

Albi Clad Thin Film TF + Water Based Intumescent Fireproofing

Application Manual & Field Guide



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ALBI CLAD TF+

APPLICATION MANUAL

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INTRODUCTION

Albi Clad TF+

Applicator Training

As an Albi applicator, you are critical to achieving the specified aesthetic effect, the long-term durability of the applied product, and ultimately the performance of the fireproofing should there be a fire. It is vital that you and everyone in your company apply the product in accordance with UL tests and in compliance with our instructions.

Albi Clad TF+ is a smooth, hard fireproofing for structural steel that will remain exposed in interior locations. Architects and building owners specify Albi Clad TF+ when they want a clean, attractive finish that maintains the contours of the structural steel. Customer satisfaction for both your firm and Albi depends on a competent and careful application with a pleasing aesthetic finish.

This manual is designed to help you understand the Albi Clad TF+ product, our equipment guidelines and our application methods. The manual is provided as part of our factory training. In addition, it should be used by Albi approved contractors to make sure that all personnel who will be applying the product are fully trained in proper application methods.

ALBI CLAD TF+ PRODUCT DESCRIPTION

Albi Clad TF+

Albi Clad TF+ is formulated for interior application on structural steel where the intumescent fire-resistive material (IFRM) is to be left exposed. It provides a hard, smooth-surfaced, thin architectural coating and withstands heavy service. An attractive finished appearance is very important when applying this fireproofing product.

FORMULATION: Albi Clad TF+ is a proprietary water-based formulation consisting of acrylic-based resins, binders, and intumescent agents. It is factory formulated for maximum quality control and is shipped in 55-gallon (US) drums or 5-gallon (US) pails. Albi Clad TF+ contains NO asbestos and it meets the fire test criteria of ASTM E84, ASTM E119 and UL 263. It does not require a topcoat for performance, though it may be painted with a compatible product if desired.

APPLICATION: Albi Clad TF+ is applied directly from the shipping containers using heavy-duty airless equipment. It requires no field additives. It is a thixotropic material with a very heavy initial viscosity. It must be thoroughly mechanically mixed in the field, which will transform the texture to smooth, creamy and sprayable. Albi Clad TF+ is available in both spray and trowel grade to suit the desired end use requirements.

WATER-BASED: This product is water-based and must be protected from freezing during transport, storage, and application. Observe standard professional practices for the application of water-based coatings. Provide adequate ventilation.

PRIMERS: Since Albi Clad TF+ is not formulated to function as a surface sealer or moisture barrier, a compatible primer is required for protection against corrosion of steel substrates. Albi manufactures two appropriate primers. Both primers must be allowed to cure for at least 72 hours prior to the application of Albi Clad TF+.

Albi 487 S – Alkyd Primer A phenolic modified alkyd primer recommended for use with Albi Clad TF+ under most conditions.

Albi 490 W – Acrylic Primer A water-borne acrylic based primer recommended for use with Albi Clad TF+ when interior application conditions require a water-based primer. For complete details see the product data sheets for these primers.

Albi Protective Coatings performs ongoing testing for primers with an existing database compilation available upon request. We can perform compatibility testing of other manufacturers primers as needed.

EQUIPMENT RECOMMENDATIONS

Why Albi Recommends Specific Equipment

Albi Clad TF+ is a heavy-bodied material that requires heavy-duty airless spray equipment for a smooth and efficient application. There are dozens of pumps, spray guns and tips on the market. Albi has extensively evaluated a number (but not all) of those pumps etc. and we have come up with a list of certain equipment that works very well. Some pumps work better than others at moving this heavy material, and the correct spray gun and tip are essential for producing a good aesthetic finish.

Under ideal conditions with the right pump and tip, an experienced applicator can apply up to 140 Wet Mils (87 Dry Mils) in one day with multiple coats. By contrast, use of inappropriate equipment may limit your production severely and/or produce an unacceptable finish.

We urge you to obtain and use the equipment we recommend here. If you elect to use other equipment than that which we recommend, you may be inviting problems. Furthermore, Albi can only give you the best technical support on the equipment with which we are thoroughly familiar.

AIRLESS SPRAY EQUIPMENT

Albi TF+ can be best applied using the approved spray equipment below.

Pumps that can supply 1.25 gallons per minute minimum, or better may be able to push this material.

Be sure to remove ALL FILTERS, including ROCK CATCHERS from the pump and Gun

Brand	Model	SKU	Type	GPM	Hose	Supports	Gun	Tip Range	Tip Type
Graco	Mark V	17E605	Electric	1.35	240797	1 Gun	241705	.519-.527	RAC X
Graco	Gmax II 5900 HD	17E832	Gas	1.6	240797	1 Gun	241705	.519-.527	RAC X
Graco	Gmax II 7900 HD	17E836	Gas	2.2	240797	2 Gun	241705	.519-.527	RAC X
Graco	GH230 DI	24W943	Convertible	1.25 - 2.35	240797	2 Gun	241705	.519-.527	RAC X
Titan	Impact 1640	2404441	Electric	1.5	291006	2 Gun	538070	.519-.527	TR1 HP
Titan	Powerbeast 4700	0537001	Gas	1.6	291006	2 Gun	538020	.519-.527	TR1 HP
Titan	Powerbeast 9700	0537007	Gas	3	291006	2 Gun	538020	.519-.527	TR1 HP
Titan	PowrTwin 6900	0290021	Convertible	1.25 - 2.25	291006	2 Gun	538070	.519-.527	TR1 HP

ADDITIONAL EQUIPMENT

MIXING EQUIPMENT

Mechanical mixing of Albi Clad TF+ is required to assure uniform blending and proper material viscosity. For best results use a simple ½ inch drive electric drill, with a paddle sized to mix either a 55-gallon drum or a 5-gallon pail.

SPARE PARTS AND ACCESSORIES

Have the following items on hand to limit possible down time expenses.

1. Long handled screwdrivers, wrenches, hose clamps, etc. to allow for quick maintenance checks and repairs in the field.
2. Extra 50-foot section of material hose
3. Supply of empty 5-gallon pails to allow for cleaning of pump and material hose with water flushing
4. Spare parts kit as recommended by pump manufacturer
5. Spare material and air hose connectors, including swivel end connectors
6. Extra spray guns, spray tips, holders.

MISCELLANEOUS EQUIPMENT

Have the following items available on the job:

1. Masking paper and tape as well as non-absorbent masking cloths to prevent or minimize overspray on finished surfaces or equipment.
2. Movable scaffolding as required.
3. Hand truck, barrel or drum handling equipment
4. OSHA approved Safety Equipment.
5. Thickness measuring gauges to assure adequate wet and dry film thicknesses.
6. Supply of good quality paint rollers and tapered polyester brushes in 3” or 4” widths.
8. Trowel and protective gloves for patch up work and for troweling or palming material into areas difficult to reach with spray application equipment.

SURFACE PREPARATION

The surface to receive Albi Clad TF+ must be properly prepared in accordance with good painting practice. The steel must be clean of all residual oil, moisture, dust, frost or other contaminants that may have formed. In areas where spot rusting has occurred, be sure all loose rust, scale, etc. is removed. Spot prime all bare steel with a compatible primer.

PRIMERS

To provide protection against corrosion, all steel must be primed with a proven compatible primer.

Albi manufactures two primers for use with Albi Clad TF+.

Albi 487S is a phenolic modified alkyd primer, and Albi 490W is a rust inhibitive acrylic primer. After using either of these Albi primers, allow at least 72 hours for thorough drying and curing before applying the Albi Clad TF+.

If using a primer other than these Albi products, you need to determine compatibility before beginning the job. Since Albi Clad TF+ is a water-based product it is compatible with many but not all primers. Do not assume compatibility. You can call our laboratory to determine the compatibility of a primer.

PREPARING TO APPLY ALBI CLAD TF+

Mixing the Material

Albi Clad TF+ is a single-component, factory-formulated intumescent fire-retardant product that requires no additives. However, it must be mixed thoroughly with mechanical equipment to a smooth creamy consistency.

When the material is shipped, it has a thick consistency. It is generally uniform, not separated, and may appear ready to apply. It is NOT ready. Albi Clad TF+ is a thixotropic material that undergoes a transformation when vigorously mixed. With mechanical mixing the material becomes smooth, flowable, and ready to spray. Once mixed however, Albi Clad does not require continuous mixing during the spray application. It is recommended to remix the material at the start of each day just prior to spraying.

Important: Mix the Albi Clad TF+ to a Smooth, Creamy Consistency

Airless Equipment Safety Warning – Injection Hazards

Airless Equipment should ONLY be used by trained and experienced personnel. All persons working with, or around airless equipment, must be aware of injection hazards.

AIRLESS SPRAY APPLICATION

Setting Up

Connect the material line to gun. Adjust the pump pressure to the recommended range and choose an airless tip size, between .319 to .527. Increase or decrease pump pressure to achieve an even spray pattern. It is always best to spray at the lowest achievable pressure. If spray tip is constantly clogging, either raise the pump pressure in five-pound increments or change to the next larger size tip. Tip extensions with swivel ends can be used to reach inaccessible areas.

Beginning to Spray

Make sure the Albi Clad TF+ is mixed to a smooth, creamy consistency just prior to starting the spray application. Hold the spray gun a comfortable distance from the work. The trigger on the gun can be pulled continuously or intermittently to allow an even application of the material.

Building the Required Film Thickness

The film thickness can be built 25-35 mils per coat. This is best achieved through multiple passes to produce an even application. Higher film builds per coat tend to impair the product finish. For the smoothest final appearance, it is often best to limit each coat to about 30 mils.

Thickness applied during each pass depends on the skill of the applicator, weather conditions, and of course using the right equipment. Excess film builds can result in mud-cracking, sagging, or material runs. **These cannot be easily repaired**, and if they are left untreated, they produce an unacceptable finished appearance.

As a general guide, film thicknesses can be built up to a maximum of 140 wet mils in one day. This is best achieved in several coats of 25-35 mils each. Allow a minimum of 2 hours between coats.

Equipment Operation Hints

If the pump fails to operate correctly, check the following points:

1. Check material pressure gauge to make sure it is operable.
2. Check material level in Albi Clad drum to be sure enough material is covering the inlet material orifice and no cavitation is occurring.
3. Check material inlet for possible malfunction or clogs.
4. Make sure all personnel involved in the use of the equipment are familiar with its operation and understand the manufacturer's recommendations for trouble shooting.

SMALL JOBS or PATCH AREAS

For very small jobs, not allowing or justifying the use of airless spray equipment, Albi Clad TF+ can be applied as follows:

1. Order trowel grade Albi Clad TF+ TG.
2. Apply by trowel or palming method. Wet trowel thoroughly with water and apply material. Do not work the Albi Clad TF+ too much, as it will tend to dislodge itself from the surface to which it is being applied.
3. To patch damaged area, first remove any loose particles. Then apply Albi Clad TF+ with sheetrock broad knife.

ALBI CLAD TF+ FINISHED APPEARANCE

Albi Clad TF+ serves both as a functional fireproofing material and the architectural finish. It can and should be applied to provide a neat acceptable finished appearance. Albi Clad TF+ should be applied in uniform thickness from runs, sags, and craters. Careless application will always result in costly additional work and customer dissatisfaction.

The final appearance of the Albi Clad TF+ is directly dependent on the initial and subsequent spray coats. Build up the thickness slowly and uniformly using successive passes. (Building up the thickness too rapidly causes mud cracks, sagging and sliding.) Allow each coat to skin dry before applying the next coat.

If errors in application have caused the material to run, slide or sag, you should immediately remove that material and reapply the Albi Clad TF+.

Smoothing the Surface

Airless spray equipment, properly used, delivers the required finish appearance. You can smooth any surface irregularities and especially flange edges by lightly rolling with a foam roller or brush immediately after spraying. Keep the roller or brush wet to avoid pulling the applied material off the steel.

Importance of Sufficient Film Thickness

The film thicknesses specified for a fireproofing job vary depending on the size of the steel and the hourly ratings required. The fire tests performed by Underwriters Laboratories (UL) result in listings of the minimum average dry film thickness. It is vital that the application meet these thicknesses as specified.

Measuring the Film Thickness

Any inspection requirements should be performed in accordance with AWCI Technical Bulletin 12-B

FINISHING UP

Down Time and Clean Up

When stopping work for a break, immerse the tip of the gun in water and cover the open drum to prevent the material from hardening. This permits quick resumption of work.

When stopping work overnight or longer, as well as when the job is completed, place the pump equipment in a container of water. Clean the exterior of the pump of residual Albi Clad TF+ material using an old brush or rag. Activate pump to cycle water, directing the material hose back into the water can. When the pump and material hose are thoroughly clean, cycle a water compatible solvent through the pump to help prevent rusting. Disconnect the material line and remove the gun for hand cleaning.

Protecting the Albi Clad from Exterior Exposure

During application and curing Albi Clad TF+ must be protected from direct weathering such as rain, freezing, snow, etc. Once fully cured, Albi Clad TF+ can withstand some exposure to exterior conditions such as intermittent light rain and snow, until the building is weather tight. However, it is important to remember that Albi Clad TF+ is an **interior** product and it should be protected from steady direct precipitation even after it is cured.

The need for weather protection depends on the climate and season at the job site. For example, if the job is in Los Angeles in the summer where the chance of rain is almost zero, you will have little need to protect the fireproofing from the weather. On the other hand, for most places the weather is much less predictable, so you will need to provide protection from the elements until the building is closed.

WEATHER CONDITIONS

Following are guidelines for cold, hot, and humid conditions. If you encounter these weather conditions in the middle of a job and need advice on how you might work through the situation or whether you might be able to exceed a specific guideline, please call our Albi Manufacturing. Our technical staff has experience and knowledge about the material, its limitations, and techniques that might work to help you continue an application.

Cold Weather Conditions

Because Albi Clad TF+ is water based, freezing is a danger and low temperatures are problematic. Be sure to follow these guidelines:

1. Albi Clad TF+ **MUST** be stored in a heated area at or above 50°F.
2. The steel substrate and ambient air must be at or above 50°F.

Hot Weather Conditions

When applying Albi Clad TF+ in high temperatures, coats must be thick enough to allow the water in the material to remain on the steel long enough to obtain proper adhesion. High temperatures accelerate water evaporation. Follow these guidelines:

1. The temperature of the steel substrate must not exceed 120°F.
2. Albi Clad TF+ should be stored indoors, out of direct sunlight at less than 120°F. If stored outdoors, we recommend storing the drums in the open in shaded areas since the shipping containers can act like ovens.

Humid Application Conditions

When applying Albi Clad TF+ in areas under high humidity conditions, it is important to note the following:

1. Steel surfaces must be free from all residual moisture. Albi Clad TF+ should not be applied whenever the substrate surface temperature is less than 5 degrees F above the dew point of the surrounding air.
2. Following good painting practice Albi Clad TF+ should not be applied when the relative humidity exceeds 85%. Under certain circumstances you can apply the material up to a humidity of 90% if you keep the steel dry. Call the Albi lab for guidance.

AVOID THESE COMMON PROBLEMS

Failure to Mix Material

The Albi Clad TF+ looks uniform when shipped, but it is almost impossible to spray until it has been thoroughly mixed. Mechanical mixing will change the consistency from thick and puttylike to smooth, creamy and sprayable. Make sure it is mixed well.

Wrong Pump

Many problems occur when applicators try to use a lightweight or untested pump to spray this heavy material. Often, they find that they cannot hang over 10 mil per coat. They may compound the problem by switching to an oversize spray tip to increase production, resulting in an unacceptable appearance.

Wrong Spray Tip

Tip Size impacts production rate, hangability and sprayability. When you go bigger to blow it on you will not achieve an attractive finish. If it is not going through recommended tip size, check again to see that the material is fully mixed.

Applying Too Little in One Coat

If you are using the right pump, spray tip and well mixed material, you really can spray 25-35 mils per coat. Some applicators who are just starting with Albi Clad TF+ are not confident about putting this much material on at first. Just remember to use proper spray technique and build with multiple passes.

Trying to Spray Too Much in One Coat

Although Albi Clad TF+ is a heavy material which can be built up quickly, there are limits. If you try to load on too much material at once, it can slide off the steel, or it can go on leaving lumpy craters.

Untrained, Unskilled Applicators

Make sure that the people spraying the Albi Clad TF+ are skilled industrial painters who have been specifically instructed in how to apply this particular product. This manual is designed to help an Albi approved applicator extend the training to his workers. In addition, Albi conducts frequent factory training.

TROUBLESHOOTING

The Pump is Not Handling the Material Correctly.

Check material pressure gauge to make sure it is operable. Check material level in Albi Clad Drum to be sure enough material is covering the inlet material orifice and no cavitation is occurring. Check material inlet for possible malfunction or clogs. Check the pump manufacturer's booklet to find further recommendations.

Material is Going on Too Slowly.

"Help! I can't hang more than 10 mil at a time! This is taking forever!" This is probably due to using a light duty pump. It also may be that the Albi Clad TF+ was not sufficiently mixed before spraying.

Still Going Too Slowly, Taking Four or Five Coats

Some applicators new to Albi may proceed too cautiously, spraying too little at once, and requiring too many coats. Just remember to use proper spray technique and build with multiple passes.

The Surface Looks Like Craters of the Moon

This is likely caused by using too large a tip. Return to the recommended tip sizes. Make sure the material is thoroughly mixed in order to flow through the right tip size.

The Material Keeps Sliding Off the Steel

You are probably spraying too much in one pass. Slow down. Temperature, humidity and airflow can affect the amount you can spray at one time. Adjust your production to the job's environmental conditions.

Repairing A Bad Surface

If an area shows runs or sags overnight, it is best to let that material dry completely and remove the sags with a handheld grater. Then apply any subsequent coats.

If an area shows drips, runs or sags while you are working on it, the best method is to remove the wet material and start over. It is very difficult to improve the appearance of sagging wet material by further spraying, as the problem is caused by excess material in the first place.

KEY POINTS WHEN TRAINING YOUR CREW

Albi Clad TF+ is not difficult to apply, however it does require following our guidelines to achieve an acceptable aesthetic finish. If you are factory trained by Albi, and now are preparing to instruct experienced industrial painters in how to apply this material, you will want to stress the following points:

- 1. Use proper safety equipment.**
Personal protection equipment (PPE)
- 2. Use proper application equipment.**
Be sure to use heavy duty airless spray equipment and the recommended tip sizes. (See page 4 – 6).
- 3. Mix well.**
Be sure to mix the product thoroughly before spraying. Albi Clad TF+ will transform from thick and putty-like to smooth and creamy when you mix it.
- 4. Build up coats with multiple passes.** Some painters are surprised at how much you can hang in a single coat with this product—others will try to spray too much at one pass and the results will be unacceptable.
- 5. Concentrate on an aesthetic finish.** This product is both a functional fireproofing and an architectural finish. In order to do an acceptable job, your applicators must achieve a neat, uniform finish at the required thickness.
- 6. Adjust application technique to climate conditions.** Remember that high humidity or low temperatures will slow the evaporation rate of water, while high temperatures or drying winds will speed it. Match your application rates to jobsite conditions.

CHECKLIST FOR APPLYING ALBI CLAD TF+

Priming and Surface Preparation

Prime Steel or Check Compatibility of Primer. Albi Clad TF+ does not protect against corrosion. Be sure steel is primed with compatible primer. If uncertain, check compatibility of primer with Albi lab.

Clean Primed Surfaces of residual oil, moisture, dust, frost or other contaminants. Remove any rust, and spot prime bare steel as needed.

Pump Equipment (page 5)

Brand	Model	SKU	Type	GPM	Hose	Supports	Gun	Tip Range	Tip Type
Graco	Mark V	17E605	Electric	1.35	240797	1 Gun	241705	.519-.527	RAC X
Graco	Gmax II 5900 HD	17E832	Gas	1.6	240797	1 Gun	241705	.519-.527	RAC X
Graco	Gmax II 7900 HD	17E836	Gas	2.2	240797	2 Gun	241705	.519-.527	RAC X
Graco	GH230 DI	24W943	Convertible	1.25 - 2.35	240797	2 Gun	241705	.519-.527	RAC X
Titan	Impact 1640	2404441	Electric	1.5	291006	2 Gun	538070	.519-.527	TR1 HP
Titan	Powerbeast 4700	0537001	Gas	1.6	291006	2 Gun	538020	.519-.527	TR1 HP
Titan	Powerbeast 9700	0537007	Gas	3	291006	2 Gun	538020	.519-.527	TR1 HP
Titan	PowrTwin 6900	0290021	Convertible	1.25 - 2.25	291006	2 Gun	538070	.519-.527	TR1 HP

Other Equipment

Mixer Air-operated motor or electric mixer.

Drum Handling Equipment

Movable Scaffolding as required

Tools long-handled screwdrivers, wrenches, hose clamps.

Extra 50-foot section of material hose

Empty 5-Gallon Pails for clean up

Spare Parts Kit as recommended by pump manufacturer

Spare Hose Connectors both material and air hoses, including swivel end connectors

Masking Paper, Tape, Cloths

OSHA approved Safety Equipment

Thickness Gauges for measuring wet and dry film thickness

Foam Paint Rollers and Polyester Brushes in 3" and 4" widths

Trowel and Protective Gloves for patch up work or reaching difficult areas.

CONTRACTOR'S CALCULATIONS AND MEASUREMENTS

Estimating Product Quantities

Coverage Guide: Albi Clad TF+ exhibits coverage rates per gallon, which can be easily calculated using a standard paint coverage equation. The formula is as follows:

1604 mils dry film thickness X 0.62 (% volume solids) = square foot per gallon (at 100% coverage rate, no loss or waste included)

Converting Dry Film Thickness to Wet Film Thickness

Contractors will determine their own typical shrinkage rates and loss/waste factors based on their experience.

WARRANTY/GUARANTEE INFORMATION

Limited warranty/limitation of liability: Information and recommendations provided by Albi are based upon extensive test data, laboratory experiments and years of field experience believed to be reliable. Statements made herein as to coverage, drying performance, application and other properties will vary according to the nature and conditions of the surfaces to which the product is applied.

Albi warrants that its products will meet the specifications that it sets for them. Albi's responsibility under this warranty will be limited solely to replacing the products which prove defective, provided that Buyer gives Albi prompt notice in writing of said defect and satisfactory proof thereof. Products may be returned to Albi only after written authorization has been obtained from Albi. The foregoing warranty is in lieu of all other warranties, whether oral, written, express, implied or statutory. **IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WILL NOT APPLY.** Technical or other advice is furnished by us solely as an accommodation and shall not increase the scope of our responsibilities or liability. Albi's warranty obligations and buyer's remedies hereunder are solely as stated herein. In no event will Albi be liable either for the labor and other associated costs incurred in replacing the product, including, but not limited to, its removal and application, or for other incidental or consequential damages.

Applicator shall guarantee that its installation of material conforms to manufacturer's recommendations and shall further guarantee his workmanship connected with the installation for a period of one year from the date of the installation.