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. AC100e contains no volatile organic compounds (VOC's). The unique 300ml PLASTIC cartridge system can be used in a standard mastic or professional gun. The operating principle of the tube involves a compressible bag in the plastic tube containing components A and B in separate compartments. The resin and hardener (A+B) are mixed 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

AC100e environmental certification

The Environmental Choice Australia Label is recognised by architects, manufacturers, designers and building industry professionals as the leading LCA based ecolabelling program in Australia. The program is managed by Good Environmental Choice Australia Ltd (GECA) a non profit organization.

Products certified by GECA like AC100e provide Green Star accredited professionals with the right resources for their Green Star projects. A GECA EPD (Environmental Product Declaration) and manufacturers GECA licence will in many cases satisfy Green Star compliance criteria which reduces complexity, paperwork and documentation time for Green Star accredited professionals.

The AC100e EPD can be downloaded from the Powers website at www.powers.com.au, or the GECA website at www.geca.org.au

Specification data

STUD THREAD SIZE mm	HOLE Ø II CONCRETE mm	HOLE Ø II FIXTURE mm	HOLE DEPTH II 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 + 2 mixing nozzles	1

AC100e installation procedures

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

Performance data

Working stress design

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

Tension

			CONCRETE 32 MPa	ALLOWABLE STEEL STRENGTH kN		
ANCHOR SIZE mm	DRILL Ø mm	EMBED. DEPTH mm	ALLOWABLE BOND STRENGTH kN	CLASS 5.8 Zinc & Gal	CLASS 8.8 Zinc & Gal	316 S/S (A4-50)
M8	10	80	4.9	7.6	11.7	8.1
M10	12	90	6.6	12.1	18.6	12.8
M12	14	110	9.5	17.5	27.0	18.6
M16	18	125	15.9	32.7	50.0	24.5
M20	24	170	24.7	51.0	81.2	53.9
M24	28	210	35.6	73.4	117.2	77.9

Shear

			CONCRETE 32 MPa	ALLOWABLE STEEL STRENGTH kN		
ANCHOR SIZE mm	DRILL Ø mm	EMBED. DEPTH mm	ALLOWABLE BOND STRENGTH kN	CLASS 5.8 Zinc & Gal	CLASS 8.8 Zinc & Gal	316 S/S (A4-50)
M8	10	80	5.6	4.2	6.5	5.0
M10	12	90	7.7	6.7	104	7.9
M12	14	110	13.2	9.8	15.1	11.5
M16	18	125	20.9	18.6	28.6	21.4
M20	24	170	34.7	29.0	46.3	33.4
M24	28	210	63.0	41.8	66.7	48.3

Incorporated Safety Factors (Tension and Shear):
Allowable bond strength (concrete) f_{sc} = 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 Design Tension Capacities

			CONCRETE 32 MPa	DESIGN STEEL CAPACITY		
ANCHOR SIZE mm	DRILL Ø mm	EMBED. DEPTH mm	DESIGN CAPACITY ΦN_A (kN)	CLASS 5.8 ϕN_{tf} (kN)	CLASS 8.8 ΦN_{tf} (kN)	316 S/S (A4-50) ΦN_{tf} (kN)
M8	10	80	8.8	15.2	23.4	16.2
M10	12	90	11.8	24.1	37.1	25.6
M12	14	110	17.1	35.1	53.9	37.2
M16	18	125	28.6	65.3	100.0	69.0
M20	24	170	44.5	101.9	162.4	107.8
M24	28	210	64.1	146.8	234.4	155.8

Anchor Design Shear Capacities

			CONCRETE 32 MPa	DESIGN STEEL CAPACITY		
ANCHOR SIZE mm	DRILL Ø mm	EMBED. DEPTH mm	DESIGN CAPACITY ΦV_A (kN)	CLASS 5.8 ϕV_f (kN)	CLASS 8.8 ΦV_f (kN)	316 S/S (A4-50) ΦV_f (kN)
M8	10	80	10.1	8.5	13.0	10.1
M10	12	90	13.9	13.5	20.8	15.9
M12	14	110	23.8	19.7	30.2	23.1
M16	18	125	37.6	37.1	57.1	42.8
M20	24	170	62.5	58.0	92.6	66.8
M24	28	210	113.4	83.6	133.4	96.6

Design for strength limit state

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

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

Where:

N^*	=	Design tension force (kN)
V^*	=	Design shear force (kN)
$\phi N_{A,tf}$	=	Anchor design tension capacity (kN)
ϕV_{Af}	=	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:

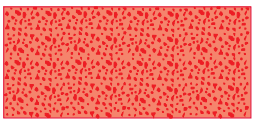
N_{tf}	=	Nominal tension capacity of steel (kN)
V_f	=	Nominal shear capacity of steel (kN)
ϕ	=	0.8 [Capacity factor – tension and shear]

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	SOLID BRICK 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	SOLID BLOCK 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 of the Adhesive Anchoring System Design Manual 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 0.6

Estimating guide

Refer to Powers website, **www.powers.com.au**, downloads section and under software you can download the latest Powers Adhesive Volume Calculator

Installation instructions

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

Health and safety

Material safety data sheet available on request. (Ref. Chemwatch report 4936-72(Part A) and 4929-88(Part B) or via the Powers website).

Suggested specification

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