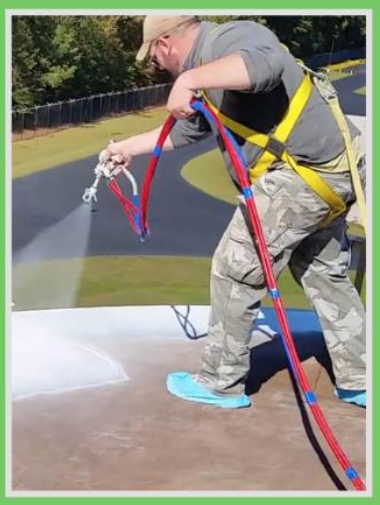
THIS DOCUMENT IS FOR INFORMATION PURPOSES ONLY. EONCOAT PRODUCTS MUST BE APPLIED BY AN EONCOAT TRAINED AND ENDORSED APPLICATOR. PLEASE CONTACT US TO ENQUIRE REGARDING TRAINING.



Surface Preparation & Application Guide

EONCOAT™

EONCOAT™

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1. 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, do not hesitate to contact 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/Grease, dust, standing water, old paint, dry fall material).

Once these two fundamentals are clearly understood, the techniques to get remarkable 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 clean, dry compressed air.

Keep in mind that this material is cement. Treat it like any other cement – do not over water it but keep it damp until it cures, (about 15 minutes) in the event of high ambient or high wind conditions.

2. PRODUCT AND PACKAGING

2.1. EONCOAT TECHNOLOGY

All EonCoat Products are applied at a 1:1 mix ratio and are 96% solids inorganic coatings. 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 film thickness 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, which is great for atmospheric applications. Good for up to 48°C (120°F)

EonCoat Corrosion Protection Plus Coating: All the advantages of ECP with better impact & abrasion resistance. Temperature rating increased to 450°C (842°F).

EonCoat CUI (Corrosion Under Insulation) Coating: This product is perfect for corrosion under insulation. This is rated at 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 floors or steel that requires welding – the possibilities are extensive. This is rated at 650°C (1200°F).

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, 19L (5-gallon buckets), as pictured next. There will be a total of 34L(9 gallons per kit) 17L (4.5 gallons) of part A & 17L (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.

2.4. EONCOAT THEORETICAL COVERAGE RATES

Product	Dry film thickness Mils - (Microns)	Wet film thickness Mils- (Microns)	Sq. Ft./ Gal (m^2/ L)
EonCoat Corrosion Protection	20.0 (500)	25.0 (635)	70 (1.7)
EonCoat Corrosion Protection Plus	20.0 (500)	25.0 (635)	70 (1.7)
EonCoat CUI	20.0 (500)	25.0 (635)	70 (1.7)
EonCoat Weldable	40.0 (1000)	45.0 (1135)	35 (0.85)

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 (500um) 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/mix.

3. SURFACE PREPARATION

Whilst 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 comparable in certain respects 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, grease, dirt, dust (including the dust from EonCoat's own dry fall/ overspray), 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 and phosphating will not take place.

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 (TSP IS IDEAL) 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. Minimum 2mm radius required on edges.

3.3. COATING PREVIOUSLY PAINTED SURFACES

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

3.4. PREPARATION OF STEEL - ABRASIVE BLAST CLEANING

All steel surfaces to be coated may be abrasive blast cleaned to an SSPC-SP 6 / NACE 3, commercial blast cleaning or better to an anchor profile of at least 75 – 150um using clean, un-recycled blast media in the range of at least 30/60 grade. Blast profile is suggested to be measured 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 critical issue is that only metal or iron oxide (FeO) remains on the surface during coating in a low to medium concentration. There are examples of surface preparations at the end of this section that are acceptable as well as examples of those that are not. If a dense concentration of flash rust is evident on a clean cloth when the substrate is wiped, then the substrate should be pressure washed to remove all loose FeO.

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 nozzle, distance from the work, method of application and workflow.

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

If the steel contains oldcorroded surfaces, then a check will need to be made for deep pitted corrosion. If deep pitted corrosion does exist, this needs to be washed with a minimum of 3000 psi

3.5. PRESSURE

A blast unit is normally operated around 90-100 PSI at the nozzle. SSPC gives typical blast cleaning rates based on nozzle size and pressures.

3.6. ABRASIVE BLASTING NOZZLE ANGLE

Abrasive blasting is supposed to be a scrubbing action, not a peening process. Therefore, the Blast Nozzle 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, an exceedingly high rate of media wear occurs. **A peened**

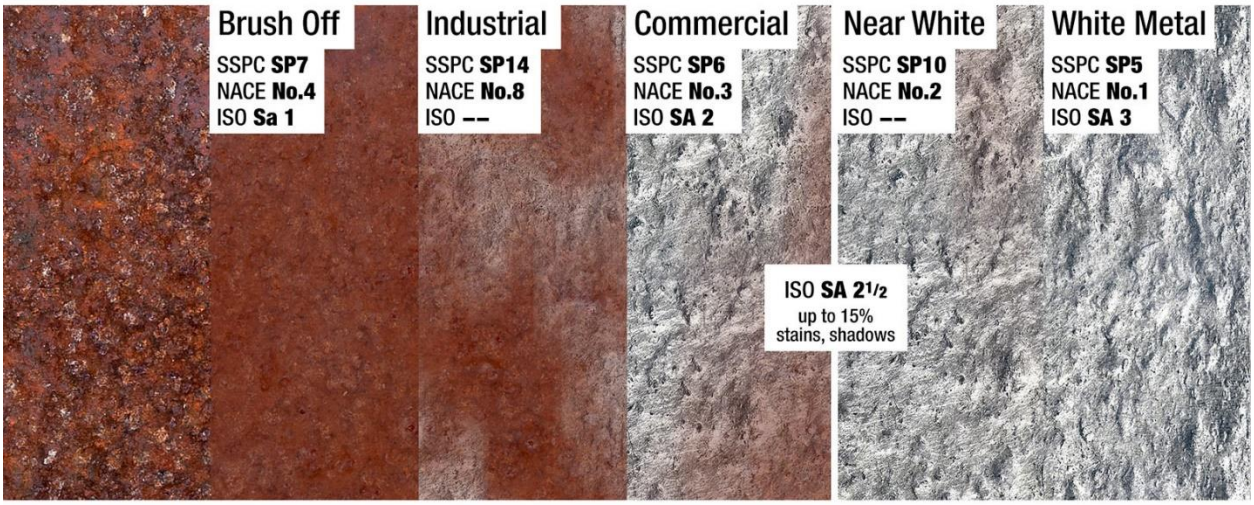
surface is not reactive and thus not suitable for applying EonCoat.

Abrasive Blast Nozzles

Nozzles are available in many wear liner materials. Selecting the correct nozzle in terms of longevity as well as size in order to maintain a nozzle pressure of 90-100Psi is critical. Failure to maintain this pressure will result in a poor surface profile as well as poor productivity. For every 1psi below 100Psi at the blast nozzle, you will lose 1.5% in production.

3.7. MEDIA

Acceptable abrasives include, aluminum oxide, garnet, 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

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.

Clean, dry compressed air at the correct pressure and volume specific to the nozzle size is essential in all abrasive blast cleaning operations. The requirement for EonCoat is no different. 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, or other dry extraction methods. Pressure washing should be utilized provide the surface is air dried. Cloths should avoided for cleaning due to lint contamination.

3.8. PREPARATION OF STEEL - WATER JETTING

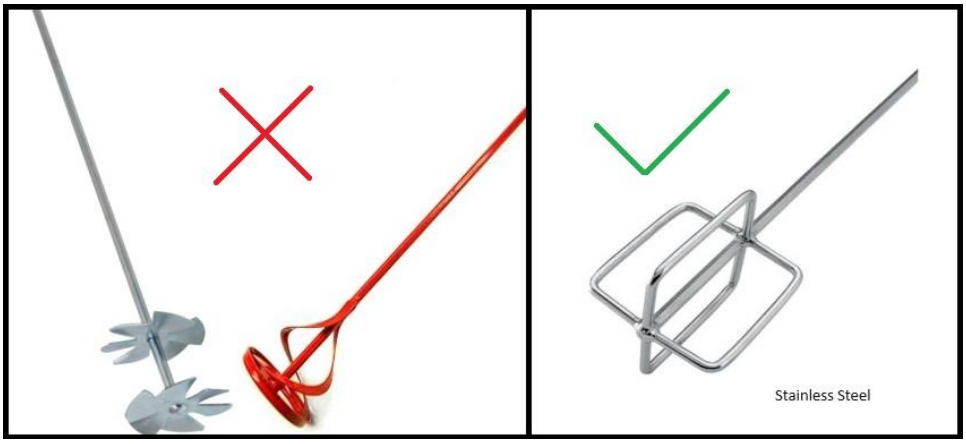
The steel surfaces to be coated shall be water jetted utilizing Ultra-High Pressure Water Jetting in accordance with SSPC-SP WJ-2 L/NACE WJ-2/L, “Clean to Bare Substrate”. Water used should be comparable to potable water and free of oil, acid, alkali, or any other detrimental matter. All coating application surfaces should be contaminant free. After water jetting, the steel surface should be cleaned with an environmentally friendly detergent or degreaser and then a final water wash to remove any remnant degreaser.

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. 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 stainless steel paddle mixer (see image below) for each component. During the mixing process, scrape the sides and bottom of the container to ensure that both parts are agitated properly. Primarily for Part A, the use of the EonCoat Stainless Steel paddle will greatly reduce the part A mix time. Agglomerations in the material, whether 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 stirrer must not have sharp edges because these will scrape plastic shards off the bucket which will 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 mounted so that it cannot touch the sides of the plastic pails.

Add Part A to the Part A hopper and Part B to Part B hopper located either side of the plural pump. Never cross contaminate both parts as the curing reaction will begin to take place.

Further mixing will be achieved with an impingement or static mixer 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.

How to Set Up & Spray EonCoat with Plural Pump

5. APPLICATION AND EQUIPMENT

The primary concept to understand is that you must apply EonCoat on a clean carbon steel surface. To achieve this, each area should be pressure washed before spraying to remove any loose contamination. 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 (15 Minutes).

5.1. SURFACE TEMPERATURE

Surface temperature should be at least 50°F (10°C) and a maximum of 110°F (43°C). There are no dew point restrictions. Special application techniques can be used when spraying in extreme temperatures, extremely low humidity, and high winds 8km/h(+5mph). The ceramic must 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 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 through surface tension and thin upon drying. If you need to achieve the required micron thickness in more complex geometric areas, you can stripe EonCoat where required. The area may be flooded with material from the spray gun, and then brushed into place using a dampened (not wet) radiator brush. Rinse brush immediately after striping.

5.3. HIGH-PRESSURE PLURAL PUMP

Applying EonCoat with a High-Pressure Plural Pump

When using a high-pressure spray system ideally you will build the full wet film 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. It is imperative that the material is sprayed wet on wet and not allowed any time to dry between passes. Maintain a wet edge of complete material build.

5.4. PNEUMATIC DUAL COMPONENT CARTRIDGE SYSTEM

Applying EonCoat with a Pneumatic Dual Component Cartridge System

The dual-component cartridge spray gun is a compact, cartridge spray system that utilizes a dual plunger actuator 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 wet film 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.

How to Use Nordson Pneumatic Cartridge Gun for EonCoat Application

5.5. HIGH PRESSURE PLURAL PUMP EQUIPMENT

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

Pump Size	30:1 (min)
Spray Gun	Graco G40/50 air assisted airless spray gun with remote mix manifold
Alternative	Graco Fusion water purge gun
Tip Orifice *	Typical tip ranges, dependent on section being sprayed and area size would be, .19 thou to .31 thou Corrosion Protection PLUS & Weldable Coating .23 - .35
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 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 Litres per minute rating (LPM). 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 Part A side of the spray equipment. Stainless Steel 304/316 is recommended for any part that meets Part A component. Do not use equipment coated with lead, zinc, or other reactive material in the supply path for part A.

Temperature has a direct effect on viscosity of the product and therefore the spray 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 substrate. The distance from the substrate is determined by the pressure and tip size. Set up the gun so that the "bounce" of the material is kept to a minimum. We want all the material to adhere to the substrate to force it into the surface profile but not bounce off. While triggering, move slowly to produce the desired coating wet film 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 3m, 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. All dry fall is to be removed prior to application.

NOTE: ***Before spraying directly on to the prepared substrate ensure that all residual water left in the whip hose and/or static mixer is evacuated using a brief trigger pull until only EonCoat product appears.***

Pump operation and monitoring

During pump operation it is extremely important that the technical assistant in charge of monitoring both material levels as well as the overall equipment, pays particular attention to both A and B fluid pressure gauges to ensure that they are balanced. Any deviation above 200 PSI should be deemed as cautionary. The technical assistant should notify the applicator to cease spraying in order to identify the cause of the imbalance (refer to pump troubleshooting image in section 11.1.

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.

https://www.youtube.com/watch?v=N_hSerpDiKYHow to Check Wet MIL Thickness of EonCoat as it is Being Applied w/ Wet Film Thickness Gauge

5.7. PUMP MAINTENANCE

At the end of each day, all remaining material may be recirculated back into the original supply buckets with great care not to cross contaminate. The pump should be thoroughly flushed with water, and material outlet filters removed and cleaned. The hoses should be thoroughly flushed with water until clean water passes through.

Once a week, displacement pump piston rods and wet cups should be inspected for both premature wear or wet cup packing tension. All wet cups need to be periodically tensioned and throat seal lubricant topped up should the level be too low. All relevant information on maintenance procedures may be found in the displacement pump manual.

Recirculation safety valves will need to be inspected every 2-3 weeks for internal wear. Should any bypass through the recirculation hoses become evident, these safety valves will need to be replaced. Monitoring the two outbound pressure gauges will offer a clear indication as to whether or not this is happening. 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.

A detailed training course on the correct setup, operation and shutdown procedure will form part of the applicator certification and training.

5.8. GUN MAINTENANCE

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

No.	Graco G40/50 Gun	Graco Fusion water Purge Gun
1	Clean gun and static mixer whip hose thoroughly with water.	Disassemble the front fluid section as per the gun manual 310648EN-P

2.	Disassemble the gun from the whip hose and clean the material build up from the tip and from the gun.	Remove Check Valves and filters if fitted, rinse and clean according to the manual.
3.	Clean the mixing block by flushing water from both sides, Part A and Part B, inlets to the mixing block as well as any inlet filters and check valves	Disassemble the front housing to clean as per the instruction manual
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.	Reassemble as per the manual
5.		Extract the Stainless-steel static mixer using the jacking tool and clean.

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.

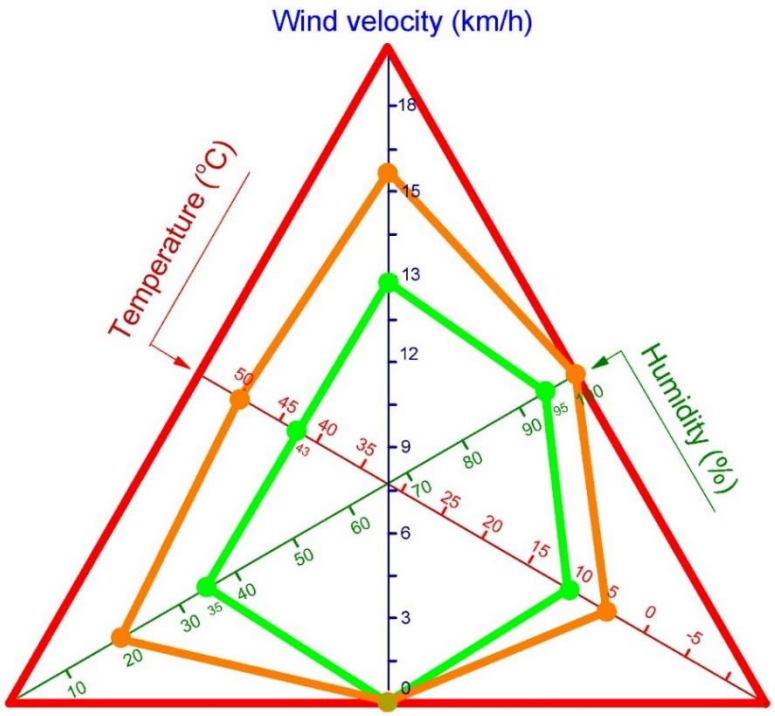
Watch a video of the Graco G40 being cleaned after use. Click on the link to watch a video or scan the QR code with a smart phone.

How to Clean Graco G40 after use with EonCoat

6. RECOMMENDED CONDITIONS

Should the above recommended conditions not be achievable, these would be considered a unique application condition. Please refer to 7.1 as well as consulting your EonCoat representative.

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.

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.

7. UNIQUE APPLICATION CONDITIONS

7.1. 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.

7.2. HIGH TEMPERATURES (SURFACE TEMPERATURES ABOVE 43°C (110°F)

Spraying in hot 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.

7.3. LOW TEMPERATURES (SURFACE TEMPERATURES BELOW 4°C (40°F)

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.

7.4. WIND (ABOVE 16Km/h (10 M/h)

Spraying in windy conditions will remove moisture from the coating prematurely. Premature moisture loss may form shrinkage cracks 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.

7.5. LOW HUMIDITY (BELOW 20%)

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 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.

8. CURING

8.1. 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. Rule of thumb is that for every 10°C increase in ambient temperature, the mixed pot life will halve.

9. INSPECTION

9.1. 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 taken immediately after application in order to achieve the most accurate reading.

9.2. PHOSPHATE TEST

A phosphate is a test which needs to be completed at every 30 sqm interval when coating which involves:

- Select an area of approximately 50mm x 50mm of the coated surface, 5-10 minutes post application
- Using a paint scraper, remove the ceramic layer down to bare substrate in the selected area
- Using a solution consisting of 50% water/50% vinegar mixture in a spray bottle, spray the exposed substrate liberally
- Leave for 5-10 minutes
- Inspect the area. Should the phosphating be successful, no oxidation/flash rusting would have taken place. If surface/flash rusting is evident, phosphating has been unsuccessful.
- If unsuccessful, select another area and repeat the test
- If additional testing is unsuccessful, the contractor should hold and undertake an assessment of what has caused the required chemical reaction not to occur

9.3. DRY FILM THICKNESS (DFT)

After the coating cures, the dry film thickness of the coating can be measured by conventional dry

film thickness gauges in accordance with SSPC-PA2, procedure for Determining Conformance to Dry Coating Thickness Requirements.

9.4. 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. Do not place the nozzle closer than 100mm from the surface

9.5. 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 (this includes spraying over a surface that contains overspray of EonCoat). The overspray needs to be removed prior to coating. The ceramic may form but not be attached to metal. This condition shows up very soon after applying. Cracking in 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 situation 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 discharges 100 ml (about 3.38 oz) 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.

9.6. 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 small point to be unprotected by a passive layer. This point may bleed rust and cause a stain. In a brief

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.

10. REPAIR

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 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.

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. We recommend a spot blast or the use of a mechanical tools such as the Bristle Blaster to create a simulated blast profile. If this is not practically possible, the steel may require chemical treatment. This chemical treatment can be provided by pouring a salt-peroxide mixture onto the surface (steel). Once flash rust bloom is observed then the steel can be coated with EonCoat.

Coating Disbondment or delamination from Steel Surface

The following process should be followed if the Eoncoat layer disbonds or de-laminates from the carbon steel surface.

- Completely remove the effected coating
- High pressure water wash and degrease
- Abrasive blast or UHP water jet the surface to ensure a clean substrate in-accordance

with blasting or jetting requirements outlined earlier in this document.

- Complete a final water wash and blow down the surface with clean dry air
- Re-apply the coating in accordance with this guide
- Complete a passivation test to check that the surface is fully passivated.

Minor Repairs

Where minor damage has removed the coating or minor rust bleed events occur then the following process can be undertaken.

- Scrape back the affected area with a paint scraper
- Clean the surface of the affected area back to the metal substrate
- Use a cartridge gun to repair EonCoat to the affected area

10.1. HEALTH AND SAFETY

EonCoat is for use in industrial environments by qualified Eoncoat accredited 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 links

EonCoat Specification Sheets (Metric)

EonCoat Specification Sheets (Imperial) or scan the QR code with your smartphone.

10.2. 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 topcoat can be chosen for the desired appearance. For customers desiring to keep with the inorganic nature of EonCoat a Poly siloxane 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.

11. TROUBLESHOOTING

Please Refer to the following table for equipment Instruction and Parts manuals as well as troubleshooting steps. These manuals can be provided upon request. Please reach out to your EonCoat representative.

Equipment Type	Manual No.	Troubleshooting Page Number
Graco G40 Gun	333182EN-C	N/A
Graco G50 Gun	3A8099EN-B	25-29
Graco Fusion Water Purge Gun	310648EN-P	25-27
Graco XP Plural Proportioner	3A0420EON	44-46
Graco Dura-Flo S/S Pumps	311827EON	N/A

11.1. SPRAY PUMP PRESSURE GAUGE READINGS

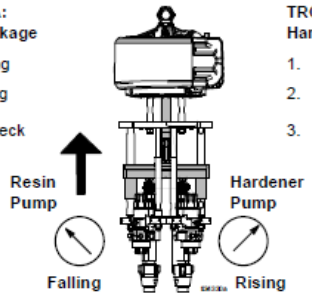
The chart on the following page uses the manifold gauges to determine pump malfunctions. Faulty manifold check valves can mask pump cylinder problems. Always keep these valves operating properly. Observe the gauge readings during the stroke direction indicated by the bold arrow, and immediately after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

Pump Troubleshooting

This chart uses proportioning fluid gauges to determine pump malfunctions. Observe the gauge readings during the stroke direction indicated by the bold arrow, and immediately after closing the gun or mix manifold. Refer to other manuals to troubleshoot individual components.

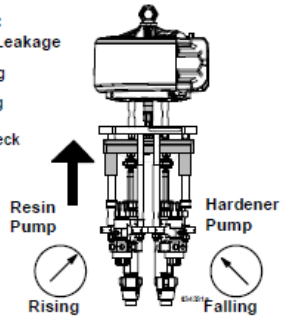
TROUBLE AREA:
Resin Pump Leakage

1. Throat packing
2. Piston packing
3. Piston ball check



TROUBLE AREA:
Hardener Pump Leakage

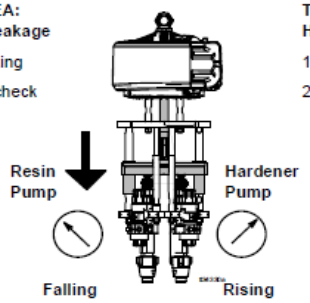
1. Throat packing
2. Piston packing
3. Piston ball check



r_258914_3a0420a_11a

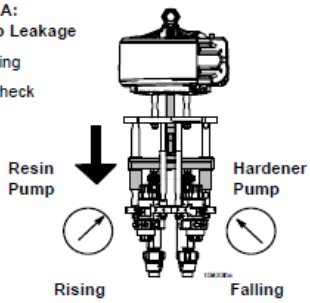
TROUBLE AREA:
Resin Pump Leakage

1. Throat packing
2. Intake ball check



TROUBLE AREA:
Hardener Pump Leakage

1. Throat packing
2. Intake ball check



12. APPENDIX

The following are photos of various levels of surface preparation. Use these as a guide to what is, and is not, acceptable.

EONCOAT™

ACCEPTABLE
This surface is NACE 2

EONCOAT™

EONCOAT™

EONCOAT™

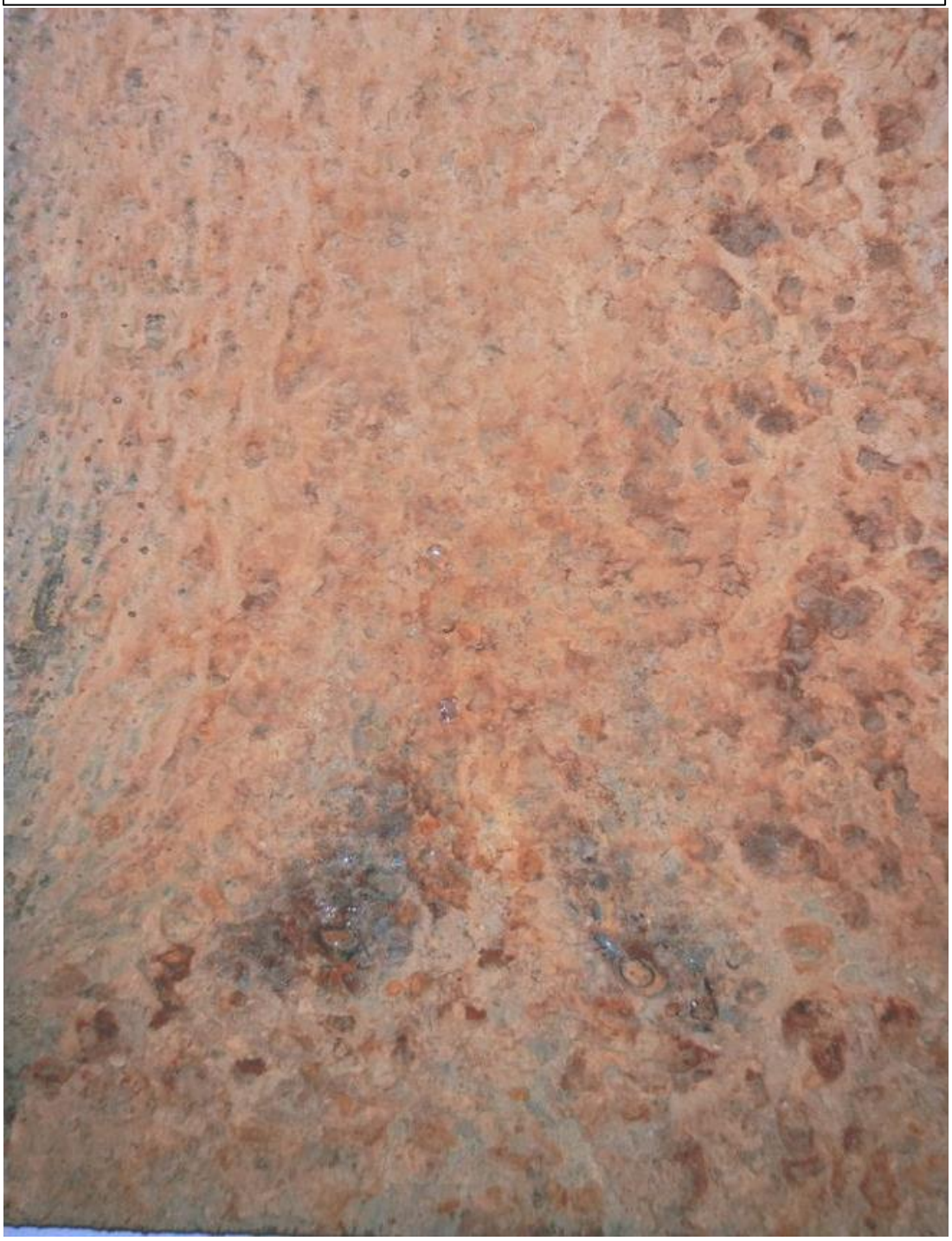
ACCEPTABLE

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 a shop primer applied

ACCEPTABLE IF LOOSE MATERIAL IS REMOVED



EONCOAT™

ACCEPTABLE

EONCOAT™

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.