

HYCHEM E900

High Impact, Chemically Resistant, Novolac Epoxy Binder

DATA SHEET



HYCHEM
EPOXY SYSTEMS

HYCHEM E900 is an epoxy binder with elastomeric characteristics and excellent chemical resistance.

It is designed to be used with quartz powder and/or glass cloth to produce a resin mortar for the rehabilitation and protection of concrete structures in aggressive chemical environments.

HYCHEM E900 is a specially modified system which provides both flexibility and chemical resistance in the one product.

AREAS OF USE

HYCHEM E900 Mortars are recommended as a resin floor topping wherever impact damage and/or chemical attack has resulted in an unsatisfactory damaged concrete finish.

This is particularly so in locations subject to high chemical exposure such as secondary containment bunds, tank farms, process area floors, pump wells and tanker delivery bays.

KEY FEATURES

Resistant to both dilute and concentrated sulphuric acid

Resistant to dilute nitric and phosphoric acids

Resistant to all concentrations of Hydrochloric acid

Resistant to petroleum hydrocarbons

Resistant to both natural and synthetic oils

Resistant to aqueous solutions of caustics and mineral salts

Excellent impact strength with good flexibility

Good thermal cycling properties

Technical Details

Product type	100% solids, epoxy novolac
Mix ratio	2 volumes resin to 1 volume hardener
Elongation 7 days	30%
ISO 527-2/1B 28 days	25%
Tensile strength 7 days	13 MPa
ISO 527-2/1B 28 days	17 MPa
Elastic Modulus 7 days	800 MPa
ISO 527-2/1B 28 days	1100 MPa
Density	1.14
Hardness Shore D	75
Pot life	60 min@10°C 30 min@20°C 20 min@30°C
Cure time	24 hours @25°C
Chemical exposure	7 days
Application temperature	Min 10°C - Max 32°C
Recoat time	Min 8 hours@25°C Max 24 hours@25°C

CHEMICAL RESISTANCE

Immersion resistance@7 days	Comment
80% Sulphuric acid	Very good
25% Sulphuric	Excellent
30% Nitric acid	Good
Xylene	Excellent
25% Acetic acid	Short term only

APPLICATION GUIDELINES

Surface preparation

Concrete

All concrete surfaces should be clean and free from contaminants such as curing agents and other coatings. Water content of the concrete should be such that it passes the plastic sheet test (ASTM D4263). The resultant surface to be coated must have a minimum surface tensile strength (ASTM 4541) of 2.1 MPa.

- Prepare the concrete surface by Abrasive Grit Blasting, Shot Blasting, Scarifying, Ultra High Pressure Water Jetting or Scabbling to provide the appropriate surface profile for optimum mechanical keying.
- The extent of surface preparation required is dependant upon but not limited to the thickness of the coating system to be applied. It is highly recommended surface preparation is carried out in accordance with industry standards and publications such as NACE 02203 item No. 22420 or ICRI Technical Guideline No. 03732.

Appropriate surface preparation will most likely lead to exposed porosity leading to outgassing of the surface with resultant bubbling of the coating. A solution to this problem is discussed under 'Priming and patching'.

Steel

All steel surfaces need to be abrasive blast cleaned to a surface profile of a minimum of 75 microns and then coated with HYCHEM Metal Primer .

Blistering & Blowholes

Properly prepared concrete surfaces are likely to suffer from surface blowholes which give rise to a phenomenon known as outgassing. This is caused by the expansion of air in the blow holes leading to blistering when a coating is applied. Correct treatment to minimise blistering is as follows.

Air may be trapped in blow holes and micropores, this can be minimised by application of a penetrating solventless primer, plus a thixotropic, hole filling scratchcoat.

HYCHEM E500P is a solventless, liquid primer with good adhesion to damp surfaces which is applied to initially seal the fine pores in the concrete. The concrete surface needs to be surface dry and pass the plastic sheet test (ASTM 4541) before application of primer.

Once cured, this primer is then over coated with HYCHEM E500T which is a lightly filled paste like version of the initial primer. Coating thickness of this scratchcoat can be 200 to 500 microns over the whole of the concrete surface. Individual blow holes may be 5 mm deep or more. Quartz aggregate filler or glass microballoons can be added to suit.

APPLICATION GUIDELINES

HYCHEM E900 is supplied as an unfilled epoxy binder of medium viscosity. It is normally used in conjunction with quartz filler and glass matting to produce an impact resistant, crack bridging epoxy composite.

The product is applied to surfaces which have been primed and sealed as above.

Base Coat- HYCHEM E900 resin and hardener are mixed at the specified mixing ratio and silica quartz flour is added to the mixed resin/hardener combination at a ratio of 1.5 kg silica to 1 litre of HYCHEM E900. The resin/filler mix is spread out at a rate of 2 litres/sqm. The surface is then broadcast with silica aggregate (16/30 to 18/40) until a uniform dry beach finish is produced. The topping is allowed to dry and is then swept off.

Saturation coat- HYCHEM E900 resin is applied to the cured topping at a coverage rate of 2-3 sqm/litre.

Topcoat- A seal coat of a chemically compatible top coat is then applied. This top coat is generally HYCHEM TL9 GF, a glass fibre reinforced epoxy novolac with maximum resistance to 98% Sulphuric acid and hydrocarbon oils and solvents.

Note. HYCHEM E900 is designed for application to horizontal surfaces. For application to vertical and overhead surfaces, a high build version, HYCHEM E900T should be used.

Caution:

- 1) HYCHEM E900 and HYCHEM TL9 GF are not recommended for working environments exposed to organic acids such as strong concentrations of acetic and lactic acids. For these environments, the use of a HYCRETE Polyurethane Cement Mortar is suggested.
- 2) Adverse environmental conditions can affect both the look and the intercoat adhesion of consecutive epoxy layers. HYCHEM E900 and HYCHEM TL9 GF must not be applied at surface temperatures below 10 degC and the surface temperature needs at all times to be a minimum of 3 degC above the dew point

TREATMENT OF CRACKS & CONSTRUCTION JOINTS

All cracks need to be routed out, primed with HYCHEM E500P and then filled with HYFLEX NS and allowed to cure. Right angle joints need to be primed and a fillet of HYFLEX NS applied and allowed to cure. A bandage of fibreglass, impregnated with HYCHEM E900 is to be applied over all repaired surfaces. Where crack repair of individual cracks is not feasible, a full HYCHEM E900/glass laminate is to be applied over the whole area.

COVERAGE

1 Litre of material yields 1mm thickness over 1 square metre

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.

To minimise an unsatisfactory cure the following indicative application conditions should be observed with respect to temperature and humidity levels.

21° C and less than 85% humidity

10° C and less than 75% humidity

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

Industry standards recommend the accurate recording of environmental conditions such as substrate & air temperatures, humidity levels and dew point readings during both the application & curing processes.

If in doubt consult the Hychem technical department for advice.

CLEAN UP

Xylene or MEK can be used for cleaning tools and equipment before the mixed compound begins to harden.

PACKAGING

12 litre kit

Resin and Hardener also available in bulk 20 litre containers.

Field support

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.

Customer responsibility

The technical information and application advice given in this publication 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 product 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. The owner, his representative or the contractor is responsible for checking the suitability of products for their intended use.