PRODUCT DATA
CERAL 50, CERAL 350
Ceral 50 also referred to as Ceral 50 Part I Base
TECHNICAL BULLETIN

TECHNICAL DATA Bulletin 50-350 - Revision: 02/07/13

Purpose		Primarily as a topcoat for a thin corrosion and oxidation resistant coating with good surface finish for steel parts operating to approximately 1100˚F (593˚C).
Density		Not less than 10.5 lb/US gallon (1258 kg/m3) when tested in accordance with ASTM D 792
Method of Application		Spray
Cleanup		Water
Shelf Life		6 months when stored between 45˚ F. and 85˚ F. (7 to 29˚C).

DESCRIPTION

CERAL 50 is a sealer that is supplied in either pigmented* or non-pigmented versions. It is supplied in ready-to-use condition**. As there are no suspended particles in the non-pigmented version it requires only shaking in order to ensure the contents are homogenous. One minute should be sufficient.

The pigmented versions of CERAL 50 have a tendency to settle out and agglomerate during shipping, storage, and any period of stagnation. Because of this, the pigmented sealer must be thoroughly mixed before use. It is not recommended that the initial mix be done using any kind of a paint shaker as this can cause degradation of the pigments. A stirrer is recommended for initial mixing. The CERAL 50 should be stirred in the original container for a minimum of 30 minutes prior to initial use. After initial mixing, it is recommended to maintain the dispersal of the pigments by periodically shaking the spray gun reservoir. An alternative method to ensure dispersion of the pigments is to place the original container on a rolling machine (see www.ceralusa.com) for 60 minutes. Effectiveness of the method used may be verified by passing the coating through a 270 mesh screen as it is poured into the spray gun reservoir.

CERAL 50 may be applied over a CERAL 34, or similar, base coat for the purpose of both improving corrosion resistance and extending the life of the coating. The seal coat also serves to render the surface smoother and, at the same time, fills in the microscopic surface voids created by the dispersed Aluminum particle distribution. The resultant binary coating is resistant to hydraulic fluids, fuel, and hot water and is highly resistant to thermal shock and impact damage.

CERAL 50 is an aqueous, inorganic material with a relatively low viscosity, making its characteristics similar to those of water when being applied to a surface. Consequently, excess material will cause runs during application and mud cracking during drying.

NOTE: It is highly recommended that a spray booth equipped with environmental controls be used to apply the coating. The preferred environment is relative humidity (RH) between 45% and 65% and temperature between 65° F. and 75° F. Application outside of the preferred environment may contribute to runs (RH > 65%) or powdery surface (RH < 45%). The ideal situation would be to control both the RH and temperature within the tightest tolerance the spray booth is provisioned to maintain in order to produce the most consistent coating quality on a day-to-day basis.

APPLICATION METHODOLOGY

1. Cleaning

All surfaces to be coated must be clean and free of grease.

NOTE: Surfaces that are to be sealed must first be activated. This may be accomplished by either "dusting" the areas with Silicon Carbide (SiC) grit at 15 to 20 PSI or, where surface finish is a critical requirement such as compressor blade applications, exposing them to a full peening operation as described in Item 2.

NOTE: Blasted components should be handled only while wearing clean, lint-free gloves.

2. Peening

This optional step is recommended for applications where surface finish is a critical requirement such as compressor blade applications. Components to be sealed should be wet peened or alternatively dry glass bead peened prior to application of the sealer. Wet peening should be performed using a medium of 25% ceramic particles (ZrO2: 60-70%, SiO2: 28-33%) with a particle size of .008" - .012" and the following peening parameters:

Pressure 45 – 50 psi
Impingement angle: 90°
Nozzle-to-work distance: 4 Inches
Nozzle diameter: 0.5 Inches.

3. Application

Spray the CERAL 50 onto the previously base coated and cured surface using a gun pressure between 15 and 25 psi and a standoff distance between 4 and 6 inches. Spray the coating in a ladder pattern, being careful to "mist" it and to not dwell in any one area. After one coat is applied in this manner, gently air dry the layer using the spray gun in air-only mode for approximately 2 minutes, again ensuring that the entire sprayed surface is so treated. Then allow the component to dry at ambient temperature for ten minutes.

4. Thickness Control

Unless otherwise instructed, the final coating thickness should be between 0.00005 and 0.0003 inches. Depending upon the component to be coated, the desired thickness may be achieved by applying multiple coats. Each sepa-

rate coat may be fully dried, cured, and blasted before applying a successive coat. Measure coating thickness and, if required, apply additional coats of CERAL 50.

5. Curing
First, bake for 30 - 45 minutes between 150° F. and 200° F. Then, cure between 450° F. and 650° F. for 30 minutes, minimum, in an air recirculating oven.

**6. Optional
In some cases, either due to personal preference or mandated by an OEM specification, a CeralUSA solvent identified as "Part II" is added to CERAL 50 prior to applying:

"Thoroughly mix ten parts by volume CERAL 50 to one part by volume CERAL 50 Part II."

Pot life of mixed product is eight hours so only mix an amount that will be consumed within that period. No adjustments to spray parameters or drying / curing routine are required.

Note: It is not recommended to add Part II to pigmented versions of CERAL 50 as it may cause separation of the pigments.

REWORK OR REMOVAL OF COATINGS
Uncured coatings may be removed from a component by running it under clean, warm tap water, after which it should be thoroughly dried and recoated. The water should not however be dumped down a common sewer but should rather be collected for disposal in accordance with local regulations or sent through a water treatment system.

Cured coatings may not be removed without also intentionally removing the previously applied base coat.

If deemed appropriate, the entire duplex coating may also be chemically stripped in a NaOH (Sodium Hydroxide) solution. If using this option, ensure that the component substrate and any brazed joints or other coatings are not sensitive to attack by strong alkaline solutions. Rinse the component thoroughly in warm water after chemical stripping.

See "Ceral 34 Technical Bulletin" for reapplication of Ceral 34 base coat.

EQUIPMENT CONSIDERATIONS
All spray equipment may easily be cleaned with water. The water should not however be dumped down a common sewer but should rather be collected for disposal in accordance with local regulations or sent through a water treatment system.

Spray booths should ideally be of the environment controlled enclosure type (see www.ceralusa.com) but if such equipment is not available, then always use a disposable dry filter system and change the filter at regular intervals. Always bag the discarded filter. Never allow the powder in a filter to be exposed to any flammable liquid such as paint thinners.

Spray booths should always be well ventilated.

SAFETY
Operators should wear rubber gloves when handling coated parts, whether cured or uncured. When spraying, operators should always wear a suitable respirator.

Operators should always wash their hands thoroughly before eating after handling components, spray equipment and such.

* Note: This technical bulletin is applicable to all pigmented and non-pigmented versions of CERAL 50 and CERAL 350.