

Date of Issue: March 27, 2015

Pure Epoxy Adhesive For Premium Engineering Applications



Substrates

- Cracked and Uncracked Solid Concrete

Applicable Standards

- ETAG001-5 Option 1
- ISO834 Fire
- 100 Year Design Life
- BS6920 Drinking Water
- CSTB Seismic Report



EPCON C8 is a high performance pure epoxy that meets the highest international anchoring standards such as seismic and cracked concrete.

Overview

Independently tested and assessed for 100 year design life under sustained loading means peace of mind for design engineers and building contractors alike.

Versatile Epcon™ C8 is suitable for extreme anchoring environments including seismic, cracked concrete, core drilled holes, oversized diameters, flooded conditions and underwater.

Epcon™ C8 is ideal for premium engineering applications requiring the highest bond strength and security.

Epcon™ C8 accommodates a wide range of climate conditions. It is easy to dispense in cold weather and its long working time is ideal for deep embedment or hot climates.

Product Advantages

- | | |
|---|--|
| <ul style="list-style-type: none"> ○ Meets the highest anchoring standards ○ Fast, All Weather Dispensing ○ No weather delays ○ High bond strength ○ Long working time ○ No shrink epoxy ○ User friendly | <ul style="list-style-type: none"> - Seismic Design Approved - Cracked Concrete and Tension Zone - 100 Year Design Life - Fire Rated - Reduced fatigue - Improved productivity - Suitable for dry, damp, wet and flooded holes - Suitable for core drilled and carbide drilled holes - 11 minutes at 20°C - Longer nozzle life - More time to insert bars into deep holes - Oversized holes up to 2.25 x bar diameter - Low odour |
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Applications

- Post installing Grade 500 reinforcing bar connections for concrete walls, slabs, columns and beams
- Starter bars and Structural Steel connections

Installation Properties

LOAD RANKING*

↑

DRY FLOODED

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Rebar Size Range - ø8 to ø32

Threaded Bar Size Range - M8 to M30

Installation Temperature Range

Adhesive 5°C to 40°C

Substrate 5°C to 40°C

Anchoring Environments	
Hole Condition	Drilled holes Cored holes Flooded holes Oversized holes
Anchoring Environment	Dynamic loading Fire Rated Seismic Drinking water safe Cracked concrete
Substrates	Solid Concrete
Operating Temperature Range	Long Term: -40°C 50°C Max Short Term: 80°C

*Load Ranking is the relative load compared with other Chemical Anchoring products in the Ramset range and is intended to assist with product selection. The Load Ranking scale is from 1 (lowest) to 5 (highest) load capacity in tension. Load Ranking is not intended to assist with load design. For load capacity and design information, consult the Ramset Specifiers Anchoring Resource book available from Ramset in hard copy or download from the website.

Working and Loading Times

Substrate Temperature	Working Time	Time to Full Load Capacity	
		Dry and Damp	Flooded and Underwater
5 to 9°C	20 min	30 hours	60 hours
10 to 19°C	14 min	23 hours	46 hours
20 to 24°C	11 min	16 hours	32 hours
25 to 29°C	8 min	12 hours	24 hours
30 to 39°C	5 min	8 hours	16 hours
40°C	5 min	6 hours	12 hours

Material:

EPCON C6EF consists of 2 parts: Part A is a mixture of synthetic epoxy resin and inorganic filler. Part B is an amine / alkyphenolic hardener. The product hardens when the 2 components are mixed together.

Typical Properties

Properties	Typical Value
Appearance	Part A: Tan Part B: Grey Mixed: Light Grey
Electrical Resistivity	$5 \times 10^{15} \Omega \cdot \text{cm}$
Thermal Conductivity ISO 22001-1	$\lambda = 0,30 \text{ W} \cdot \text{m}^{-1} \cdot \text{K}^{-1}$
Flexural Strength NF EN ISO 178	$\sigma_{fb} = 30 \text{ MPa}$ (stress at breaking point) $\epsilon_{fb} = 1,57 \text{ mm}$ (strain at breaking point)
Compressive Strength NF EN ISO 604	115 MPa

Approvals

Certification	Approval Number / Report Number
European Technical Approval (ETA) 001-5 Option 1	ETA 10/0309
European Technical Approval (ETA) 001-5 TR 023	ETA 07/0189
CSTB Fire Test Report to ISO834	26007642/b
DIBt Report	Z-21.8-1866
WRAS Approval Contact with Drinking Water BS6920	MAT/LAB 622A
CSTB Seismic Applications Report	3/12-727
Bureau Veritas Electrical Resistance Test Report to CEI 60093	Nr 6010-1845
100 Year Design Life Swinburne University Report	5 September 2013

Chemical Resistance

Chemical	Resistant	Not Resistant
Sulphuric Acid 10% (H ₂ SO ₄)	✓	
Hydrochloric Acid 10% (HCl)	✓	
Nitric Acid 10% (HNO ₃)	✓	
Acetic Acid 10% (CH ₃ COOH)	✓	
Ammonium Hydroxide 10% (NH ₄ OH)	✓	
Sodium Hypochlorite 5% (NaClO)	✓	
Sodium Hydroxide 50% (NaOH)	✓	
Acetone		✓
Toluene	✓	
Ethanol		
Methyl Ethyl Ketone (MEK)		✓
Methanol		✓
Water Distilled / Demineralized	✓	
Salt Water / Sea Water	✓	
Petrol	✓	
Machine Oil	✓	

Storage and Shelf Life

Shelf life is 24 months from date of manufacture stored in a cool, dry place between 5°C and 25°C away from direct sunlight. See USE BY date on package.

Product Range – Epcon™ C8 Anchoring Adhesive

Description	Part No	Order Quantity
Epcon™ C8 Cartridge 450 ml + 1 Nozzle	C8-450	12
Epcon™ C8 Applicator	E108	1
Epcon™ 10.8 V Battery Powered Applicator	E108V10.8	1
Mixing Nozzles for Epoxy	ISNE	5

Installation Details – Post Installed Reinforcing Bar in Solid Concrete

Refer to Engineer's drawings for specified dimensions. In the absence of Engineer specification, the following dimensions are required. Refer to Ramset Specifier's Anchoring Resource Book for load design (Available from Ramset™ or the website www.ramset.com.au)

Bar Size	Drill Hole Size, d_h (mm)	Minimum Drill Hole Depth in Substrate (mm)	Minimum Edge Distance, e_c (mm)	Minimum Anchor Spacing, a_c (mm)	Minimum Structural Thickness, b_m (mm)
ø10	14	70	40	60	100
ø12	16	90	50	70	120
ø16	20	120	65	100	160
ø20	25	150	80	120	200
ø24	30	180	100	145	240
ø28	35	210	115	170	280
ø32	40	240	130	195	320
ø36	45	270	145	220	360
ø40	50	300	160	240	400

Table 1. Chemical Anchor Installation Details for Post-Installed Reinforcing Bar in solid Concrete



Installation Details – Threaded Bar and ChemSet™ Anchors Studs in Solid Concrete

Refer to Engineer's drawings for specified dimensions. In the absence of Engineer specification, the following dimensions are required. Refer to Ramset Specifier's Anchoring Resource Book for load design (Available from Ramset™ or the website www.ramset.com.au)

Thread Size	Drill Hole Size, d_h (mm)	Drill Hole Depth in Substrate (mm)	Maximum Fixture Clearance (mm)	Maximum Fixture Thickness (mm)	Tightening Torque, T_r (Nm)	Minimum Edge Distance, e_c (mm)	Minimum Anchor Spacing, a_c (mm)	Minimum Structural Thickness, b_m (mm)
M8	10	80	10	15	10	35	50	100
M10	12	90	12	25	20	40	60	120
M12	14	110	15	30	40	50	75	140
M16	18	125	20	40	95	65	100	160
M20	24	150	24	80	180	80	120	190
		170						220
M24	26	160	28	105	315	100	145	200
		210						270
M30	32	270	32	-	650	120	180	300
M36	38	330	38	-	1150	145	220	365

Table 2. Chemical Anchor Installation Details for Threaded Bar and ChemSet™ Anchor Studs in solid Concrete



Installation Details – Threaded Inserts in Solid Concrete

Thread Size	Drill Hole Size, d_h (mm)	Drill Hole Depth in Substrate (mm)	Tightening Torque, T_r (Nm)	Minimum Edge Distance, e_c (mm)	Minimum Anchor Spacing, a_c (mm)	Minimum Structural Thickness, b_m (mm)
M8	14	65	10	65	120	100
M10	20	70	22	65	130	100
M12	24	80	36	85	150	125
M16	28	130	80	125	250	180
M20	35	175	120	170	340	240

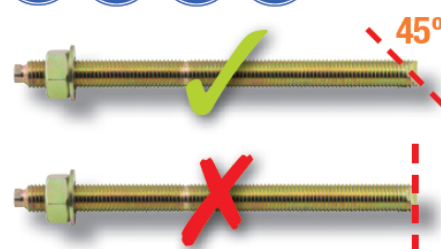


Installation Details – Precautions

Read safety directions on the pack and the MSDS before opening or using. In general, wear safety goggles, gloves and hearing protection when drilling and using chemical anchoring adhesive.

Before you start:

- Do not install chemical anchor into concrete less than 3 days old
- Chemical anchor may be installed in concrete aged between 3 and 28 days but will not carry full load capacity until concrete is at least 28 days old.
- Threaded rod must have one end cut at approximately 45° to prevent unthreading from the cured adhesive



Installation Details – Drilling



Drilled holes



Cored holes

- Consult engineers drawings for hole dimensions; otherwise refer to table 1 (Post Installed Rebar), table 2 (Threaded Bar) and table 3 (Threaded Inserts) above.
- Drill hole to specified dimensions using carbide or diamond core as appropriate.
- Ramset™ Dustless Drilling System is recommended as the fastest most certain method of removing drilling debris and dust and eliminates post-drilling hole cleaning.
- Otherwise drilling debris and dust must be removed by brushing and blowing out of drilled holes as described below.

Hole Cleaning – Carbide Drilled

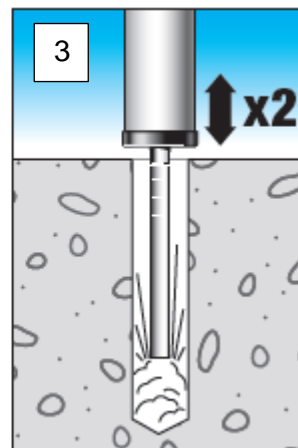
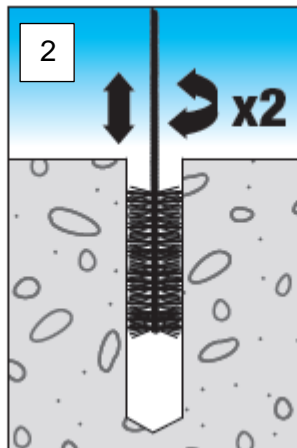
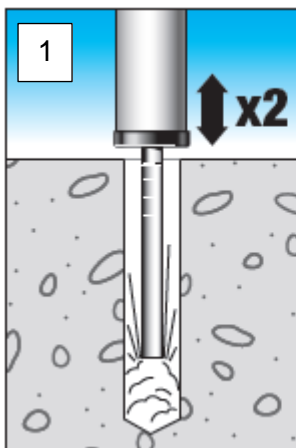


Carbide Drilled

Dust removal and cleaning is not required with Ramset™ Dustless Drilling System.

Drilling debris and dust must be removed from holes drilled with standard carbide as follows:

1. Using Ramset™ blower (Part Number HCPHV), compressed air blast or wet / dry vacuum (Ramset™ AC1630P), remove dust with 2 swift pumps.
2. Using the appropriate sized brush, with a twisting / rotating motion, insert brush to the bottom of the hole and remove 2 times.
3. Remove remaining dust residue with air blower (2 pumps), compressed air blast or wet / dry vacuum.



If holes are left for more than 24 hours after cleaning, they must be cleaned again (including holes drilled with Dustless Carbide)

Hole Cleaning – Core Drilled or Flooded Holes



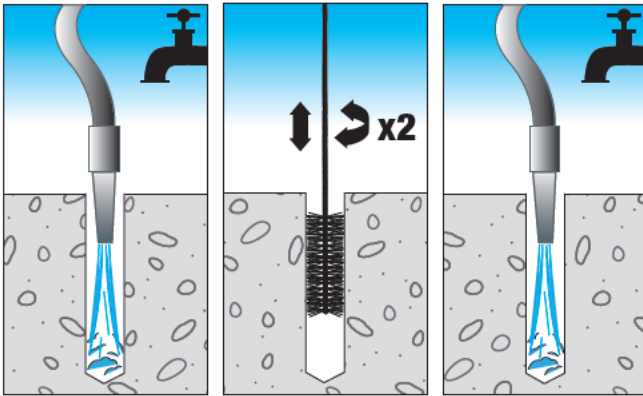
Cored holes



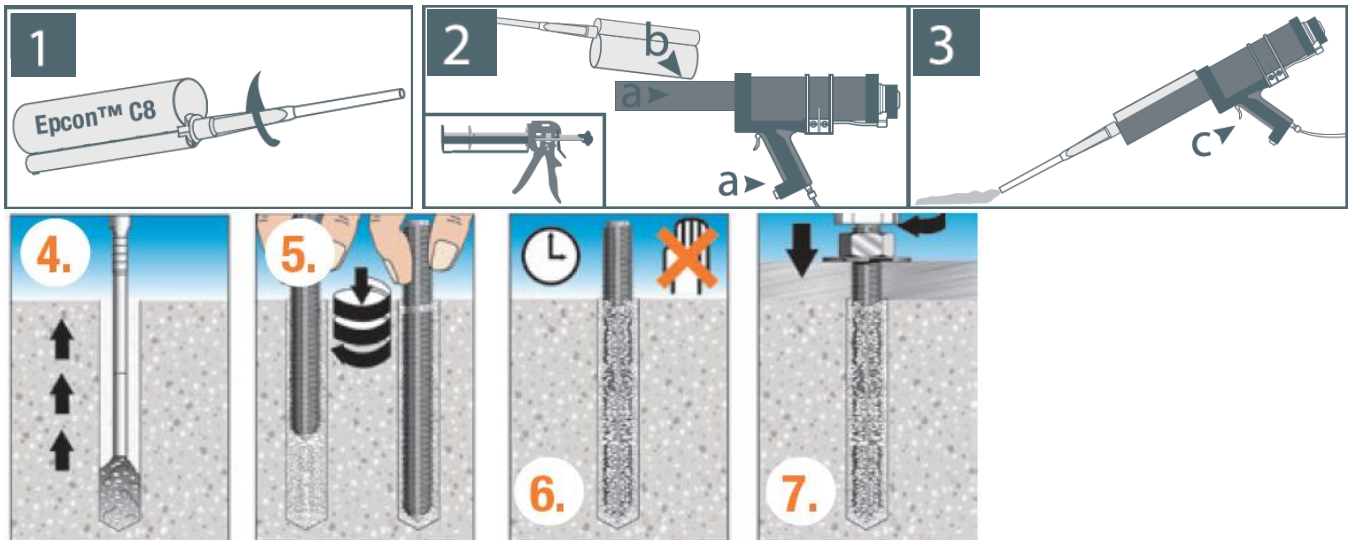
Flooded holes

Remove dust and drilling debris from Diamond Core drilled or flooded holes as follows:

1. Flush holes with clean running water until water is clear.
2. Using the appropriate sized brush, with a twisting / rotating motion, insert brush to the bottom of the hole and remove 2 times.
3. Flush holes with clean running water until water is clear.



Opening and Using Cartridge

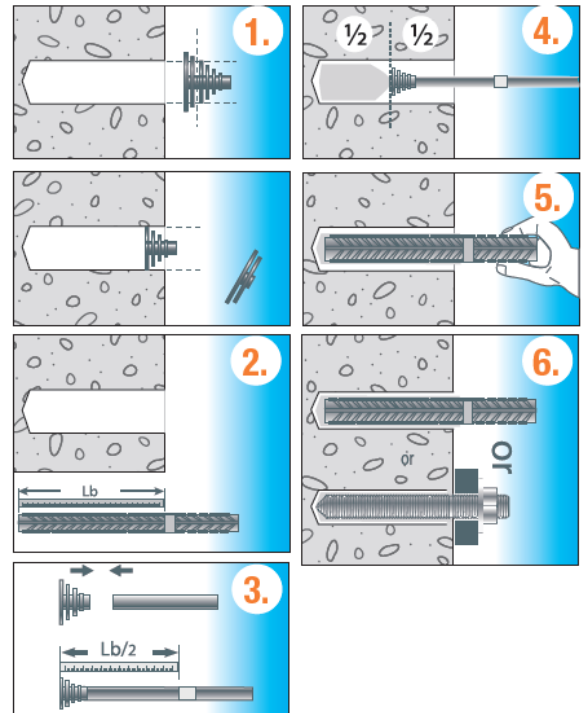


1. Remove cap from cartridge and attach mixing nozzle part number ISNE
2. Load cartridge into dispensing gun (Ramset Part Numbers E108 (Manual) and E108V10.8 (10.8V Battery Powered))
3. Dispense a small quantity of adhesive (2 to 3 trigger pulls) to waste to ensure both adhesive components are balanced
4. Insert mixing nozzle tip to bottom of hole (to avoid air bubbles) and inject adhesive. Gradually withdraw nozzle to keep the nozzle tip at the surface of the adhesive. Continue injecting until hole is about $\frac{3}{4}$ filled
5. Insert fixing using a twisting / rotating motion into adhesive and wipe away any excess
6. Allow adhesive to cure. Refer to Working and Loading Times table on Page 2
7. Load anchor and apply torque (to threaded fixings) after appropriate cure time

Deep Embedment

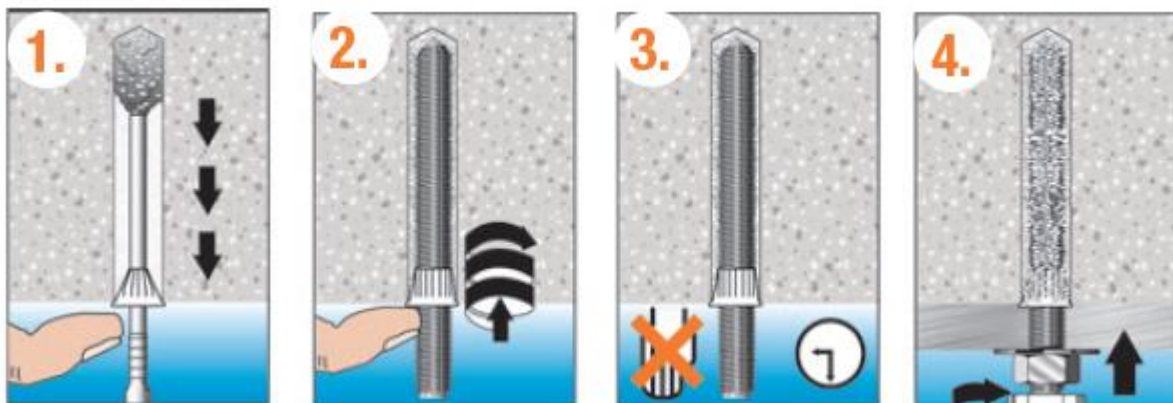
- For deep holes up to 440 mm, use an extension tube (included with ISNE mixing nozzles).
- For holes deeper than 440 mm, use flexible pvc tube with a Ramset Dosing Cap (Part Number 055969).

1. Break off larger discs from Dosing Cap to obtain the correct diameter
2. Measure depth of hole.
3. Attach dosing cap to end of extension tube. Measure and mark half the hole depth on the extension tube.
4. Insert extension tube to end of hole and inject adhesive. Adhesive in the hole will apply force to the disc, pushing it back. Stop injecting when mark on tube appears.
5. Insert rod or bar with a twisting / rotating motion. Wipe away any excess adhesive.
6. Load anchor and apply torque (to threaded fixings) after appropriate cure time.



Overhead Installation

Note: Dustless carbide system is recommended to eliminate falling dust and debris during overhead drilling. Retaining collars are available from Ramset™ for M12 (P/N ISR12) and M16 (P/N ISR16) threaded rod. For other threaded rod sizes and rebar, use plastic wedges after the anchor has been installed.



1. Insert mixing nozzle tip to bottom of hole (to avoid air bubbles) and inject adhesive. If using retaining collar, place it in the hole and insert nozzle as illustrated. Gradually withdraw nozzle to keep the nozzle tip at the surface of the adhesive. Continue injecting until hole is about $\frac{3}{4}$ filled. Dosing Cap (Part Number 055969) is recommended for deep holes and hole diameters > 18 mm.
2. Insert fixing using a twisting / rotating motion into adhesive and wipe away any excess. Retaining collar will hold rod in place while adhesive sets. With no retaining collar, hold fixings in place by inserting 4 x plastic wedges between the fixing and the concrete.
3. Allow adhesive to cure. Refer to Working and Loading Times table on Page 2
4. Load anchor and apply torque (to threaded fixings) after appropriate cure time.

Transport and Storage

Not classified as flammable for transport and storage.
Classified as Class 8 (Corrosive) for transport and storage.

Occupational Health and Safety



- ◆ Avoid contact with skin and eyes
- ◆ Avoid breathing vapour
- ◆ Wear protective gloves when mixing or using.
- ◆ If poisoning occurs, contact a doctor or Poisons Information Centre.
- ◆ If swallowed, **do not** induce vomiting. Give glass of water.
- ◆ If skin contact occurs, remove contaminated clothing and wash skin thoroughly.
- ◆ If in eyes, hold eyes open, flood with water for at least 15 minutes and seek medical assistance.
- ◆ **Do not** use in poorly ventilated or confined space.

For more detailed information refer to the Material Safety Data Sheet available from Ramset or the website.

CHEMSET™ ACCESSORIES

Fixings – Chemset™ Anchor Studs



ChemSet™ Anchor Studs

Thread Size	Description	Zn ZINC	GAL Galvanised	A4 316 Stainless Steel 316	Box Quantity
M8	ChemSet™ Anchor Stud M8 x 110 Zinc	CS08110	CS08110GH	CS08110SS	10
M10	ChemSet™ Anchor Stud M10 x 130 Zinc	CS10130	CS10130GH	CS10130SS	10
M12	ChemSet™ Anchor Stud M12 x 160 Zinc	CS12160	CS12160GH	CS12160SS	10
M12	ChemSet™ Anchor Stud M12 x 180 Zinc	CS12180			10
M16	ChemSet™ Anchor Stud M16 x 190 Zinc	CS16190	CS16190GH	CS16190SS	10
M20	ChemSet™ Anchor Stud M20 x 260 Zinc	CS20260	CS20260GH	CS20260SS	6
M24	ChemSet™ Anchor Stud M24 x 300 Zinc	CS24300	CS24300GH	CS24300SS	6

ChemSet™ Anchor Studs Range

Fixings – Chemset™ Threaded Inserts



Threaded Inserts

Thread Size	Description	Drilling Dimensions		Zn ZINC	A4 316 Stainless Steel 316	Box Quantity
		Diameter (mm)	Depth (mm)			
M8	Threaded Insert M8 x 60	14	65	062770	062860	10
M10	Threaded Insert M10 x 65	20	70	062480	062960	10
M12	Threaded Insert M12 x 75	24	75	062760	063100	10
M16	Threaded Insert M16 x 125	28	130	062800	051175	10
M20	Threaded Insert M20 x 170	35	175	062810	-	10

ChemSet™ Threaded Inserts Range

Hole Cleaning Accessories


Description	To Suit	Part Number	Pack Quantity
Hole Cleaning Pump (High Volume)	All hole sizes	HCPHV	1
Hole Cleaning Brush 13 mm	8 – 12 mm Diameter Holes	HCBT13	1
Hole Cleaning Brush 20 mm	14 – 20 mm Diameter Holes	HCBT20	1
Hole Cleaning Brush 26 mm	20 – 24 mm Diameter Holes	HCBT26	1
Hole Cleaning Brush 20 mm x 1m	14 – 20 mm Diameter Holes	HCBT261000	1
Hole Cleaning Brush 26 mm x 1m	20 – 24 mm Diameter Holes	HCBT201000	1
Hole Cleaning Brush 36 mm x 1m	26 – 34 mm Diameter Holes	HCBT361000	1
Hole Cleaning Brush 42 mm x 1m	36 – 40 mm Diameter Holes	HCBT421000	1

ChemSet™ Hole Cleaning Accessories

Ramset™ R3™ Dustless Drilling Carbide

Suitable for use with all SDS-Max Hammer Drills and professional worksite vacuum cleaners (Ramset™ AC1630P)

Part No.	Type	Size (mm)	Hole Depth (mm)	Drill Length (mm)
DDEM14400	U3Max	14	400	600
DDEM16400	U3Max	16	400	600
DDEM18400	R3Max	18	400	600
DDEM20400	R3Max	20	400	600
DDEM22400	R3Max	22	400	600
DDEM25400	R3Max	25	400	600
DDEM28400	R3Max	28	400	600
DDEM30400	R3Max	30	400	600
DDEM32400	R3Max	32	400	600
DDEM35400	R3Max	35	400	600



Ramset™ Dustless Drilling Carbide Bits

To purchase or obtain further information contact *Ramset* or your nearest *Ramset* distributor

NEW ZEALAND
 PHONE: 0800 726 738
 WEB: www.ramset.co.nz

AUSTRALIA
 PHONE: 1300 780 063
 WEB: www.ramset.com.au

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