MasterFlow® 960 TIX

Special one-part, fluid, very fine grade cement mortar, recommended for the structural fixing of threaded rods and bars with improved adhesion, also on large diameter holes and where it is damp. It can be applied at temperatures as low as -5°C. It is used instead of conventional structural resins in anchoring.

DESCRIPTION

MasterFlow® 960 TIX is a one-part very fine grade cement anchoring agent, which gives 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, it is more compatible with substrates, lasts longer and is easier to apply, all to the benefit of operator health.

MAIN FIELDS OF APPLICATION

MasterFlow® 960 TIX is an anchoring agent 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 it can be used for applications where casting into holes is possible.

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	8 minutes	1 hour
0°C	8 minutes	1 hour
5°C	8 minutes	1 hour
10°C	8 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	

TYPICAL PERFORMANCE

(Referred to a slump flow S5, UNI EN 12350/2 in the absence of bleeding;
T = 20 °C, rh > 90 %)

Metodo di prova	Prestazione
Adhesion to the concrete, UNI EN 1542	> 2.0 MPa
Permeability to water - under pressure, UNI EN 12390/8 - as capillary absorption, UNI EN 13057	average depth of penetration < 20 mm < 0.5 kg-m^{-2}.h$^{-0,5}$
Resistance to artificial weathering (2000 hours of UV radiation and condensation), UNI EN 1062/11	No blistering, no cracking, no flaking
Resistance to freeze-thaw cycles with de-icing salts measured as adhesion UNI EN 1542 after the cycles UNI EN	≥ 2 MPa after 50 cycles

MasterFlow® 960 TIX

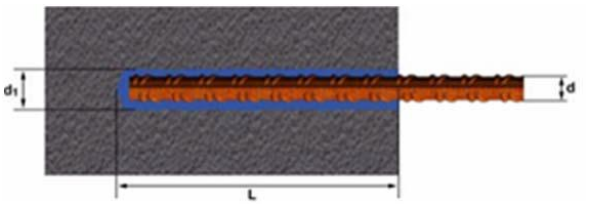
Special one-part, fluid, very fine grade cement mortar, recommended for the structural fixing of threaded rods and bars with improved adhesion, also on large diameter holes and where it is damp. It can be applied at temperatures as low as -5°C. It is used instead of conventional structural resins in anchoring.

13687/1 on substrate MC 0.40	
Modulus of elasticity, UNI EN 13412	24,000 (± 2,000) MPa
Compressive strength, UNI EN 12390/3	2 h > 15 MPa 3 h > 20 MPa 1 day > 25 MPa 7 days > 50 MPa 28 days > 60 MPa

PACKAGING

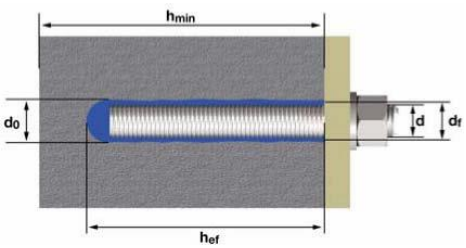
12 kg bags are available Consumption
Water Quantity: 1,9 - 2,0 kg/lt

ANCHORING OF BARS WITH IMPROVED ADHESION



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

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_0 (mm)	h_{ef} (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 threaded rebars class > 5.8	M8	115	10	90	85	170	85	43	43	15	9
	M12	140	14	115	110	220	110	55	55	30	14
	M16	180	20	145	140	280	140	70	70	40	18
	M20	218	24	175	170	340	170	85	85	50	22
CONCRETE C20/25 bars with improved adhesion (FeB44k, B450C, BST500)	Ø 12	175	16	150	145	290	145	73	73	-	-
	Ø 16	248	22	203	195	388	195	99	99	-	-
	Ø 18	246	24	205	201	402	201	100	100	-	-
	Ø 20	270	26	225	220	440	220	110	110	-	-
	Ø 25	320	32	255	245	485	245	125	125	-	-

MasterFlow® 960 TIX

Special one-part, fluid, very fine grade cement mortar, recommended for the structural fixing of threaded rods and bars with improved adhesion, also on large diameter holes and where it is damp. It can be applied at temperatures as low as -5°C. It is used instead of conventional structural resins in anchoring.

LOAD DATA

material	rebar type	rebar diameter	average ultimate tensile strength	average ultimate shear strength
			Nrum (kN)	VRum (kN)
CONCRETE C20/25 3 hours	≥ 5.8	M8	15,7	9,5
	≥ 5.8	M12	32,5	23,5
	≥ 5.8	M16	46,5	44,8
	≥ 5.8	M20	63,8	71,5
CONCRETE C20/25 28 days	≥ 5.8	M8	31,4	11,0
	≥ 5.8	M12	65,0	26,0
	≥ 5.8	M16	125,0	49,0
	≥ 5.8	M20	195,0	76,0
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
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

**FeB44k, B450C, BST500*
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.*

MasterFlow® 960 TIX

Special one-part, fluid, very fine grade cement mortar, recommended for the structural fixing of threaded rods and bars with improved adhesion, also on large diameter holes and where it is damp. It can be applied at temperatures as low as -5°C. It is used instead of conventional structural resins in anchoring.

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

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.

MIXING
Using a drill with whisk attachment at low speed, mix the whole content of the sacks for 3-4 minutes with the minimum recommended quantity of water (equal to 17%) until a smooth, lump-free mix is obtained. If necessary add more water (without exceeding the recommended maximum quantity of 19%).

APPLICATION
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.

HEALTH AND SAFETY PRECAUTIONS
MasterFlow® 960 TIX is a three-component epoxy grout formulated for industrial and professional use only and must be kept out of the reach of children. These products contain chemicals which may be COMBUSTIBLE and potentially HARMFUL to your health if not stored and used properly. Hazardscan be significantly reduced by observing all precautions which are found on material safety data sheets, and product labels. Please read this literature carefully before using product.

DISCLAIMER
The technical information given in this publication is based on the present state of our best scientific and practical knowledge. **Master Builders Solutions Yapı Kimyasalları Sanayi ve Ticaret Ltd. Şti.** is only responsible for the quality of the product **Master Builders Solutions Yapı Kimyasalları Sanayi ve Ticaret Ltd. Şti.** 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.

CONTACT INFORMATION
Master Builders Solutions Yapı Kimyasalları Sanayi ve Ticaret Ltd. Şti.
Adres: Barbaros Mah. Begonya Sok.
Nidakule Kuzey Ataşehir, C Kapısı
No:3 E/5, 34746 Ataşehir İstanbul / Türkiye
Tel: 0216 217 88 00
Mail: mbs.tr@mbcc-group.com
Web: www.master-builders-solutions.com/tr-tr

MasterFlow® 960 TIX Technical Data Sheet -Revision Date: 12/2020