

# **Desoprime™ HS Primers**

## **CA 7700 Series Application Guide**



**Where Smart Solutions Take Flight®**

## Use

Desoprime™ HS CA 7700 series primers are high solids, low VOC (< 350 g/l), epoxy primers used on aircraft exterior structures and components, including metal and/or composites surfaces. CA 7700 series primers meet or exceed the stringent requirements of airline and original equipment manufacturers worldwide. The CA 7700 series primers are available for use with either the “B” or “BE” activator. The “BE” activator was designed for improved electrostatic spray applications. They have undergone extensive testing and field service evaluations and are currently in use at airframe manufacturers, airlines, and third party paint facilities worldwide. CA 7700 series primers are urethane compatible. These primers, when properly mixed and inducted with the appropriate activator, provide excellent durability, adhesion, water resistance, hydraulic fluid resistance, and corrosion resistance. They also pass the whirling arm (rain erosion) test.

## Surface Preparation

Surface preparation is extremely important for good adhesion, chemical resistance, corrosion resistance, and appearance. Customer preferences for pre-paint preparation and materials will vary. The following procedures are PPG Aerospace, PRC-DeSoto recommendations for non-anodized surfaces.

### Aluminum Substrates

1. Strip the aluminum surfaces with a stripper according to the manufacturer's instructions.
2. Rinse with warm water.
3. Apply an alkaline cleaner and rinse thoroughly with warm water. Take care not to let the alkaline cleaner dry on the surface. Dried alkaline cleaner leaves a residue that is difficult to see or remove.
4. Power abrade the surface with an abrasive pad and water. Clean thoroughly with a mild solvent, or solvent blend, such as Desoclean™ 110 cleaner.
5. Acid etch with a mild acid brightener or dilute a strong brightener according to the manufacturer's instructions. Agitate the brightener with abrasive pads. Do not power abrade. Make sure the surface is water break free for a minimum of 20 seconds. If not water break free, abrade the surface by hand with diluted brightener, then recheck the surface for water breaks.
6. Apply clear chromate conversion coating according to manufacturer's instructions using care not to exceed recommended surface dwell time. Rinse thoroughly with warm water.
7. Allow the surface to dry before applying the primer, making sure there is no residual water in the seams.

**Note:** Customers who cannot use a clear chromate conversion coating may skip Step #6. However, using clear chromate conversion coating will improve corrosion resistance and adhesion.

**Note:** Some aircraft have anodized skins. After the anodized aluminum aircraft is stripped down to the anodized aluminum, power abrade the surface with an abrasive pad, then wipe clean with a mild

solvent, or solvent blend, such as Desoclean™ 110 cleaner. Apply a clear chromate conversion treatment. Rinse with warm water and allow the surface to dry before applying Desoprime™ HS CA 7700 epoxy primer.

## Sand And Repaint

1. Prior to sanding, inspect the substrate to ensure the aged paint system is in sound condition. Areas of bubbles, blisters, etc. should be inspected to ensure substrate is free of corrosion.
2. If sanding is warranted, carefully sand\* the polyurethane painted surface to remove the gloss, minimizing the amount of exposed aluminum. For the smoothest surface, sand with 400-grit paper.
3. Wipe the sanded surface clean with a mild solvent, or solvent blend, such as Desoclean™ 110 cleaner. Do not use a strong solvent such as Methyl Ethyl Ketone (MEK). Dust and debris may also be removed with a urethane compatible tack rag.
4. Where metal is showing, apply a thin coat of CA 7700 series high solids epoxy primer with a Sempen® applicator or touch up gun.
5. Allow the primer to dry then apply two coats of Desothane® HS topcoat.

\***Note:** Some carbide sandpapers may contain silicone or stearate binders that will cause dewetting or crawling problems.

## Material Inspection Prior To Use

Inspect containers for damage during shipping. Open any bulging cans with extreme caution. The condition of the curing solution (Activator) is important. Initially, the curing solution (Activator) may appear to have soft settling. After **hand stirring**, the curing solution (Activator) will be a cloudy (milky) amber solution. Do not put the activator component on a paint shaker.

## Mixing The Primer

**Note:** It is important to condition the primer for 24 hours prior to mixing by placing in the shop or hangar, with ambient temperatures between 55° to 95°F (13° to 35°C). The minimum temperature of the paint components should be 55°F (13°C) prior to mixing.

Be sure all mixing and measuring containers are clean and free of contamination. Paper mixing cups must not have a solvent soluble (i.e. wax) lining. These linings will contaminate the primer.

For all CA 7700 series primers, it is important to shake the base component for 10 to 15 minutes on a paint shaker or stir thoroughly until there is no solid material on the bottom of the can. All components should be mixed at the proper ratio (outlined on next page) to achieve the optimum performance properties and the correct VOC. Failure to mix properly will affect the application characteristics and film properties. Avoid mixing old primer with freshly mixed primer. This can reduce the pot life of the freshly mixed primer, cause severe orange peel and decrease the wet edge time. Do not use thinners or flow control agents from other manufacturers. These often contain material that will degrade the cure, adhesion, or appearance of the primer.

Mix Ratio: 1:1 (by volume)

Base: CA 7700A

Activator: CA 7700B or CA 7700BE

Base: 7033A

Activator: CA 7033B or CA 7033BE

Base: CA 7755A

Activator: CA 7755B or CA 7755BE

Base: CA 7756A

Activator: CA 7756BE

## Mixing Instructions

Be sure the activator component is **well stirred by hand** using a clean stirrer or paint stick at least 5 minutes prior to adding to the base. The activator component must be homogeneous prior to incorporation into the base. After thoroughly shaking the base component, add one volume of activator component to the base component. Mix until uniform.

**Table 1**

External Temperature	Induction Time
55° – 64°F (13° – 17°C)	1½ hours, minimum
65° – 74°F (18° – 23°C)	1 hour, minimum
75° – 84°F (24° – 28°C)	30 minutes, minimum
85° – 95°F (29° – 35°C)	No induction time required

## Induction Time

An induction time is **required** for the CA 7700 series primers mixed with either the CA 7700B or CA 7700BE Activator. The ambient (external) temperatures determine the appropriate induction time as outlined in Table 1 below. Mild agitation during induction period is highly recommended.

## Pot Life

The pot life for CA 7700 series primers mixed with CA 7700B or CA 7700BE Activator is based on the ambient (external) temperatures as outlined in Table 2 below. After mixing, strain the primer through a fine mesh cloth to remove any particles that may have been introduced into the primer during mixing and measuring. Stir the mixed material before and during use to minimize settling. Discard any unused material that has exceeded its usable pot life. A primer that has exceeded its usable pot life may still have low viscosity, but may develop severe orange peel.

## Application

Ground the aircraft and the application equipment before priming. Stir the primer slowly while the primer is being applied. Apply Desoprime™ HS primers CA 7700 series to an average dry film thickness from 0.6 to 1.2 mils (15 to 30 microns). This can be accomplished by one medium coat with a 50% overlap. After applying primer, a close inspection of the primer film is recommended to ensure a continuous coating was applied. The primer film will appear translucent between 0.6 to 1.2 mils (15 to 30 microns). The primer should not be applied to full hide. If there are small pinholes, reapply the primer to completely cover the substrate.

## Pot Life

**Table 2**

Primer (Base + Activator)	55°–64°F (13°–17°C)	65°–74°F (18°–23°C)	75°–84°F (24°–28°C)	85°–90°F (29°–32°C)	91°–95°F (33°–35°C)
CA 7700 + CA 7700B or CA 7755 + CA 7755B	6 hours	6 hours	6 hours	6 hours	6 hours
CA 7700 + CA 7700BE or CA 7755 + CA 7755BE	5 hours	4 hours	3 hours	2 hours	1 hour

## Dry Times \*

**Table 3**

Dry times	55°–64°F (13°–17°C)	65°–74°F (18°–23°C)	75°–84°F (24°–28°C)	85°–90°F (29°–32°C)	91°–95°F (33°–35°C)
Dust free	3 – 4 hours	2 – 3 hours	½ – 1½ hours	½ – 1½ hours	½ – 1 hour
Dry-to-tape	4 – 5 hours	3 – 4 hours	2 – 3 hours	2 – 3 hours	1½ – 2½ hours
Dry-to-topcoat Minimum Maximum	2 hours 72 hours	2 hours 72 hours	2 hours 72 hours	2 hours 72 hours	2 hours 72 hours
Dry-to-fly	96 hours	72 hours	48 hours	24 hours	20 hours
Ultimate cure	7 days	7 days	7 days	7 days	7 days

\*Actual dry times may vary and are dependent upon film thickness, airflow, and spray technique. Lower film thickness, better airflow, and spraying “dry” will decrease the dry-to-tape times.

# Spray Equipment: Recommended Tip Sizes and Pressure Settings

**Table 4**

Equipment Type	Tip Size	Pot Pressure	Atomization Pressure at the Cap
Electrostatic Air Spray Gun	1.2 mm or 1.5 mm (or equivalent)	16 to 20 psi (1.1 to 1.4 bar)	45 to 60 psi (3.1 to 4.1 bar)
Electrostatic Air Assisted Airless Spray Gun	#611 or #613 (Graco® Nomenclature)	700 to 1800 psi (48 to 124 bar)	40 to 50 psi (2.8 to 3.5 bar)
High Volume Low Pressure Spray Gun (HVLP)	1.0 to 1.4 mm (or equivalent)	10 to 20 psi (0.69 to 1.4 bar)	10 psi maximum (0.69 bar)*
Conventional Air Spray Gun	1.2 to 1.8 mm (or equivalent)	10 to 20 psi (0.69 to 1.4 bar)	45 to 60 psi (3.1 to 4.1 bar)*

Note: 1 psi = 0.0689 bar

\*Spraying in excess of 10 psi at the air cap will cause "dry spray" with HVLP spray equipment.

## Application Conditions

The temperature of paint should be equivalent to the external / environmental conditions (shop or hangar) before application.

The optimum conditions for applying Desoprime™ HS primers is from 60° to 80°F (15° to 27°C) and 15% to 85% relative humidity. Lower temperatures may cause longer dry times and increase the time to put the aircraft into service. Higher temperatures will shorten pot life, increase orange peel and shorten wet edge.

## Accelerated Cure

Allow 30-minute flash off from 65° to 85°F (18° to 29°C), followed by 30 minutes at 120°F (49°C) for dry-to-topcoat.

## Surface Preparation Before Topcoating

If the primer surface exhibits surface defects such as dry spray or visible dust particles, hand scuff with an abrasive pad then remove dust with a mild solvent, or solvent blend, such as Desoclean™ 110 cleaner. A urethane compatible tack rag may be used to remove dust or debris on the surface. Do not use excessive pressure when using a urethane compatible tack rag. Tack rag residue can be left on the primer surface and cause craters or swirl marks. Never use a tack rag wet with solvent.

If the primer is less than 72 hours old, the topcoat can be applied without any further surface preparation. Ensure the surface is clean prior to applying any topcoat.

If the primer is over 72 hours old, lightly scuff the surface with an abrasive pad or 240-grit (or finer) sandpaper. Remove any dust or debris with a mild solvent, or solvent blend, such as Desoclean™ 110 cleaner then wipe dry with a lint-free cloth. Do not allow the solvent to dry on the surface. Dust and debris may also be removed with a urethane compatible tack rag.

## Spray Equipment

PPG Aerospace, PRC-DeSoto primers are formulated for use with all types of spray equipment. The "BE" activator is designed for improved electrostatic spray applications. Recommended tip sizes and pressure settings are listed in Table 4 above. The final appearance depends on many factors. In general, small particles will create a smoother film with less orange peel. Air spray or HVLP atomize the paint more effectively than airless or assisted airless spray equipment and are recommended for Desoprime™ HS primers.

## Fluid Flow Rate

To determine fluid flow rate of spray equipment, turn off the atomizing air at the pump. Enclose the air cap of the spray gun with a solvent resistant plastic bag. If more than one gun is being used from one pump, then both triggers must be pulled to draw pressure from the pump. Pull the trigger on the enclosed gun for 15 seconds. Remove the bag and transfer all the captured paint into a graduated container. Multiply the contents by 4 and this will be the flow rate per minute. The suggested flow rate to minimize sagging and orange peel is 8 to 12 ounces (227 to 340 milliliters) per minute. The flow rate can be adjusted by increasing or decreasing the fluid pressure or by changing the tip size.

## Air Pressure Settings

In order to achieve 45 to 60 psi (3.1 to 4.1 bar) atomization pressure at the gun, the regulated pressure at the mixing pot should be set higher to compensate for pressure losses. Table 5 below shows regulator pressure requirements for different hose lengths.

Air Hose Length	Air Regulator Pressure
4 feet (1.2 meters)	45 psi (3.1 bar)
15 feet (4.6 meters)	50 psi (3.4 bar)
25 feet (7.6 meters)	55 psi (3.8 bar)
36 feet (11.0 meters)	65 psi (4.5 bar)
50 feet (15.2 meters)	70 psi (4.8 bar)
75 feet (22.9 meters)	85 psi (5.9 bar)
100 feet (30.5 meters)	100 psi (6.9 bar)

## Clean Up

Clean spray equipment as soon as possible after use. Flush spray equipment with a strong ester or ketone solvent, or solvent blend, such as Desoclean™ 45 cleaner. PPG Aerospace, PRC-DeSoto epoxy primers are chemically reacting systems that are not soluble in solvents after they have cured. For this reason, equipment should be cleaned as soon as possible after application and always before the material has cured. Even freshly applied coatings will deposit a film on the equipment that does not dissolve easily. Agitation with a brush or clean cloth will help to remove these deposits.

## Health And Safety

This product is safe to use and apply when recommended precautions are followed. Before using this product, read and understand the PPG Aerospace, PRC-DeSoto “Safe Handling Guide” for aerospace coatings and the Material Safety Data Sheet (MSDS) for information on health, physical and environmental hazards, handling precautions and first aid recommendations. An MSDS is available on request. Avoid overexposure. All mixing and spraying must be conducted with adequate ventilation and proper personal protective equipment as recommended. Obtain medical care in case of symptoms of overexposure as outlined in Section III of the Material Safety Data Sheet (MSDS).

FOR INDUSTRIAL USE ONLY. KEEP AWAY FROM CHILDREN.

EMERGENCY MEDICAL INFORMATION IN THE U.S.A. AND CANADA: 1-800-228-5635.

EMERGENCY MEDICAL INFORMATION (GLOBAL): 1-651-632-9265.

EMERGENCY SPILL CONTROL IN THE U.S.A.: 1-800-424-9300 (CHEMTREC).

EMERGENCY SPILL CONTROL INFORMATION IN CANADA: 1-613-996-6666 (CANUTEC).

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Issued: 2/07  
Supersedes: 1/04

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LIT# DES-008