


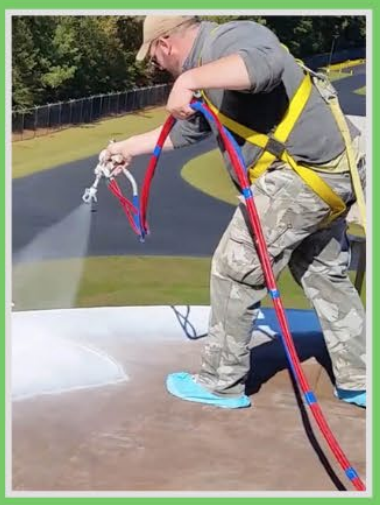

Surface Preparation & Application Guide

EONCOAT™

Tony Collins

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Photographic guide of various levels of surface preparation. This is to be used as a guide for what is acceptable.

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1.0 INTRODUCTION

The purpose of this guide is to familiarize contractors and 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, don't hesitate to get in touch with your EonCoat representative.

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

Overview

EonCoat is an easy technology to apply. You will get outstanding results if you recognize that this is a cementitious product designed to alloy a metal surface with a chemical bond.

Two fundamentals:

1. If you chemically bond a sufficiently soluble phosphate to steel, the metal cannot corrode for as long as the phosphate is there.
2. If you apply an acid phosphate to steel, it will chemically bond with that metal unless there is something between the acid and the metal (e.g., oil, dust, standing water, old paint, dry fall material).

Once these two fundamentals are clearly understood, the techniques to get great results become obvious – spray the coating on a clean substrate that is either dry or damp but not covered in standing water. The easiest way to do this is to pressure wash each area just before spraying the coating – then let the water begin to evaporate. On a horizontal surface it may be necessary to vacuum the surface or blow the area off with an air hose.

Keep in mind that this material is a cement. Treat it like any other cement – don't over water it but keep it damp until it cures (about 15 minutes).

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2.0 PRODUCT AND PACKAGING

2.1 EONCOAT TECHNOLOGY

All EonCoat Products are applied at a 1:1 mix ratio and are 96% solids inorganic coating. When applied, EonCoat forms a layer of magnesium iron phosphate that is permanently chemically bonded with the ferrous ions in steel. It also forms a protective outer layer of flexible ceramic. Because the ceramic becomes very dense when it forms, the wet mils will be greater than the dry mil thickness even though the material is 96% solids.

2.2 EONCOAT PRODUCTS

EonCoat Corrosion Protection Coating: Our original formula and is great for atmospheric applications.

EonCoat CUI / High Temperature Coating: This product is perfect for corrosion under insulation or high-temperature applications. This is rated for 450°C (842°F).

EonCoat Weldable Coating: This product is phenomenal for corrosion protection **both** before and after welding. To date, the most popular use for our weldable coating is the soil facing side of tank bottoms or steel that requires welding – although the possibilities are endless.

2.3 EONCOAT PACKAGING

EonCoat is available in two (2) separate packaging methods depending on the application method. If you will be using High Pressure Plural Pump with Stainless Steel Lowers, your EonCoat will be packaged in 2, 5-gallon buckets, as pictured next. There will be a total of 9 gallons per kit (4.5 gallons of part A & 4.5 gallons of part B).

If your application method is the Dual Component Cartridge Spray Gun. Then, your EonCoat would come in 600mL Dual Cartridges with 2 static mixtures each. (300mL of part A & 300mL of part B). Pictured Below.

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2.4 EONCOAT TYPICAL COVERAGE RATES

	Dry Mils - (Microns)	Wet Mils (Microns)	Sq. Ft./ Gal (m²/ gal.)
EonCoat Corrosion Protection Coating	20.0 (500)	25.0 (635)	70 (6.4)
EonCoat CUI Coating	20.0 (500)	25.0 (635)	70 (6.4)
EonCoat Weldable Coating	40.0 (1000)	40.0 (1000)	35 (3.2)

NOTE: Recommended dry film thickness (DFT) may vary based 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; however, **it is crucial that the entire 20 mils be achieved while the material is still wet.** An application below minimum recommended thickness may adversely affect coating performance.

2.5 EONCOAT STORAGE AND TEMPERATURE

Do not store EonCoat in direct sunlight for a prolonged period of time. The minimum storage temperature is 40ºF (5ºC) and a maximum of 110ºF (43ºC). EonCoat, when stored properly, maintains a shelf life of at least one (1) year if unopened. When opened, containers can be used more than once when lids are tightly sealed after each use. Containers should be used within one month after opening. Temperature will affect the spray-ability of the product. Cooler temperatures increase viscosity, conversely, warm temperatures will decrease viscosity. Therefore, we recommend that you place the product pails indoors at a minimum of 65ºF (18ºC) for 24 hours prior to application to allow them to gradually come to room temperature as a means of making the material easier to pour.

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3.0 SURFACE PREPARATION

While none of the NACE Standards precisely matches the optimal surface preparation for EonCoat, the closest spec, and slightly better than required, is NACE 3/SSPC 6. EonCoat is not a barrier coating, but rather a surface treatment analogous 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**. This means removal of old paint, oil, dirt, dust (including the dust from EonCoat's own dry fall), and any other contamination. EonCoat must physically touch the metal in order to alloy it. If you spray over a contaminated surface, the ceramic will not bond to the metal below.

3.1 PRIOR TO BLASTING

All surfaces shall be cleaned and free from all old paint, grease, dirt, oils, dust or residue that will adversely affect the adhesion of EonCoat to the steel. 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 clean water or steam cleaning, followed by thorough rinsing with clean water. You can see our Surface Preparation Page or download our Surface Preparation Checklist.

3.2 SURFACE IRREGULARITIES

Fins, slivers, burred or sharp edges, weld spatter and slag shall be removed prior to surface preparation.

3.3 COATING PREVIOUSLY PAINTED SURFACES

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

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3.4 PREPARATION OF STEEL - ABRASIVE BLAST CLEANING

All steel surfaces to be coated may be abrasive blast cleaned similar to SSPC-SP 6 / NACE 3, commercial blast cleaning or better to an anchor profile of at least 3 mils (75 microns). Abrasive media should be equal to MEDIUM grade, BLACK BEAUTY®. 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 tape, or equivalent, 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 iron oxide (FeO) remain on the surface during coating. There are examples of surface preparations at the end of this section that are acceptable as well as examples of those that are not.

Abrasive blasting will produce both a cleaning and finishing action. The finishing effect may vary by controlling such factors as hardness of the abrasive, abrasive particle size, velocity of abrasive stream, angle of abrasive gun, distance from the work, method of application and work flow.

It is estimated that the surface area of metal increases as much as ten times as a result of the abrasive impact action.

Pressure

A blast machine is normally operated around 90 PSI at the nozzle. SSPC gives typical blast cleaning rates based on nozzle size and pressures.

The Grit Blast Gun

Abrasive blasting is supposed to be a scrubbing action, not a peening process. Therefore, the gun should always be aimed at a 60° to 45° angle to the surface being cleaned. When the gun is aimed at 90°, peening occurs and, due to the abrasive particles colliding with the abrasive bouncing off the surface, a very high rate of media wear occurs. **A peened surface is not reactive and thus not suitable for applying EonCoat.**

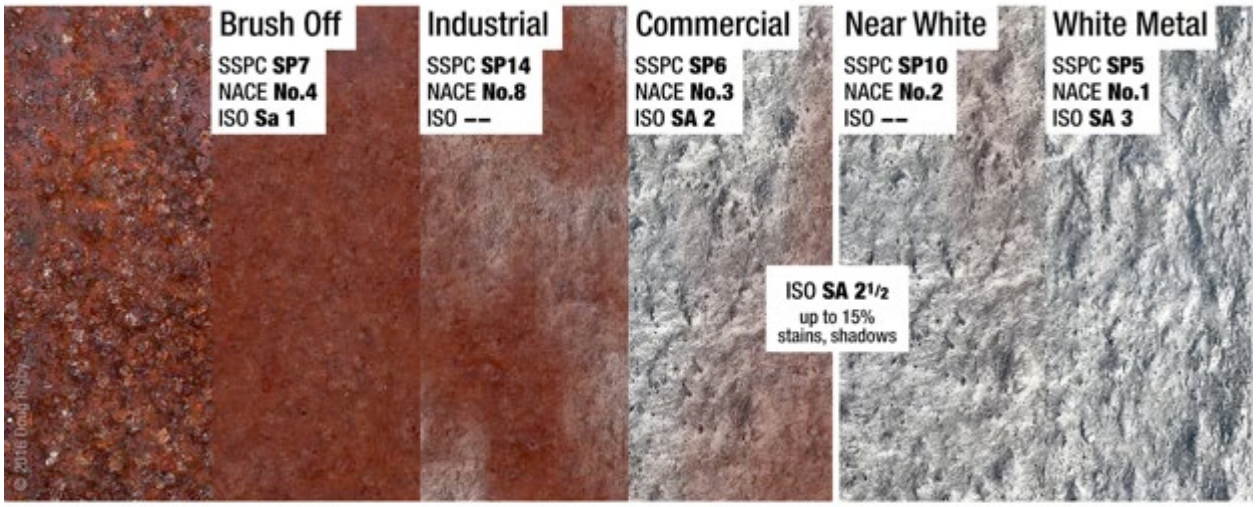
The Gun Nozzle

Nozzles made of tungsten carbide are the best choice. If your compressor cannot keep up with the blaster, chose a smaller nozzle for the gun. If you have plenty of pressure at the gauge, but

don't seem to feel it at the gun, look for an obstruction in the abrasive pickup line or something stuck in the nozzle.

Media

Acceptable abrasives include coal slag (BLACK BEAUTY), aluminum oxide, garnet, silicon carbide, and steel grit.



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/

NOTE: See the Appendix at the end of this application guide for larger samples of photos that can be used to match to the surface you are preparing.

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.

EonCoat can be applied over white metal or over flash rusted metal. The cost of blasting steel to white metal – and holding the blast - is far more expensive than performing a basic commercial blast and allowing flash rust to form. There is no reason to blast steel to a white metal finish before applying EonCoat. At the time of coating, the degree of flash rust should be moderate (M), as listed in SSPC WJ standards for a 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 should be utilized provided the surface is air dried. 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 water jetted utilizing Ultra-High Pressure Water Jetting in accordance with SSPC-SP WJ-2 L/NACE WJ-2/L, “Clean to Bare Substrate”. At the time of the coating, the degree of flash rust should be moderate. Water used should be comparable to potable water and free of oil, acid, alkali or any other detrimental matter.

At the time of the coating, the degree of flash rust should be moderate (M), as listed in SSPC WJ standards above for maximum degree of flash rust. Painting over contaminants or mill scale 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 KITS (APPLIES TO HIGH-PRESSURE PLURAL PUMP)

Mix the entire contents of Part A and Part B separately. Do not mix Part A with Part B. Mix using a rounded edge paddle mixer for each component. During the mixing process, scrape the sides and bottom of the container to ensure that both parts are agitated properly. Agglomerations in the material, whether of globs of either Part A, or globs of Part B, will create small dimples in the

wet coating because the mass of the agglomeration acts like a rock hitting a puddle of water – you get a splash mark.

A drill-operated mix paddle must not have sharp edges because these will scrape plastic shards off the bucket and those end up in the coating.

A bucket mixer can be used to mix product. A bucket mixer with a dispersion blade is ideal for Part A mixing if the mixer is firmly mounted so that it cannot touch the sides of the plastic pails.

Add Part A to the Part A saddlebag/transfer bucket and Part B to Part B saddlebag/transfer bucket 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.

Watch a video on how to mix & set up EonCoat in a High-Pressure Plural Pump with Stainless Steel Lowers. Click on this link or scan the QR Code with a smartphone.

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5.0 APPLICATION AND EQUIPMENT

The primary concept to understand is that you must apply EonCoat on a clean carbon steel surface. In order to achieve this, each area should be pressure washed before spraying. Pressure washing will remove loose iron oxide as well as overspray from previous passes of EonCoat.

The important thing is for the coating to stay damp until it cures, like all types of cement. You can manage to apply on warmer substrates and in warmer weather, and in higher winds than

are specified in this document, if you wisely use water to keep the surface cool as well as mist water on the ceramic to keep it damp until it is fully cured.

5.1 SURFACE TEMPERATURE

Surface temperature should be a minimum of 40ºF (5ºC) and a maximum of 110ºF (43ºC). There are no dew point restrictions. Special application techniques can be used when spraying in extreme temperature, very low humidity, and high winds (+5mph). It is essential that the ceramic be kept damp for at least 5 minutes and preferably for 15 to eliminate shrinkage cracking. In most conditions no special activity is needed. But for the extremes, the surface can be misted to retain moisture. A pressure washer, properly set to mist, is an ideal tool. See troubleshooting (Section 6.0 and the weather graph of this guide) or contact an EonCoat representative for specific details.

5.2 STRIPE COATING

EonCoat does not typically require stripe coating. In the industry, 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. If you need to achieve the required mil thickness in more complex geometric areas, you can stripe EonCoat where required.

5.3 APPLYING EONCOAT WITH HIGH-PRESSURE PLURAL PUMP

When using a high-pressure spray system ideally you will build the full mil thickness in one or two slow passes. You may need to build thickness in some areas with multiple passes if the temperature is low and the material is not curing fast enough.

If weather conditions promote slow curing and the coating is trying to sag, the first pass can be applied as little as 3-4 mils (75-100 microns). You would then wait for a few seconds and apply a second pass at 3-4 mils (75-100 microns). This will allow the coating to be able to hold the

weight of the material and allow for adequate coverage over these areas. **Remember, all chemical reactions go twice as fast with each 10 degrees C of temperature.**

5.4 APPLYING EONCOAT WITH A PNEUMATIC DUAL COMPONENT CARTRIDGE SYSTEM

The dual-component cartridge spray gun is a compact, cartridge spray system that utilizes a valve gun and a static mixing tip at low pressure, to apply EonCoat over a substrate. The dual-component cartridge spray gun can be used as a stand-alone spray system or in conjunction with a high-pressure spray system. The dual-component cartridge spray gun can be used for repair or 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.

Setting up a cartridge system is much easier than the plural pump. Watch a video on how this is done. Click on the link or scan the QR code with a smartphone.

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5.5 HIGH PRESSURE PLURAL PUMP EQUIPMENT

A high-pressure plural pump with stainless steel lowers must be used to apply EonCoat. Refer to the chart below for spray pump and equipment recommendations:

Pump Size	15:1 (min)
Spray Gun	Graco G40 spray gun with remote mix manifold

Alternative	Binks 43P spray gun with Graco static mixer
Tip Orifice *	.323 - .745 fan tip Experience indicates that for a large flat horizontal substrate (tank) in 80F weather a 429 tip with pump pressure at 2,500 psi and 250 feet of 1/2” line delivers very good results
Atomization Pressure	400-3500 psi – use lowest pressure that does not produce “tails” in the pattern
Material Hose ID	Attach 50’ lengths of 1/2" hose to pump as needed to reach (A & B Side)
Whip Hose ID	Attach (1) 3’-5’ x 3/16” whip hose from mix manifold to gun with static mixer inside the gun end of the hose. *EonCoat can supply these for additional cost.*

* Specific tip sizes will depend on the nature of each particular application. Select a spray tip that is within the capacity of the high-pressure plural 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.

The high-pressure plural pump must have a minimum of 1500 psi output pressure rating and adequate delivery volume to support the spray tip orifice gallons per minute rating (GPM). High-pressure plural pump sprayers with higher maximum pressure capability will allow spray application or using spray hose lengths greater than 300 feet (90 meters). 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.

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. Do not use any equipment coated with lead, zinc or other reactive material in the supply path for part A.

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

The recommended film thickness should be achieved in a single coat through multiple passes. Multiple passes can be sprayed while the coating is still wet or tacky. Once the coating has "dried-to-touch", the coating must be allowed to set-up before additional materials can be applied.

NOTE: Every attempt should be made to achieve the recommended thickness while the initial spray is still wet.

5.6 APPLICATION TECHNIQUES

Hold the spray gun perpendicular to the surface. The distance from the substrate is determined by the pressure and tip size. Set up the gun so that "bounce" of the material is kept to a minimum. We want all of the material to go firmly enough onto the substrate to push material into the surface profile, but not have any bounce off. While triggering, move at a rate to produce the desired coating wet mil thickness without thin spots or "holidays". The spray technique should include an overlapping technique where each spray pass is overlapped 20-30% for uniform coverage. **Never flick the wrist at the end of a pass.** The coating is dry fall in 10 feet, even less on hot days. Flicking the wrist at the end of a pass will create dry fall on uncoated steel. This dry fall then becomes surface contamination that will negatively impact the coating reaching the metal.

Watch a video of how EonCoat Spray Patterns should be and how to measure the thickness while wet. Click on the link to watch or scan the QR code with a smartphone.

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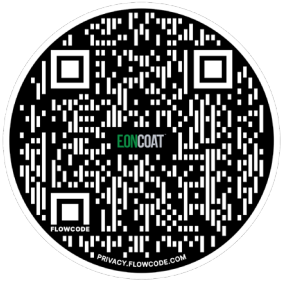

5.7 PUMP MAINTENANCE

At the end of each day, 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.

The hoses should be thoroughly flushed with water 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.

Material can be left in the hoses and pump (without pressure) if the job has stopped for less than 8 hours. In this case, pressure must be released from the pump, gun, and hoses.

5.8 GUN MAINTENANCE

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

No.	Graco G40 Gun	Binks 43P Gun

1	Clean gun and static mixer whip hose thoroughly with water.	Immediately remove the static mixer and disassemble it. Wash it thoroughly with water.
2.	Disassemble the gun from the whip hose and clean the material build up from the tip and from the gun.	Remove the orifices from both sides of the gun and rinse them out with water.
3.	Clean the mixing block by flushing water from both sides (Part A and Part B, inlets to the mixing block).	Remove the high-pressure water line from the center and connect it to each of the fluid inlets in turn.
4.	If a RAC tip has been used, the material might build up inside the RAC tip holder. Clean it with water and a small brush.	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.

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Watch a video of the Graco G40 being cleaned after use. Click on the link to watch a video or scan the QR code with a smart phone.

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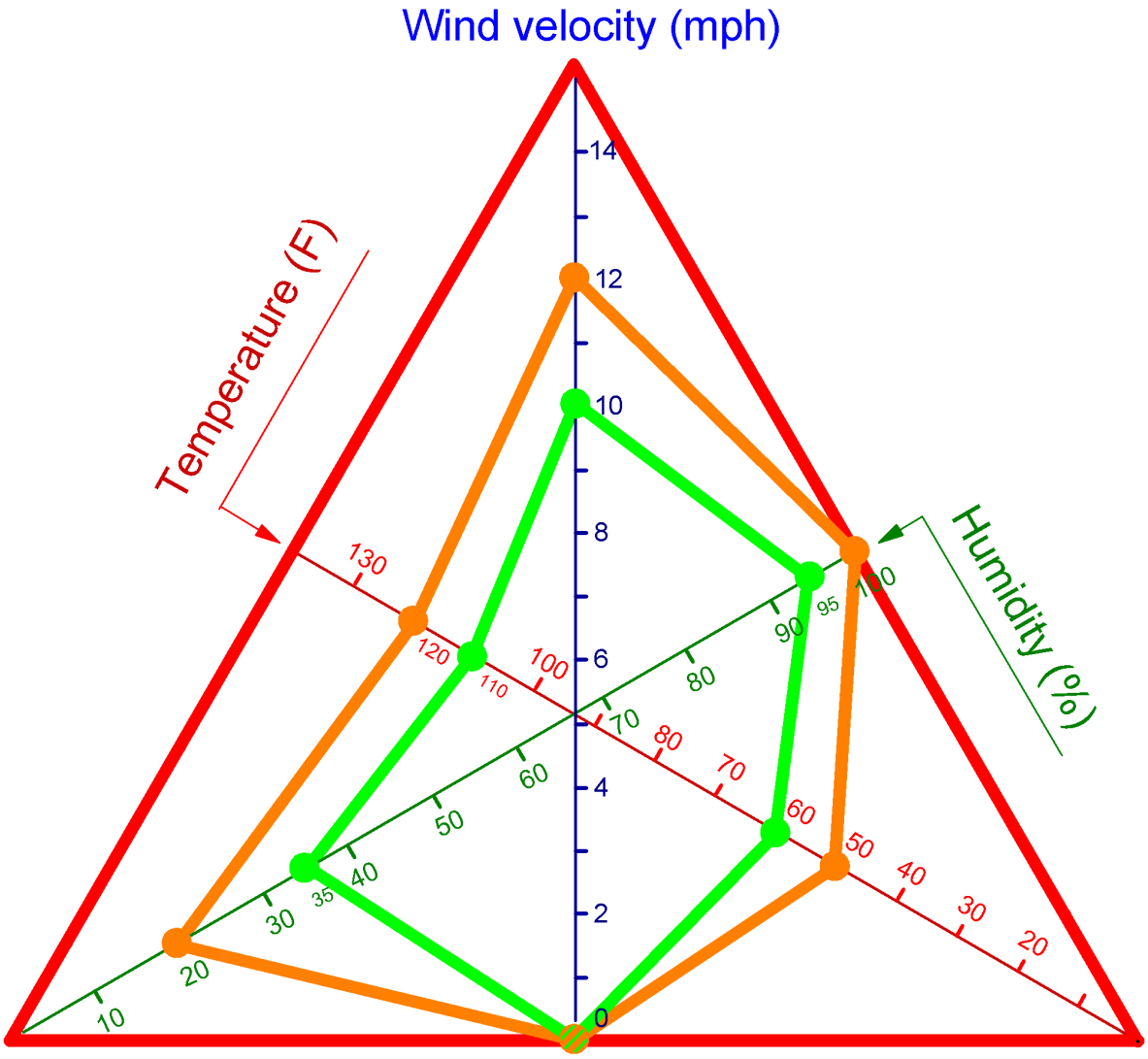
6.0 UNIQUE APPLICATION CONDITIONS

6.1 WHAT IS A UNIQUE APPLICATION CONDITION?

EonCoat is a water-based, rapid cure ceramic coating system. It has many application advantages but also needs special consideration when being applied in conditions near or beyond the recommended limits. 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. This is typical of all cementitious materials and keeping the substrate moist is handled in the same way as with concrete or inorganic zinc – mist the surface with water if it is curing so fast that you see shrinkage cracks. The ceramic only needs a few minutes to cure, but it must be damp during that time period.

The combined RH, substrate temperature, and wind velocity 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. For example, proper misting of the ceramic to keep it damp allows a much wider application window.

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



Using the chart above:

Apply EonCoat 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 line.

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

6.2 HIGH TEMPERATURES (SURFACE TEMPERATURES ABOVE 110F)

Spraying in high temperatures causes EonCoat to “flash” water too quickly thereby not allowing adequate time for the ceramic to form. This causes poor ceramic formation and makes the coating brittle. This can also cause hairline cracks to form 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. A larger tip size means larger droplet sizes during atomization, and this will help reduce water loss during spray.
- Use lower pump pressures. The lower pump pressures will also increase droplet sizes during atomization at the spray tip. You should only use the amount of pressure needed to eliminate tails in your spray pattern.
- Apply a mist coat of clean 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.

6.3 LOW TEMPERATURES (SURFACE TEMPERATURES BELOW 40F 4°C)

Spraying a waterborne system in these temperatures keeps the water in the ceramic cold and delays the formation of the 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:

- Do not mist the coating. Do not wet the substrate before coating. Do not spray on a damp surface.
- Use EonCoat – winter formula product.

6.4 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. A larger tip size means larger droplet sizes during atomization, and 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. You should only use the amount of pressure needed to eliminate tails in your spray pattern.
- Apply a mist coat of clean 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.
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6.5 LOW HUMIDITY (BELOW 30%)

Spraying in low humidity 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 humidity conditions:

- Adjust your spray tip to larger orifices. Larger tip sizes mean larger droplet sizes during atomization, and this will help reduce water loss during spray.
- Use lower pump pressures. Using lower pump pressures will also increase droplet sizes during atomization at the spray tip. Use only use the amount of pressure needed to eliminate tails in your spray pattern.
- Apply a mist coat of clean 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.

7.0 CURING

7.1 KEEP IT DAMP

The recommended thickness of EonCoat can be applied in multiple passes but it should be applied in one application. EonCoat Version 5 dries to the touch in about 5 minutes and is hard dry in about 15 minutes in 70F (21°C) conditions.

Keep the ceramic damp for about 15 minutes while the cement fully cures. Misting with a pressure washer is a handy method of keeping the ceramic damp when spraying in unusually hot or dry conditions.

NOTE: Cure time is dependent on temperature and humidity. Every 10C will affect the rate of reaction by a factor of 2.

8.0 INSPECTION

8.1 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 order to achieve the most accurate reading.

8.2 DRY FILM THICKNESS (DFT)

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

8.3 FINAL INSPECTION

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. Pressure washing at a minimum 3000 PSI to clean and prepare the surface for its topcoat also provides a method of verifying that a good bond to the substrate has been obtained. If the ceramic has failed to bond with the substrate, the velocity from a pressure washer will cause the ceramic to disbond. Use a rotary head with an aggressive nozzle

8.4 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 contaminant will prevent the material from physically touching the metal, and without physical contact, no bond can occur. The ceramic may form but not be attached to the metal. This condition shows up very soon after applying. 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 repaired with new material using any of the application methods. The edges will easily bond to the existing ceramic because EonCoat chemically bonds 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. **Too much residence time in the whip hose can cause this**. When spraying constantly the mixed material only stays in the whip for 2 seconds. However, if the applicator stops momentarily the material will begin reacting. We recommend that if spraying stops for more than 5 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. If a poor passive layer is discovered, the ceramic should be removed and the application repeated.

A third cause of cracks in the ceramic, as well as disbondment, is the spraying off ratio. Particularly spraying too much Part A will result in large cracks forming in the ceramic shortly after application. Watch your pump pressures to be sure you stay on ratio.

8.5 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 that 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.

9.0 REPAIR

Generally, the pressure washer test (refer to the post application observations in the inspection section above) shows EonCoat to EonCoat disbondment if present. As seen in the image at the end of this document, the topcoat can peel off showing EonCoat to EonCoat disbondment as well.

All areas needing repair shall be masked and repaired by abrading the edge of 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.

For large repairs (more than 2 sq. ft.) → Wet the EonCoat – Apply additional EonCoat while the surface is damp using a high-pressure plural pump with stainless steel lowers.

For small repairs (less than 2 sq. ft.) → Wet the EonCoat – Apply additional EonCoat while surface is damp using a dual component cartridge spray system (Part A & Part B) along with a static mixing tip.

For very small repairs (less than 5 sq. inches) → Hand mixing and applying EonCoat will work with very small quantities. Mix equal parts A and B in a small bucket with a brush and immediately apply in the 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 equivalent.

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NOTE: If hand tool or power tool cleaning leaves a polished smooth surface, EonCoat will not bond to such a surface because the surface will inhibit the chemical reaction between EonCoat and steel. To make such steel reactive may require chemical treatment. This chemical treatment can be provided by pouring a salt-peroxide mixture on to the surface (steel). Once flash rust bloom is observed then the steel can be coated with EonCoat.

10.0 HEALTH AND SAFETY

EonCoat is for use in industrial environments by qualified coating application specialists. Although EonCoat is considered non-hazardous, the environment in which it is being applied may be hazardous. Please refer to the material safety data sheets (for Part A and Part B) for more health and safety information prior to using EonCoat or contact your EonCoat representative. For our most up-to-date SDS & Tech Data Sheet please use the following link: https://eoncoat.com/sds-technical-data/ or scan the QR code with your smartphone.

11.0 TOPCOATS AND SEALERS

EonCoat is a cementitious coating. Like all cementitious materials, it is porous, and therefore, will get dirty and stain easily if not sealed. 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.

Application

When applying any topcoat to EonCoat the temperature should be falling. This is because all porous materials outgas, meaning they expel air and moisture from the pores when heating. If you apply a topcoat or sealer while air is escaping from the ceramic you will get bubbles in the

coating and a poor bond with the coating. Work with the natural flow of air and moisture to let it draw coating material into the pores to get a strong bond.

12.0 TROUBLESHOOTING

12.1 Spray Gun- (Graco G40) or Spray Gun- (Binks 43P)

Problems	**Solution**
Trigger won't engage	Material packed out in the 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
Material leaking through Needle assembly	Tighten the take-up nut to seal the housing
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 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
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
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

Gun initially loses pressure, but then pressure levels out	(A) or (B) side resin seat leaking (refer to chart on page 15 for reading pressure loss) Clean out resin seat or replace

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

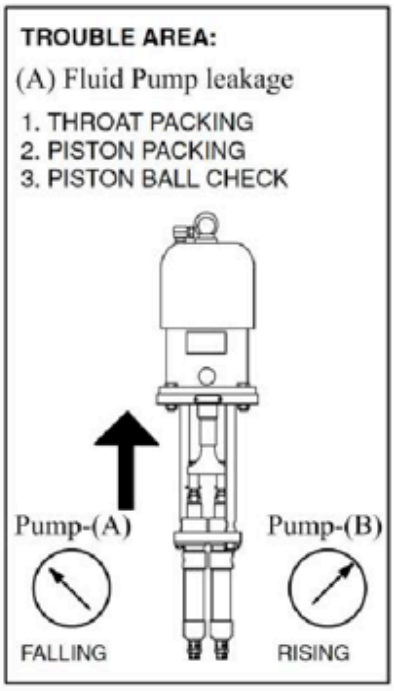
12.2 Spray Pump (Plural (1:1) Spray Pump)

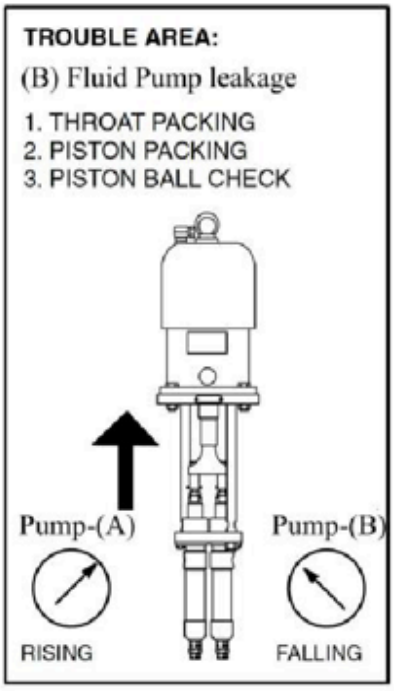
Problem	**Solution**
System stop or will not start	Air Pressure or volume too low Increase; check air compressor Closed or restricted air line or valve Open or clean fluid valves Closed or clogged fluid hose Open, clean or replace Air motor worn or damaged Repair air motor Displacement pump stuck Clean or repair pump
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
Pump Operates, but (A) fluid output pressure drops on upstroke	Dirty, worn or damaged (A) fluid pump upper ball or valve seat - Clean or repair (A) fluid displacement pump Piston packing - replace
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

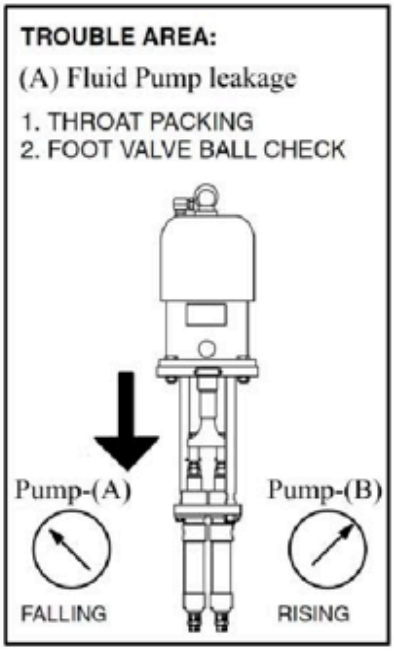
Pump Operates, but (A) fluid output pressure drops on both strokes	(B) fluid pump output restriction - Clean or unplug (B) side Open manifold restrictor Fluid supply low - Refill container
Pump Operates, but (B) fluid output pressure drops on upstroke	Dirty, worn or damaged (B) fluid pump upper ball valve or seat - Clean or repair (**B**) fluid displacement pump Piston packing - replace
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
Pump Operates, but (B) fluid output pressure drops on both strokes	(A) fluid pump output restriction - Clean or unclog (A) side Open manifold restrictor (B) Fluid supply low -- refill container
Fluid leaking in packing nut	Loose packing nut or worn throat packing Tighten packing nut Replace throat packing
Fluid leak under packing nut	Packing cartridge O-ring. Replace O-ring

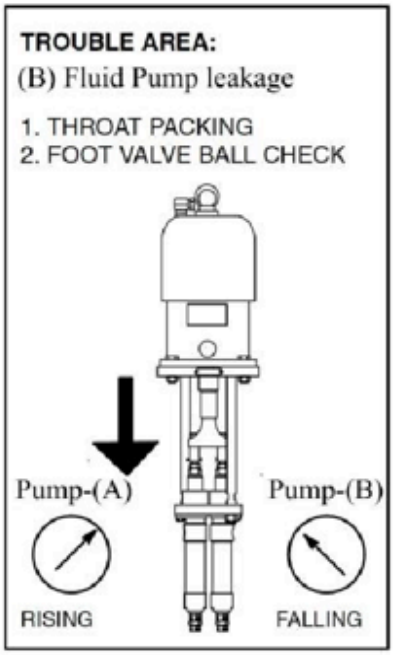
12.3 SPRAY PUMP PRESSURE GAUGE READINGS

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
Pump-(A)
Pump-(B)
FALLING
RISING


TROUBLE AREA:
(B) Fluid Pump leakage
1. THROAT PACKING
2. PISTON PACKING
3. PISTON BALL CHECK
Pump-(A)
Pump-(B)
RISING
FALLING


TROUBLE AREA:
(A) Fluid Pump leakage
1. THROAT PACKING
2. FOOT VALVE BALL CHECK
Pump-(A)
Pump-(B)
FALLING
RISING


TROUBLE AREA:
(B) Fluid Pump leakage
1. THROAT PACKING
2. FOOT VALVE BALL CHECK
Pump-(A)
Pump-(B)
RISING
FALLING

APPENDIX

Following are photos of various levels of surface preparation.

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

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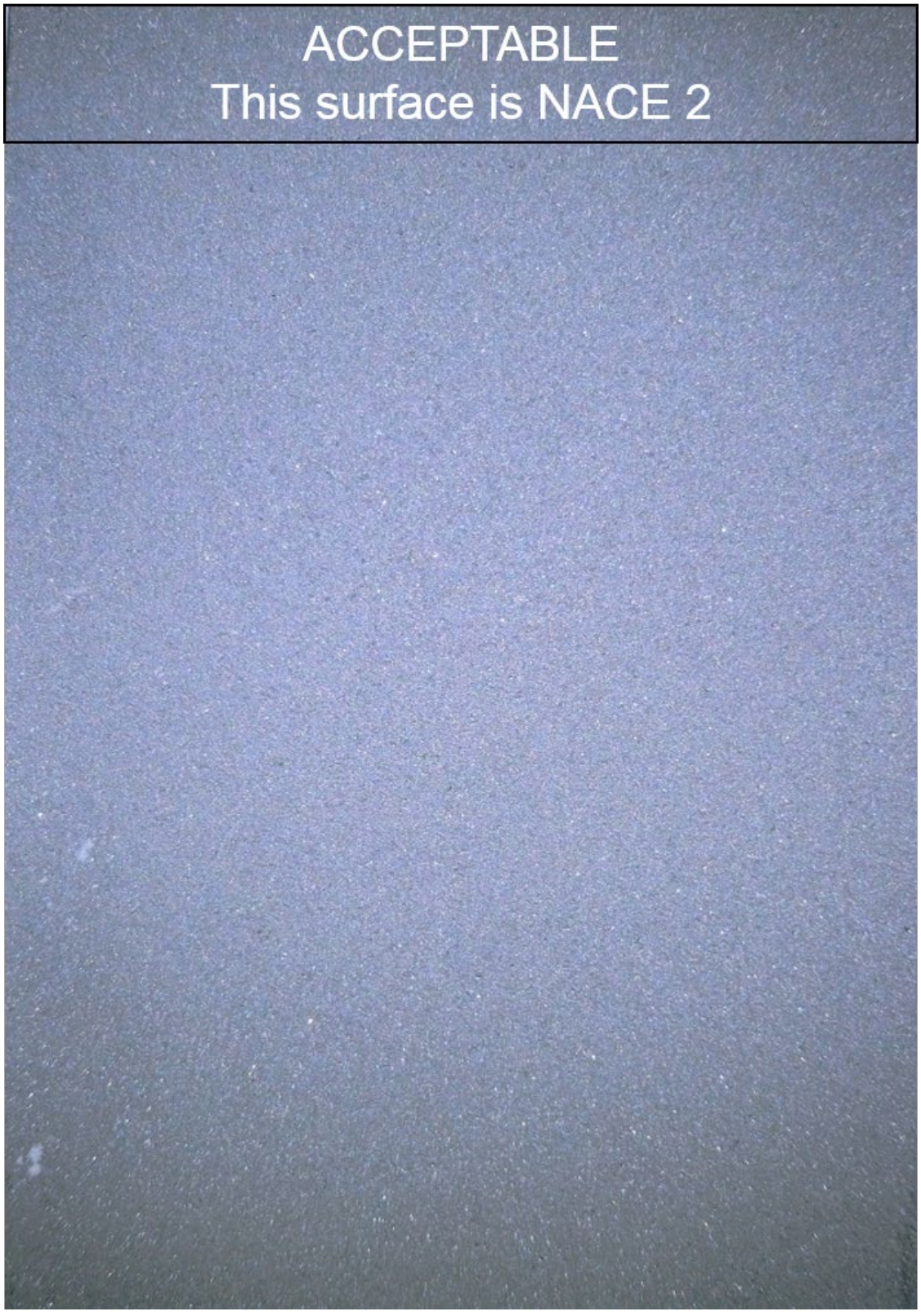
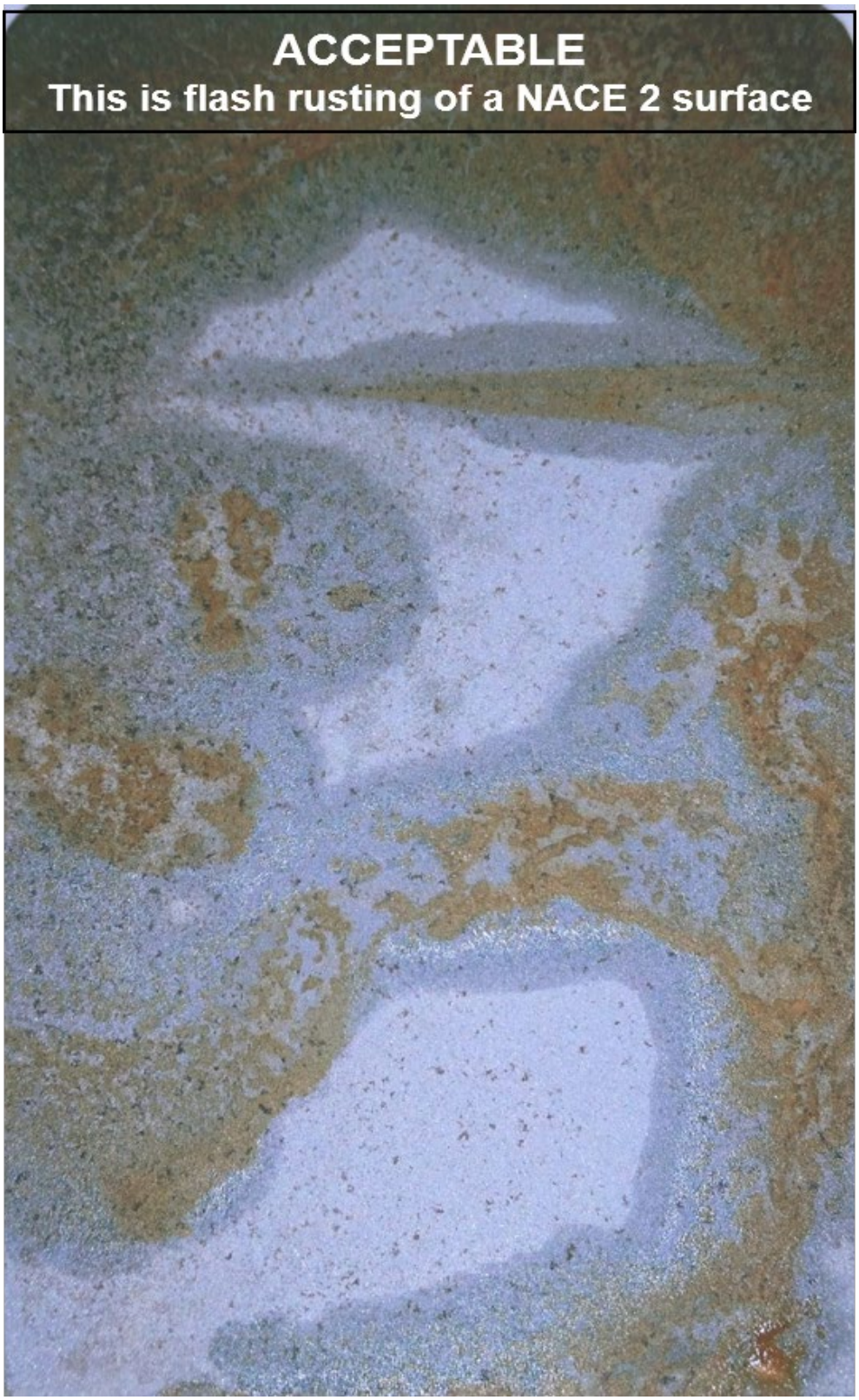

ACCEPTABLE
This surface is NACE 2



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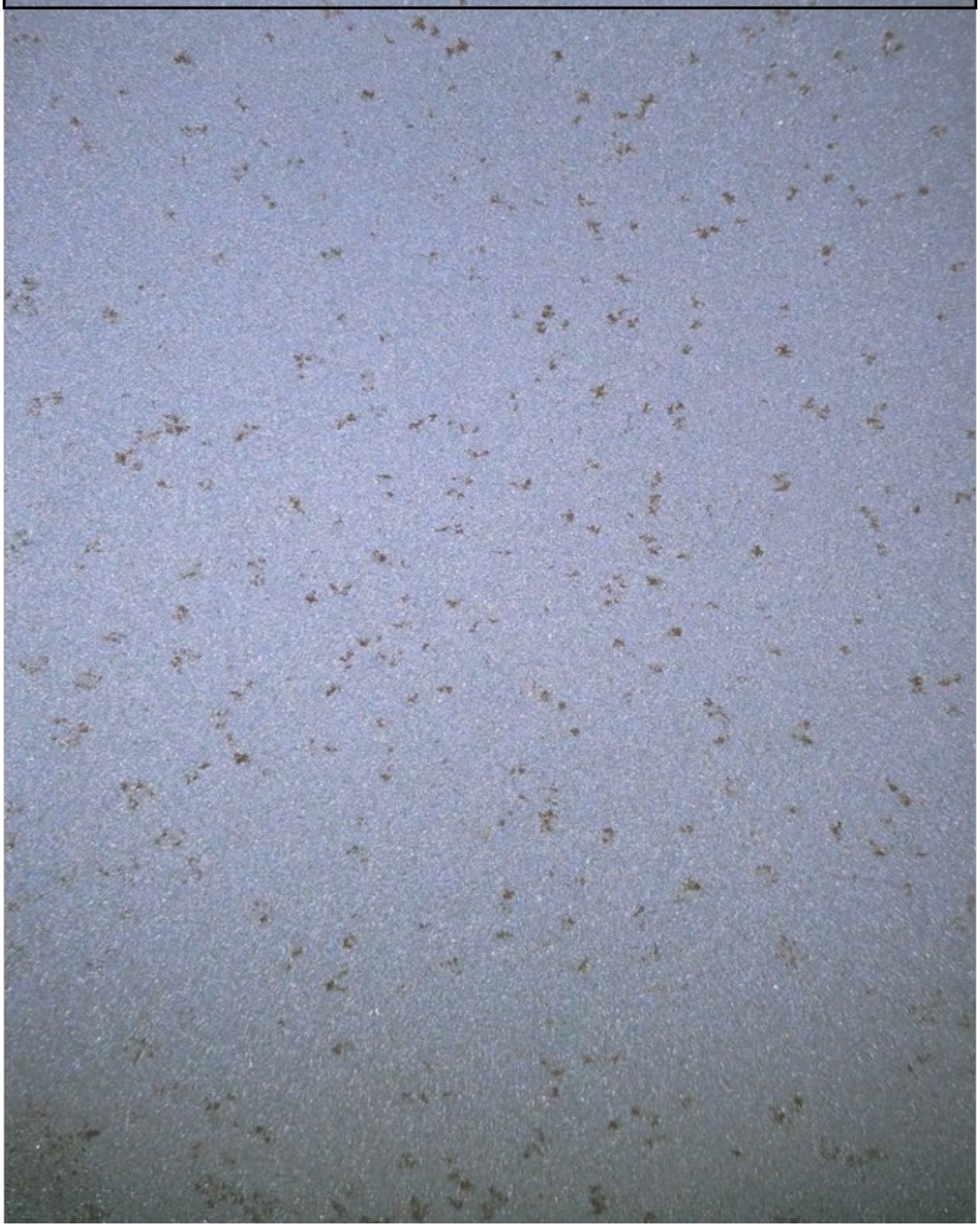
ACCEPTABLE
This surface has small amounts of rust on an otherwise well prepared surface. EonCoat will convert the small rust spots to iron phosphate




NOT ACCEPTABLE
This surface has a shop primer applied

ACCEPTABLE IF LOOSE MATERIAL IS REMOVED

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ACCEPTABLE

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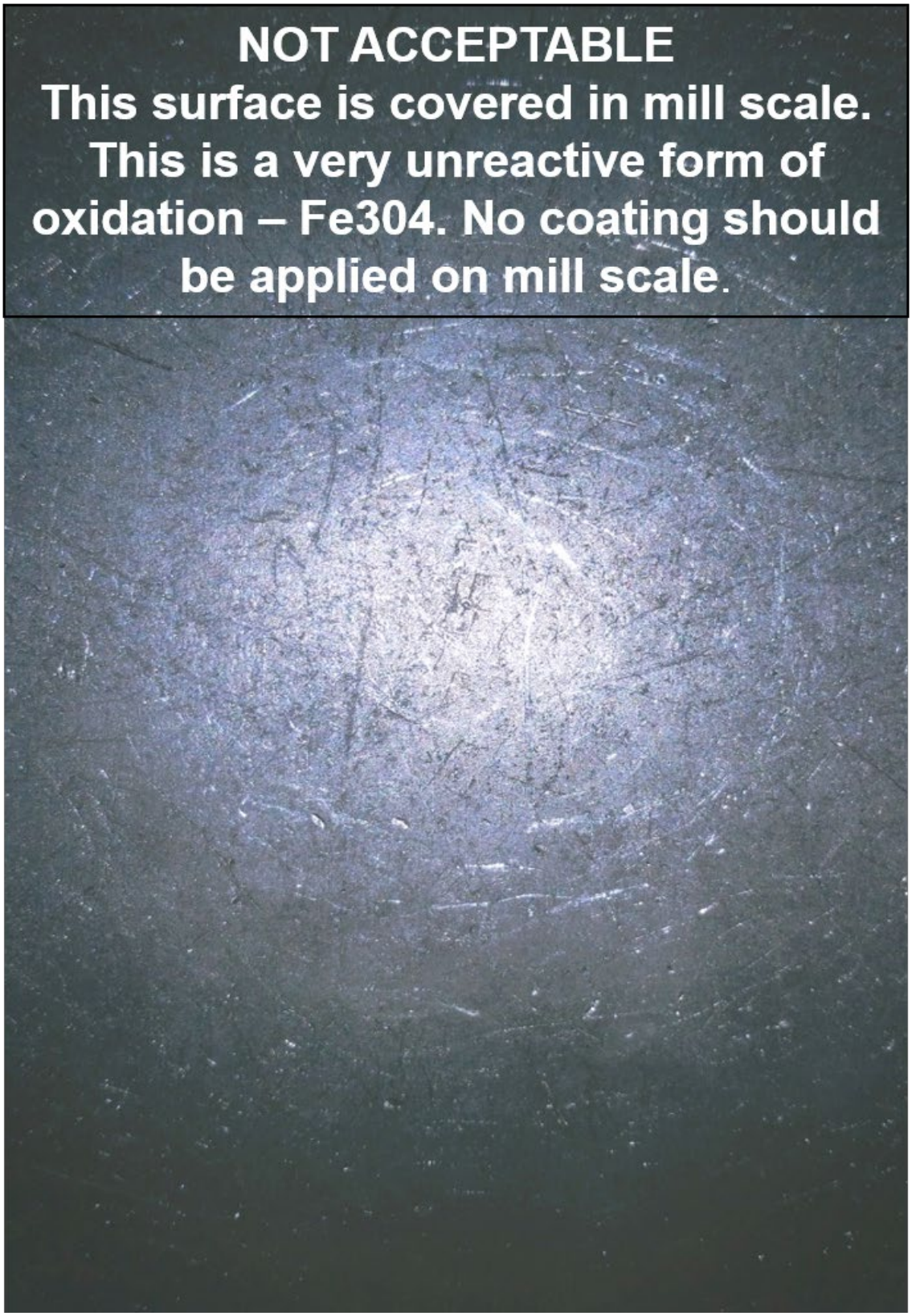
NOT ACCEPTABLE
This surface is covered in mill scale. This is a very unreactive form of oxidation – Fe304. No coating should be applied on mill scale.