



Plural Component Ceramic
Coating Version 5

Surface Preparation and
Application Guide

V.5.10.2016

EONCOAT



Table of Contents

1.0	Introduction
2.0	Product and Packaging
2.1	EonCoat
2.2	EonCoat Packaging
2.3	Storage and Material Temperature
3.0	Surface Preparation
3.1	Prior To Blasting
3.2	Welds
3.3	Coating Previously Painted Surfaces
3.4	Preparation of Steel- Abrasive Blast Cleaning
3.5	Preparation of Steel- Water Jetting
4.0	Mixing
4.1	Mixing EonCoat
5.0	Application & Equipment
5.1	Surface Temperature
5.2	Stripe Coating
5.3	Plural Component Equipment Recommendation
5.4	Application
5.5	Pump Maintenance
5.6	Gun Maintenance
6.0	Curing
6.1	Temperature Rise
7.0	Inspection
7.1	Wet Film Thickness
7.2	Dry Film Thickness
7.3	Final Inspection
7.4	Alloy Layer Test
7.5	Post Application Observations
8.0	Repair
9.0	Health & Safety
10.0	Application Notes
10.1	Ambient Conditions
11.0	Top Coats and Sealers
12.0	Troubleshooting
12.1	Spray Gun
12.2	Spray Pump
11.3	Spray Pump Pressure Gauges

EONCOAT

1.0 INTRODUCTION

The purpose of this guide is to familiarize contractors/ applicators with the basic information necessary for properly ordering, storing, and applying EonCoat, a plural component flexible ceramic coating system. Prior to starting work, please read this guide carefully. If you have any questions, please contact your EonCoat representative.

Also, reference the project specifications and compare them to this guideline and product data sheet.

2.0 PRODUCT AND PACKAGING

The following contains information on components of EonCoat.

2.1 EONCOAT

EonCoat is a 1:1 mix ratio, 100% solids inorganic coating. It forms two layers of protection in minutes. When applied, EonCoat's forms a layer of magnesium iron phosphate that is permanently chemically bonded with the ferrous ions in steel and a protective outer layer of flexible ceramic.

2.2 EONCOAT PACKAGING

KIT SIZE	PART A (PARTIALLY FILLED)	PART B (PARTIALLY FILLED)	YIELD (MIXED)
Standard	5 gal. pail	5 gal. pail	9 gal (34.1 L)





2.2 EONCOAT THEORETICAL COVERAGE RATES

	Dry Mils - tolerance (Microns)	Wet Mils (Microns)	Sq. Ft./ Gal (m ² / gal.)
Recommended -no max	20.0 (508) - minus 4(100)	20.0 (508) - minus 4(100)	80 (7)

NOTE: Recommended DFT could vary on substrate condition and system design. Please contact EonCoat for application specific recommendations. Allow for overspray and surface irregularities. Film thickness is rounded to the nearest .5 mils (1 mil = 25.4 microns) and can be achieved in one or multiple passes, but it is crucial that the entire 20 mils be achieved while the material is still wet. Adding thickness to EonCoat after it is dry is of little to no value. Application below minimum recommended thickness may adversely affect coating performance.

2.3 EONCOAT STORAGE AND TEMPERATURE

Do not store EonCoat in direct sunlight for a prolonged period of time. Minimum storage temperature is 40°F (5°C) and maximum 120 °F (49 °C). EonCoat, when stored properly, maintains a shelf life of up to (1) year unopened. When opened, containers can be used more than once when lids are tightly sealed after each use. Opened containers should be used within (1) month after opening. Temperature will affect the sprayability of the product. Cooler temperatures increase viscosity. Warm temperatures will decrease viscosity. So we recommend that you place the product pails in a relatively warm room 24 hours prior to application to allow them to gradually come to room temperature as a means of making the material easier to pour.

3.0 SURFACE PREPARATION

None of the NACE Standards precisely matches the optimal surface prep for EonCoat. EonCoat is not a barrier coating, but rather a surface treatment similar to phosphating. To alloy the metal surface it is not necessary for all iron oxide to be removed, but it is essential to remove all other surface contamination. EonCoat must physically touch the metal in order to alloy it. If very small areas are missed (not alloyed) because of surface contamination the ceramic will continue to dissolve and phosphate the unprotected metal for years. This will fix tiny spots that do not get alloyed by the initial application, but this should not be counted on as the primary mechanism of surface protection.

3.1 PRIOR TO BLAST CLEANING STEEL

EONCOAT

All surfaces shall be cleaned and free from all grease, dirt, oils, dust or residue that will adversely affect the adhesion of EonCoat. All loose scale, large deposits, oil, grease, cutting oils, dirt and other contaminants shall be removed prior to abrasive blasting by washing with detergent and potable water or steam cleaning, followed by a thorough rinsing with potable water.

3.2 WELDS

Fins, slivers, burred or sharp edges, weld spatter and slag shall be ground down by hand or power tool prior to surface preparation. Welds should be ground down to remove any surface irregularities and considered ready for painting when a minimum finish level of a C designation is achieved as defined by NACE SPO178.

3.3 PREVIOUSLY PAINTED STRUCTURES

Previously painted surfaces require complete removal of existing paint prior to coating in order for EonCoat to form the molecular bond with the steel.

3.4 PREPARATION OF STEEL- ABRASIVE BLAST CLEANING

All steel surfaces to be coated shall be abrasive blast cleaned similar to SSPC-SP16/ NACE 3, Commercial Blast Cleaning to an anchor profile of minimum 1-2 mils. Abrasive media should be equal to FINE-MEDIUM grade, BLACK BEAUTY® abrasive media to achieve a 1-2 mil profile. Recyclable blast media must be clean and free from dust, oil, grease or any other detrimental matter. Anchor profile is suggested to be measured by using Testex-Replica profile, or other, tape prior to the application of the coating. Once all foreign materials and mill scale are removed the surface can be allowed to degrade (flash rust). The important issue is that only metal or light iron oxide (FeO) remain on the surface during coating. Below are examples of surface preps that are acceptable as well as those that are not.

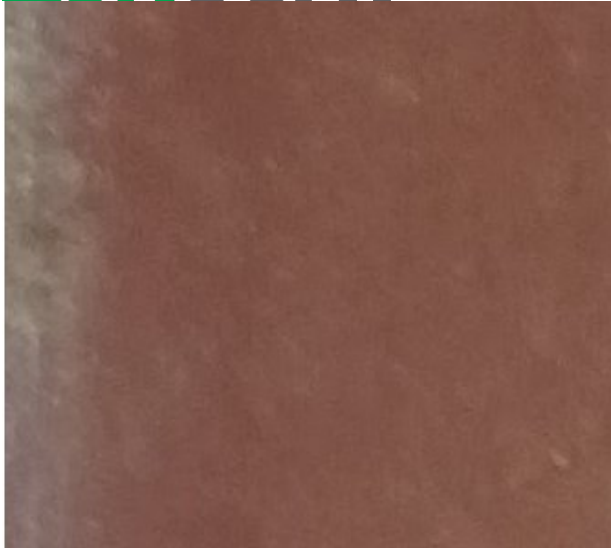
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	Brush Off	Industrial	Commercial	Near White	White Metal
	SSPC SP7 NACE No.4 ISO Sa 1	SSPC SP14 NACE No.8 ISO --	SSPC SP6 NACE No.3 ISO SA 2	SSPC SP10 NACE No.2 ISO --	SSPC SP5 NACE No.1 ISO SA 3
				ISO SA 2 1/2 up to 15% stains, shadows	
Loose Material	None	None	None	None	None
Tight Material	100%	up to 10%	None	None	None
Stains, Shadows	100%	100%	up to 33%	up to 5%	None

More detailed information can be found here: <http://blastjournal.com/surface-preparation-standards-explained/>



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NOT ACCEPTABLE - HAS PRIMER ON SURFACE



ACCEPTABLE - WHITE METAL



ACCEPTABLE - MINOR STAINING



NOT ACCEPTABLE - Fe₂O₃

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ACCEPTABLE - FLASH RUST



NOT ACCEPTABLE - MILL SCALE



ACCEPTABLE - FLASH RUST & MINOR STAIN



NOT ACCEPTABLE - Fe₂O₃

See the Appendix of this Application guide for larger samples of the photos above which can be used to match to the surface you are preparing.

EONCOAT

The compressed air used for blasting should be free from water and oils. Adequate moisture/ oil separators should be used to ensure elimination of all contaminants. Cleanliness of the air can be checked by operating the line without abrasive media through a white cloth in accordance with ASTM D4285, Standard Test Method for Indicating Oil or Water in Compressed Air, which describes if any oil or water is found on the cloth, the separators should be cleaned until subsequent 20 second tests prove satisfactory.

The formation of rust bloom after a blast is acceptable. The rust bloom should be minimal so as to not affect the adhesion to the steel. At the time of the coating, the degree of flash rust shall be no greater than moderate (M), as listed in SSPC WJ standards for maximum degree of flash rust. Painting over contaminants is not acceptable. Care should be taken by individuals to avoid hand or clothing contamination on freshly blasted surfaces.

Remove all blasting residues from the structure/vessel by means of vacuum cleaning plus, as appropriate, shovels, brooms, clean compressed air, vacuum cleaners and other dry extraction methods. Pressure washing may be utilized provided the surface is air dried and coated prior to the maximum allowable degree of flash rust. Cloths should not be permitted for cleaning due to possible lint contamination.



3.5 PREPARATION OF STEEL- WATER JETTING

The steel surfaces to be coated shall be pressure washed utilizing Ultra-High Pressure Water Jetting in accordance with SSPC-SP WJ-1 L/NACE WJ-1/L, "Clean to Bare Substrate, Light Flash Rust." At the time of the recoating, the degree of flash rust shall be no greater than moderate (M). Water used should be comparable to potable water and free of oil, acid, alkali or any other detrimental matter.

The formation of rust bloom after a blast is acceptable to paint EonCoat over. The rust bloom should be minimal so as to not affect the adhesion or chemical bond the steel. At the time of the coating, the degree of flash rust shall be no greater than moderate (M), as listed in SSPC WJ standards above for maximum degree of flash rust. Painting over contaminants is not acceptable. Care should be taken by individuals to avoid hand or clothing contamination on freshly blasted surfaces.

4.0 MIXING

4.1 MIXING EONCOAT

Mix the entire contents of Part A and Part B separately. Do not mix Part A with Part B. Mix using a Paddle Mixer or PS Jiffy Blade for each component for a minimum of (3) minutes. During the mixing process, scrape the sides and bottom of the container to ensure the both Parts are agitated properly.

Add Part A to Part A saddlebag/ transfer bucket and Part B to Part B saddlebag/ transfer pump located on or near the spray pump. Applicators should be careful not to cross contaminate both Parts as the curing reaction will begin to take place.

Further mixing will be achieved by use of an impingement mix gun or static mix block as detailed in the next section.

5.0 APPLICATION AND EQUIPMENT

5.1 SURFACE TEMPERATURE

Surface temperature should be minimum 40°F (5°C) and maximum 110°F (43°C). There are no dew point restrictions. The maximum relative humidity at the time of coating should be 95%. Please note that special consideration and application techniques will need to be utilized when spraying at the high end of temperature readings, low end of humidity readings and windy conditions (+5mph). See troubleshooting (Section 10.0 of this guide) or contact an EonCoat representative for specific details.



5.2 STRIPE COATING

Stripe coats are additional coats of paint that are applied locally to welds, fasteners and external corners. Their function is to build a satisfactory coating thickness at edges and corners where paint has a tendency to contract and thin upon drying. In order to achieve the required mil thickness in these areas, you can apply EonCoat ONE of the following two ways:

High Pressure Spray (EonCoat Predator Spray System or Similar)

When using a high pressure spray system you may not be able to build mil thickness in one pass. You may need to build thickness in the areas with multiple passes.

The first pass (back and forth) can be applied approximately 3-4 mils, then wait for a few seconds, and then apply a second pass at 3-4 mils. This will allow the coating to be able to hold the weight of the material on the edge/ corner and allow for adequate coverage over these areas. If sprayed too wet, the coating will fall off the edges and leave a thin layer of coating over the applied area.

Once you have achieved the thickness you desire over the striped areas and the coating is DTT, you may then proceed by spraying the entire structure or substrate with a uniform coat of EonCoat to build the specified thickness in one application (multiple passes).

Air-Assisted, Cartridge Spray System (EonCoat Quad 3000 Spray System or Similar)

The air assisted spray system is a compact, cartridge spray system that utilizes a valve gun and a static mixing tip at low pressure, to apply EonCoat over a structure or substrate. The air-assisted cartridge spray system can be used as a stand-alone spray system or in conjunction with a high pressure spray system. The air assisted can be used in hard-to-reach areas of a structure or substrate to build optimum mil thickness prior to spraying the structure or substrate with a high pressure spray system, which might not be able to reach these areas.

When coating stripe areas with the cartridge system, you must build mil thickness in multiple passes. The first pass (back and forth) can be applied at approximately 6-8 mils, then wait a few seconds and apply a second pass at 6-8 mils. This will allow the coating to be able to hold the weight of the material on the edge/ corner and allow for adequate coverage over these areas. If sprayed too wet, the coating will fall off the edges and leave a thin layer of coating over the applied area.

After (2) passes and the coating is DTT, you can then proceed with a top coat or a uniform coat of EonCoat utilizing the cartridge system OR the high pressure spray system to build the specified thickness on striped and unstriped areas.



5.3 PLURAL COMPONENT SPRAY EQUIPMENT

A plural component spray must be used to apply EonCoat. Refer to the chart below for Spray Pump and equipment recommendations:

Pump Size	25:1 (min)
Spray Gun	Binks 43P with static mixer
Alternative	Remote mix manifold with static mixer and standard Contractor spray gun
Tip Orifice *	.017 - .043 fan tip
Atomization Pressure	1200-2000 psi OR until “tails” in spray pattern do not show
Mat’l Hose ID	Attach 50’ lengths of 3/8” or 1/2" hose to pump as needed to reach (A & B Side)
Whip Hose ID	Attach (1) 6’-10’ x 1/4” hose to fluid line and gun (A & B Side)

* Specific tip sizes will depend on the nature of each particular application. Select a spray tip that is within the capacity of the airless spray pump. The larger the spray tip, the greater the pressure drop. Long hose length and cold material will decrease material delivery volume and fluid pressure at the spray tip. If the pattern has fingers or pulsates, change the spray tips to reduce the size of the spray orifice. This will decrease the material volume and increase pressure.

Airless spray pump must have a minimum 2000 psi output pressure rating and adequate delivery volume to support the spray tip orifice gallons per minute rating (gpm). High pressure airless sprayers with higher maximum pressure capability will allow spray application in cold weather or using spray hose lengths greater than 200 feet (76 meters).

NOTE: Part A is an acidic product and care should be taken when selecting components for use with the Part A side of the spray equipment. Stainless Steel 304/ 316 is recommended for any part that comes in contact with the Part A component.

Temperature will change viscosity of product and therefore mix chamber, insert tips and fan tips may need to change accordingly. Application environment will also be in factor when choosing these components to spray with. Please contact your EonCoat representative for more information.

EONCOAT

The recommended film thickness should be achieved in a single coat through multiple passes. Multiple passes can be sprayed while coating is still wet or tacky. Once coating has “dried-to-touch”, the coating must be allowed to set-up before additional materials can be applied. However, additional thickness has minimal value. *Every attempt should be made to achieve the recommended thickness while the initial spray is still wet.*

5.4 APPLICATION

Technique-

Hold the spray gun perpendicular to the surface at a distance of 24-30 inches (60 - 75 cm). While triggering, move at a rate to produce the desired coating wet mil thickness without thin spots or “holidays”. The spray technique should include a “half pass” technique where each spray pass is overlapped 50% for uniform coverage. Never flick the wrist at the end of a pass. The coating is dry fall in 5 feet. Flicking the wrist at the end of a pass will create dry fall on uncoated steel. This dry fall then becomes surface contamination which could negatively impact the coating reaching the metal.

The initial pressure should be set to where the lowest fluid pressure will provide a uniform spray pattern without tails. If greater material coverage is desired, use a larger tip size and keep the fluid pressure the same.

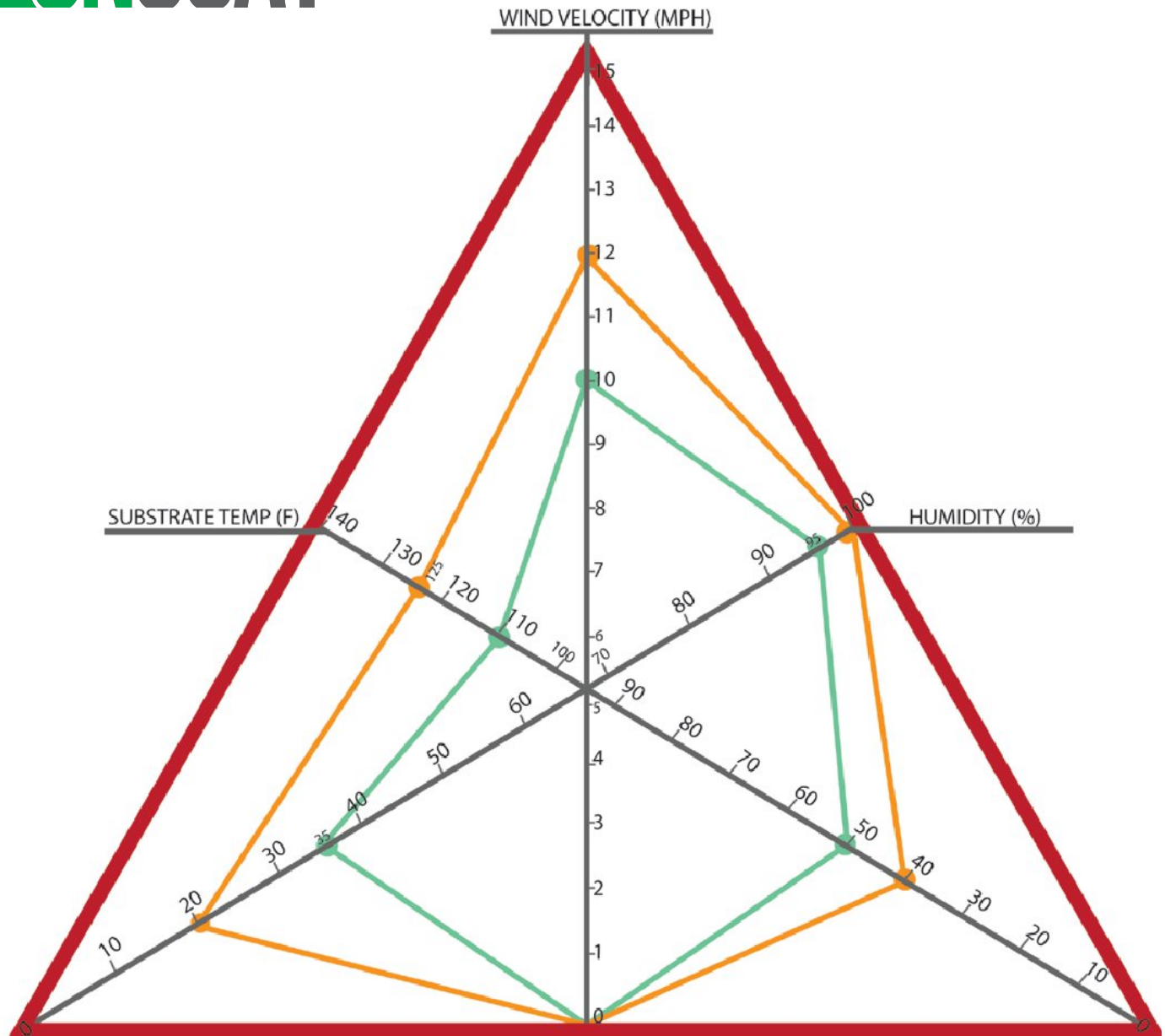
It is essential that the coating reaches the metal while the pH is below 4, the optimal pH for formation of the passive layer. This is easy to accomplish when using an internal mix gun like the Binks 43P. More attention must be paid when using a remote mix manifold and whip hose. A 10 foot ¼” whip hose holds about 100 ml of material. When spraying continuously the material only stays mixed in the whip for 3 seconds, not nearly long enough for a reaction to proceed very far. However, if spraying stops for more than about 20 seconds the material in the hose might react enough to raise the pH above the point where it will react with the metal and form the passive layer. If spraying is stopped for 20 seconds or more the 100 ml left in the hose must be emptied into a waste bucket or on the ground before spraying on the substrate is resumed.

Conditions-

*Please refer to the chart below as temperature ranges can be affected by weather conditions, including humidity.

The combined RH, Substrate temperature and wind velocity combined must allow for a rate of evaporation in the acceptable range. If ambient or substrate temperature fall outside of given ranges during application, there are application techniques that *may* make it possible to apply EonCoat. The chart below will help gauge the weather conditions for application.

EONCOAT



Using the chart above:

Apply EonCoat CR if conditions (wind velocity, substrate temperature and humidity) fall inside the green line of the parameters.

Contact EonCoat for advice on how to proceed if conditions fall between the green line and orange.

Do not apply EonCoat CR if conditions fall outside of the orange line (between orange and red line, or above the red line). Speak with an EonCoat representative.



5.5 PUMP MAINTENANCE

At the end of the spray, the pump should be thoroughly flushed with water. Any material left in the pump will damage the pump and cause spray issues the next day.

Also thoroughly flush all the hoses until clean water is passing through.

Once a week, all parts of the displacement pumps should be taken apart and thoroughly cleaned. At this time, note any wear that may have occurred while spraying. Refer to the pump manual provided with your equipment for recommended cleaning procedures or contact EonCoat for detailed equipment recommendations.

5.6 GUN MAINTENANCE

At the end of each spray application you must clean all of the coating out of your spray gun or it most certainly will spray poorly the following day. An ideal way to clean the gun is to

- 1) Immediately remove the static mixer and disassemble it. Wash it thoroughly with water.
- 2) Remove the orifices from both sides of the gun and rinse them out with water
- 3) Remove the high pressure water line from the center and connect it to each of the fluid inlets in turn
- 4) With the water pressure on squeeze the trigger and let water flush through the non-return valve, the fluid valve and the mix chamber
- 5) Repeat the process on the other side of the gun

Note- be sure to remove all residual acid or material remaining on or in the parts of the gun. When exposed to air, this can corrode certain parts that have been in contact with the material.

6.0 Curing

6.1 TEMPERATURE

The thickness of EonCoat can be applied in multiple passes. EonCoat Version 5 dries to the touch in about 5 minutes and hard dry in about 20 minutes in 70F conditions.

**** Please note that cure time is dependent on temperature and humidity. Every 10C will affect the rate of reaction by a factor of 2.**



7.0 QUALITY

7.1 WET FILM THICKNESS (WFT)

Due to the nature of the quick curing properties and multiple pass application of spraying EonCoat, a wet film thickness measurement must be utilized immediately after applying in attempt to achieve the most accurate reading.

EonCoat @ 20 mils (508 microns) theoretically will cover 80ft² (7m²) per gallon of material. Subtract for overspray and surface irregularities (10%-20%) and the theoretical coverage is now approximately 68ft² (6m²) per gallon of material. Figure an area approximately the size of theoretical coverage for the amount of material to be sprayed, and try to achieve that coverage. A (9) gallon kit of EonCoat, at the above referenced mil thickness and wastage, should cover approximately 612ft² (56m²).

7.2 DRY FILM THICKNESS (DFT)

After the coating has cures, the dry film thickness of the coating can be measured by eddy current-type gauges in accordance with SSPC-PA2, Procedure for Determining Conformance to Dry Coating Thickness Requirements.

7.3 FINAL INSPECTION

Due to the porosity of EonCoat as a ceramic coating, the use of Low Voltage Holiday Detection and/or High Voltage Holiday detection may not be utilized as a practice for Final Inspection. These tests may be used if a top coat is applied over EonCoat however.

If there are concerns about whether EonCoat has cured properly a pressure washer with high pressure can be used after 24 hours. Uncured coating will immediately be removed when exposed to high pressure water.

EonCoat recommends a pressure washer of 4000 psi to perform this test. Pressure wash the entire surface of the structure and notice any visible defects. Placing the wand nozzle 12 inches from the surface will be sufficient to remove/ expose uncured EonCoat. For repair, see Section 8 of this document.



7.4 ALLOY LAYER TEST

After EonCoat has been applied and cured, it forms a permanent molecular bond with the ferrous ions in the steel. This bond forms an alloy layer on the steel which protects the steel from future corrosion.

In order to test this layer on the substrate the applicator, or inspector, can spray a 6% hydrogen peroxide / 6% salt concentration onto the ceramic and wait approximately 10 minutes. If the alloy layer did not form completely the surface will quickly show pits of rust bleeding through.

7.5 POST APPLICATION OBSERVATIONS

Ceramic Disbondment

If the ceramic is not well bonded to the substrate it can crack and disbond. There are three things that can cause the ceramic to have a poor bond. The most common cause is spraying over a contaminated surface. A contaminate will prevent the material from physically touching the metal. Without physical contact no bond can happen. The ceramic may form, but not be attached to the metal. This condition shows up very soon after applying. Tapping the surface with a mallet will reveal loose material. Cracking of this area is also common. If this occurs the loose ceramic is scraped off and the surrounding area is removed until only tightly bonded ceramic remains. The area can then be patched with new material using any of the application methods. The edges will easily bond to the existing ceramic because EonCoat bonds chemically to itself.

A second thing that can cause a poor bond is when the acid side A and alkaline side B are allowed to begin reacting with each other prior to reaching the substrate. If the pH of the slurry is 4 or less when it reaches the metal an excellent chemical bond to the metal will form. If the pH is higher than 4 the bond will suffer as will the passive layer formation, but the ceramic can still form. Too much residence time in the whip hose can cause this. When spraying constantly the mixed material only stays in the whip for 3 seconds. However, if the applicator stops momentarily the material will begin reacting. We recommend that if spraying stops for more than 20 seconds that the applicator discharge the 100 ml in the whip hose into a waste bucket before continuing with application. If disbondment is found under these circumstances the loose material should be removed and repaired as discussed above. The surrounding area should be tested for passive layer formation using the hydroxide/salt solution discussed in this document. If poor passive layer is discovered the ceramic should be removed and the application repeated.

A third thing that can cause cracks in the ceramic as well as disbondment is spraying off ratio. Particularly spraying too much part A will result in large cracks forming in the ceramic shortly after applying. Watch your pump pressures to be sure you stay on ratio.

EONCOAT

PINPOINT BROWN STAINS

If the coating does not physically touch metal it cannot alloy it. Occasionally there will be blast media that gets imbedded in the profile, or just small bits of contamination, that cause a very small point to be unprotected by a passive layer. This point may bleed rust and cause a stain. In a very short period of time the phosphate which leaches from the ceramic will permanently repair this spot by forming iron phosphate. This is the natural healing mechanism which makes the technology so effective. Unlike any other coating -- the ceramic in EonCoat will fix the inevitable application errors.

8.0 REPAIR

All areas needing repair shall be masked and repaired by abrading the coating surface with grit disk paper or other hand tooling method and feathered into the existing coating not needing repair to provide a consistent, uniform finish. **Hand tool or power tool cleaning will leave a polished, smooth surface. This surface will need to be rusted after cleaning to provide an adequate surface for EonCoat to be applied. Please call an EonCoat representative for further information pertaining to “rusting” a hand or power tool cleaned surface. The surface must then be cleaned of the oxidizing agent prior to applying EonCoat on the surface of the steel.** After abrading and cleaning, additional coating material can be applied to the repair area.

EonCoat sells a Bazooka Cartridge Spray System which utilizes a dual cartridge (Part A & Part B) along with a static mixing tip. A pump system pushes the product through the cartridges and in through the static mixer. An airline attached to the static mix tip then spray atomizes EonCoat onto the surface. Kit sizes range from 300mL to 1500mL cartridges. This system and procedure helps with small areas that need repair.

Hand mixing and applying EonCoat will work with very small quantities. Mix equal parts A and B, in a small bucket, mix with brush and immediately apply in location of repair.

The same repair procedure shall be utilized if re-applying with a plural component spray system such as the Predator Spray system or equal.

9.0 HEALTH AND SAFETY

EonCoat is for use in industrial environments by qualified coating application specialists. Although EonCoat is considered non-hazardous, the environment to which it is being applied in may not be. Please refer to the material safety data sheet for more health and safety information prior to using EonCoat or contact your EonCoat representative.



10.0 APPLICATION NOTES

10.1 Ambient Conditions

EonCoat is a water-based, rapid cure ceramic coating system. It has many application advantages but also needs special consideration when applying in conditions near or beyond the recommended limits (see chart pg. 10 of this guide). Spraying EonCoat outside of ideal conditions is manageable by understanding the environment in which it is to be sprayed. Keeping moisture in the coating during its curing process is an essential part of maintaining EonCoat's physical properties, specifically during the formation of the ceramic.

High Temperatures (surface temperatures above 110F.)

Spraying in high temperatures causes EonCoat to “flash” water too quickly not allowing adequate time for the ceramic to form. This causes a poor ceramic formation and makes the coating brittle. This can also cause the ceramic to form hairline cracks in the ceramic.

In order to reduce the amount of water from flashing out too quickly, you may use the following techniques:

- Adjust your spray tip to larger orifices

- Larger tip sizes mean larger droplet sizes during atomization. This will help reduce water loss during spray

- Use lower pump pressures

- Lower pump pressures will also increase droplet sizes during atomization at the spray tip- only use the amount of pressure needed to eliminate tails in your spray pattern

- Apply a mist coat of water onto the substrate prior to the application of EonCoat.

- Evaporation of water will cool the surface to be coated. **DO NOT ALLOW STANDING WATER ON THE SUBSTRATE WHILE APPLYING EONCOAT.**

- Apply a mist coat of clean water immediately after the application of EonCoat.

- Water applied over EonCoat will keep the necessary amount of water in the ceramic while it is curing.

- Any excess water will evaporate after the initial cure is complete

Low Temperatures (below 50F.)

Spraying a water borne system in these temperatures keeps the water in the ceramic cold and delays the formation of ceramic. Delaying the formation can cause runs or sags when the coating is applied, especially in humid environments.

When spraying in colder conditions, use the following techniques:

- Adjust your spray tip to smaller orifices

- Smaller orifices mean smaller droplet sizes during atomization. This will help with a tighter matrix formation and allow the reaction take place in a timelier manner.

EONCOAT

Use higher pump pressures

Higher pump pressures will allow you to atomize the material with smaller droplet sizes

Wind (above 10 mph)

Spraying in windy conditions will remove moisture from the coating prematurely. Premature moisture loss will cause the ceramic to become brittle and may also form wrinkles in the coating.

Use the following techniques when spraying in windy conditions:

Adjust your spray tip to larger orifices

Larger tip sizes mean larger droplet sizes during atomization. This will help reduce water loss during spray

Use lower pump pressures

Lower pump pressures will also increase droplet sizes during atomization at the spray tip- only use the amount of pressure needed to eliminate tails in your spray pattern

Apply a mist coat of water onto the substrate prior to the application of EonCoat.

Evaporation of water will cool the surface to be coated. **DO NOT ALLOW STANDING WATER ON THE SUBSTRATE WHILE APPLYING EONCOAT.**

Apply a mist coat of clean water immediately after the application of EonCoat.

Water applied over EonCoat will keep the necessary amount of water in the ceramic while it is curing.

Any excess water will evaporate after the initial cure is complete

Low Humidity (below 30%)

Spraying in low humid conditions will remove moisture from the coating prematurely. Premature moisture loss will cause the ceramic to become brittle and could also form wrinkles in the coating.

Use the following techniques when spraying in low humid conditions:

Adjust your spray tip to larger orifices

Larger tip sizes mean larger droplet sizes during atomization. This will help reduce water loss during spray

Use lower pump pressures

Lower pump pressures will also increase droplet sizes during atomization at the spray tip- only use the amount of pressure needed to eliminate tails in your spray pattern

Apply a mist coat of water onto the substrate prior to the application of EonCoat.

Evaporation of water will cool the surface to be coated. **DO NOT ALLOW STANDING WATER ON THE SUBSTRATE WHILE APPLYING EONCOAT.**

Apply a mist coat of clean water immediately after the application of EonCoat.

Water applied over EonCoat will keep the necessary amount of water in the ceramic while it is curing.

Any excess water will evaporate after the initial cure is complete



11.0 Top Coats and Sealers

EonCoat is a true ceramic. Like all ceramics it is porous, and because it is porous it will get dirty and stain easily if not sealed. For atmospheric applications the sealer or top coat is solely cosmetic - no performance criteria is required to maintain a corrosion free surface. A top coat can be chosen for the desired appearance. For customers desiring to keep with the inorganic nature of EonCoat a polysiloxane sealer is ideal. These will last many years. PSX 700 or equivalent is a very good choice. For a less expensive option an acrylic, like Avanse 100, is also a very good choice.

Customers are free to choose any top coat to offer the cosmetic look they desire. EonCoat will directly supply this material and include it in our warranty, or the customer may select their own with this guidance - waterborne or siloxane top coats and sealers will bond best. Other chemistries will also work, but to achieve the very best bond a silane coupling agent should be added to the top coat to allow it to bond with the amorphous silica in EonCoat.

For applications where EonCoat will be immersed in running water (like inside a pipe), or in an acid, a sealer is mandated. The sealer or top coat should be chosen for the specific operating conditions. Your EonCoat technical support team will gladly help you choose the best option for your application. Regardless of the application - EonCoat is always the best primer. Putting EonCoat next to the metal insures that the metal will remain corrosion free for the life of the asset.

12.0 Troubleshooting

12.1 Spray Gun- (Binks 43P)

Problem: Trigger won't engage:

Material packed out in needle assembly

Remove needle assembly and clean out assembly pieces (entirely)

Take-up nut too tight

Loosen the take-up nut on the needle assembly to allow for movement

Problem: Material leaking through Needle assembly

Tighten the take-up nut to seal the housing

Problem: Trigger won't release

Material is packed out in needle assembly

Remove needle assembly and clean out assembly pieces (entirely) and resin seat in the fluid block

Trigger stuck on purge stem

EONCOAT

Loosen the spool nuts on the needle assembly where the yolk sits and adjust the yolk to have enough room between the trigger and purge stem

Problem: Gun spray pattern shows fingers or tails

Dirty or damaged spray tip

Remove tip and clean or replace as needed

Spray Pressure too low

Raise pressure on the spray pump to alleviate tails

** Check static mixer for cured product and clean as needed to prevent cured material from entering the spray tip

Problem: Gun loses pressure while spraying (off-ratio)

(A) or (B) is packed out

Clean out needle assembly and resin seat for each side as needed

Problem: Gun initially loses pressure, but then pressure levels out

(A) or (B) side resin seat leaking (refer to chart on pg 15 for reading pressure loss)

Clean out resin seat or replace

12.2 Spray Pump (Cosmostar PF100)

Problem: System stop or will not start

Air Pressure or Volume too low

Increase; check air compressor

Closed or restricted air line or valve

Open or clean

Fluid valves closed

Open

Clogged fluid hose

Clean or replace

Air motor worn or damaged

Repair air motor

Displacement pump stuck

Clean or repair pump

Problem: System speeds up or pumps erratically

Fluid containers are empty

Check often; keep filled

Air in fluid lines



Purge; check connections

Displacement pump parts are worn

Repair pump

Problem: Pump Operates, but (A) fluid output pressure drops on upstroke

Dirty, worn or damaged (A) fluid pump valve or piston packing

Clean or repair (A) fluid displacement pump

Problem: Pump Operates, but (A) fluid output pressure drops on down stroke

Dirty, worn or damaged (A) lower ball, seat or seal

Clean or repair (A) fluid pump

Problem: Pump Operates, but (A) fluid output pressure drops on both strokes

(B) fluid pump output restriction

Clean or unplug (B) side

Open manifold restrictor

Fluid supply low

Refill container

Problem: Pump Operates, but (B) fluid output pressure drops on upstroke

Dirty, worn or damaged (B) fluid pump valve or piston packing

Clean or repair (B) fluid displacement pump

Problem: Pump Operates, but (B) fluid output pressure drops on down stroke

Dirty, worn or damaged (B) lower ball, seat or seal

Clean or repair (B) fluid pump

Problem: Pump Operates, but (B) fluid output pressure drops on both strokes

(A) fluid pump output restriction

Clean or unclog (A) side

Open manifold restrictor

Fluid supply low

Refill container

Problem: Fluid leaking in packing nut

Loose packing nut or worn throat packing

Tighten packing nut

Replace throat packing



Problem: Fluid leak under packing nut

Packing cartridge O-ring

Replace O-ring

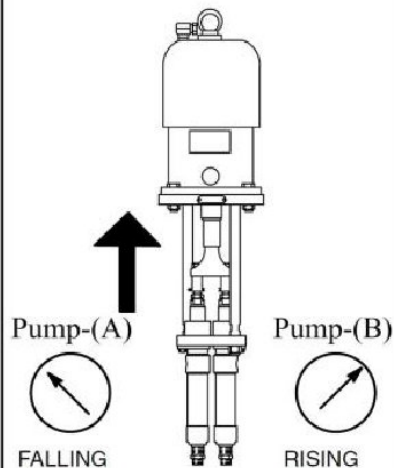
12.3 Spray Pump Pressure Gauges

The chart on the following page uses the manifold gauges to determine pump malfunctions. Faulty manifold check valves can mask pump cylinder problems. Always keep these valves operating properly. Observe the gauge readings during the stroke direction indicated by the bold arrow, and immediately after closing the manifold.

TROUBLE AREA:

(A) Fluid Pump leakage

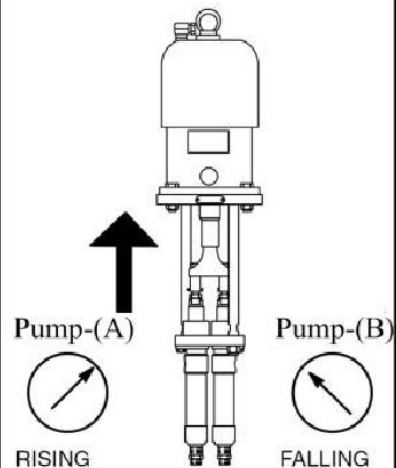
1. THROAT PACKING
2. PISTON PACKING
3. PISTON BALL CHECK



TROUBLE AREA:

(B) Fluid Pump leakage

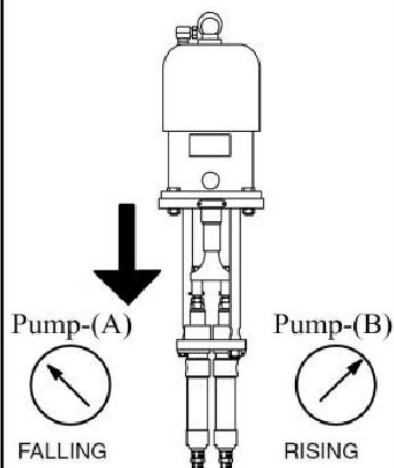
1. THROAT PACKING
2. PISTON PACKING
3. PISTON BALL CHECK



TROUBLE AREA:

(A) Fluid Pump leakage

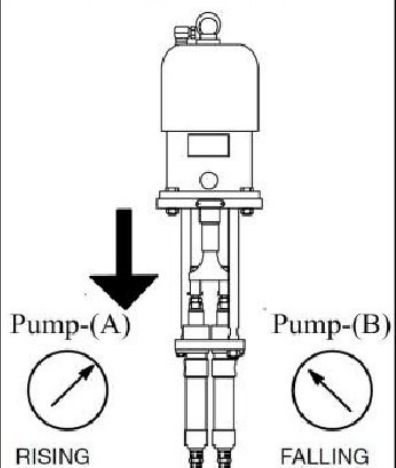
1. THROAT PACKING
2. FOOT VALVE BALL CHECK



TROUBLE AREA:

(B) Fluid Pump leakage

1. THROAT PACKING
2. FOOT VALVE BALL CHECK





APPENDIX

Following are photos of various surface preps.

Use these as a guide to what is, and is not, acceptable.

EONCOAT

ACCEPTABLE

**This is flash rusting
of a NACE 2
SURFACE**



EONCOAT

ACCEPTABLE
This is a typical flash
rusted surface



EONCOAT

NOT ACCEPTABLE
This surface has a
shop primer applied



EONCOAT

NOT ACCEPTABLE

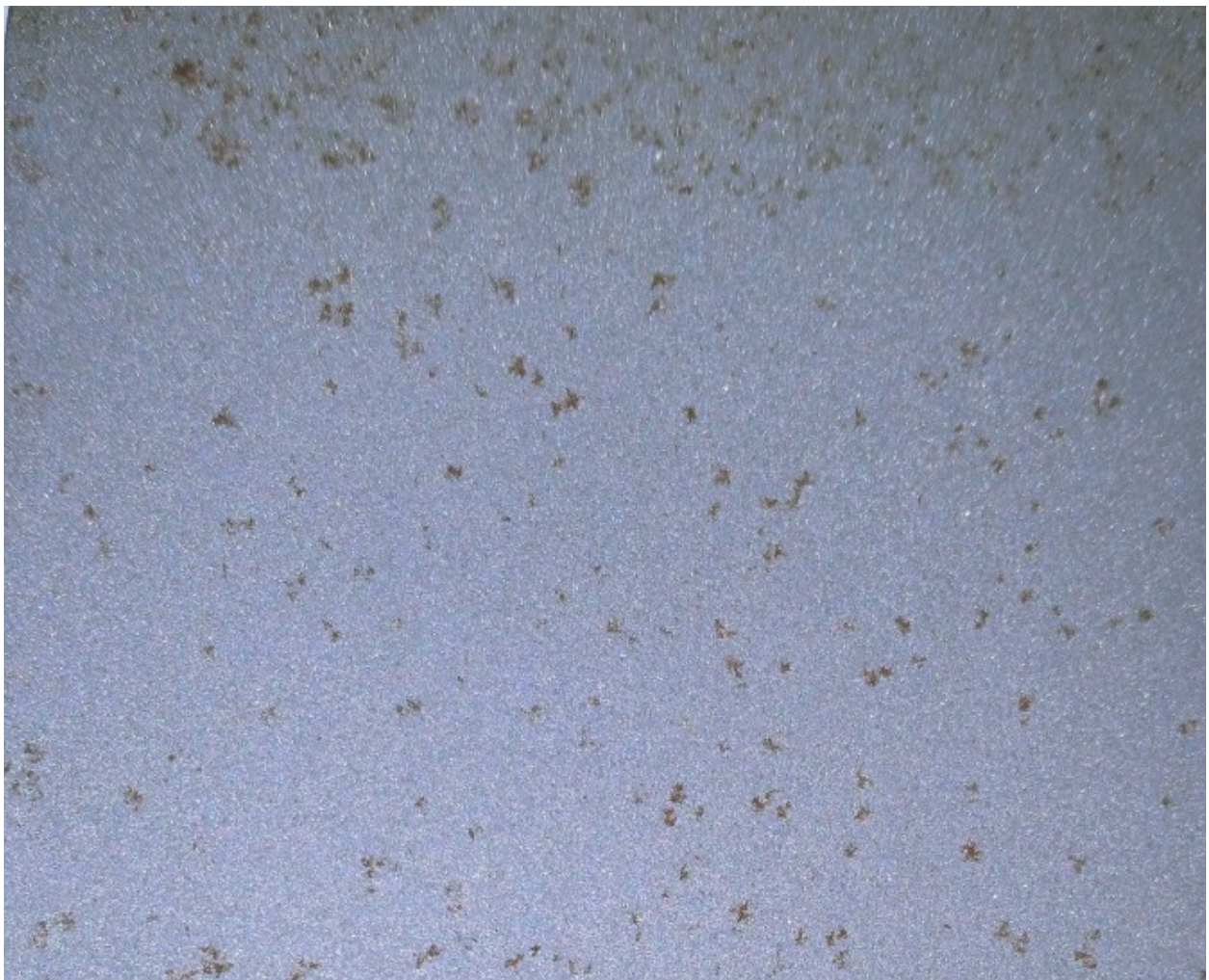
This surface has loose rust as well as Fe_2O_3 (a less reactive form of oxidation)



EONCOAT

ACCEPTABLE

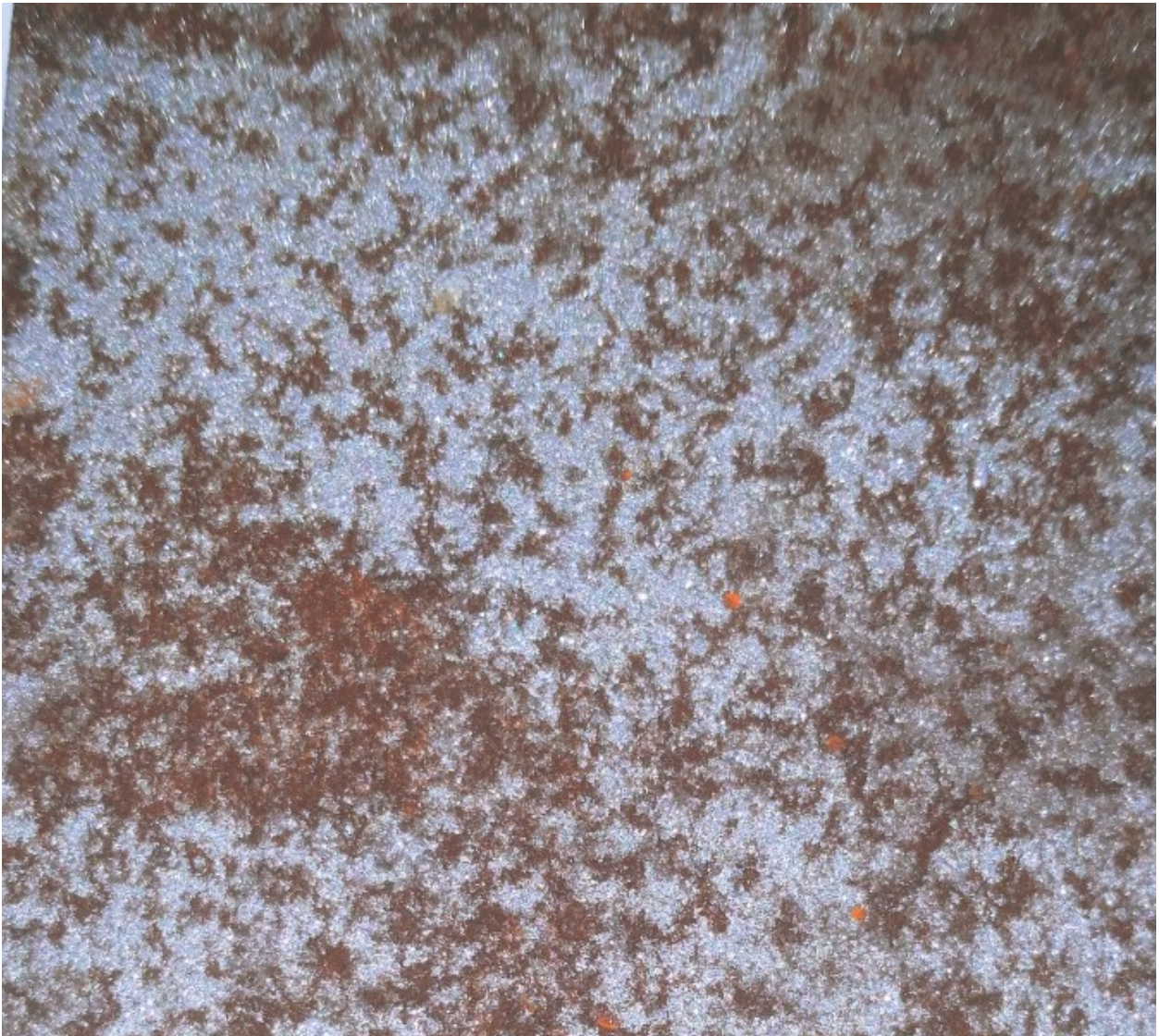
This surface has small amounts of rust on an otherwise well prepared surface. EonCoat will convert the small rust spots to iron phosphate



EONCOAT

NOT ACCEPTABLE

This surface has too much Fe_2O_3 (a much less reactive form of oxidation compared to flash rust – FeO)



EONCOAT

ACCEPTABLE

**This surface is
NACE 2 – an optimal
surface prep for
nearly all coatings**



EONCOAT

NOT ACCEPTABLE
This surface is covered in mill scale. This is a very unreactive form of oxidation – Fe_3O_4 . No coating should be applied on mill scale.

