature is between - 5°C and +30°C. Whenever the temperature at the time of application is between - 5 and +5°C, the mechanical strength will develop more slowly. It is advisable to use warm mixing water (+18 ÷ +25°C).
Whenever the temperature at the time of application is between +30 and +35°C, it is advisable to use cool mixing water (+5 ÷ +10°C) and to apply the grout during the coolest hours of the day.

PREPARATION OF THE SUBSTRATE

The substrate must be clean, structurally sound and have no substances that could adversely affect the bonding of the material.

DRILLING

Using a drill and bit of the correct diameter, drill the substrate to the right depth. The surfaces must be clean, without loose parts or dust from drilling. We recommend using compressed air or the special air pump for cleaning. until a smooth, lump-free mix is obtained. If necessary add more water (without exceeding the recommended maximum quantity of 17%).

APPLICATION

It is expected:

- For the thixotropic version (MasterFlow 960 TIX): filling the gun with the material and then proceed to extrude the product directly on the hole; then insert the bar to be anchored.

Fill the hole by casting up to approximately 3/5 of the depth.
When the hole has been filled enough, slowly insert the rebar with a slight twisting movement.
Remove any material that may overflow.

CLEANING THE TOOLS

Residues of material must be removed mechanically after hardening or with a brush and with plenty of water.

SAFETY INFORMATIONS

For information on the correct and safe use, transport, storage and disposal of the product, consult the most recent Safety Data Sheet.

OTHER SERVICIES

For price analysis, specifications, supplementary brochures, references, reports and technical assistance, visit the website www.master-builders-solutions.com/it-it or contact infomac@mbcc-group.com.
Scan the QR code to visit the product page and download the latest version of this datasheet

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Since 16/12/1992, Master Builders Solutions Italia Spa has been operating under a Certified Quality System compliant with the UNI EN ISO 9001 Standard. Furthermore, the Environmental Management System is certified according to the UNI EN ISO 14001 Standard and the Safety Management System is certified according to the UNI ISO 45001 Standard.

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For further information, please consult the local Technician of Master Builders Solutions. The technical advice on how to use our products, either written or verbally given, are based on the current state of our scientific and practical expertise, and does not imply the assumption of any guarantee and/or responsibility for the final results of works executed using our products.

Therefore, the customer is not exempted from the exclusive task and responsibility of verifying the suitability of our products for the intended use and purposes.

This version supersedes all the previous ones.