

MasterFlow® 936 AN

Pure Epoxy (3:1) Resin Based High Performance Anchoring Grout

DESCRIPTION

MasterFlow® 936 AN is a two component (3:1) pure epoxy resin based high performance anchoring grout for use in cracked and uncracked concrete under normal as well as seismic conditions (seismic category C1 – C2).

Designed for post-installed rebar connection applications, **MasterFlow® 936 AN** offers a very high load-bearing capacity.

The system can be installed in percussive and diamond drilled dry or wet holes.

FIELDS OF APPLICATION

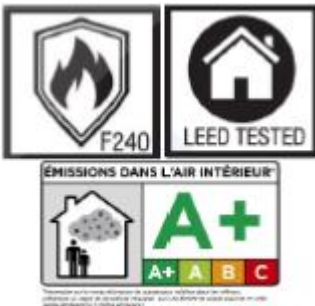
- Structural applications in cracked and uncracked concrete applications in seismic zones (C2)
- Post installed rebar connections
- Facades
- Crash barriers
- Structural steel

FEATURES

- Fixings close to free edges
- Fire tested
- Versatile
- High load capacities
- Extended get/open time
- Suitable for dry and wet holes

APPROVALS & TESTS

- ETA according to ETAG 001 part 1 & 5 option 1 for anchoring of threaded bars into cracked & uncracked concrete
- ETA according to TR023 for post-installed rebar connections
- Tested according to LEED 2009 EQ c4.1, SCAQMD rule 1168(2005)
- Fire resistance F240 for reinforcing bars
- A+ as per French VOC Regulation



PACKAGING

MasterFlow® 936 AN is available in boxes of 12 side-by-side cartridges of 385ml & boxes of 12 side-by-side cartridges of 585ml.)

INSTALLATION PROCEDURE

Please refer to the method statement or contact BASF Technical Services Department

STORAGE & SHELF LIFE

Cartridges should be stored in their original packaging the correct way up and in cool dry conditions (+10°C to +25°C) out of direct sunlight. When stored correctly, the shelf life will be for 24 months from the date of manufacture

HEALTH AND SAFETY PRECAUTIONS

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. **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.

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WORKING & LOADING TIMES

Resin Cartridge Temperature	T Work	Base Material Temperature	T Load
+10 to +15°C	40 mins.	+10 to +15°C	18 hrs.
+15 to +20°C	25 mins.	+15 to +20°C	12 hrs.
+20 to +25°C	18 mins.	+20 to +25°C	8 hrs.
+25 to +30°C	12 mins.	+25 to +30°C	6 hrs.
+30 to +35°C	8 mins.	+30 to +35°C	4 hrs.
+35 to +40°C	6 mins.	+35 to +40°C	2 hrs.
Ensure cartridge is >10°C			

Note: T Work is at the highest temperature in the range. T load is at the lowest temperature in the range

TECHNICAL DATA

Property		Unit	Value	Test Standard
Density		g/cm ³	1.5	ASTM D 1875 @ +20°C / +72°F
Compressive Strength	24 hours	N/mm ²	75	ASTM D 695 @ +20°C / +72°F
	7 days	N/mm ²	95	
Tensile Strength	24 hours	N/mm ²	18	ASTM D 638 @ +20°C / +72°F
	7 days	N/mm ²	23	
Elongation at Break	24 hours	%	6.6	ASTM D 638 @ +20°C / +72°F
	7 days		5.9	
Tensile Modulus	24 hours	GN/m ²	5.7	ASTM D 638 @ +20°C / +72°F
	7 days	GN/m ²	5.5	
Flexural Strength	24 hours	N/mm ²	45	ASTM D 790 @ +20°C / +72°F
HDT	7 days	°C	49	ASTM D 648 @ +20°C / +72°F
VOV		g/L	4.5	ASTM D 2369

THEORETICAL NUMBER OF FIXINGS PER CARTRIDGE

Applies to installations in solid substrates only

Cartridge Volume	h _{ef}	Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
		Drilling Ø 12mm	Drilling Ø 14mm	Drilling Ø 16mm	Drilling Ø 20mm	Drilling Ø 25mm	Drilling Ø 32mm	Drilling Ø 40mm
585ml side by side	10d	116	77	55	32	16	7	3
	12d	97	64	46	26	13	6	2
	20d	58	38	27	16	8	3	1

Note: Installations at jobsite usually result in more resin being injected than the theoretical requirement resulting in lower number of fixing per cartridge.

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MasterFlow 936 AN with REINFORCING BARS (ANCHOR THEORY)

INSTALLATION PARAMETERS

Diameter of rebar (mm)	10	12	16	20	25	32
Drilled hole diameter (mm)	14	16	20	25	32	40

DESIGN RESISTANCE

Rebar size Effective embedment depth h_{ef} [mm]	Ø 10 90	Ø 12 110	Ø 16 125	Ø 20 170	Ø 25 250	Ø 32 300
non-cracked concrete temperature range (-40°C / +50°C)						
tension C20/25 $N_{Rd,p}$ [kN]	24.50	35.94	47.05	74.62	102.45	160.85
C50/60 $N_{Rd,p}$ [kN]	26.71	39.17	54.79	93.14	143.82	175.33
shear C20/25 $N_{Rd,s}$ [kN]	14.67	20.67	36.67	57.33	90.00	147.33
cracked concrete temperature range (-40°C / +50°C)						
tension C20/25 $N_{Rd,p}$ [kN]	20.49	27.65	33.54	53.20	73.04	124.71
C50/60 $N_{Rd,p}$ [kN]	22.60	30.13	45.66	77.62	101.87	142.45
shear C20/25 $N_{Rd,s}$ [kN]	14.67	20.67	36.67	57.33	90.00	147.33

RECOMMENDED RESISTANCE

Rebar size Effective embedment depth h_{ef} [mm]	Ø 10 90	Ø 12 110	Ø 16 125	Ø 20 170	Ø 25 250	Ø 32 300
non-cracked concrete temperature range (-40°C / +50°C)						
tension C20/25 $N_{Rd,p}$ [kN]	17.50	25.67	33.61	53.30	73.18	114.89
C50/60 $N_{Rd,p}$ [kN]	19.08	27.98	39.14	66.53	102.73	125.23
shear C20/25 $N_{Rd,s}$ [kN]	10.48	14.76	26.19	40.95	64.29	105.24
non-cracked concrete temperature range (-40°C / +50°C)						
tension C20/25 $N_{Rd,p}$ [kN]	14.64	19.75	23.96	38.00	52.17	89.08
C50/60 $N_{Rd,p}$ [kN]	16.14	21.52	32.61	55.44	72.77	101.75
shear C20/25 $N_{Rd,s}$ [kN]	10.48	14.76	26.19	40.95	64.29	105.24

$f_{yk} = 500 \text{ N/mm}^2$

Partial safety factor $\gamma = 1.5$

For resistance values in higher temperatures, please contact **Master Builders Solutions** Technical Services.

All the above resistance values are considering combined pull out and concrete cone failure in tension and steel failure in shear

The above load values are for long term temperature of -40°C to +50°C and short-term temperature of +70°C

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MasterFlow 936 AN with THREADED RODS

INSTALLATION PARAMETERS

Diameter of threaded rod (mm)	M10	M12	M16	M20	M24	M30
Drilled hole diameter (mm)	12	14	18	22	26	35

Threaded rod size Effective embedment depth h_{ef} [mm]	M10 90	M12 110	M16 128	M20 170	M25 210	M32 270
non-cracked concrete temperature range (-40°C / +50°C)						
tension C20/25 $N_{Rd,p}$ [kN]	28.27	38.84	48.75	74.62	102.45	149.36
C50/60 $N_{Rd,p}$ [kN]	30.82	45.20	56.10	93.14	138.07	175.67
shear C20/25 $N_{Rd,s}$ [kN]	12.00	16.80	31.20	48.80	70.40	112.00
cracked concrete temperature range (-40°C / +50°C)						
tension C20/25 $N_{Rd,p}$ [kN]	18.85	27.65	34.76	53.20	73.04	101.79
C50/60 $N_{Rd,p}$ [kN]	20.55	30.13	44.42	69.86	103.55	110.95
shear C20/25 $N_{Rd,s}$ [kN]	12.00	16.80	31.20	48.80	70.40	112.00

RECOMMENDED RESISTANCE

Threaded rod size Effective embedment depth h_{ef} [mm]	M10 90	M12 110	M16 128	M20 170	M25 210	M32 270
non-cracked concrete temperature range (-40°C / +50°C)						
tension C20/25 $N_{Rd,p}$ [kN]	20.20	27.74	34.82	53.30	73.18	106.69
C50/60 $N_{Rd,p}$ [kN]	22.01	32.29	40.07	66.53	98.62	125.48
shear C20/25 $N_{Rd,s}$ [kN]	8.57	12.00	22.29	34.86	50.29	80.00
non-cracked concrete temperature range (-40°C / +50°C)						
tension C20/25 $N_{Rd,p}$ [kN]	13.46	19.75	24.83	38.00	52.17	72.71
C50/60 $N_{Rd,p}$ [kN]	14.68	21.52	31.73	49.90	73.97	79.25
shear C20/25 $N_{Rd,s}$ [kN]	8.57	12.00	22.29	34.86	50.29	80.00

$f_{yk} = 500 \text{ N/mm}^2$

Partial safety factor $\gamma = 1.5$

For resistance values in higher temperatures, please contact **Master Builders Solutions** Technical Services.

Design resistance and recommended resistance in tension are only valid for single anchors without close edge considerations for combined pullout and concrete cone failure and concrete cone failure. Steel failure is not considered by these calculations.

Design resistance and recommended resistance in shear are only valid for single anchors for steel failure without lever arm. The above load values are for long term temperature of -40°C to +50°C and short-term temperature of +70°C

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CONTACT INFORMATION

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