

PRODUCT DESCRIPTION

The CTech-LLC® thixotropic Epoxy Resin Saturant (ERS™400) is epoxy matrix materials for saturating composite fibers and bonding applications. ERS™400 is available in forms of gel. The reaction of epoxy with hardener results an outstanding durability material which is a proper matrix for all of the composite systems and structural strengthening works. CTech-LLC® epoxy resins offer a wide range of high performance properties like excellent chemical and mechanical resistance and strong adhesion. ERS™400 epoxy resins can be used in different fields like strengthening and retrofitting of structural members. These resins are used for saturating of carbon and glass wrap and bonding FRP plates and FRP anchors (in NSM Methods).

some of the benefits of using ERS™400 epoxy resin in strengthening and retrofitting of structures:

- ERS™400 epoxy resins have good strength compared with other epoxies.
- ERS™400 epoxy resins are extremely durable and resistant to temperature and moisture. They also have high fatigue strength.
- ERS™400 epoxy resins have good mechanical and chemical resistance.
- ERS™400 epoxy resins have high adhesive strength and in addition to high saturation capability can be used for bonding an extended range of elements and materials like FRP laminates, metal elements, plastics and many other types of materials and elements.
- ERS™400 epoxy resin is easy to use and can be known as an eco-friendly product.
- ERS™400 epoxy resins have high dielectric performance and are resistant to electricity.
- Curing of ERS™400 epoxy resin systems is very slow and have long pot life.
- Using CTech-LLC® ERS™400 epoxy resin is a very cost effective method.

CTech-LLC® epoxy resins can tolerate processing oil on the substrate and obtain satisfactory bond strength. Where can we use ERS™400 epoxy resins?

- ERS™400 epoxy resins are high-performance adhesives which are widely used in strengthening and retrofitting of different types of structures and manufacturing composite products.
- Epoxy resins are electrical insulators, so they are highly used in electrical industry. ERS™400 epoxy resins can be used in many of the electrical components.
- Epoxy resins are widely used in aerospace industry. we can use these powerful resins to assemble or repair interior and exterior aircraft components.

SHELF LIFE

ERS™400 must be stored in its original packaging. Lid of the container should be kept closed. Moisture can decrease shelf life of epoxy resins. With proper storage, resin and hardeners remain usable for at least 24 months.

STORAGE CONDITIONS

ERS™400 must be stored in a dry and cool place. Temperature should be between 10° to 35° C. Avoid freezing the product and keep it away from direct sunlight, flame or other hazards.



EPOXY COMPONENT PHYSICAL PROPERTIES

Chemical Base	Epoxy resin
Net Weight	Component A = 10 and 20 Kg Component B = 5 and 10 Kg
Mixing Ratio	100:50 Part A: 100 Part B: 50
Color	Component A is grey paste Component B is white paste Mixed resin and hardener is grey paste
Pot Life	120 Minutes at 21° C
Density at 21° C ASTM D792	Component A = 1.30kg/L Component B = 1.20kg/L Mixed product =1.26kg/L
Application Methods	Hand lay-up
Shelf Time	24 month
Storage Condition	Store Dry and away from direct sunlight 10-40° C

EPOXY MATERIAL MECHANICAL PROPERTIES

Property	ASTM Method	Test Value*
Tg	D4065	70° C
Tensile Strength	D638 Type1	<25 MPa
Tensile Modulus	D638 Type1	<2.1 GPa
Elongation Percent	D638 Type1	<1.0 %
Compressive Strength	D695	<30 MPa
Compressive Modulus	D695	<2.1 GPa

* Curing schedule 72 hours post cure at 60° C.
* Testing temperature: 21° C

MIXING

epoxy compounds are usually supplied in two different containers. Before pouring the contents of component B into contents of component A, each part should be stirred separately to avoid deposit in container. Then part A and B should be mixed together depending on the required quantity. Process of mixing should take 3-5 minutes with a low speed mixer. After mixing resin and hardener, you'll

have about 120 minutes time to apply the material. Clean mixing tools with a proper towel to reuse them.

HOW TO USE

SURFACE PREPARATION

For retrofitting applications, substrate preparation can highly effect on the quality of the performance of CFRP and GFRP composite systems.

- All the surfaces must be cleaned from dirt, grime, dust, curing compounds, oils, grease, waxes and all the other contaminated materials which may cause voids behind the CTech-LLC® composites.
- Repair mortar must be used to repair all the eroded or damaged concrete surfaces.
- An industrial vacuum cleaner must be used to remove dust and dirt.
- All the surfaces need grinding, Sandblasting, shot blasting, pressure wash or other common mechanical methods to reach an even concrete substrate.
- The sharp edges must be smooth and rounded to a minimum radius of 30 mm.
- Note that concrete surfaces must be fully dried or cured so adhesive can properly dry.

APPLICATION

Surface of all the contaminated elements must be cleaned thoroughly. Prime the surface with a suitable type of CTech-LLC® primer. ERS™400 epoxy resins is compatible with all types of CTech-LLC® fabrics, primers and mortars. Mix part A and B together with a low speed mixer.

You can use saturators for impregnating fabrics or apply hand methods for some of the smaller projects. Using a roller can help to eliminate air bubbles in the resin and substrate, it can also ensure that there is a good bonding between them.

LIMITATIONS

Proper temperature for applying ERS™400 epoxies is between 4° C to 40° C. for applying them must use adequate ventilation. They should not be used in cold and humid weather.

CAUTION!

All components of FRP composite systems may cause skin irritation and sensitization. Use of chemical resistant gloves is recommended.

Avoid breathing vapors and dust. Get medical attention if you are breathing with difficulty.

Resin products can cause strong eye irritation. Avoiding eye contact and using safety goggles is necessary.

SAFETY PRECAUTIONS

- Avoid eye contact.
- Do not allow resin contact with skin.
- Use safety gloves and glasses.
- Wear rubber boots and protective suits.
- Do not eat, drink or smoke when using the products.

If any symptoms happened, go to open air and get medical attention.

FIRST AID

If eye contact happened, Flush eyes with large amounts of water and obtain medical attention.

In case of skin contact, wash your skin with soap and water and get medical attention if irritation persists.

If there is cough or difficulty in breathing, go to open air and get medical attention if it persists.

WARANTY

CTech-LLC® warrants its products to be free from manufacturing defects. Buyer determines suitability of product for use and assumes all risks. Buyer's sole remedy shall be limited to replacement of product. Any claim for breach of this warranty must be brought within one month of the date of purchase. CTech-LLC® shall not be liable for any consequential or special damages of any kind, resulting from any claim or breach of warranty, breach of contract, negligence or any legal theory. The Buyer, by accepting the products described herein, agrees to be responsible for thoroughly testing any application to determine its suitability before utilizing.