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Stucco Repair and Maintenance

No. 1.01

These stucco repair and maintenance techniques are intended as a partial guide to repair of stucco walls. They may not be adequate for all situations. When in doubt hire a qualified professional to diagnose conditions and develop a repair strategy.

Surface Cleaning Acrylic and Acrylic Elastomeric Finishes

Depending on the size of the area to be cleaned and the tenacity of dirt or other accumulation on the surface, the tools used for cleaning will vary: hand clean with a soft to medium bristle brush for isolated surface spots, use a garden hose for a full elevation, and pressure wash for entire buildings and/or difficult to remove accumulations.

A good generic cleaning solution is 1—2 cups trisodium phosphate (TSP) detergent and 1 gallon of warm water. Add 1/2 to 1 quart of bleach to remove algae (usually green stains on the surface of the finish) or mildew (generally black stains that look like dirt). Bleach is necessary to kill micro-organisms that create the algae or mildew on the finish. If no bleach is used or if it is not allowed sufficient time (about 15 minutes) to sit on the surface and kill the micro-organisms, algae or mildew will re-occur. If no algae or mildew exists on the surface then bleach is not necessary.

Apply the TSP cleaning solution to the wall surface by brush or spray and allow to soak for a period of 15—20 minutes. For heavy deposits, lightly scrub the affected area with a soft medium bristle scrub brush. If a pressure washer is used, keep the pressure at approximately 200—500 psi and keep the nozzle several feet from the surface. Do not exceed 500 psi pressure, as the surface integrity of the finish can be destroyed with higher pressure washing. After the cleaning solution has soaked the surface, rinse the surface thoroughly with clean water and allow to dry. Some variation of these instructions may exist for proprietary cleaners. Always read the label and follow directions. Always check local regulatory requirements for disposal of cleaning solution and waste water.

Commercially available cleaning solutions are:

- a.) General Cleaner by Wind-lock Corp.¹—a general surface cleaner
- b.) Miracle Mildew Remover by Wind-lock Corp.¹—dissolves algae and mildew
- c.) Wash Down™ by Demand Products²—a general surface cleaner
- d.) EIFS Clean 'N Prep by Prosoco³—a general surface cleaner

Do Not:

1. Use solvent based cleaners—acetone, gasoline, ketones, mineral oils, or turpentine
2. Use steam cleaning or other high temperature cleaning methods
3. Use excessive scrubbing, stiff bristle brushes or wire brushes
4. Use high pressure washing (in excess of 500 psi [3.4 MPa]), or sandblasting

Notes:

1. Wind-lock™ Corp., 1055 Leisz's Bridge Road, Leesport, PA 1935, Tel: 1-800-USA –LOCK (1-800-872-5625), www.wind-lock.com
2. Demand Products, Inc., 1055 Nine North Drive, Alpharetta, GA 30004, Tel: 1-800-325-7540 www.demandproducts.com
3. Prosoco, Inc., 3741 Greenway Circle, Lawrence, KS 66046, Tel: 800 255-4255, www.prosoco.com

Stucco Repair and Maintenance

No. 2.01

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Condition: Cracking

Stucco by its nature is brittle and some degree of cracking is normal. Sometimes stresses transfer from the supporting structure to the stucco and cause it to crack. In other cases the stucco may crack because of shrinkage shortly after application. For a more extensive list of reasons why stucco cracks consult the references listed below. When cracks are unsightly or when they allow enough water to enter that causes deterioration they can be repaired.

Remedy

Cracks can generally be repaired in a few ways, depending on the severity of the cracks and their root cause. Obtaining a perfect color/texture match is very difficult and isolated crack repair, although effective functionally, may stand out in appearance from the rest of the wall. Therefore resurfacing of the elevation or a portion of the elevation to an architectural break may be necessary to obtain the best possible appearance.

A. Hairline Cracks (up to approximately 1/32" wide)

1. Apply two coats of color-matched smooth elastomeric coating by brush or roller and allow to dry. General application guide is 12-14 wet mil thickness per coat. Refer to Sto product bulletin 212 (Stolastic) or 222 (StoSilco Lastic) for specific information. Apply the coating up to an architectural break or to the full elevation as necessary to obtain a satisfactory aesthetic appearance.

B. Moderate Cracks (up to approximately 1/8" wide)

1. Embed glass fiber reinforcing mesh (920E Sto Mesh) in acrylic base coat (225 Sto RFP). Treat the cracks individually with a 4-6 inch wide strip of mesh centered over the crack. If cracks are spread throughout an area, treat the whole area with mesh. Overlap all mesh seams minimum 2-1/2". Resurface up to an architectural break or resurface the full elevation as necessary to obtain a satisfactory aesthetic appearance.
2. After the base coat is dry, usually within 24 hours, re-apply Sto acrylic elastomeric finish to match the color/texture of adjacent areas.

OR

1. Fill the crack with knife-grade elastomeric crack filler (CR214 Sto Flexible Crack Filler) and follow procedure A or B above.



Photo 1: Cracks that are dispersed across a large area can be repaired with elastomeric coating if narrow in width (1/32" or less), Procedure A, or with glass fiber reinforcing mesh and acrylic base coat, Procedure B. Surface cleaning to remove the efflorescence and any other surface contamination must be done first.

References:

1. Bucholtz, John J., P.E., *The Consumer's Stucco Handbook*, San Jose, CA, 1995.
2. Portland Cement Association (PCA), *Portland Cement Plaster (Stucco) Manual*, Skokie, IL, PCA, 1996.

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No. 3.01

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Condition: Blistering or Bubbling of Finish

A common cause for blistering or bubbling of finish from stucco wall surfaces is water getting behind the finish. The source of water may be roofs, parapets, windows, joints, ground water, or other areas of construction that allow water to enter into the wall. As water accumulates at a particular location pressure can build that eventually causes the finish to blister. Sometimes the stucco itself may come apart if the stucco is weak at the surface.

Remedy

BEFORE REPAIRING BLISTERS ISOLATE THE SOURCE OF WATER INTRUSION AND REPAIR IT TO PREVENT RECURRENCE OF THE BLISTER (SEE *STUCCO REPAIR AND MAINTENANCE GUIDE-WATER INTRUSION*).

1. Remove the blistered stucco finish with a scraper or other hand tool to adjacent well adhered finish.
2. If the stucco surface is chalky, clean and apply primer or surface conditioner (831 Sto Plex W) to restore the integrity of the surface.
3. If the stucco is weak, loose, or scaling, remove the weak material with a scraper or wire brush to a uniform depth and to where it is firm. Dampen the prepared surface and apply stucco base coat so it is even with the adjacent stucco. Moist cure. Proprietary stucco patch materials are also available from Sto such as 244 Sto Leveler. Follow the manufacturer's instructions for these materials.
4. Apply color/texture matched finish to the repaired stucco surface.



Photo 1: The blistered area at the base of this wall can be removed with a hand tool, and new color/texture matched finish applied to repair it. The likely root cause of this blister is ground water that seeps into the stem wall below and wicks up into the stucco. A canale (scupper) from the roof above drains water directly into the ground and not away from the wall. A diverter that directs water away from the wall would prevent recurrence.

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Condition: Efflorescence

Efflorescence is the migration of soluble salts in Portland cement based materials to the surface of the material. Efflorescence occurs when water enters and dissolves unhydrated Calcium Hydroxide (CaOH_3) and carries it to the surface where the water evaporates. When exposed to air the Calcium Hydroxide (CaOH_3) combines with Carbon Dioxide (CO_2) to form Calcium Carbonate (CaCO_3), the white deposit that is on the surface.

Remedy

Efflorescence can generally be removed by light washing with a cleaning agent. A common household solution is vinegar and warm water. Proprietary cleansers¹ are also available from a number of different sources (see notes below). Care should be taken to avoid heavy abrasion of the surface which could damage the integrity of the textured material. A soft bristle scrub brush should be used to scrub the affected area with the cleaning solution. Always try a small inconspicuous area first to be sure of desired results. When using proprietary cleansers follow the instructions and safety precautions on the packaging.



Photo 1: Efflorescence can be cleaned with a mild acid solution to remove unsightly stains on the exterior surface of the stucco.

Notes:

1. *EIFS Clean 'N Prep or Light Duty Concrete Cleaner*, Prosoco, Inc., 3741 Greenway Circle, Lawrence, KS 66046, Tel: 800 255-4255, www.prosoco.com

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Condition: Water Intrusion

Water intrusion can occur from many sources, such as ground water seepage into foundation or stem walls, unprotected parapets, improper or poorly installed roof, deck or chimney flashing, leaky windows, or cracks in the stucco itself. Depending on the severity of the water intrusion, it can result in conditions such as efflorescence, blistering or peeling of finishes, or in more serious cases, water damage to structural elements.

Remedy

- A. Repair large cracks in walls. See *STUCCO REPAIR AND MAINTENANCE GUIDE No. 2.01-CRACKING*. Any of these crack repair techniques are intended to alleviate water intrusion on vertical above grade walls.
- B. Highly exposed surfaces such as parapets and sill returns require membrane protection to effectively waterproof these surfaces (Photos 1 and 2).
 - 1. Fill cracks with flexible crack filler (CR214 Sto Flexible Crack Filler).
 - 2. Embed glass fiber reinforcing mesh (920E Sto Mesh) in waterproof base coat material (235 Sto Flexyl). Extend this application around parapets minimum 6" down each side. Extend minimum 4" down sills and up jambs at window sill returns. At three way intersections, for example, outside corners of sill returns, add another mesh strip application to cover all exposed areas (dotted line, photo 2).
 - 3. Apply primer (801/804 Sto Primer or Sto Primer Smooth) to the waterproofing material.
 - 4. Apply color/texture matched finish.
 - 5. Note: the application of membrane protection and new finish to parapet and sill areas will look different than adjacent areas. To maintain aesthetics, the affected elevations may have to be resurfaced and re-finished so the finished wall appears uniform.



Photo 1: the large crack in the parapet requires elastomeric crack filler, followed by waterproofing with glass fiber mesh installed around the parapet and a minimum of 6" down each side.

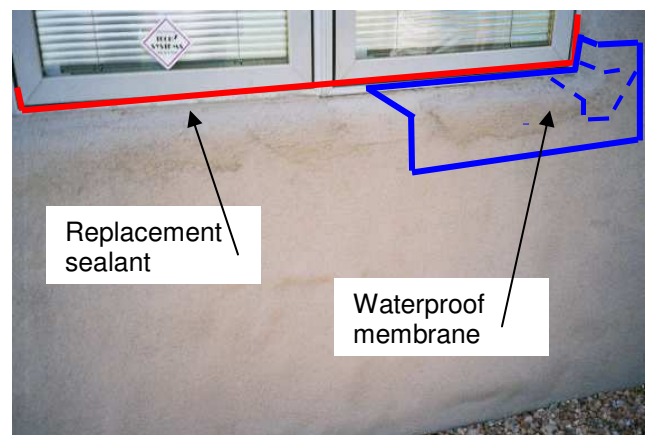


Photo 2: the sill area is the likely source of water intrusion. Waterproofing with glass fiber reinforcing mesh is installed minimum 6" down the sill and 4" up the jambs. Note the extra piece of waterproofing at the corner to ensure complete protection. Perimeter sealant, if missing or deteriorated, should also be replaced.