CHEMSET™ INJECTION 800 SERIES

PRODUCT
Chemset Injection 800 Series is a chemical anchor system based on epoxy mortar. The two parts are dispensed and mixed in one action through a static mixing nozzle, which allows accurate mixing with no mess.

DESCRIPTION
Chemset 800 Series injection mortars are tough, corrosion resistant products suitable for anchoring jobs close to edges where there is a need to avoid bursting stress on the surrounding substrate.

The high strength and toughness of Chemset 800 Series mortars allows higher loads on anchored fixtures. This enables designs to be optimised by providing a broader range of anchoring options.

Chemset 800 Series mortars also have exceptional corrosion resistance making them ideal to use in areas where there is frequent cleaning or where chemicals are frequently used.

Chemset 800 Series consists of two products, each tailored to different climates. Chemset 801 is designed to provide rapid cure with adequate working time in temperate climates. Chemset 802 has been developed with a slower gel time for areas where there is a high ambient temperature or where a slower mortar is required.

RECOMMENDED USES
* Fixing to solid concrete, solid brick and masonry.
* Suited for structural fixings.
* Holding down fixings.
* Securing stainless steel fixings into corrosive environments or where a large degree of chemical resistance is required.
* Suitable for fixing wall ties, starter bars, deformed rebar, studs, bolts and large screws.
* Suitable vertical and horizontal applications.
* Suitable for situations where anchor is subjected to cyclic loading.
* Suitable for use in areas subjected to vibration and dynamic loading
* Suitable for use in dry, diamond cored holes.

FEATURES AND BENEFITS
* Stress free anchoring allows for close to edge applications.
* Allows for close anchor spacing between fixing parts.
* Integrated system, no need to mix
* Metered system reduces waste.
* For a partially used cartridge, simply change nozzle and re-use.
* High strength.
* Excellent chemical resistance.
* Low shrinkage – allows for large anchors to be installed.
* Low odour.
* Non-flammable for transport and storage

PERFORMANCE PROPERTIES
Typical properties after 7 days cure at 25°C and 50% RH

Appearance Mixed colour appearance	A: White thixotropic paste B: Black thixotropic paste Mid grey thixotropic paste
Viccosity (mixed material)	Approx. 90,000 cps at 25°C
Density (mixed material)	Approx. 1.30 kf/litre
Flammability	Non flammable
Service temp. (cured)	-10°C to +80°C
Heat distortion temp.	Approx. 80°C
Hardness	> 80 Shore D
Minimum installation temperature	Substrate temp. 5°C Mortar temp. 18°C
Recommended maximum installation temperature	Ambient temp. 43°C Mortar temp. 30°C
Water absorption ASTM D570	< 2% (10 days at 25°C)
Full cure	7 days at 25°C
Modulus of elasticity	>4 GPa
Chemical composition	Epoxy
Tensile strength BS2782	> 25 MPa
Compressive strength AS1012.9 AS2073 using 80mm cubes	> 75 MPa
Flexural Strength ASTM C348-86, BS 6319	Approx. 22 MPa

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PRECAUTIONS

* Do not install anchors when the Chemset mortar temperature is less than 18°C.
* Do not install anchors when substrate temperature is less than 5°C.
* At temperatures below 18°C Chemset Injection 801 and 802 should be warmed or stored in temperatures of 20-25°C for 24 hours prior to use to improve product flow and cure.
* Avoid excessive pressure being applied to the dispensing gun. Excessive pressure applied to the dispensing gun may result in mortar loss from the back of the cartridge.
* Use only the correctly mixed mortar – incorrect mix ratio will cause a reduction of the physical properties of the cured system.
* Partly used cartridges must be used within 5 weeks of initial use.
* Always ensure hole is properly cleaned, dry and no water present.
* Do not expose mortar to moisture or water for at least 24 hours after installation to allow for maximum curing.
* Do not dilute mortar with any solvents and/or other chemicals.
* Always use Ramset ISNE nozzles, other nozzles may cause ineffective mixing and reduce the properties of the mortar.
* Do not install into uncured concrete.
* Do not remove spiral mixer from nozzles.
* Do not cut or shorten nozzles.
* Not recommended for overhead applications use Chemset 100.

INSTALLATION INSTRUCTIONS:

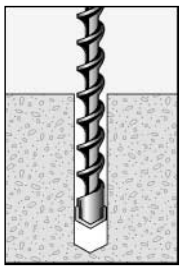
Read the “Precautions” section of these instructions prior to use.

Setting and technical data provided applies to:

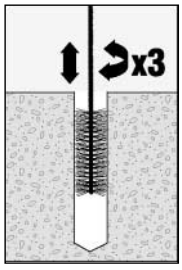
* Holes drilled with Rotary Hammers using drill bits toleranced in accordance with DIN8035, and where holes have been cleaned using a brush and air pump.
* Holes cored with diamond coring equipment that have been cleaned using a brush and air pump.
* Always wear safety glasses or goggles.

SOLID SUBSTRATES

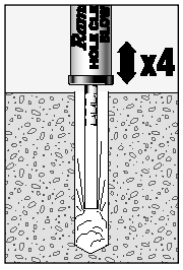
1. Drill hole using correctly sized rotary hammer drill bit to the specified depth. (see Chart No. 2 for threaded studs refer to the project specifications).



2. Clean hole with correctly sized hole cleaning brush (see Chart No. 2) with stiff nylon or wire bristles. Using a combination Push/Pull and twisting (rotation) motion, ensure the sides of the hole are scrubbed at least **3 times** for the full depth of the hole.



3. Remove debris, dust etc. from the hole using a hole cleaning blower with at least 4 swift pumps, alternatively a strong blast of compressed air may be used.



4. Reinforcing bars, internally threaded sockets, threaded rods or studs to be used should be cleaned and free from oil, grease, flaking rust or debris. Threaded rods or studs should be chisel ended to prevent them unthreading from the cured mortar.

5. Ensure that holes are dry. If holes have been left for a prolonged period since drilling, re-cleaning in accordance with ‘2 & 3’ above is recommended.

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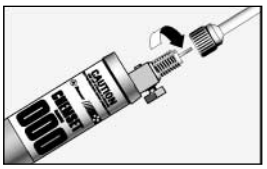
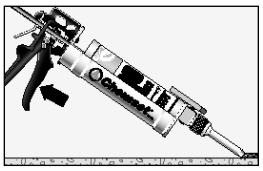
6. Using only Ramset ISNE mixing nozzles (other nozzles may cause ineffective mixing and reduce the properties of the mortar) remove nut from the cartridge and attach a mixing nozzle (screw down tight).



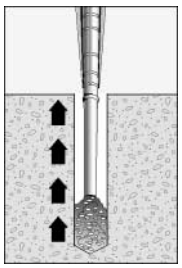
7. Mount assembled cartridge into the Ramset Universal Applicator.

8. Open the orange valve. (Turn so arrow points forward). Squeeze the handle so the mortar is dispensed out of the nozzle until an even, uniform light grey colour is achieved. (Approximately 5-6 trigger pulls should be adequate). The initial mortar flow is unsuitable for fastening and must not be used. This initial flow should be disposed of into empty packaging or similar materials.

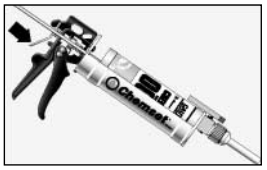


9. The mortar must be injected without creating air pockets. To achieve this insert mixer nozzle to the base of the hole and inject from the base out.

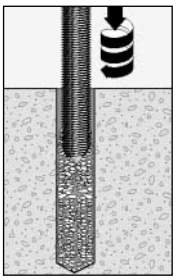
10. Slowly withdraw the nozzle as the hole fills with each squeeze. Use an extension tube for deep holes. Chart No. 3 lists the correct number of trigger pulls to dispense just enough resin for each hole/stud size.



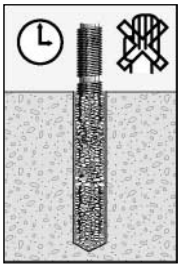
11. Once the required fill is obtained release pressure by pressing rear trigger and wipe off excess material.



12. Push the stud into the hole using a slow twisting motion. Wipe away the excess material.



13. Do not touch the anchor until mixture has gelled and do not load anchor until curing is complete as per Chart No.1.



14. Attach fixture and tighten nut in accordance with recommended tightening torque (See Chart No. 2)

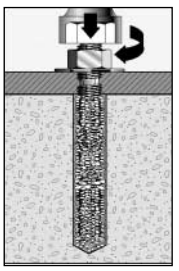


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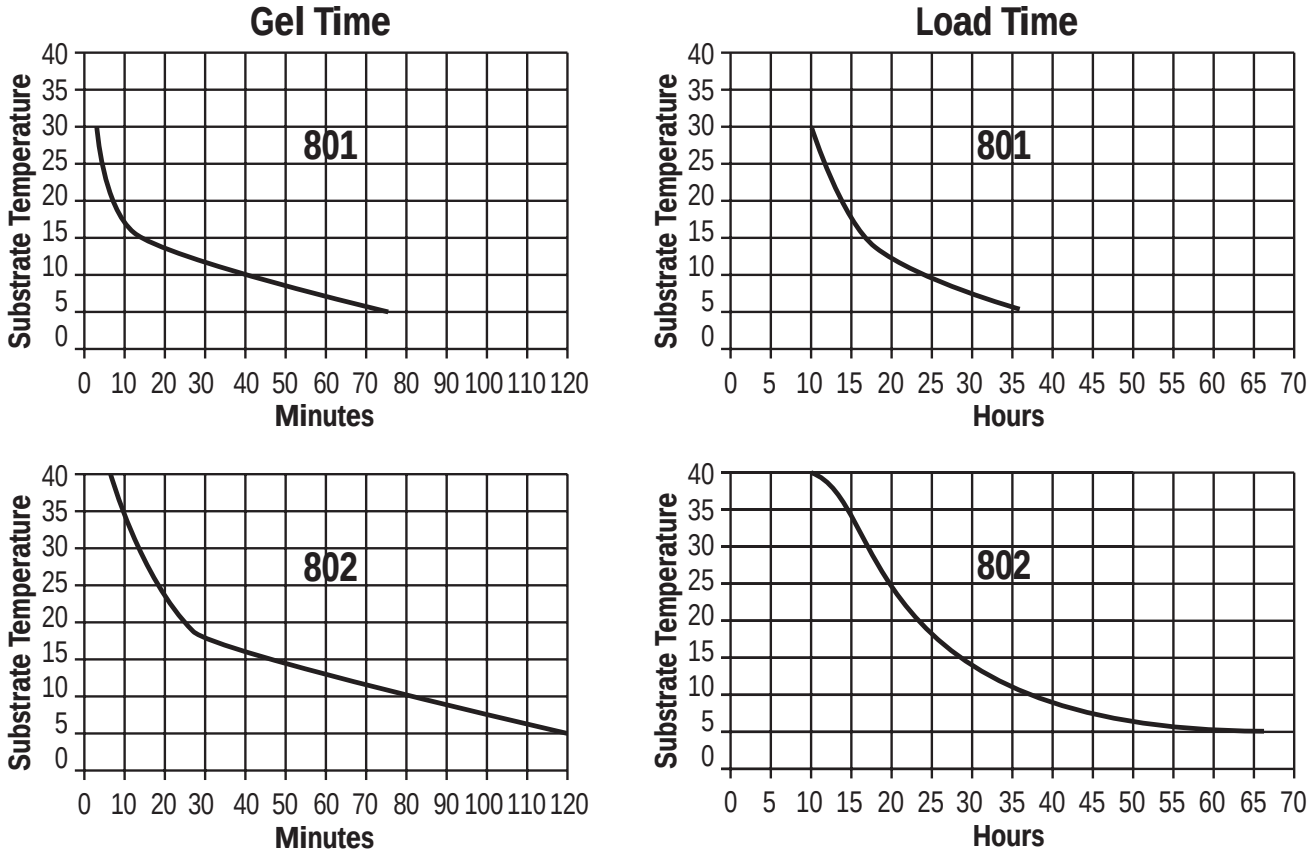
CHART 1 - SETTING TIMES



Note: For ambient temperature below 15°C the mortar must be conditioned to a minimum of 18°C. See precautions, page 2.

CHEMSET™ ANCHOR STUDS
CHART 2 - SOLID SUBSTRATE INSTALLATION DETAILS

Anchor Size	Thread Size	Drill Size (mm)	Hole Cleaning Brush Size (mm)	Hole Depth in Substrate (mm)	Maximum Fixture Clearance Ø (mm)	Maximum Fixture Thickness (mm)	Tightening Torque (Nm)	Minimum Edge Distance (mm)	Minimum Anchor Spacing (mm)	Minimum Structural Thickness (mm)
8	M8	10	13	80	11	15	8	30	50	100
10	M10	12	13	90	13	25	15	40	60	120
12	M12	14	13	110	15	30	30	50	70	140
16	M16	18	20	125	19	40	70	65	100	160
20	M20	24	20	150	25	75	140	80	120	190
24	M24	26	26	160	30	105	230	95	145	200

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CHART 3 - FIXINGS PER CARTRIDGE

Anchor Size	Nominal Hole Ø (mm)	Nominal Hole Depth (mm)	Number of Fixings*		Trigger Pulls per Hole†	
			380ml	750ml	380ml	750ml
8	10	80	91	193	1	1
10	12	90	62	132	1	1
12	14	110	41	86	2	1.5
16	18	125	26	54	2	2
20	24	150	10	22	6	5
24	26	160	11	24	6	5

Note: *Approximately based on continuous installation without interruptions or nozzle changes.
†Trigger pulls using Chemset™ Universal Applicator (CUA). Provided as a guide and will vary with temperature.

CHART 4 - RECOMMENDED WORKING LOADS WITH CHEMSET ANCHOR STUDS

Anchor Size	Thread Size	Recommended Working Load (kN)					
		20MPa		30MPa		40MPa	
		Tensile	Shear	Tensile	Shear	Tensile	Shear
8	M8	6.5	4.4	6.5	4.4	6.5	4.4
10	M10	8.6	7.1	9.7	7.1	10.3	7.1
12	M12	12.5	10.5	14.1	10.5	15.3	10.5
16	M16	16.9	19.8	19.2	19.8	20.8	19.8
20	M20	24.3	30.0	27.6	30.0	29.9	30.0
	M20	29.3	30.0	33.3	30.0	36.1	30.0
24	M24	28.8	43.4	32.7	43.4	35.5	43.4
	M24	43.3	43.4	49.2	43.4	53.4	43.4

For shear loads acting towards an edge(s) of the concrete the above capacities are not applicable.
Contact a Ramset technical consultant for advice.

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CHART 5 - RESISTANCE OF CHEMSET 800 SERIES EXPOSED TO

Chemical/ Liquid	Conc. %	Resistant	Not Resistant	Chemical/ Liquid	Conc. %	Resistant	Not Resistant
Acetic Acid	10	•		Lactic acid	any	•	
Acetic Acid	30		•	Machine oil	100	•	
Acetone	25		•	Methanol	10	•	
Battery Acid	•	•		Nitric acid	conc.		•
Beer	•	•		Nitric acid	30		•
Butanol	100	•		Nitric acid`	10	•	
Calcium chloride, aq	any	•		Petrol	100	•	
Calcium hydroxide, aq	•	•		Petroleum	100	•	
Carbon tetrachloride	20	•		Phosphoric acid	30	•	
Citric Acid	any	•		Phosphoric acid	10	•	
Common salt solution	any	•		Riverwater	•	•	
Communial waste water	•	•		Sea water	•	•	
Diesel fuel	100	•		Sodium carbonate, aq	any	•	
Distilled water	•	•		Sodium chloride, aq	any	•	
Engine oil	100	•		Soduim hydroxide	20	•	
Ethanol	40	•		Sodium hydroxide	10	•	
Formaldehyde, aq	30	•		Sodium silicate	any	•	
Formic acid	40	•		Sulphuric acid	conc.		•
Formic acid	10	•		Sulphuric acid	20	•	
Gasoline	100	•		Sulphuric acid	10	•	
Glycol	100	•		Tap water	0	•	
Hydrochloric acid	conc.		•	Toluene	100		•
Hydrochloric acid	10	•		Turpentine	•	•	
Hydrochloric acid	20	•		Water	•	•	
Hydrochloric acid	30		•	Water glass	any	•	

aq = aqueous solution (diluted) sat = saturated % = % by weight

HEALTH & SAFETY

* Avoid contact with skin (R38)
* Avoid contact with eyes (R36)
* Avoid breathing vapour (S23) (R20)
* 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 see a doctor.
* Do not use in poorly ventilated or confined space. (S38).

For more detailed information refer to the Material Safety Data Sheet No. 26573 and 1056.
Note: Numbers in brackets, example (R38) refer to the internationally recognized risk phrases from the "National Code of Practice for the Labelling of Workplace Substances."

STORAGE

Store in a cool, dry place between 5°C and 25°C away from direct sunlight.