

PROCESS STANDARD EXTERIOR DECORATIVE PAINT SYSTEM

HIGH SOLIDS / VOC COMPLIANT EPOXY PRIMER EP-2-Y1 & POLYURETHANE TOPCOAT PG-6-SERIES

Revised: October 2011

SCOPE:

This process standard will provide outline information covering the specific requirements for the mixing/handling and the application of the EP-2-Y1 Epoxy Primer and PG-6 SERIES Polyurethane Topcoat. This exterior aircraft paint system has been designed to meet or exceed the VOC requirements of Air Pollution Regulations governing Aerospace coatings applications. These coatings also meet or surpass all performance requirements of the following specifications: Boeing BMS 10-72V, Type IX, Bombardier BAMS 565-008 /565-009, Embraer MEP 10-068/10-069, SAE AMS-3095, Boeing (Douglas) DPM 6596/6597, Airbus AIMS 04-04-013 and deHavilland DHMS C4.18 PQS 8.

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• SECTION I

PRODUCT MIXING & HANDLING

PRIMER:**HIGH SOLIDS / VOC COMPLIANT EPOXY PRIMER PRODUCT EP-2-Y1**

COLOR: YELLOW
VOC: 350 g/l
MIX RATIO: 2:1:1 2 Parts Base EP-2-Y1
1 Part Hardener EH-12
1 Part Catalyst SC-11

VISCOSITY: 16-17 se. #2 Zahn cup at 77°F
POT LIFE: 2-3 hrs. at 77°F
DRY TO OVERCOAT: 3-4 hrs. at 77°F
SHELF LIFE: 24 months (unopened can)

MIXING INSTRUCTIONS:

Shake base component EP-2-Y1 approximately 10-20 minutes. Pour base into a container, then while stirring or agitating slowly add 1 part EH-12 to 2 parts base and slowly add 1 part Catalyst SC-11.

NOTE: Always add catalyst to base and not base to catalyst. Never mix SC-11 and EH-12 without base component. **See table on page 9 for proper induction times and pot life.**

PRECAUTIONS

It is not recommended that this product be used with temperatures below 55 degrees as Epoxy Amine “bloom” may form on the primed surface and adversely affect the adhesion of the topcoat. Amine “bloom” can occur when cold surface condensation stops the epoxy exothermic reaction and forms an undetectable, invisible film, which can result in poor topcoat adhesion.

• SECTION I (CONTINUED...)

PRODUCT MIXING & HANDLING

TOPCOAT:**HIGH SOLIDS / VOC COMPLIANT POLYURETHANE PRODUCT #PG-6-XXX**

COLOR: XXX
V.O.C.: 420 g/l
MIX RATIO: 2:1:1 2 Parts Base PG-6-XXX
1 Part Hardener PH-19
1 Part Catalyst SC-10, 6, or 2

VISCOSITY: 16-18 sec. #2 Zahn @ 77°F
POT LIFE: 4 hrs. at 77°F
DRY TO OVERCOAT: 30-60 min. at 77°F
DRY TO TAPE: SC-10 4.5-5 hrs. at 90°F 50%RH
SC-6 2-4 hrs. at 90°F 50%RH
SC-2 .5-1hr. at 90°F 50%RH
SHELF LIFE: 24 months (unopened can)

MIXING INSTRUCTIONS:

Shake base component PG-6-XXX for approximately 15 minutes. Pour base into a container. While stirring or agitating slowly, add 1 part PH-19 to 2 parts base and slowly add 1 part Catalyst SC-10. Slowly stir for 10-20 minutes before use.

***Note:** Use this product within 2 hours for optimum results.

• SECTION I (CONTINUED...)

PRODUCT MIXING & HANDLING

SPECIAL PRECAUTIONS:

- 1) Hardener and Catalyst should be clear and free from gelled particles or particulate matter.
- 2) If swollen, Hardener and Catalyst cans should be discarded and not used.
- 3) Discard any component which has exceeded shelf life.
- 4) For optimum results, application environment should not exceed 90° F with 90% relative humidity or below 55° with 85% relative humidity.
- 5) Suitable respirators and protective clothing should be worn when working with any of the products listed within this specification.
- 6) If component or mixed material comes in contact with skin or eyes, wash skin with soap and water or flush eyes with large amounts of water and seek medical attention.
- 7) See Material Safety Data Sheets for detailed safety information.
- 8) Make sure that all Federal, State and Local environmental guidelines are adhered to when following recommendations listed herein.

• SECTION II

SURFACE PREPARATION

STRIP AND REPAINT:

After removing old paint using OEM approved stripper per manufacturer's recommendation, we recommend the following procedure:

- 1) Remove stripper residue using copious amounts of water (hot water, if available). Do not let stripper dry on aircraft surface.
- 2) Wash surface with OEM approved alkaline cleaner, diluted per manufacturer's instructions, using ScotchBrite #7448 Ultrafine or #7447 Coarse.
- 3) Seal all seams. Make fiberglass repairs and finish using AXON SP-11 or SP-60 Surfacer Primer.
- 4) Etch metal surface using a phosphoric acid brightener, such as Alodine, or conversion coating, mixed and applied according to the manufacturer's recommendation.

***NOTE:** For Alodine, apply beginning from the bottom up rinsing quickly. For all other conversion coatings follow manufacturer's recommendations.

- 5) Thoroughly rinse and check for "Water Break Free" surface.

***NOTE:** A water break free surface should appear as a continuous film or sheet of water over all metal surfaces with no breaks or beads.

- 6) Wipe and blow seams dry prior to painting.
- 7) Treated surfaces should be primed within 24 hours. Surface oxidation could interfere with primer adhesion.
- 8) Finally, tack surfaces immediately before painting, changing tack rags frequently.

***NOTE:** Poor application of conversion coatings or waiting too long before priming can cause primer to metal adhesion failures. Normally a maximum twenty four hours lapsed time is acceptable, prior to painting.

• SECTION II (CONTINUED...)

SURFACE PREPARATION**SPECIAL PRECAUTIONS:**

Lab tests show that some acid brighteners have ingredients which may not be detected by water break test and if residue is left on surface can affect adhesion. Therefore it is suggested to alkaline clean and rinse after etching to insure proper coating performance.

When surface is allowed to collect dirt or other contaminants, clean the surface with SR-40 or SR-28 solvent cleaner and tack prior to painting. When using PreKote, follow specific recommendations from manufacturer.

OVERCOAT OF OLD PAINT:

- 1) Check old paint for adhesion and remove that which will not support another coat of paint.
- 2) Wash surface to be sanded with approved alkaline cleaner per manufacturer's recommendation.
- 3) Sand all areas to be painted with applicable Grit paper #180 to #320.
- 4) Wash and rinse all areas with water (warm, if available) then blow dry. Wipe with SR-40 or SR-28 solvent cleaner.
- 5) Tack surfaces to be painted, changing rags frequently.
- 6) Prime entire surface to be topcoated and topcoat per primer overcoat schedule.

• SECTION III

APPLICATION

The following coatings were developed to accommodate various methods of application; HVLP, Conventional & Electrostatic Air Spray, etc. Consult Section IV (Equipment) for a few recommendations. Avoid using air less spray equipment to apply high solids coatings as micro-blisters or haze may result.

In addition, the products you are about to use have been formulated to be used “as mixed” without further reduction. To optimize application and appearance, mixed material may be further reduced. For primer use SR-61 solvent and for topcoat use SR-12, SR-55 or SR-420 (VOC Compliant) solvents. Material should be reduced by a maximum of 15% by volume.

PRIMER APPLICATION:

Apply a thin, smooth uniform coat to a dry film thickness of 0.5-1.0 mil. Allow primer to dry prior to topcoating according to the table below.

Temperature	Induction Time	Minimum Overcoat Time *	Maximum Overcoat Time	Pot Life
56-65 °F (13-18 °C)	90 minutes- minimum	5 hours	24 hours	3.5 hours
66-75 °F (19-24 °C)	60 minutes- minimum	4 hours	16 hours	3 hours
76-85 °F (24-29 °C)	30 minutes- minimum	3 hours	12 hours	2.5 hours
86-95 °F (30-35 °C)	15 minutes- minimum	2 hours	8 hours	2 hours

*Primer surface should withstand 4-5 MEK rubs prior to application of topcoat.

DO NOT APPLY PRIMER WITH TEMPERATURES BELOW 55 DEGREES AS EPOXY AMINE “BLOOM” MAY FORM ON THE SURFACE, WHICH MAY ADVERSELY AFFECT ADHESION OF TOPCOAT TO PRIMER AND PRIMER TO METAL!

Note: If the maximum overcoat times are exceeded sanding is recommended prior to overcoating. After 48 hours, sand and re-apply a coat of primer. Primer topcoat adhesion failures may occur if these recommendations are not followed.

A thin uniform primer coat will enhance the appearance of the topcoat to be applied. Make adjustments to your spray equipment and technique to ensure a thin, smooth uniform orange-peel free surface. Orange peel in the primer will telegraph to the topcoat.

• SECTION III (CONTINUED...)

APPLICATION

**TOPCOAT APPLICATION
TWO COAT PROCEDURE:**

Spray apply a medium wet uniform coat overlapping 50% to ensure uniformity. Allow first coat to flash for 40-60 minutes at 77° optimum before applying the second coat. Apply second coat as the first coat was recommended. If a third coat is necessary observe previous recommendations. When temperature conditions are extreme, longer or shorter overcoat times will be required.

***NOTE:** The successful second or third coat application depends on the previous coat being wet enough to allow proper flow and wet edge. Apply a medium wet coat without flooding for optimum flow while avoiding runs.

SPECIAL PRECAUTIONS:

**Do not wait too long to overcoat first coat or second coats; orange peel will result and excessive paint consumption will be experienced.

- 1) Agitate paint 15-30 minutes prior and always during application.
- 2) Mix fresh material for each coat.
- 3) Do not use other manufacturer's additives with these products.
- 4) Always ground equipment and aircraft prior to painting.
- 5) Sanding of primary color to remove gloss, should be done to ensure adhesion of additional colors.

**Dry To Fly (DTF), for major colors on a completed aircraft is recommended to be minimum of 36 hours after final application of topcoat, when applied within the optimum temperature range. Colder application environments may make it necessary to adjust for longer times of up to 48 hours.

• SECTION III (CONTINUED...)

APPLICATION

ACCELERATOR AX-17

To offset the effects of cold weather and shorten dry times, the following additions of AX-17 Polyurethane Accelerator may be used. This will not adversely affect any performance properties of this coating system.

Temperature	Admix DTT with SC-10/ PH-34	Additions of AX-17 to achieve 5-6 hour DTT		Additions of AX-10 to achieve 5-6 hour DTT	
		Using SC-6	Using SC-10/ PH-34	Using SC-6	Using SC-10/ PH-34
56-65 °F (13-18 °C)	16-24 hours	15 ml/ mix gal	25 ml/ mix gal	75 ml/ mix gal	125 ml/ mix gal
66-75 °F (19-24 °C)	10-16 hours	7 ml/ mix gal	10 ml/ mix gal	35 ml/ mix gal	50 ml/ mix gal
76-85 °F (24-29 °C)	7-9 hours	N/A	5 ml/ mix gal	N/A	25 ml/ mix gal

ROLLER ADDITIVE AX-31

The AX-31 Roller Additive should be added to the PG-6 Series in one of the following ratios by volume:

- 1) 1 gallon PG-6 Base to 1 gallon PH-34 Hardener to 2-3 ounces of AX-31
- 2) 1 quart PG-6 Base to 1 quart PH-34 Hardener to 0.5-0.75 ounces of AX-31
- 3) 2 gallons PG-6-Base to 1 gallon PH-19 Hardener to 1 gallon SC-10 Catalyst to 4-6 ounces of AX-31
- 4) 2 quarts PG-6-Base to 1 quart PH-19 Hardener to 1 quart SC-10 Catalyst to 1-1.5 ounces of AX-31

After mixing the PG-6 Base and PH-34 or PH-19 & SC-10 with AX-31 in one of the above ratios, it can be brushed or rolled using a solvent resistant brush or roller. Roll or brush a thin coat of the topcoat being careful to smooth all runs and streaks.

Note: If the temperature is above 75°F do not let the mixture induct for more than 15 minutes before rolling or brushing.

• SECTION III (CONTINUED...)

APPLICATION

DECORATIVE COLORS (PREMASK)

It is extremely important to allow topcoat to have sufficient cure time prior to masking for additional colors. To test if the paint is dry to tape, apply pressure with your finger to the surface to be taped. If after a few seconds there is no mark left, you are ready to tape.

****NEVER cover freshly painted areas with plastic, as this will trap solvents and cause the surface to blister and down gloss.**

TRIM COLOR PROCESS RECOMMENDATIONS:

- 1) After masking for layout, abrade surface to be overcoated
Using 320 grit paper.
- 2) When sanding use extreme care to sand to all mask lines
in order to ensure 100% adhesion during de-mask and
adhesion of paint in service.

• SECTION IV

EQUIPMENT

Equipment choices are critical to the success of all coatings applications. The equipment choices listed here are those which Axon recommends and several of our customers have chosen to achieve the best results with our High Solids System, yet, other similar equipment will be just as effective.

GRACO:

PRO XS4 Smart

PRIMER AND TOPCOAT:

Tip	1.5mm
Cap	381-431.8

PRO 3500 Air Spray (Electrostatic)

PRIMER AND TOPCOAT:

Tip	1.2 mm
Air Cap	180-739
Pot Pressure	20-40 psi
Atomization Pressure	45-60 psi

HVLP Binks Mach I

Tip	#94
Pot Pressure	11 to 15 psi
Atomization Pressure	10 psi

NOTE: Pressure should be increased to accommodate longer hoses. Flush equipment with SR-43 or SR-44.

Graco recommends the following air regulator pressures to maintain 45-60 psi at the atomization point.

<u>Air Hose Length</u>	<u>Air At Regulator</u>
25 ft. or less	55 psi approximate
35 ft.	65 psi approximate
50 ft.	70 psi approximate
75 ft.	85 psi approximate
100 ft.	100 psi approximate

• SECTION V

SPECIALTY PRODUCTS

WING AND ABRASION RESISTANT COATINGS:**PRODUCT: EP-5-CM1 HIGH SOLIDS
ALUMINIZED WING COATING**

Mix Ratio: 2:1:1

"DO NOT SPRAY ELECTROSTATICALLY"

- (1) GENERAL
This multi component Skydrol resistant aluminized epoxy coating is designed specifically to protect aircraft wing surfaces from corrosion. This product does not require a topcoat.
- (2) SURFACE PREPERATION
To ensure proper adhesion, sand surface with #180 grit or #240 grit and solvent clean with SR-40, all surfaces prior to painting.
- (3) MIXING INSTRUCTIONS
Mix thoroughly, two parts EP5-CM1 base with one part EH-12 hardener and one part SC-11 catalyst. Let material induct for approximately 15-30 minutes. Pot life will be 2-3 hours.
- (4) APPLICATION
Spray apply a single wet uniform coat to dry film thickness of 1-1.5 mils. Constant agitation is required during product application to ensure aluminum dispersion.

**PRODUCT: TS-1-XX / PH-15 SEMI-GLOSS
PTFE ABRASION RESISTANT COATING****PRODUCT: TG-1-XX / PH-25 GLOSS
PTFE ABRASION RESISTANT COATING**

Mix Ratio: 3:1

Spray apply or roll to a DFT of .5 mil using standard application technique.
Multiple coats may be applied for higher build.

• SECTION V (Cont'd)

SPECIALTY PRODUCTS

**PRODUCT: SP-11/ PH-20 or
SP-60 / PH-61
HIGH BUILD PRIMER SURFACER
Mix Ratio: 2:1**

Spray apply in uniform wet coats. Multiple coats may be applied, but each coat must not exceed 4 wet mils. Allow 45-60 minutes between coats and 12-24 hours dry time prior to sanding depending on temperature. These dry times may be accelerated by using .5oz per admixed gallon of AX-17 Accelerator, heat or a combination of both. This product must be reduced 10-20% by volume with SR-12 or SR-350 (VOC Compliant) as may be required. Sanding may be accomplished with 220 or 320 grit paper.

**** ADDITIONAL PROCESS PRODUCTS**

SR-12 Reducer
SR-15 Retarder Reducer
SR-28 Aircraft Wash
SR-40 Aircraft Wash
SR-43 Spray Gun Cleaner
SR-44 Spray Gun Cleaner
SR-350 VOC Compliant Reducer for Primer
SR-420 VOC Compliant Reducer for Topcoat
AX-31 Post Add Roller Additive

AXON HENTZEN Aerospace
307 Echelon Road
Greenville, SC 29605
Tel. 864-299-2819
Fax 864-299-2820