

AC100e

versatile
styrene free
low odour
polyester resin

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AC100e

Product Description

The AC100e (300ml) cartridge system is a versatile, two component, mix in the nozzle, polyester resin system for structural applications. The resin is styrene free and has a low odour. The unique 300ml co-axial cartridge system can be used in a standard mastic or professional gun. The operating principle of the tube involves the peeling of the inner tube allowing mixing of the resin and hardener using a static mixing nozzle.

AC100e is suitable for anchoring threaded rod, reinforcing bars or internally threaded sockets into solid concrete and other solid or hollow masonry structures.

When used in hollow structures, eg. hollow precast concrete beams, perforated brickwork and hollow blockwork, a mesh plastic sleeve must be inserted into the hole prior to the resin being pumped in and the stud or socket being inserted.

The sleeve holds the resin in position until curing has taken place.

AC100e is suitable for overhead applications and damp holes

Typical Applications:

Structural steel	Barriers
Starter bars	Cladding restraint
Masonry support	Curtain walling
Fencing	

Features:

- Versatile
- Styrene free
- Low odour
- Variable embedment depth
- Easy extrusion



Specification data

STUD THREAD SIZE mm	HOLE Ø CONCRETE mm	HOLE Ø FIXTURE mm	HOLE DEPTH CONCRETE mm	MAX. RECOMMENDED TORQUE IN CONCRETE Nm
M8	10	9	80	11
M10	12	11	90	22
M12	14	13	110	38
M16	18	17	125	95
M20	24	22	170	150
M24	28	26	210	200

AC100e curing times

TEMPERATURE °C	GEL TIME minutes	CURE TIME* minutes
35	2	20
30	4	25
20	6	45
10	15	80
5	25	120

* Times required to achieve published load capacities.

AC100e selection guide

PART NO	DESCRIPTION	QTY
AC100e	300ml Cartridge + 1 mixing nozzle	1

AC100e installation procedures

AC100e must be installed in accordance with Powers published installation instructions. Refer to page 17 to 19 of the Design manual.

Performance data

Working stress design

Allowable working loads are based on the lesser of the allowable bond strength and allowable steel strength.

ANCHOR SIZE mm	DRILL Ø mm	EMBED. DEPTH mm	CONCRETE 32 MPa	ALLOWABLE STEEL STRENGTH kN		
			ALLOWABLE BOND STRENGTH kN	CLASS 4.6 (zinc & gal)	CLASS 8.8 (zinc & gal)	316 S/S (A4-50)
M8	10	80	4.9	5.9	11.7	8.1
M10	12	90	6.6	9.4	18.6	12.8
M12	14	110	9.5	13.5	27.0	18.6
M16	18	125	15.9	25.1	50.0	24.5
M20	24	170	24.7	39.2	81.2	53.9
M24	28	210	35.6	56.4	117.2	77.9

Tension

ANCHOR SIZE mm	DRILL Ø mm	EMBED. DEPTH mm	CONCRETE 32 MPa	ALLOWABLE STEEL STRENGTH kN		
			ALLOWABLE BOND STRENGTH kN	CLASS 4.6 (zinc & gal)	CLASS 8.8 (zinc & gal)	316 S/S (A4-50)
M8	10	80	5.6	3.3	6.5	5.0
M10	12	90	7.7	5.2	10.4	7.9
M12	14	110	13.2	7.6	15.1	11.5
M16	18	125	20.9	14.3	28.6	21.4
M20	24	170	34.7	22.3	46.3	33.4
M24	28	210	63.0	32.2	66.7	48.3

Shear

Incorporated Safety Factors (Tension and Shear):
 Allowable bond strength (concrete) $f_{bc} = 3$
 Allowable steel strength $f_{ss} = 2.5$

Limit state design

Anchor design capacities are based on the lesser of the design capacity concrete and design steel capacity

ANCHOR SIZE mm	DRILL Ø mm	EMBED. DEPTH mm	CONCRETE 32 MPa	DESIGN STEEL CAPACITY		
			DESIGN CAPACITY ΦN_A (kN)	CLASS 4.6 ΦN_{tr} (kN)	CLASS 8.8 ΦN_{tr} (kN)	316 S/S (A4-50) ΦN_{tr} (kN)
M8	10	80	8.8	11.7	23.4	16.2
M10	12	90	11.8	18.7	37.1	25.6
M12	14	110	17.1	26.9	53.9	37.2
M16	18	125	28.6	50.2	100.0	69.0
M20	24	170	44.5	78.4	162.4	107.8
M24	28	210	64.1	112.8	234.4	155.8

Anchor Design Tension Capacities

ANCHOR SIZE mm	DRILL Ø mm	EMBED. DEPTH mm	CONCRETE 32 MPa	DESIGN STEEL CAPACITY		
			DESIGN CAPACITY ΦV_A (kN)	CLASS 4.6 ΦV_t (kN)	CLASS 8.8 ΦV_t (kN)	316 S/S (A4-50) ΦV_t (kN)
M8	10	80	10.1	6.5	13.0	10.1
M10	12	90	13.9	10.4	20.8	15.9
M12	14	110	23.8	15.1	30.2	23.1
M16	18	125	37.6	28.6	57.1	42.8
M20	24	170	62.5	44.6	92.6	66.8
M24	28	210	113.4	64.3	133.4	96.6

Anchor Design Shear Capacities

Design for strength limit state

Design is based on the lesser of the concrete and steel capacities.

$$\begin{aligned}
 N^* &\leq \phi N_{A,tf} && \text{Tension} \\
 V^* &\leq \phi V_{A,f} && \text{Shear} \\
 (N^*/\phi N_{A,tf})^{5/3} + (V^*/\phi V_{A,f})^{5/3} &\leq 1 && \text{Combined loading}
 \end{aligned}$$

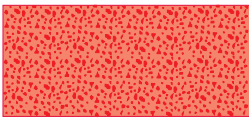
Where:

- N* = Design tension force (kN)
- V* = Design shear force (kN)
- $\phi N_{A,tf}$ = Anchor design tension capacity (kN)
- $\phi V_{A,f}$ = Anchor design shear capacity (kN)
- Concrete:
 - N_A = Characteristic ultimate tension load capacity (kN)
 - V_A = Characteristic ultimate shear load capacity (kN)
 - ϕ = 0.6 [Strength reduction factor]– tension and shear
- Steel:
 - N_{tf} = Nominal tension capacity of steel (kN)
 - V_f = Nominal shear capacity of steel (kN)
 - ϕ = 0.8 [Capacity factor – tension and shear]

Characteristic ultimate load capacities in masonry walls

The strength of masonry varies widely, therefore, job site tests to develop load capacities are recommended. The allowable working loads in these tables should be used as guidelines only.

Characteristic ultimate load capacities in 20.5 MPa brick



ROD SIZE mm	HOLE SIZE mm	EMBEDMENT DEPTH mm	GUIDE TORQUE Nm	SOLID BRICK	
				TENSION kN	SHEAR kN
8	10	80	2.0	4.5	4.5
10	12	90	6.0	9.3	9.3
12	14	110	11.0	12.8	12.8
16	18	125	24.0	16.0	16.0

Characteristic ultimate load capacities in 7.0 MPa block



ROD SIZE mm	HOLE SIZE mm	EMBEDMENT DEPTH mm	GUIDE TORQUE Nm	SOLID BLOCK	
				TENSION kN	SHEAR kN
8	10	80	2.0	1.9	1.9
10	12	90	6.0	4.2	4.2
12	14	110	11.0	6.4	6.4
16	18	125	24.0	9.6	9.6

The characteristic ultimate load capacities listed are based on using Class 4.6 threaded rod

Note: Refer to page 10 for masonry design criteria
 Design guidelines: **Working stress design**
 Divide characteristic ultimate load capacities by a factor of safety of 3.
Limit state design
 Multiply characteristic ultimate load capacities by $\phi=0.6$

Estimating guide

Refer to Powers website, www.powers.com.au, technical literature section and request the latest **Powers Adhesive Volume Calculator**

Installation instructions

For installation instruction see pages 17 to 19 in the Design Manual

Health and safety

Material safety data sheet available on request.
Reference: Chemwatch report 4936-72 (Part A) 4929-88 (Part B)

Suggested specification

Powers Fasteners
AC100e injection system
Stud / Re-bar size, length, plating
Drill size, Ø mm
Embedment depth, mm



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