Application Guide
AC-®131
A Conversion Coating to Promote Paint Adhesion

SCOPE

This document describes a process for the application of AC-®131 conversion coating on aluminum, nickel and titanium alloys to promote paint adhesion.

This process is valid on aluminum alloys in the following forms: sheet, plate, foil, forging, and honeycomb core.

AC-®131 is applicable for parts subsequently finished with epoxy-based and polyurethane-based organic coatings.

NOTE:

Subject matter contained in this document is covered by patents pending and by the following United States patents: 5,814,137; 5,849,110; and 5,939,197. Advanced Chemistry & Technology is a Licensee of The Boeing Company.

AC-®131 is a Boeing Company Licensed Product under Boegel-EPII.

MATERIALS

AC-®131 (AC-®131 4-Part Clear & AC-®131 2-Part Blue or Clear), Advanced Chemistry & Technology, 7341 Anaconda Avenue, Garden Grove, CA 92841, 800-732-4470

Scotch-Brite pads, Type A, very fine

Norton Company aluminum oxide nylon abrasive pads; very fine (240 – 400 grit)

Aluminum oxide abrasive paper, #180 grit or finer

Wipers, cheesecloth, gauze or clean cotton rags.

Etch Cleaner/Brightener, as applicable

STORAGE

Materials included in these documents that are considered to be time and temperature sensitive shall be stored in accordance with manufacturer's instructions and in accordance with local requirements from time of receipt through use.

FACILITIES/MAINTENANCE CONTROL

Air used for drying, air-water rinsing, and blow-off shall be treated and filtered so that it is free of moisture, oil, and solid particles.

Application shall be conducted in an area provided with ventilation.

Recommended temperatures for application and cure are 57°F to 87°F and relative humidity shall not exceed 85 percent.

Fresh water input for rinsing of the part prior to AC-®131 application shall not exceed 200 ppm total solids, and meet one of the following additional criteria:

pH 5 to 9; chloride 6 ppm maximum or

Deionized with conductivity no greater than 25 microsiemens/cm.

DEFINITIONS

The following definitions shall apply to terms that are uncommon or have special meanings as used in this specification:

Water-Break-Free Surface: A surface that maintains a continuous water film for a period of at least 30 seconds after having been spray or immersion rinsed in clean water at a temperature below 100F.

Mist Apply: Using the minimal amount of AC-®131 solution required to wet out the entire surface (as opposed to flooding or spray drenching). This will minimize the amount of excess material that will run off of the part and possibly accumulate during this application.

Ambient Conditions: The shop condition meeting the facilities/maintenance control requirements above.

Induction Time: The period of time that freshly mixed AC-®131 solution must sit to initiate the polymerization reaction prior to application. The induction time for AC-®131 is 30 minutes (minimum). Do not treat the part with solution before the elapsed induction time is complete.

Pot-Life: The limited time period, after all of the AC-®131 components have been mixed and the induction time completed, within which the coating material must be used. The pot life for AC-®131 is 24 hours. Do not treat the part with the solution after the pot-life time has expired.

Dry to Paint Time: As soon as the AC-®131 coated surface appears dry, but no sooner than 15 minutes from time of AC-®131 application (at ambient conditions). This is applicable for areas that can be painted without requiring further operations (i.e., masking/marking/tacking, etc.).

Dry to Mask/Mark/Tack Time: As soon as the AC-®131 coated surface appears dry, but no sooner than 60 minutes from time of AC-®131 application (at ambient conditions).

Elevated Temperature Dry Time: Exposing AC-®131 coated surfaces to 8 hours at 120 °F.

MANUFACTURING CONTROL

WARNING

This process involves the use of chemical substances that are hazardous. Please refer to the supplied MSDS and employer's safety instructions. For disposition of hazardous waste materials, consult site environmental engineers for proper disposal methods.

GENERAL PROCESSING NOTES FOR AC-131

Hardware to be processed should be racked or handled with minimal contact area and protected from oil, grease, and fingerprints. Parts that have been contaminated during handling and transport shall be aqueous cleaned with a detergent cleaner or solvent cleaned before storing.

Orient parts for processing to maximize drainage and minimize contact points during cleaning, surface preparation, and AC-®131 application.

Spray equipment for applying AC-®131 solution is not controlled. Examples of acceptable equipment include HVLP guns, airless sprayers, hand-pumped sprayers, and conventional garden sprayers. For reference, good results have been achieved in final paint operations with the following set-up:

- Binks air-assisted airless AA4000 gun using size 13 tips (for mist application).
- Devillbis VTX 18

AC-®131 is a dry in place coating and does not get rinsed off after application.

Process parts in accordance with the flow chart depicted in Figure 1.

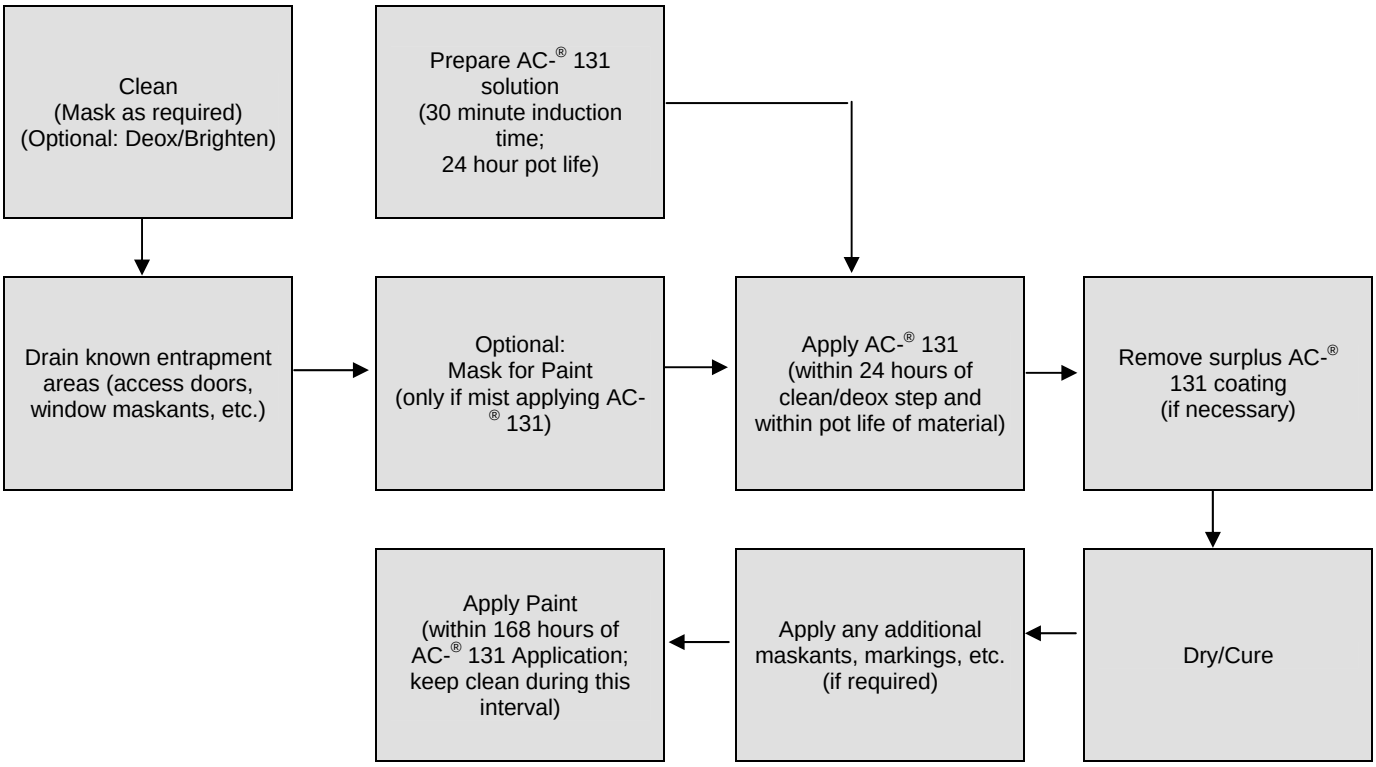

FIGURE 1. PROCESS FLOW FOR AC-®131

APPLICATION PROCESS FOR AC-®131

SURFACE PREPARATION

Solvent/Aqueous Cleaning

As necessary, apply maskant to protect any adjacent surfaces (including entrapment areas) that should not be exposed to the cleaning solutions.

As required, remove any existing coatings using locally approved procedures. Take care to minimize roughening or scoring of the underlying metallic surface.

Thoroughly clean the part by either solvent wiping or by applying an aqueous cleaner; rinse thoroughly. Remove all contaminants.

Check the surface for water-break. If the entire surface is water-break free, it is optional to apply the AC-®131 without proceeding to the deoxidation step. Time between cleaning and application of AC-®131 shall not exceed 24 hours. If the surface is not water-break free, reclean or proceed to one of the deoxidation steps below.

Option 1 - Manual Deoxidation (Optional if Already Water-break Free)

As necessary, apply maskant to protect any adjacent surfaces (including entrapment areas) that should not be exposed to the abrasive media, cleaning solutions, and/or any generated dust/debris.

As required, remove any existing coatings using locally approved procedures. Take care to minimize roughening or scoring of the underlying metallic surface.

Thoroughly clean the part by either solvent-wipe or by applying an aqueous cleaner; rinse thoroughly. Remove all contaminants.

Thoroughly abrade the part surface area to be coated, and adjacent surfaces, using Scotch-Brite pads or aluminum oxide abrasive paper (#180 grit or finer). Rinse thoroughly with water to remove residue. Repeat as required until the surface is water-break free. Time between abrasion and application of AC-®131 shall not exceed 24 hours.

Option 2 – Chemical Deoxidation (Optional if Already Water-break Free)

As necessary, apply maskant to protect any adjacent surfaces (including entrapment areas) that should not be exposed to the chemical solution.

Thoroughly clean the part by either solvent-wipe or by applying an aqueous cleaner; rinse thoroughly. Remove all contaminants.

Brighten or deoxidize the part using an etch cleaner in accordance with the manufacturer's recommended procedures. The part shall be water-break-free after etch-cleaning. If a water-break-free surface is not achieved, solvent-wipe and deoxidize again. Etch-cleaning is optional for parts that are free of loose oxides and scale and are water break free. The time between etch-cleaning and AC-®131 application shall not exceed 24 hours.

MIXING OF AC-®131

Prepare AC-®131 solution in accordance with mixing procedures supplied with each kit (including required induction time). Scale up for size of part as necessary (approximately 1 Quart of solution per 300 sq. ft. to be coated).

APPLICATION OF AC-®131

Open and drain any known water entrapment areas such as access doors, masked windows, etc. Blow out any entrapped water as required. Remask these entrapment areas as required.

Mask as necessary to protect areas of the part that will not be treated with AC-®131.

Optional: If mist applying the AC-®131, it is allowable to mask for paint at this point.

Apply AC-®131 solution by spraying the part surface or by brushing with a clean natural bristle brush, swabbing with a clean wiper, cheesecloth or gauze. Apply the minimum amount of solution required to achieve complete coverage of the surface to be treated.

Recommended: It is recommended to mist apply (see definitions) the AC-®131 to the surface in a top to bottom fashion thereby minimizing accumulation of solution along horizontal edges, crevices, pockets, rain gutters, fastener edges, or other collection areas.

If a water-break occurs on the surface during the application of the AC-®131, surfaces shall be locally reworked using Scotch-Brite nylon pads specified above. Water wipe to remove abrasive debris and reapply AC-®-131 solution.

Allow the coated hardware to drain for approximately 10 minutes (but still wet). If there is any surplus AC-®131 solution that has pooled or collected in crevices, pockets, honeycomb, or other collection areas, including drip edges or fastener holes, use filtered compressed air to blow off excess solution while leaving a wet film behind. Minimize splattering of this excess solution onto adjoining part surfaces. Alternatively, the excess AC-®131 solution may be gently blotted/rubbed off of the surface using a clean wiper or very fine grit (240 – 400) Norton nylon pads. Do not dry off areas of the part that are able to freely drain. Areas to be subsequently painted where excess AC-®131 solution has puddled/collected and dried must have the dried coating removed and reapplied.

Areas that require no further masking/marking/tacking, etc., can be painted after drying at ambient conditions in accordance with the "Dry to Paint" time defined above.

Areas that require further masking/marking/tacking, etc, can be subjected to these further operations after drying at ambient conditions in accordance with the "Dry to Mask/Mark/Tack" time defined above.

Areas coated with AC-®131and stored at ambient conditions must be coated with organic finish within 168 hours of AC-®131 treatment. Avoid contamination of the AC-®131 coated surface during this interval.

Alternatively, the AC-®131 coated parts can be dried at elevated conditions. Areas coated with AC-®131 and subjected to the elevated temperature dry time defined above, must be coated with organic finish within 16 hours of completing the elevated temperature exposure. Avoid contamination of the AC-®131 coated surface during this interval.

Advanced Chemistry & Technology, Inc

7341 Anaconda Avenue Garden Grove, CA 92841 T: 714.373.2837 F: 714.373.1913