

ac products, inc.

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Introduction To AC Solvent Based Maskants

AC markets three different basic formulations of maskants; the AC-818/823/828 family, the AC-820 family, and the AC-850 family of maskants.

The AC-818/823/828 formulations all contain exactly the same raw materials and almost in exactly the same proportion. The variations exist in the % weight solids present (viscosity) and the solvent blends incorporated. Various formulations contain a blue/green colorant. The colorant is omitted when the product is to be used through BAC 5555, phosphoric acid anodizing. The word -TAN is added to the original product designation when sold to BAC 5555. The solvents incorporated can be toluene, xylene, VM&P Naphtha, perchloroethylene, and/or parachlorobenzotrifluoride an exempt solvent in the USA. Various blends of solvents are required to obtain optimum application and environmental compliance of the maskants and are dependent on how and where the maskant is applied; i.e., by brush, dip, flow coat, or spray; and the ambient temperature and the flow of air in the immediate area.

The various solvent blends in no way alter the performance of the maskants when fully dried. There are no raw materials present that can leach into the BAC 5555 prebond cleaning line and the formulations do not contain volatiles that can contaminate the part during the primer cure prior to bonding.

The AC-818/823/828 maskants are AC's optimum dip maskants for chemical milling, anodizing, plating, and 250°F. bonding. They provide excellent flow properties, bubble breaking, and adhesion values. They cannot be used through 350°F. bonding with a 290 - 300°F. primer cure or through aging at 375°F. At temperatures in air above 260°F., the adhesion climbs to infinity. If desired, they may also be applied by brush and hot or cold airless spray.

AC-811 Line Sealer and AC-807 Repaircoat work well on this family of maskants. AC-806-AC Line Sealer should be used when chemical milling in acid etchants. AC-832 or AC-837T Topcoat may be used when chemical milling in very aggressive acid etchants to enhance the chemical resistance of these maskants.

Maskants currently sold in the above category are as follows:

AC-818	AC-823-1	AC-828-T-RTU TAN
AC-818-PERC	AC-823-B/AC-828-B TAN	AC-828-C-PERC TAN
AC-818-PERC-5	AC-823-622-O	AC-828T TAN
AC-818-PERC-30		AC-828-CA TAN
AC-818-C-NF	AC-828-C-NF GREEN	
AC-818-C-PERC		AC-828-GD TAN
AC-818-L		AC-828-77 TAN
AC-818-T/AC-818-T-250		AC-828-0-419
AC-818-T-DARK BLUE		AC-828-77 TAN SPRAY CONC.
AC-818-O		
AC-818-C-O		
AC-818-O-30		

The AC-820 family of products was developed for hot or cold airless spray and brush application. They perform well in the following processes:

- Forming
- Routing
- Chemical Milling
- Anodizing
- 250°F. and 350°F. bonding

AC-820-B will work extremely well as a general-purpose maskant for chemical milling, anodizing, plating, forming, and routing at a reasonable cost.

AC-811 Line Sealer and AC-807 Repaircoat work well with AC-820-B. Use AC-806-AC Line Sealer when chemically milling in acid etchants. AC-832 or AC-837T Topcoat may be used when chemical milling in very aggressive acid etchants to enhance the chemical resistance of these maskants.

The AC-820 family of products offers the following advantages:

1. Low uniform adhesion on both clad and bare aluminum.
2. Excellent chemical resistance.
3. Excellent results in all aluminum chemical milling etchants at all temperature ranges.
4. A sprayed film that contains air can perform well in aluminum etchants.
5. Minimum seepage at the edge of the maskant when processed through anodizing or plating.
6. Excellent results in the 250°F. bonding process.
7. Routs well.

The disadvantages are as follows:

1. Poor bubble breaking when dip applied. The products were designed to be applied by brush and hot or cold airless spray.
2. Sprays at 19% volume solids compared to the 24-26% volume solids of the AC-850 maskants. It takes 6 - 8 applications of AC-820-B to achieve the same film build as we now obtain with 3 applications of AC-850-PERC-HS-TAN or AC-850-AERO-D-TAN.

Maskants currently sold in the AC-820 family of maskants are:

- AC-820-B
- AC-820-B-RTU
- AC-820-NF-RTU (DPM 6840)
- AC-820-NF-CONC (DPM 6840-1)
- AC-820-NF-250-RTU
- AC-820-TH-NF GREEN

The raw materials used in the AC-820 family of maskants are all equivalent with the exception that an adhesion controlling inert resin is found in all of the above with the exception of the AC-820-B maskants. This same resin is used in the AC-818/823/828 and the AC-850 maskants. The raw materials will not leach into the BAC 5555 prebond cleaning solutions nor contaminate the primed side of the part during curing.

The AC-850 family of maskants offers the following advantages when compared to previous or competitive maskant formulations. AC-850 maskants can be used successfully with a minimum of labor through all of the processes currently required when manufacturing aircraft or aerospace vehicles.

- Fast application - Up to 17 mils of dry film build with 3 applications making use of hot airless spray equipment.
- Total application and curing time - 2 hours, 10 minutes for up to 17 dry mils of film build making use of oven drying.
- Routes cleanly; does not foul cutters.
- Excellent through various forming processes.
- Minimum seepage at the edge of the part when anodizing.
- Low uniform adhesion even after 250°F. or 350°F. bonding. (Normally 10-12 oz./in. width after processing on clad aluminum)
- Excellent abrasion resistance
- Excellent chemical resistance
- Can be processed through aging @ 375°F.
- Will peel off of chromic and sulfuric acid anodized surfaces (AC-850-CH/AC-854-AH).
- Will peel off of porous castings or forgings (AC-850-CH/AC-854-AH).
- Tears like paper for ease of removal.
- Can be processed in any order and multiple times through the above processes.

The raw materials incorporated into the four versions of AC-850 maskants are equivalent. The various desired properties are achieved by varying the level of the raw materials present and by the addition of an inert resin previously discussed. The major differences occur in the solvent blends incorporated into the formulations. Again, AC uses toluene, xylene, VM&P naphtha, perchloroethylene, and/or PCBTF, in various proportions to achieve the desired application properties. The performance properties of a particular version of an AC-850 maskant are the same when the solvents are evaporated from the maskant film.

Maskants currently sold in the AC-850 family of maskants are:

- **AC-850 Tan** - Primarily formulated for use on clad aluminum.
- **AC-850 Green** - Not for use in BAC 5555) (Primarily formulated for use on clad aluminum.
- **AC-850-Perc-HS-Tan** - Primarily formulated for use on clad aluminum.
- **AC-850-Toluene Tan** - Primarily formulated for use on clad aluminum.
- **AC-850-TCA Tan** -Primarily formulated for use on clad aluminum.
- **AC-850-O Tan** - Exempt Non VOC/Non HAP in U.S.A.) (Primarily formulated for use on clad aluminum.
- **AC-850-O-HS Tan** - Exempt Non VOC/Non HAP in U.S.A.) (Primarily formulated for use on clad aluminum.
- **AC-850-250 Tan** - Primarily formulated for use on clad aluminum.
- **AC-850-CH-Perc Tan** - Very low adhesion version. For use on rough or anodized surfaces.
- **AC-850-CH-Toluene Tan** - Very low adhesion version. For use on rough or anodized surfaces.
- **AC-850-CH-O Tan** - Exempt Non VOC/Non HAP in USA. Very low adhesion version, for use on rough or anodized surfaces.
- **AC-850-Aero-D Tan** - May be used on clad or bare aluminum, steel and titanium.
- **AC-850-Aero-D-Tan-Perc** - May be used on clad or bare aluminum, steel and titanium.
- **AC-850-M Dip or Spray Application Version** - Works well on Aluminum, steel, exotics, and Titanium.

NOTE: The AC-850 formulations recommended for use on clad aluminum may be used on bare alloys with success. They will, however, peel at higher adhesion levels. The use of the AC-850-Aero-D Tan formulations is recommended. These versions will peel readily from both clad and bare aluminum before and after processing.
None of the above maskants will peel off of a phosphoric acid anodized surface.

AC-811 Line Sealer and AC-807 Repaircoat work well with AC-850 maskants. Use AC-806-AC Line Sealer when chemically milling in acid etchants.

AC Products, Inc. also sells waterbased maskants and multiscribe line sealers.

Please contact AC Products, Inc. at acpaerosp@quakerchem.com for additional information or call 714-630-7311.