Powers FASTENERS

KF2

economical
easy to apply
polyester resin

Distributed by:
Aerofast Australia Pty Ltd
ABN: 23 068 361 455
LOGAN CITY
8 Booran Drive, Woodridge QLD 4114
Tel: 07 3299 4555 Fax: 07 3299 4566
email: sales@aerofast.com.au
GOLD COAST
Unit 1/13 John Duncan Court
Varsity Lakes QLD 4227
Tel: 07 5593 4550 Fax: 07 5593 4549
email: coastsales@aerofast.com.au
WEB: www.aerofast.com.au

Edition: January 2006

Powers offers the widest range of mechanical and adhesive fasteners in the market place. Powers products cover the full traditional anchoring range while specialising in innovative products that provide the architect, engineer and end user with aesthetic, high performance, labour saving fastening solutions.
Fast technical advice, free samples and free on site demonstrations.
Call toll free 1800 677 872 or visit our web site www.powers.com.au

Other Powers adhesive systems

Power-Fast® PRO
Heavy duty
Odourless
Epoxy anchoring
adhesive

AC100® PRO
High performance.
Fast cure
Styrene free

AC100e
Standard caulking gun
Easy to apply

Chem-Stud®
Hammer Capsule®
High performance
Economical
Versatile
Epoxy acrylate resin

Support

Training Facility
Melbourne

In-house Product &
Application Testing
Service
Melbourne

National on Site
Anchor Testing
Service

National On Site
Service
Powers Training
Vehicles (PTV)

Contents

KF2

Introduction

The KF2 adhesive system consists of a cartridge and a static mixing nozzle for use in attaching reinforcing bar and threaded rod to concrete, brickwork, and blockwork. It is suitable for close to edge and high vibration applications and can be used with the studs, mesh sleeves and accessories.

Product description

KF2 adhesive is packaged in a 380ml co-axial dispensing cartridge which includes a special drive unit. A manually operated tool is used to dispense the adhesive which is designed for use in the installation of threaded rod in solid concrete and masonry materials. It can also be used with mesh tubes and threaded rod in hollow masonry base materials. KF2 adhesive mortar bonds the anchor rod to the base material so no expansion forces are exerted against the walls of the hole in the base material. This makes the mortar ideal for use in anchoring to a variety of base materials ranging from soft common brick to hard stone.

KF2 cartridges contain 380 ml of material. The cartridge is designed for use with the Multi PRO dispensing tool CGPRO, designed for use with all Powers adhesives.

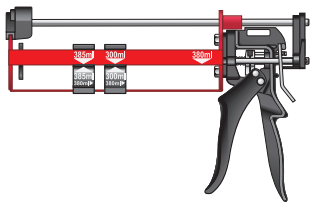
Each cartridge has pre-measured amounts of resin and hardener. The cartridges are supplied with a special mixing nozzle to insure complete and proper mixing of the components. As the components are pumped through the mixing nozzle, they pass through a series of static mixing elements. The elements properly divide and recombine the components to provide precise automatic mixing.

KF2 setting time

The setting times listed for the KF2 adhesive vary according to the base material temperature. The working time is the maximum time during which the mortar can be dispensed before it begins to set and starts when the cartridge is pumped. The curing time is the minimum time required for the KF2 adhesive mortar to reach its published load capacities.

BASE MATERIAL TEMP. (°C)	WORKING TIME (Minutes)	CURING TIME (Minutes)
35	2	20
30	4	25
20	6	45
10	12	80
5	20	120

KF2 Selection guide



KF2 cartridges are packaged individually along with with two mixing nozzles.

The Multi-PRO (CG PRO) manual injection tool is designed with a pump style drive mechanism which has a high pump ratio to provide fast dispensing. The base unit is a unique design which allows for the dispensing of different cartridge sizes consisting of different component ratios. The CG PRO will dispense the 385ml (3:1) cartridge, 380ml (10:1) cartridge and 300ml (10:1) cartridge. CG PRO is ideal for those who use the entire Powers adhesive range.

PART NO	DESCRIPTION	QTY
KF2	1x380ml cartridge and 2 mixing nozzles	1
CGPRO	Dispensing tool for Powers adhesives	1

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 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

Shear

			CONCRETE 32 MPa	ALLOWABLE STEEL STRENGTH kN		
ANCHOR SIZE mm	DRILL Ø mm	EMBED. DEPTH mm	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	104	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

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 4.6 ΦN_{tf} (kN)	CLASS 8.8 ΦN_{tf} (kN)	316 S/S (A4-50) ΦN_{tf} (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 Shear Capacities

			CONCRETE 32 MPa	DESIGN STEEL CAPACITY		
ANCHOR SIZE mm	DRILL Ø mm	EMBED. DEPTH mm	DESIGN CAPACITY ΦV_A (kN)	CLASS 4.6 ΦV_f (kN)	CLASS 8.8 ΦV_f (kN)	316 S/S (A4-50) ΦV_f (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

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

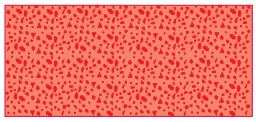
Steel:

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	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 of the Powers Adhesive anchoring aystems 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 ϕ= 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 59224

Suggested specification

Powers Fasteners
KF2 Injection System
Stud / Re-bar size, length, plating
Drill size, Ø mm
Embedment depth, mm

Powers
FASTENERS

VIC HQ:
TELEPHONE: **03-8787 5888**
FACSIMILE: 03-8787 5899

NSW:
TELEPHONE: **02-9748 7766**
FACSIMILE: 02-9648 5977

SA:
TELEPHONE: **08-8346 5611**
FACSIMILE: 08-8346 5711

QLD:
TELEPHONE: **07-3216 7122**
FACSIMILE: 07-3216 7216

FAR NORTH QLD:
TELEPHONE: **0439 083 646**
FACSIMILE: 07-4036 4166

WA :
TELEPHONE: **08-9209 1211**
FACSIMILE: 08-9209 1055

NZ:
TELEPHONE: **64-9415 2425**
FACSIMILE: 64-9415 2627

Distributor: