



HYCHEM
EPOXY SYSTEMS

HY-GROUT E200

High early strength epoxy grout

HY-GROUT E200 is a 100% solids, high performance epoxy grout designed for use in situations where high early mechanical strength development is required and long term non shrink performance and effective transfer of static and dynamic load is important. It is ideal in low temperature environments.

USE

- Heavy machinery with large base plates in industrial plants
- Equipment subject to constant dynamic load such as motors and turbines
- As a high strength repair mortar for concrete structures
- As a replacement for cement grouts in locations exposed to chemical damage
- Rail mountings, plinths and footings
- End capping of post tension trunchions

HY-GROUT E200 is ideal for use in a wide variety of industries such as marine, power generation, mining, chemical plants, structural engineering, transportation, printing and general manufacturing.

FEATURES AND BENEFITS

- Rapid development of strength, 65 MPa in 8 hours
- Very high mechanical strength - compressive, tensile and flexural
- Excellent vibration and dynamic load tolerance
- Excellent flow and high bond strength, ensuring even load distribution
- Resistant to a wide range of chemicals, acids, caustic and hydrocarbons
- Moisture tolerant, can be applied to damp concrete
- Suited to application in low temperatures to 5°C

PHYSICAL PERFORMANCE

Epoxy grouts have much higher physical performance capabilities than cement grouts, with 3 times the compressive strength and up to 10 times the tensile strength. They are also more impact resistant and withstand cracking due to mechanical vibrations. Individual epoxy grouts vary depending on whether they are formulated for high or low temperature use, minimal cost or specific flow and creep properties.

The placement depth of an epoxy grout is dependant on the heat released during cure and the resultant shrinkage and cracking forces that occur. HYCHEM E200 is a fast curing grout releasing considerable heat.

E200 can be modified with epoxy grade kiln dried quartz. Standard fill ratio is 2 x 20kg W6 and 1 x 20kg 1mm. This can be reduced to increase fluidity of the grout bearing in mind there would be a reflective increase in heat generation within the grout.

The following tables gives indicative values for HY-GROUT E200 Epoxy Grout.

UNCURED PROPERTIES

Appearance	Resin, Clear honey like liquid Hardener, Clear liquid
Mix ratio	2:1 Resin:Hardener by volume
Pot life	15 minutes

CURED PROPERTIES

Compressive strength	(ASTM D695)	100 MPa
Compressive modulus		10,000 MPa
Tensile strength	(ASTM D638)	23 MPa
Service temperature		-10 to 60°C
Linear shrinkage Creep (28 days @ 60°C)	(ASTM C531-81)	0.04mm/mm
Strength development with time (23°C)	4 hours	15 MPa
	6 hours	35 MPa
	8 hours	65 MPa
	16 hours	85 MPa
	24 hours	90 MPa
	3 days	95 MPa
	7 days	100 MPa

HYCHEM E200 PULL OUT STRENGTHS (40 MPa CONCRETE)

14mm deformed bar (embedded 150mm) Bar Fails	<50 kN
14mm threaded bolt (embedded 110mm) Bar Fails	<50 kN
25mm deformed bar (embedded 225mm) Concrete Fails	<150 kN
25mm threaded bolt (embedded 175mm) Concrete Fails	<150 kN

CHEMICAL RESISTANCE

HY-GROUT E200 has excellent resistance to dilute mineral acids, caustic solutions, mineral salt solutions and hydrocarbons. For specific information, contact the HYCHEM Technical Department.

APPLICATION GUIDELINES

Surface Preparation

Sub-Base Preparation – Ensure foundation concrete is properly cured. All surfaces should be clean and free from rust, dust, oil, wax, grease and standing water. Concrete should be scabbled if necessary to remove any weak, crumbly materials. Formwork should be treated with release agent where required.

Plate and Equipment Preparation – The bonding surfaces of the base plate to be grouted should be free of coatings, wax, grease or scale. Mask all external areas likely to be affected by rising grout.

Forming – Forms must be liquid tight and ideally should have a moveable head sloped at 45°C to enhance grout placement. The top of the form must be a minimum of 18mm above the equipment being grouted; edges should be a minimum of 25mm from each base plate.

Mixing

The resin is mixed with hardener at the designated mix ratios. Mix mechanically at 250 rpm for approximately 2 minutes then scrape down sides and continue mixing for a further 1 minute. If required, blend in additional quartz aggregate and mix until completely blended with the premixed epoxy resin component.

Temperature Conditioning – At high temperatures with large volume grouting operations, cool the components before mixing. Work time varies with temperature, in general work time is halved for every 10°C temperature rise. For temperatures below 15°C, warm the components if possible.

Applying

Under plates. Pour mixed materials slowly into the prepared void from one side only and fill the cavity continuously to avoid air entrapment.

Anchoring bolts, rebar, dowels and inserts in concrete, rock and brickwork. The following guidelines are suggested.

Hole diameter

Should generally be 1.5 times the insert diameter. This can be reduced for large insert diameters above 100 mm.

Depth of embedment

Concrete tensile strength and the depth of bolt embedment determines the pull-out load. The anchor depth should be designed to provide bolt failure when tested in tension.

Hole spacing

Hole spacing is important to avoid stress interaction caused by holes spaced too closely together or near the edge of the structure. A good guide for minimum spacing is 10 times the bolt diameter for bolt spacing and five times the bolt diameter for edge spacing.

Epoxy grout placement

To avoid air entrapment, the liquid grout should be filled bottom up using enough head pressure to achieve the desired flow rate and distance.

PACKAGING

30 litre

SHELF LIFE

This product has a shelf life of 12 months from date of manufacture, stored under shelter at 25°C in original un-opened container.

COMPLIMENTARY PRODUCTS

HYCHEM E205, E210 and IIS-PF9-HP/EG offer alternative cure times and gap filling capacity.

SAFETY PRECAUTIONS

Epoxy polymer products may cause allergic reactions through skin contact. Goggles and protective gloves and clothing should be worn at all times. Ensure that there is adequate ventilation and air flow and avoid breathing the vapour. If skin contact occurs wash skin with soap and water. If eye contact occurs wash immediately with copious amount of clean water.

WARNING - ENVIRONMENTAL CONDITIONS

Temperature and the surrounding atmospheric conditions will play a part in the curing process of all epoxy products. Under conditions of low temperatures and high humidity the final cured surface finish can be adversely affected potentially resulting in poor gloss retention, discolouration over time, poor overcoatability and intercoat adhesion. Quite often these conditions will result in the formation of a white film over the surface often evident after contact with water. This chemical reaction with the atmosphere is commonly referred to as “amine bloom” or “amine blush”.

If this occurs then the existing coating will need to be abraded to completely remove the affected surface to ensure the adhesion of subsequent applications. In some cases partial or complete re-priming may be necessary.

Attention also needs to be paid to the substrate temperature which should be at least 3°C and preferably 5°C above the dew point during the curing phase.

Industry standards recommend the accurate recording of times and dates, batch numbers, consumption rates and environmental conditions including substrate and air temperatures, humidity levels and dew point readings during both the application and curing processes. Full material warranties cannot be provided unless all the relevant data has been recorded accurately.

If in doubt consult the Hychem technical department for advice.

NOTE: Customer responsibility

The technical information and application advice given here is based on the best information available at the time of print. As the information herein is of a general nature, no assumption can be made as to the products suitability for a particular use or application and no warranty as to its accuracy, reliability or completeness either expressed or implied is given other than those required by Commonwealth or State Legislation.

Field support, where provided, does not constitute supervisory responsibility. Suggestions made by HYCHEM either verbally or in writing may be followed, modified or rejected by the owner, engineer or contractor since they and not HYCHEM are responsible for carrying out procedures appropriate to a specific application.

If unsure contact Hychem for further technical advice before proceeding.

