

DESCRIPTION

The UCAN FLO-ROK FR5 MAX anchoring system is an styrene free epoxy acrylate adhesive that incorporates the latest technology in chemical anchoring. The unique properties of the two component, high strength adhesive provide stress free anchoring and minimal shrinkage. It has reliable cure due to low mix ratio sensitivity and is ideal for use in a wide range of temperatures from -20°C to over 30°C. It is an excellent choice for anchoring and dowelling jobs. The special static mixing nozzle ensures thorough, 10:1 mixing of the resin and the hardener. The result is consistent, fast and complete curing every time. The FR5-28 MAX, a jumbo 28 oz cartridge, is the most economical size for large volume applications such as reinforcing bar dowelling.

FEATURES

- Fast set
- Broad working temperature range from -20°C to +30°C
- Stress free anchoring
- Minimal shrinkage
- Moisture insensitive, non sag formula
- Styrene free, low VOC; meets LEED guidelines
- Suitable for hollow wall applications

TYPICAL APPLICATIONS

- Hollow wall anchoring applications
- Rebar dowelling
- Telecommunications equipment
- Highway and bridge construction
- Renovations



MATERIAL SPECIFICATIONS

Anchor Component	Material Standard	Mechanical Properties	
		F _u	F _y
Standard threaded rod	ISO 898 Grade 5.8	500 MPa (72.5 ksi)	400 MPa (58 ksi)
High Strength threaded rod	ASTM A193 , Grade B7	862 MPa (125 ksi)	724 MPa (105 ksi)
Stainless steel threaded rod	ASTM F593 (AISI 304/316)	689 MPa (100 ksi)	448 MPa (65 ksi)
Carbon steel nuts	ASTM A563		
Stainless steel nuts	ASTM F 594		
Stainless and carbon steel washers	ANSI B18.22.1 Type A Plain		
Two component (10:1 mix ratio) acrylic epoxy adhesive in 28 oz.; 12 oz. twin cartridge; 10 oz and 5 oz. coaxial cartridge			
Corrosion protection (carbon steel anchors)	ASTM B633 - 98e1	0.0002" (5 micron)	electrodeposited

FLO-ROK FR5MAX INJECTION ADHESIVE ANCHOR



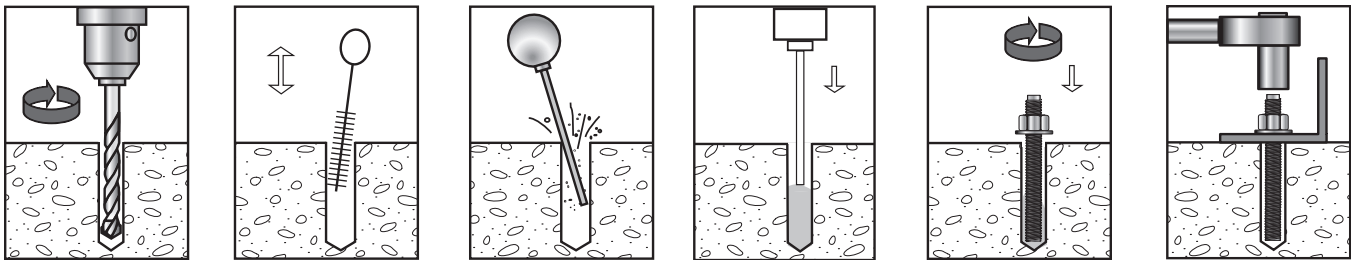
INSTALLATION

Details	Anchor size						
	3/8	1/2	5/8	3/4	7/8	1	1-1/4
Anchor rod dia. d_a (in)	3/8	1/2	5/8	3/4	7/8	1	1-1/4
Drill bit / hole nominal diameter d_o (in)	1/2	9/16	11/16	13/16	1	1-1/8	1-3/8
Effective embedment / hole depth h_{ef} / (in)	3-1/2	4	5	6-1/2	n/a	8-1/4	11-3/4
Critical anchor spacing for 100% performance $s_{cr,N}$	10-1/2	12	15	19-1/2	n/a	24-3/4	35-1/4
Required edge distance for 100% performance $c_{cr,N}$	5-1/4	6	7-1/2	9-3/4	n/a	12-3/8	17-5/8
Minimum base material thickness h_{min}	1.0 x embedment + 2 inches						
Max. installation torque T_{inst} (ft x lbf)	15	30	59	111	n/a	148	204

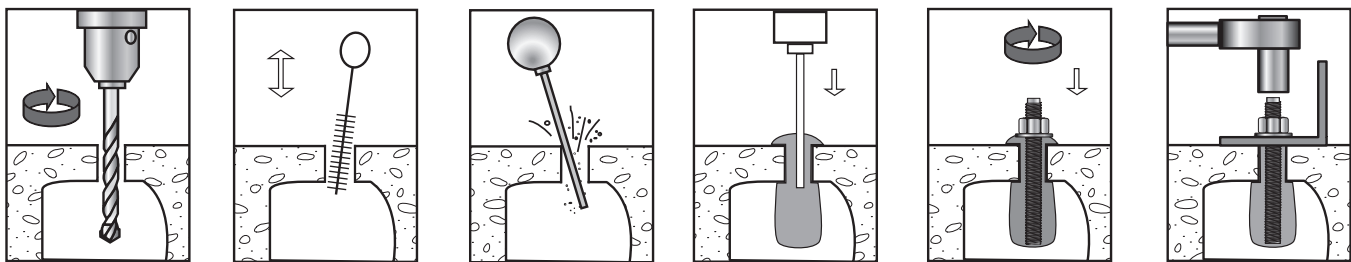
Note: Carbide tipped drill bits shall conform to ANSI B 212.15

• All dimensions are in inches

SOLID CONCRETE/MASONRY APPLICATIONS



HOLLOW CONCRETE BLOCK/MASONRY APPLICATIONS



NOTE:

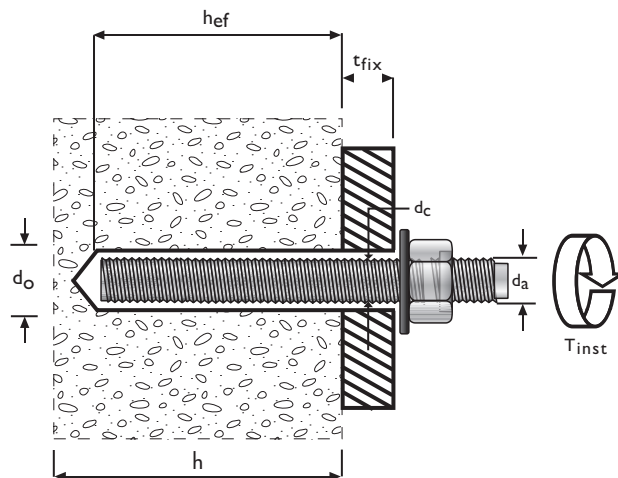
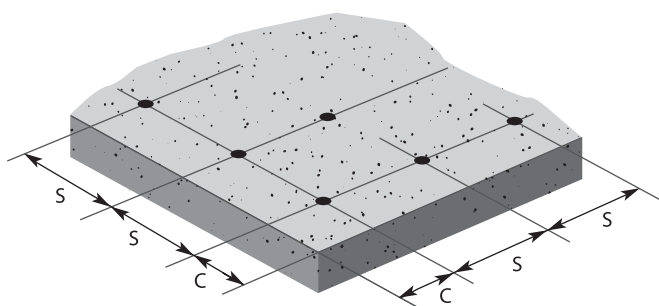
- Clean hole thoroughly by using nylon brush and blow-out bulb or compressed air (65 - 80 psi)
- Always dispense about 1 oz. FLO - ROK to the side, prior to injecting it into the clean hole, to assure uniform mixing indicated by a consistent dark grey colour.
- At a minimum, half fill the hole starting from the bottom up by slowly withdrawing the nozzle. (solid installation)
Fill the screen fully starting from the bottom by slowly withdrawing the nozzle. (hollow installation)
- Mark embedment depth on the threaded rod (rebar) prior to insertion, and insert the rod (rebar) turning it slowly until it reaches the bottom of the hole (depth mark is flush with the surface).
- Observe curing time. The installed anchor must not be disturbed or loaded before the specified curing time has elapsed.

CURING TIMES

Temperature	Gel Time	Full Cure
30° C (86°F)	4 min	35 minutes
20°C (68°F)	6min	50 minutes
5°C (41°F)	18min	145 minutes
-20°C (-4°F)	20 min*	24 hours

Do not disturb stud during the curing time

*Cartridge temperature +5°C (41°F)



DESIGN DATA

Allowable and Ultimate Bond Strength in min. 20 MPa (3000 psi) Concrete

Rod Diameter inch	Hole Diameter inch	Embedment inch	Tension Bond Capacities in 3000 psi Concrete	
			Allowable Load lbs (kN)	Ultimate Load lbs (kN)
3/8	1/2	3	1,822 (8.1)	7,289 (32.4)
		4-1/2	2,733 (12.2)	10,934 (48.7)
1/2	9/16	4	3,010 (13.4)	12,038 (53.6)
		6	4,514 (20.1)	18,057 (80.3)
5/8	11/16	5	4,215 (18.8)	16,859 (75.0)
		7-1/2	6,322 (28.1)	25,289 (115.5)
3/4	13/16	6	6,700 (29.8)	26,799 (119.2)
		9	10,050 (44.7)	40,199 (178.8)
1	1-1/8	8	9,276 (41.3)	37,102 (165.1)
		12	13,913 (61.9)	55,653 (247.6)
1-1/4	1-3/8	10	11,467 (51.0)	45,869 (204.0)
		15	17,201 (76.5)	68,804 (306.0)

Notes: • Use the lesser value of bond and steel capacity

- All above data are calculated using independent laboratory test data on metric size anchor rods installed into local concrete
- Not recommended for overhead anchoring applications
- For flooded hole application suitability please contact Ucan Fastening Products

FLO-ROK FR5MAX INJECTION ADHESIVE ANCHOR

Allowable Steel Strength for Carbon and Stainless Steel Threaded Rods

Size	ISO 898 Grade 5.8		B7 (125 ksi)		303/304 (100 / 85 ksi)		316 (100 / 85 ksi)	
	Tensile	Shear	Tensile	Shear	Tensile	Shear	Tensile	Shear
1/4	1,175	605	2,025	1,043	1,620	834	1,620	834
3/8	2,643	1,362	4,556	2,347	3,645	1,878	3,645	1,878
1/2	4,699	2,421	8,099	4,172	6,480	3,338	6,480	3,338
5/8	7,342	3,782	12,655	6,519	10,124	5,216	10,124	5,216
3/4	10,752	5,446	18,224	9,388	12,392	6,384	12,392	6,384
7/8	14,390	7,413	24,804	12,778	16,867	8,689	16,867	8,689
1	18,795	9,682	32,398	16,690	22,030	11,349	22,030	11,349
1-1/4	29,367	15,128	50,621	26,078	34,423	17,733	34,423	17,733

Allowable Tension and Shear load data shown are based on AISC Manual of Steel Construction (ASD) 9th Edition

Ultimate Steel Strength for Carbon and Stainless Steel Threaded Rods

Size	ISO 898 Grade 5.8		B7 (125 ksi)		303/304 (100 / 85 ksi)		316 (100 / 85 ksi)	
	Tensile	Shear	Tensile	Shear	Tensile	Shear	Tensile	Shear
1/4	2,670	1,602	4,602	2,454	3,682	1,963	3,682	1,963
3/8	6,007	3,604	11,354	5,522	8,283	4,418	8,283	4,418
1/2	10,679	6,407	18,408	9,817	14,726	7,854	14,726	7,854
5/8	16,686	10,011	28,762	15,340	23,010	12,272	23,010	12,272
3/4	24,027	14,416	41,417	22,089	28,164	15,021	28,164	15,021
7/8	32,704	19,622	56,374	30,066	38,334	20,445	38,334	20,445
1	42,715	25,629	73,631	39,270	50,069	26,704	50,069	26,704
1-1/4	66,743	40,046	115,049	61,359	78,233	41,724	78,233	41,724

Ultimate Tension and Shear load data shown are based on AISC Manual of Steel Construction (LRFD) 3rd Edition

EPOXY USAGE ESTIMATING TABLES

Holes per FR5MAX-5

Rod dia.	Hole dia.	Embedment (inch)											
		1	2	3	4	5	6	7	8	9	10	15	20
1/4	5/16	151.0	75.5	50.3	37.8	30.2	25.2	21.6	18.9	16.8	15.1	10.1	7.6
	3/8	89.4	44.7	29.8	22.3	17.9	14.9	12.8	11.2	9.9	8.9	6.0	4.5
3/8	7/16	91.1	45.6	30.4	22.8	18.2	15.2	13.0	11.4	10.1	9.1	6.1	4.6
	1/2	58.5	29.3	19.5	14.6	11.7	9.8	8.4	7.3	6.5	5.9	3.9	2.9
1/2	9/16	65.8	32.9	21.9	16.4	13.2	11.0	9.4	8.2	7.3	6.6	4.4	3.3
	5/8	42.3	21.2	14.1	10.6	8.5	7.1	6.0	5.3	4.7	4.2	2.8	2.1
5/8	1 1/16	48.1	24.0	16.0	12.0	9.6	8.0	6.9	6.0	5.3	4.8	3.2	2.4
	3/4	32.9	16.5	11.0	8.2	6.6	5.5	4.7	4.1	3.7	3.3	2.2	1.6

Holes per FR5MAX-12

Rod dia.	Hole dia.	Embedment (inch)											
		1	2	3	4	5	6	7	8	9	10	15	20
1/4	5/16	377.5	188.8	125.8	94.4	75.5	62.9	53.9	47.2	41.9	37.8	25.2	18.9
	3/8	223.5	111.7	74.5	55.9	44.7	37.2	31.9	27.9	24.8	22.3	14.9	11.2
3/8	7/16	227.9	113.9	76.0	57.0	45.6	38.0	32.6	28.5	25.3	22.8	15.2	11.4
	1/2	146.3	73.2	48.8	36.6	29.3	24.4	20.9	18.3	16.3	14.6	9.8	7.3
1/2	9/16	164.5	82.2	54.8	41.1	32.9	27.4	23.5	20.6	18.3	16.4	11.0	8.2
	5/8	105.9	52.9	35.3	26.5	21.2	17.6	15.1	13.2	11.8	10.6	7.1	5.3
5/8	1 1/16	120.2	60.1	40.1	30.1	24.0	20.0	17.2	15.0	13.4	12.0	8.0	6.0
	3/4	82.4	41.2	27.5	20.6	16.5	13.7	11.8	10.3	9.2	8.2	5.5	4.1
3/4	1 3/16	96.5	48.3	32.2	24.1	19.3	16.1	13.8	12.1	10.7	9.7	6.4	4.8
	7/8	68.1	34.1	22.7	17.0	13.6	11.4	9.7	8.5	7.6	6.8	4.5	3.4
7/8	1 1/4	83.8	41.9	27.9	21.0	16.8	14.0	12.0	10.5	9.3	8.4	5.6	4.2
	1	55.7	27.8	18.6	13.9	11.1	9.3	8.0	7.0	6.2	5.6	3.7	2.8

Holes per FR5MAX-28

Rod dia.	Hole dia.	Embedment (inch)											
		1	2	3	4	5	6	7	8	9	10	15	20
1/4	5/16	891.9	446.0	297.3	223.0	178.4	148.7	127.4	111.5	99.1	89.2	59.5	44.6
	3/8	27.9	264.0	176.0	132.0	105.6	88.0	75.4	66.0	58.7	52.8	35.2	26.4
3/8	7/16	538.3	269.2	179.4	134.6	107.7	89.7	76.9	67.3	59.8	53.8	35.9	26.9
	1/2	345.6	172.8	115.2	86.4	69.1	57.6	49.4	43.2	38.4	34.6	23.0	17.3
1/2	9/16	388.5	194.3	129.5	97.1	77.7	64.8	55.5	48.6	43.2	38.9	25.9	19.4
	5/8	250.1	125.0	83.4	62.5	50.0	41.7	35.7	31.3	27.8	25.0	16.7	12.5
5/8	1 1/16	284.0	142.0	94.7	71.0	56.8	47.3	40.6	35.5	31.6	28.4	18.9	14.2
	3/4	194.6	97.3	64.9	48.7	38.9	32.4	27.8	24.3	21.6	19.5	13.0	9.7
3/4	1 3/16	228.0	114.0	76.0	57.0	45.6	38.0	32.6	28.5	25.3	22.8	15.2	11.4
	7/8	161.0	80.5	53.7	40.2	32.2	26.8	23.0	20.1	17.9	16.1	10.7	8.0
7/8	1 1/4	198.0	99.0	66.0	49.5	39.6	33.0	28.3	24.7	22.0	19.8	13.2	9.9
	1	131.5	65.7	43.8	32.9	26.3	21.9	18.8	16.4	14.6	13.1	8.8	6.6
1	1 1/16	143.9	72.0	48.0	36.0	28.8	24.0	20.6	18.0	16.0	14.4	9.6	7.2
	1 1/8	108.1	54.1	36.0	27.0	21.6	18.0	15.4	13.5	12.0	10.8	7.2	5.4
1 1/4	1 3/8	83.7	41.9	27.9	20.9	16.7	14.0	12.0	10.5	9.3	8.4	5.6	4.2
	1 1/2	55.0	27.5	18.3	13.8	11.0	9.2	7.9	6.9	6.1	5.5	3.7	2.8
Rebar size													
10M	9/16	391.6	195.8	130.5	97.9	78.3	65.3	55.9	49.0	43.5	39.2	26.1	19.6
15M	3/4	268.4	134.2	89.5	67.1	53.7	44.7	38.3	33.6	29.8	26.8	17.9	13.4
20M	1 1/4	173.8	86.9	57.9	43.4	34.8	29.0	24.8	21.7	19.3	17.4	11.6	8.7
25M	1 1/2	84.7	42.3	28.2	21.2	16.9	14.1	12.1	10.6	9.4	8.5	5.6	4.2
30M	1 3/4	58.8	29.4	19.6	14.7	11.8	9.8	8.4	7.3	6.5	5.9	3.9	2.9
35M	1 3/4	48.3	24.2	16.1	12.1	9.7	8.1	6.9	6.0	5.4	4.8	3.2	2.4

For correct epoxy usage, add 20% waste (multiply the tabulated number by 0.80)