

ES-24.68	HUDSON PRODUCTS CORPORATION <i>Fan Engineering Standards</i> Title: Refinishing Tuf-Lite® (B), Tuf-Lite II® (H) And Tuf-Lite III® (K) Fan Blades In The Field.	Page 1 of 7
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Preliminary Examination

1. Examine fan blades for basic structural integrity per E.S. spec 24.30 “Field Inspection Guidelines”.
2. Blades are best refurbished by removing from hub assembly and processed in the shop.

Safety Precautions

Before attempting to recoat fan blades using this procedure, it is highly recommended that the necessary safety equipment and practices be employed. Chemically resistant gloves, appropriate respirators and protective clothing should be procured before refinishing is started. Fans must be disabled from operating before anyone is allowed access to them. Chemically resistant gloves should be worn when sanding, solvent wiping or rinsing, during mixing of the paint, while applying paint, and during clean up of paint equipment. During sanding operations, a respirator or dust mask, which filters out fine particulates, should be worn. During solvent wiping, painting, and clean-up, a respirator which filters out both organic vapors and particulates should be worn.

Surface Preparation

1. Sanding

If there are multiple defects on the fan blade that require patching, it may be necessary to sand and patch these defects before sanding the rest of the blade. To achieve good paint adhesion, it is best to sand a blade immediately prior to applying paint.

Scuff sand over entire blade thoroughly with 240 or 320 grit sand paper to produce a proper surface profile for paint adhesion. Sanding can be done by hand with a sanding block or with powered random orbital sanders. Avoid any circular disc sanders and grinders, as they can grind into the blade too aggressively. Care should be taken on areas where the glass fibers are exposed. Do not sand areas of the blade that have a majority of exposed fibers. These areas will look like a collection of small diameter white or gray fibers and feel fuzzy to the touch.

Recommended random orbital sander: 5” or 6” sanding disc diameter, pneumatic, equipped with dust collection bag.

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2. Patching

After sanding the blade surface to be repainted, small blade defects should be patched with recommended patching compound. Small defects should be limited to slight pitting of leading edge, chips on trailing edge or blade tip, and resin rich cracks. Pits and chips should be roughened with sandpaper or a pneumatic die grinder to enhance adhesion of patching compound. Do not sand or grind into the fiberglass laminate of the blade. Resin rich cracks can be prepared by grinding out the majority of the crack with a pneumatic die grinder equipped with a ¼” to ½” diameter ball end carbide bit. Care should be taken not to grind into the fiberglass laminate. The ground out crack should have the ends and sides tapered. This will help adhesion and aid in filling the crack. Fixing resin rich cracks is optional. Resin rich cracks are common on B blades and pose no particular hazard. Once all the defects are prepared, mix together the two parts of the patching compound per directions on the package and fill defects till slightly above blade surface. Patching compound has a working life of 25 minutes. After patching compound has cured for 3 hours at 70 °F, sand patched areas to blend in with the blades surface. Some large defects may take multiple applications to fill properly. If there are multiple defects that will be repaired on a blade, it may be best to sand and fill patched areas before sanding the rest of the blade.

Recommended patching compound: Epoxy Patch Kit, 11C, Black, 4 oz.
(HPC part no. 82132)

3. Rinsing or Solvent Wiping

Any area of the blade that will be painted must be sanded appropriately or the paint adhesion will be greatly affected. Before painting the newly sanded blade, one must remove all sanding debris and dust with a lint free rag and approved solvent or clean water. The blade must be allowed to completely dry before applying paint.

Recommended solvent: Rubbing Alcohol or Isopropyl Alcohol, 50% to 100% concentration diluted with water.

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Applying Fast Cure Epoxy (Macropoxy 646)

An epoxy coating is required if fiberglass is showing on 25% or more of the blade surface. Mix one (1) part epoxy part A with one (1) part epoxy hardener part B. This epoxy has a pot life of 4 hours at 77°F and 50% relative humidity.

Application Process:

Refer to Sherwin Williams Macropoxy 646 product information sheet for details on proper mixing, application and handling procedures.

May be applied by:

Spray, brush or roller application

Optimal DFT range 3 to 6 mils

Cleanup:

Please follow the instructions carefully for clean-up of lines, guns, pumps, mixers, etc.

1. Clean up immediately after application.
2. Use a reducing solvent, e.g. MIBK or MEK, for clean-up. Recommend reducer R7K15 or R7K111 or Oxsol 100.

Follow manufacturer's safety recommendations when using any solvent.

Recommended Fast Cure Epoxy: Sherwin Williams (Macropoxy 646) **(HPC part no. 41705)**

Fan Blade Repainting Precautions

Fan blades are individually moment balanced at time of their manufacture. There is the possibility that repainting fan blades could cause a noticeable increase in fan vibration at fan RPM. It is important when painting fan blades that all blades are painted with the same amount of paint and that the paint is evenly distributed over the blade's entire surface area. All blades should be painted in the most repeatable manner possible.

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Approximate Polyurethane Topcoat Paint Quantities For All Blade Models

Paint quantities will vary greatly depending on the method used to apply the paint. Depending on the painting method and equipment condition, the actual paint quantity could be more or less than that shown below.

- Fan Diameter 05ft-10ft = 0.10 gal per fan blade
- Fan Diameter 10ft-14ft = 0.15 gal per fan blade
- Fan Diameter 15ft-20ft = 0.19 gal per fan blade
- Fan Diameter 22ft-30ft = 0.36 gal per fan blade
- Fan Diameter 36ft-40ft = 0.45 gal per fan blade

Applying Polyurethane Topcoat for Tuf-Lite (B) Fan Blades

The entire blade surface to be painted should be properly sanded and cleaned just before applying topcoat. Mix four parts of B and one part of A together thoroughly. Only mix the amount of paint that will be applied. Polyurethane topcoat has a pot life of 4 hours at 77°F and 50% relative humidity. This paint can be brushed, rolled, conventionally sprayed, or HVLP sprayed. Do not apply at temperatures below 60 °F.

Typical Properties	Color	Black
	Gloss	Semi-gloss
	Mix Ratio	4B:1A
	Recommended Film Thickness	4-6 mils W.F.T.
	Drying time, 50% R.H. 77°F	
	Touch	1.5 hours
	Recoat (polyurethane paint to itself)	1-3 hours
	Handle	6-8 hours
	Ready to install and return to service	24 hours

Recommended Polyurethane Topcoat: Polyurethane Paint, Black, 1-1/4 gallon kit (**HPC part no. 41704**)

Applying Polyurethane Topcoat for Tuf-Lite II (H) Fan Blades

The entire blade surface to be painted should be properly sanded and cleaned just before applying topcoat. Mix four parts of B and one part of A together thoroughly. Only mix the

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amount of paint that will be applied. Polyurethane topcoat has a pot life of 3 hours at 77°F and 50% relative humidity. This paint can be brushed, rolled, conventionally sprayed, or HVLP sprayed. Do not apply at temperatures below 60 °F.

Typical Properties	Color	Blue
	Gloss	Gloss
	Mix Ratio	4B:1A
	Recommended Film Thickness	4-6 mils W.F.T.
	Drying time, 50% R.H. 77°F	
	Touch	1.5 hours
	Recoat (polyurethane paint to itself)	1-3 hours
	Handle	6-8 hours
	Ready to install and return to service	24 hours

Recommended Polyurethane Topcoat: Polyurethane Paint, Blue, 1-1/4 gallon kit **(HPC part no. 41713)**

Applying Polyurethane Topcoat for Tuf-Lite III (K) Fan Blades

The entire blade surface to be painted should be properly sanded and cleaned just before applying topcoat. Mix four parts of B and one part of A together thoroughly. Only mix the amount of paint that will be applied. Polyurethane topcoat has a pot life of 3 hours at 77°F and 50% relative humidity. This paint can be brushed, rolled, conventionally sprayed, or HVLP sprayed. Do not apply at temperatures below 60 °F.

Typical Properties	Color	Teal
	Gloss	Gloss
	Mix Ratio	4B:1A
	Recommended Film Thickness	4-6 mils W.F.T.
	Drying time, 50% R.H. 77°F	
	Touch	1.5 hours
	Recoat (polyurethane paint to itself)	1-3 hours
	Handle	6-8 hours
	Ready to install and return to service	24 hours

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Recommended Polyurethane Topcoat: Polyurethane Paint, Teal, 1-1/4 gallon kit (**HPC part no. 41714**)

Applying Polyurethane Topcoat for Tuf-Lite II (H) & Tuf-Lite III (K) Fan Blades

The entire blade surface to be painted should be properly sanded and cleaned just before applying topcoat. Mix four parts of B and one part of A together thoroughly. Only mix the amount of paint that will be applied. Polyurethane topcoat has a pot life of 3 hours at 77°F and 50% relative humidity. This paint can be brushed, rolled, conventionally sprayed, or HVLP sprayed. Do not apply at temperatures below 60 °F.

Typical Properties	Color	White
	Gloss	Gloss
	Mix Ratio	4B:1A
	Recommended Film Thickness	4-6 mils W.F.T.
	Drying time, 50% R.H. 77°F	
	Touch	1.5 hours
	Recoat (polyurethane paint to itself)	1-3 hours
	Handle	6-8 hours
	Ready to install and return to service	24 hours

Recommended Polyurethane Topcoat: Polyurethane Paint, White, 1-1/4 gallon kit (**HPC part no. 41719**)

For Small Touch-Up Paint Repairs: 12oz Aerosol Can of Polyurethane White Paint (**HPC part no. 57205**)

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0	Initial release	2/23/04	SR
1	Added Tuf-Lite II and Tuf-Lite III blades.	3/13/04	SR
2	Revised format	8/27/04	CY
3	Revised paint color and quantities	10/1/09	TK
4	Updated with latest Sherwin William Products	5/8/15	BM
5	Updated with Macropoxy 646, aerosol white touch-up paint & TLI paint PN	2/27/18	DT

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