

# Ultra Surface Crack Repair System

## DESCRIPTION

The Ultra Surface Crack Repair system was developed from over ten years of research and development on actual jobs throughout the world. It has proven to be very successful for repairing structural moving cracks prior to applying an Ultra Surface Polymer Concrete application. It is not a guaranteed system but has a high success rate against cracks re-occurring. There are basically two types of cracks; structural cracks and non-moving surface cracks. Structural cracks go all the way through the substrate and begin or end at an edge or joint. They can be less than 1/16th of an inch to more than one inch in width. Structural cracks should always be repaired with the Ultra Surface Crack Repair System. Non-moving surface cracks start and stop in the middle of a slab and do not go all the way through the concrete substrate. Non-moving cracks will not need to be repaired but can simply be covered up during the resurfacing application of the Ultra Surface Polymer Concrete. If in doubt whether or not a crack is moving, treat it as a moving crack and repair it with the Ultra Surface Crack Repair System. This is the best crack repair system to use prior to applying a polymer concrete overlay system. For the Ultra Surface Color Flake System, Tuff-Grit System and for solid color epoxy and urethane coating systems, the cracks only need to be filled with Epoxy 500 mixed with silica sand. It is not necessary to use the 4" Fabric and Elastomeric Basecoat except when doing a polymer concrete overlay system. Following is a list of the basic equipment, tools, supplies and materials needed to repair structural cracks along with step-by-step mixing and application instructions.

## PRODUCTS AND TOOLS NEEDED FOR CRACK REPAIR APPLICATION

Description of Application	Product Name	Coverage Rate/Gallon	Tools For Application
Fill Cracks w/ Epoxy	<b>Ultra Surface Epoxy 500</b> [Silica Sand #60 will also be needed to mix w/ the Epoxy 500]	1/8 x 1/4" Crack = 300' 1/4 x 1/2" Crack = 150'	Rubber Gloves, Paint Brush, 5" Stiff Putty Knife, 1 gal. Mixing bucket, Measuring cup, stir stick
Apply/ Elastomeric Basecoat	<b>U.S. Elastomeric Basecoat</b>	250 ln. ft.	4" Paint Brush
Lay 4" Fabric	<b>U.S. Crack Repair Fabric</b>	300' per roll	Utility Knife/ Scissors
Apply/ Elastomeric Basecoat	<b>U.S. Elastomeric Basecoat</b>	250 ln. ft.	4" Paint Brush
Patch fabric w/ Polymer Concrete Patching	<b>U.S. Concrete Polymer</b> [mix w/ cement, sand and water.]	150 ln. ft.	24" Metal Squeegee

Note: Other equipment and supplies will be needed for cleaning the cracks and mixing the crack repair materials. Read the instructions below for more information on what you will need.

## MIXING AND APPLICATION INSTRUCTIONS

### 1. Clean The Cracks

Before cracks can be repaired they must be cleaned. Cracks should be cleaned during the surface preparation process. For indoor jobs where shotblasting is used, the cracks can be cut open at least 1/2" deep using a dustless grinder and diamond blade attachment. For outdoor jobs cracks can be cleaned while **pressure washing** the surface by holding the tip of the spray wand a couple of inches from the crack, to clean it as deep as possible. After cleaning the surface and the cracks, a **wet/dry vacuum** can be used to help dry the cracks. Once the cracks look dry on the surface they are ready to be repaired.

### 2. Prime The Cracks With Ultra Surface Epoxy 500

#### Mixing Instructions: [By volume]

2	Parts of Part A	[The Resin]
1	Part of Part B	[The Hardener]

The next step is to mix up some of the **Epoxy 500** to prime the cracks. Wear **disposable rubber gloves** while mixing and try not to mix more material than can be used within 15 minutes. Start by mixing 1 pint of part A [resin] and 1/2 pint of part B [Hardener]. Mix part A and B together for approximately 3 minutes in a 1/2 **gallon size mixing bucket** using a **stir stick**. Be sure to scrape the sides and bottom of the bucket as you mix.

## CRACK REPAIR INSTRUCTIONS CONTINUED

Immediately after mixing the **Epoxy 500**, prime the inside edges of the larger cracks [over 1/8th inch wide] using a small **3" size paint brush**. Fine cracks can be primed by brushing a thin bead of the Epoxy 500 directly over the crack and allowing it to soak down in. The quickest method to prime fine cracks is to use a **catsup bottle** to squeeze a small bead of material over the cracks. If the Epoxy 500 doesn't penetrate into the crack after a few minutes, use a **5" stiff putty knife** to help press it in. **Note:** If the mixed **Epoxy 500** gets hot in the bucket or begins to smoke, do not try to use it. Allow it to harden and cool before throwing it away.

### **3. Fill The Cracks With Epoxy 500 Sand Mix**

Immediately after the cracks have been primed, add some **#60 silica sand** to the left over mix or mix up another small batch of the **Epoxy 500** and then add some silica sand to make a semi-pourable patching mix. Generally mix 1 part of Epoxy 500 to 2-3 parts of #60 Silica Sand. Use a **5" putty knife** to scoop small amounts of the sand mix out of the bucket and press the sand mix into the cracks. Fill them as deep as possible, being careful not to spread the sand mix too wide on the surface. Try to keep the Epoxy 500 prime coat and sand mix from spreading wider than 1½ inches on either side of the crack, so the **4" Crack Repair Fabric** in step 7 will cover the Epoxy 500 repairs.



1. Pressure wash cracks.



2. Prime with Epoxy 500.



3. Fill with Epoxy 500 sand mix.

### **4. Scrape The Excess Epoxy and Sand Mix From The Surface**

After filling the cracks flush with the surface, use a **5" putty knife** to scrape the excess sand mix off the surface and re-use it if possible in nearby cracks. After filling the cracks and scraping the surface, check for any holes or sunken areas that have opened up and if necessary apply more sand mix where needed. [See pictures 1-4]

### **5. Apply Ultra Surface Elastomeric Basecoat Over The Epoxy 500**

Before applying the **Ultra Surface Elastomeric Basecoat**, scrape all the crack repairs to remove any drips left behind from the epoxy application. The Elastomeric Basecoat can be applied over the Epoxy 500 while it is still tacky within one hour or after it is completely dry. Brush the Elastomeric Basecoat over the repaired cracks approximately 5 inches wide [2 ½ inches on each side of the center of the crack]. Do not apply the Elastomeric Basecoat too thick and do not brush more than 1 to 2 lineal feet at a time, so that the fabric can be laid and secured before the it begins to dry.



4. Scrape up excess sand mix.



5. Apply Elastomeric Basecoat over S-500.



6. Lay crack repair fabric over E. Basecoat.

## CRACK REPAIR INSTRUCTIONS CONTINUED

### **6. Lay The Ultra Surface Crack Repair Fabric Into The Wet Elastomeric Basecoat**

After brushing 1 to 2 feet of Elastomeric Basecoat 5 inches wide over the crack, immediately lay the **4" wide Crack Repair fabric** into the wet Elastomeric Basecoat and centered over the crack as much as possible.

### **7. Apply Ultra Surface Elastomeric Basecoat Over The Fabric**

Immediately after laying the fabric into the first coat of Elastomeric Basecoat, brush another thin coat over the fabric to completely saturate it and to secure the fabric flush with the surface. Continue applying the Elastomeric Basecoat and fabric in 1 to 2 foot sections at a time until all of the cracks have been completed. Where the crack changes directions, cut the fabric using a pair of **scissors** or a **utility knife**. Lay the cut piece end to end where the crack changes directions without overlapping the edges.



7. Apply Elastomeric Basecoat over fabric.



8. Fog surface with water.



9. Spread patching mix over crack repair.

## **Patching The Crack Repairs With Ultra Surface Polymer Concrete**

Once the Elastomeric Basecoat is completely dry under the fabric and on top of the fabric the crack repairs should be patched smooth with the **Ultra Surface Polymer Concrete**. Even though the Elastomeric Basecoat on top of the fabric feels dry, it may still be wet under the fabric. To be sure it is completely dry, push firmly on the fabric with your fingers to see if it can be moved. If it moves, the Elastomeric Basecoat is still curing underneath which means it will be necessary to wait longer before proceeding with the patching application. The purpose of the patching application is to cover the crack repairs so they will not be noticeable through the Ultra Surface Polymer Concrete thin resurfacing and texture coat applications, such as the Squeegee Coat, Fine Broom Finish, Trowel Knockdown Texture and Swirl Pattern Finish. For the Stamped Concrete and Leveling applications, 1/4" thick or more, it will not be necessary to patch over the Elastomeric Basecoat and 4" Fabric since the thick resurfacing application will be sufficient to cover them.

### **The Mixing Formula for the Ultra Surface Polymer Concrete Patching Mix is as follows:**

[1] Part Ultra Surface Concrete Polymer

[1] Part Water

[2] Parts Cement [Portland Type I/II]

[4] Parts Silica Sand [#60 or 90]

Note: Substitute the word "part" for any size measure [quart, gallon etc.] To make up the amount of mix desired.

Mix these ingredients together in a **5 gallon bucket** for 3-5 minutes using a **1/2" drill motor and a mixing paddle** to achieve a creamy, lump free consistency.

### **8. Fog The Surface With Water Next To The Crack Repairs**

The best way to apply the patching mix is by working in sections of approximately 10 lineal feet at a time. First lightly wet the concrete surface next to the Elastomeric Basecoat and Fabric with water about 2 feet on each side using a **pump-up sprayer**. The water helps the Polymer Concrete stay workable long enough to finish it smooth.

## CRACK REPAIR INSTRUCTIONS CONTINUED

### **9. Spread The Patching Mix Over The Crack Repairs** [Note: Steps 8 - 14 are not necessary when doing 1/4" Stamping applications].

Pour out a thin row of the Ultra Surface Polymer Concrete Patching Mix down the center of the 10 foot section of crack repair you just fogged with water. Using the Ultra Surface 24" **Metal Edge Squeegee**, quickly spread the patching mix material back and forth over the crack repair to work it into the water dampened concrete surface.

### **10. Pull The Material Into A Pile Near The Starting Edge**

After quickly spreading the patching material back and forth over a 10 foot section, pull the excess material into a pile at one end of the patch.

### **11. Spread The Patching Mix Smooth Over The Crack Repairs**

Place the **Metal Squeegee** behind the pile of material so it is centered over the fabric. Press it firmly against the surface while pulling the patching mix down the center of the fabric. You should be leaving a thin 2 foot wide patch of material one foot on each side of the fabric.

### **12. Scrape Up The Excess Material From The Edges**

After spreading the patching mix smooth over the cracks, carefully scrape up any excess material that remains on the edges of the patch using a **5" putty knife or the Metal Edge Squeegee**. Keep the putty knife as close to the feathered edges of the patch as possible to prevent marking up the deeper areas of the patch. The excess material can be put back into the mixing bucket to be re-used on nearby cracks. To be sure the edges are completely feathered to zero they can be fogged with water using a **spray bottle** and then feathered flush with the surface using the **5" putty knife, hand trowel, or the metal squeegee**.



10. Pull the material to a pile



11. Spread it to a smooth finish



12. Scrap edges and feather to zero

### **13. Begin The Next Patch Where You Left Off**

Once you have completed your first 10 foot section and feathered all the edges to zero, begin where you left off with the next 10 foot section and so on until all the crack repairs are patched smooth with the Ultra Surface Polymer Concrete.

**Note:** One patch coat is usually sufficient if you are planning to do a Trowel knockdown Finish over the surface. For Fine Broom Finishes and Swirl Pattern Finishes two patch coats are recommended to be sure the fabric does not show through the finished application. Patching over the Fabric and Elastomeric Basecoat with the Ultra Surface Polymer Concrete is the same idea as patching over drywall taping, just using different materials. If done properly the repairs will not show through your finished application.

### **14. Apply A Squeegee/Bond Coat Over The Repairs**

When all the patching is completed, allow the Ultra Surface Polymer Concrete to dry approximately one hour or until dry to touch before proceeding with the resurfacing application. A turbo fan [used by carpet cleaners] can be used to speed up the drying process if desired. The next step after all the crack repairs are completed is to apply the Ultra Surface Polymer Concrete Squeegee/Bond Coat or Resurfacer to smooth out the surface and to blend all the repairs together. See the Polymer Concrete Squeegee/Bond Coat instructions in section 6 of the Ultra Surface Products Manual for Information.

## CRACK REPAIR INSTRUCTIONS CONTINUED



13. Begin the next patch



14. Apply a squeegee coat over entire surface



15. Apply desired finish

### **15. Apply The Desired Texture Coat or 1/4" Stamping Application**

After applying a Squeegee/Bond Coat over the surface a texture coat of Ultra Surface Polymer Concrete can be applied or a 1/4" Stamped Concrete application. Refer to the Polymer Concrete Texture Coat section or the 1/4" Stamped Concrete section in the Ultra Surface Products Manual for detailed mixing and application instructions.



**Fine broom finish**



**Swirl pattern finish**



**Trowel knockdown finish**



**1/4" stamped concrete finish**