R-CAS® RAWL CAPSULE

FOR CONCRETE

Product Information

DESCRIPTION

R-CAS is a high performance resin anchor system for use in safety critical applications. The system relies on the adhesion between the concrete and resin, which is free from expansion forces. This makes it an ideal choice where there are close edge and spacing distances.

SUITABLE FOR USE IN:

Concrete.

TYPICAL APPLICATIONS

- Heavy Machinery
- Structural Steel to concrete

FEATURES

1. High performance.
2. Quick and easy to install.
3. Capsule contains exact amounts of ingredients making it a very consistent product.
4. Adhesive strength is not affected by unpolluted water (curing time will be affected).
5. Suitable for overhead applications.
6. Suitable for use in wet conditions.

RAWL® R-CAS Capsules

CAPSULE SIZE *(d)*	CAPSULE LENGTH (mm)	MAXIMUM FIXTURE THICKNESS (mm) *(Tfix)*	HOLE DIAMETER IN CONCRETE (mm) *(d_o)*	HOLE DIAMETER IN FIXTURE (mm) *(df)*	HOLE DEPTH IN CONCRETE (mm) *(h_o)*	RECOMMENDED TORQUE *(Nm)* *(T_{inst})* IN CONCRETE	CAPSULES PER BOX	PRODUCT CODE	NEW CODE
M8	80	17	10	9	80	11	10	60-428	R-CAS-08
M10	80	28	12	11	90	22	10	60-430	R-CAS-10
M12	95	36	14	13	110	38	10	60-432	R-CAS-12
M16	95	42	18	17	125	95	10	60-436	R-CAS-16
M20	175	65	25	22	170	150	6	60-442	R-CAS-20
M24	210	55	28	26	210	200	6	60-446	R-CAS-24
M30	265	65	35	33	280	320	6	60-450	R-CAS-30

Boxes of M8 to M16 contain a socket driver suitable for a standard drill chuck.
Please see accessories on page 64 for additional socket drivers.
For range of internally threaded sockets see accessories page 65.

RAWL® R-CAS Studs (Also suitable for all cartridge resin systems)

STUD THREAD SIZE (mm) *(d)*	STUD OVERALL LENGTH (mm) (l)	NUT DIAMETER (mm) *(AF)* *(Sw)*	WASHER DIAMETER (mm) *(Dw)*	STUD PRODUCT CODES (Complete with nut and washer)						
				STUDS PER BOX/ PACK	ZINC PLATED		STAINLESS STEEL GRADE 316 A4		R-CAS Stud Drivers	
					PRODUCT CODE	NEW CODE	PRODUCT CODE	NEW CODE	PRODUCT CODE	NEW CODE
M8	110	13	17	10	60-708	STUDS-08110	60-906	STUDS-08110-A4	60-649	STUDS-08110-05
M10	130	17	21	10	60-710	STUDS-10130	60-911	STUDS-10130-A4	60-653	STUDS-10130-05
M12	160	19	24	10	60-712	STUDS-12160	60-916	STUDS-12160-A4	60-661	STUDS-12160-05
M16	190	24	30	10	60-716	STUDS-16190	60-921	STUDS-16190-A4	—	—
M20	260	30	37	6	60-720	STUDS-20260	60-926	STUDS-20260-A4	—	—
M24	295	36	44	6	60-724	STUDS-24295	60-931	STUDS-24295-A4	—	—
M30	380	46	56	5	—	STUDS-30380	—	—	—	—

BASE MATERIAL TEMPERATURE (°C)	> 20	11 – 20	6 – 10	1 – 5	-5 – 0
Curing time dry	30 mins	1 hour	3 hours	6 hours	15 hours
Curing time wet	1 hour	2 hours	6 hours	12 hours	30 hours

Specification Data

RAWL® R-CAS Performance Data

SIZE	CONCRETE, $f_{ck,cube}$ = 30N/mm2 (C20/25)								
	CHARACTERISTIC RESISTANCE (kN)		DESIGN RESISTANCE (Factored) (kN)		RECOMMENDED LOAD (Unfactored) (kN)		CHARACTERISTIC EDGE DISTANCE (mm)		CHARACTERISTIC SPACING (mm)
	TENSION (N_{Rk})	SHEAR (V_{Rk})	TENSION (N_{Rd})	SHEAR (V_{Rd})	TENSION (N_{rec})	SHEAR (V_{rec})	TENSION ($C_{cr,N}$)	SHEAR ($C_{cr,V}$)	TENSION & SHEAR ($S_{cr,N}$) ($S_{cr,V}$)
M8	15.4	9.9	8.3	7.9	5.9	5.7	100	130	130
M10	23.8	15.7	11.3	12.6	8.1	9.0	130	150	150
M12	35.1	22.9	15.9	18.3	11.4	13.1	150	170	170
M16	64.4	42.5	28.0	34.0	20.0	24.3	170	190	190
M20	103.9	66.8	43.3	53.4	30.9	38.2	220	220	220
M24	138.3	95.7	55.3	76.6	39.5	54.7	260	260	260
M30	213.9	152.5	85.5	122.0	61.1	87.1	340	340	340

For further explanations on calculations please see pages 10 and 11

Reduction Factors – Edge and Spacing Distances.
The full characteristic edge and spacing distances shown in the table above are the minimum allowable for the quoted DESIGN RESISTANCE or RECOMMENDED LOAD, depending on your design method.
Where these dimensions are not achievable, the appropriate reduction factor/s from the tables below must be applied to the DESIGN RESISTANCE or RECOMMENDED LOAD. Choose the required bolt diameter across the top of the appropriate table and read down the left hand column until actual edge or spacing distance is found. Read off the reduction factor where the two lines intersect (interpolate as required). Multiply this factor by the DESIGN RESISTANCE or RECOMMENDED LOAD quoted in the table. On the occasion that multiple close edge and/or spacing distances occur, the appropriate reduction factors must be applied.

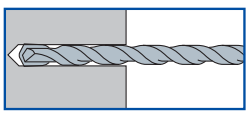
Edge Distance (Concrete Only)

EDGE (mm)	TENSILE: EDGE REDUCTION FACTORS							SHEAR: EDGE REDUCTION FACTORS						
	M8	M10	M12	M16	M20	M24	M30	M8	M10	M12	M16	M20	M24	M30
60	0.76							0.50						
70	0.82	0.75						0.58	0.50					
80	0.88	0.80	0.74					0.66	0.57	0.50				
90	0.94	0.85	0.78					0.75	0.64	0.56				
100	1.0	0.90	0.83	0.77				0.83	0.71	0.62	0.52			
110		0.95	0.87	0.81				0.92	0.78	0.69	0.58	0.50		
130		1.0	0.96	0.89	0.77			1.0	0.93	0.81	0.68	0.59	0.50	
150			1.0	0.96	0.83	0.76			1.0	0.94	0.79	0.68	0.57	
170				1.0	0.88	0.81				1.0	0.89	0.77	0.65	0.50
190					0.94	0.86	0.75				1.0	0.86	0.73	0.56
220					1.0	0.93	0.80					1.0	0.85	0.65
260						1.0	0.88						1.0	0.76
300							0.92							0.88
340							1.0							1.0

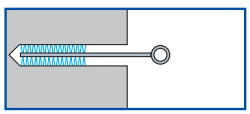
Spacing (Concrete Only)

SPACING (mm)	TENSILE & SHEAR REDUCTION FACTORS						
	M8	M10	M12	M16	M20	M24	M30
60	0.80						
70	0.83	0.80					
80	0.87	0.83	0.80				
90	0.90	0.86	0.83				
100	0.93	0.89	0.85	0.81			
110	0.97	0.91	0.87	0.83	0.80		
130	1.0	0.97	0.92	0.87	0.84	0.80	
150		1.0	0.97	0.92	0.87	0.83	
170			1.0	0.96	0.91	0.86	0.80
190				1.0	0.95	0.89	0.82
220					1.0	0.94	0.85
260						1.0	0.90
300							0.95
340							1.0

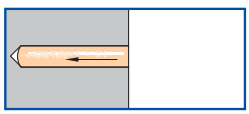
Installation



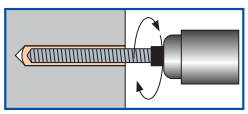
1. Drill correct diameter and depth of hole for the stud or socket.



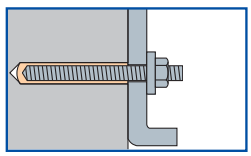
2. Clean the hole using brush and air three times.



3. Insert R-CAS capsule into the hole. Connect stud or socket to drilling machine using the appropriate driver system.



4. Offer stud or socket up to capsule and switch on machine. Drive stud or socket into capsule. To prevent over mixing, stop as soon as bottom of hole is reached. Leave undisturbed until resin has set.



5. Position fixture and tighten to recommended torque.