

# MasterFlow<sup>®</sup> 920 ANS

Epoxy acrylate (styrene-free) resin based high performance anchoring grout

## DESCRIPTION

**MasterFlow 920 ANS** is a two-component epoxy acrylate resin based high performance anchoring grout for use in cracked and uncracked concrete under normal as well as seismic conditions (seismic category C1). It is a styrene-free system with very low voc content. **MasterFlow 920 ANS** has extended gel and cure time for tropical temperatures.

## USES & APPLICATIONS

- Structural applications in cracked and uncracked concrete applications in seismic zones (C1)
- Reinforcing & starter bars
- Suspended ventilation systems
- Safety barriers
- Machinery & heavy machinery
- Racking
- Rolling cranes

## APPROVALS & TESTS

- ETA according ETAG 001 Part 1 and Part 5 Option 1 for anchoring of threaded bars into cracked and uncracked concrete application in seismic zones (C1)
- ETA according to TR023 for post-installed rebar connections
- Tested according to LEED 2009 EQ c4.1, SCAQMD rule 1168 (2005)
- A+ as per French VOC Regulation
- WRAS – Suitable for use with potable water

## FEATURES

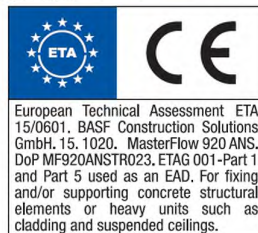
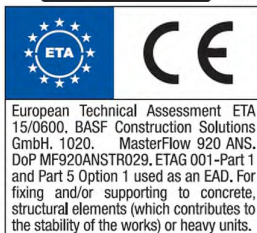
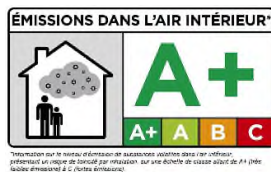
- Anchors may be placed close to free edges
- Suitable for dry, wet & flooded holes
- Reduced drilling diameters i.e. M20 only requires a 22mm hole and M24 requires only a 26mm hole making it an economical injection system
- Variable embedment depths
- Ratio of 10:1

## PACKAGING

**MasterFlow 920 ANS** is available in boxes of 12 co-axial cartridges of 380ml and boxes of 12 single piston foil pack cartridges of 300ml

## INSTALLATION PROCEDURE

Please refer to the method statement or contact Master Builders Solutions Technical Services department.



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## WORKING & LOADING TIMES

Resin cartridge Temperature	T Work	Base Material Temperature	T Load
+15 to +20°C	15 mins	+15 to +20°C	5 hours
+20 to +25°C	10 mins	+20 to +25°C	145 minutes
+25 to +30°C	7.5 mins	+25 to +30°C	85 minutes
+30 to +35°C	5 mins	+30 to +35°C	50 minutes
+35 to +40°C	3.5 mins	+35 to +40°C	40 minutes

*T Work is typical gel time at highest base material temperature in the range. T Load is set at the lowest base material temperature in the range*

## PHYSICAL PROPERTIES

Property		Value	Test Standard
Compressive Strength	24 hours	72.3N/mm <sup>2</sup>	ASTM D695 @ +20°C
	7 days	77.8N/mm <sup>2</sup>	
Compressive Modulus Strength	24 hours	5GN/m <sup>2</sup>	ASTM D695 @ +20°C
	7 days	7GN/m <sup>2</sup>	
Tensile Strength	24 hours	13.5N/mm <sup>2</sup>	ASTM D638 @ +20°C
	7 days	15.2N/mm <sup>2</sup>	
Tensile Strength Elongation at Break	24 hours	6%	ASTM D638 @ +20°C
	7 days	6.7%	
Tensile Modulus	24 hours	3.75GN/m <sup>2</sup>	ASTM D638 @ +20°C
	7 days	3.8GN/m <sup>2</sup>	
Flexural Strength	24 hours	29.3N/mm <sup>2</sup>	ASTM D790 @ +20°C
	7 days	38.7N/mm <sup>2</sup>	

## THEORETICAL NUMBER OF FIXINGS PER CARTRIDGE

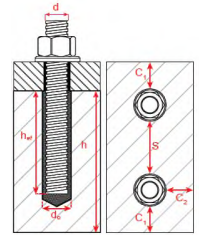
Applies to installations in solid substrates only

Cartridge Volume	h <sub>ef</sub>	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
300ml	10d	49	32	22	13	6	3	1
	12d	41	27	19	10	5	2	1
	20d	24	16	11	6	3	1	0
380ml	10d	63	42	29	16	8	3	2
	12d	53	35	24	14	7	3	1
	20d	31	21	14	8	4	1	1

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

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## INSTALLATION PARAMETERS



### MasterFlow 920 ANS with REINFORCING BARS (ANCHOR THEORY)

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

## DESIGN RESISTANCE

Rebar size	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
<b>Effective embedment depth <math>h_{ef}</math> [mm]</b>	<b>90</b>	<b>110</b>	<b>125</b>	<b>170</b>	<b>250</b>	<b>300</b>
non-cracked concrete temperature range (-40°C / +40°C)						
tension C20/25 $N_{Rd,p}$ [kN]	18.85	23.04	34.91	53.41	98.17	92.15
shear C20/25 $N_{Rd,s}$ [kN]	9.33	14.67	20.67	57.33	90.00	147.33

## RECOMMENDED RESISTANCE

Rebar size	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
<b>Effective embedment depth <math>h_{ef}</math> [mm]</b>	<b>90</b>	<b>110</b>	<b>125</b>	<b>170</b>	<b>250</b>	<b>300</b>
non-cracked concrete temperature range (-40°C / +40°C)						
tension C20/25 $N_{Rd,p}$ [kN]	13.46	16.46	24.93	38.15	70.12	65.82
shear C20/25 $N_{Rd,s}$ [kN]	6.67	10.48	14.76	40.95	64.29	105.24

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

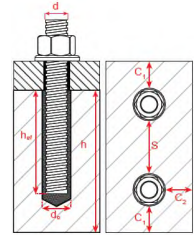
Partial safety factor  $\gamma 1.4$

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.

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## MasterFlow 920 ANS with REINFORCING BARS (REBAR THEORY)



### INSTALLATION PARAMETERS

Diameter of rebar	8	10	12	16	20	25	32
Drilled hole diameter	12	14	16	20	25	32	40

### DESIGN RESISTANCE

Rebar size	Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
Effective embedment depth $h_{ef}$ [mm]	110	140	170	230	280	350	680
cracked concrete (static cracks) temperature range (-40°C / +40°C)							
tension C20/25 $N_{Rec,p}$ [kN]	9.4	14.7	21.2	37.5	58.6	91.6	224.9

### RECOMMENDED RESISTANCE

Rebar size	Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
Effective embedment depth $h_{ef}$ [mm]	110	140	170	230	280	350	680
cracked concrete (static cracks) temperature range (-40°C / +40°C)							
tension C20/25 $N_{Rd,p}$ [kN]	6.6	10.3	14.8	26.2	41.0	64.1	160.64

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

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

All the above tension loads are valid for good bond conditions according to EN 1991-1-1. For all other conditions multiply the value by 0.7

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

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## STORAGE & SHELF LIFE

Cartridges should be stored in their original packaging, the correct way up, in cool conditions (+5°C to +25°C) out of direct sunlight.

When stored correctly, the product shelf life will be 12 months from the date of manufacture.

## QUALITY AND CARE

All products originating from Master Builders Solutions Dubai, UAE facility are manufactured under a management system independently certified to conform to the requirements of the quality, environmental and occupational health & safety standards ISO 9001 and ISO 14001.

\* Properties listed are based on laboratory controlled tests.

® = Registered trademark of the MBCC Group in many countries.

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### STATEMENT OF RESPONSIBILITY

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### NOTE

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