Base Load Power Hub (BLPH)

SURFACE PREPARATION AND PAINTING PROCEDURE PSV

Document Number: 1724000518-MAT-PRO-00005

Document Class: 2

02	03/07/2024	Accepted for construction (AFC)	Di Virgilio L.	Delponte P.L.	Bianchi R.
01	22/05/2024	Accepted for construction (AFC)	Di Virgilio L.	Delponte P.L.	Bianchi R.
00	12/04/2024	Issue for Review (IFR)	Di Virgilio L.	Delponte P.L.	Bianchi R.
Rev.	Date	Description	Prepared	Reviewed	Approved
technical					

This document undergoes an issuance cycle within EDMS "Fusionlive".
Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

Table of Contents

SH.	DESCRIPTION	REVISIONS							
		00	01						
1	Cover	X	X						
2	Table of Contents	X	X						
3	Revision / Change Log	X	X						
4 ÷ 12	PAINTING PROCEDURE PA-PRO_23/3962	X	X						
13 ÷ 28	PRODUCT DATA SHEET & TEST	X	X						

This document undergoes an issuance cycle within EDMS "Fusionlive".
Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

Revision / Change Log

Rev.	Description
00	ISSUE FOR REVIEW (IFR)
01	ACCEPTED FOR CONSTRUCTION (AFC)

HOLDS LIST

No.	Description
1.	
2.	
3.	
4.	

This document undergoes an issuance cycle within EDMS "Fusionlive".
Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

1.0 PURPOSE
2.0 STANDARDS
3.0 HEALTH AND SAFETY
4.0 AREAS NOT TO BE COATED
5.0 ENVIRONMENTAL CONDITIONS
6.0 SURFACES PREPARATION AND CLEANING
7.0 APPLICATION OF THE COATING
8.0 INSPECTION AND TESTING
9.0 REPAIR OF COATING
10.0 HANDLING, PACKING, SHIPPING
11.0 INSPECTION RECORDS AND REPORTS

- ANNEXES

2	03/07/24	REVISED AS PER CUSTOMER COMMENTS	RB	LDV	RB
1	22/05/24	REVISED AS PER CUSTOMER COMMENTS	RB	LDV	RB
0	02/04/24	FIRST EMISSION	RB	LDV	RB
REV	**DATE**	**DESCRIPTION**	**PREPARED**	**CHECKED**	**APPROVED**

1.0 PURPOSE

This Procedure provides details for:

- Preparation of metal surfaces.
- Application of the coating in the workshop.
- Inspection.
- Quality checks.
- Reports.
- Handling, packaging and shipment of the coated material.

This procedure is derived from specification **123A90-DDL-MAT-SP-60006 Rev 00** (and therefore also from NORSOK M5010 Rev 6) and has been modified to adapt to the specificity of safety valves in area ATEX Exd IIC

2.0 STANDARDS

For undated references, the latest edition of the referenced document shall be used unless otherwise agreed.

- ISO 4624	Paints and varnishes - Pull-Off Test for adhesion
- ISO 8501-1	Preparation of steel substrates before application of paints and related products Visual assessment of Surface Cleanliness Part 1: Rust grades and preparation grades of uncoated steel substrates and of steel substrates after overall removal of previous coatings.
- ISO 8501-3	Preparation of steel substrates before application of paints and related products – Visual assessment of surface cleanliness – Part 3: Preparation grades of welds, edges and other areas with surface imperfections
- ISO 8502-6	Preparation of steel substrates before application of paints and related products – Test for the assessment of surface cleanliness – Part 6: Extraction of soluble contaminants for analysis – The Bresle method
- ISO 8502-9	Preparation of steel substrates before application of paints and related products – Test for the assessment of surface cleanliness – Part 9: Field method for the conductometric determination of water-soluble salts
- ISO 8503-1 to 5	Preparation of steel substrates before application of paints and related products. Surface roughness characteristics of blast-cleaned steel substrates. Part 1 to 5.
- ISO 8504-2	Preparation of steel substrates before application of paints and related products — Surface preparation methods — Part 2: Abrasive blast-cleaning.
- ISO 19840	Measurement of, and acceptance criteria for, the thickness of dry

		films on rough surfaces
–	ISO 80079-36	Explosive atmospheres Part 36: Non-electrical equipment for explosive atmospheres — Basic method and requirements
–	SSPC-SP1	Surface Preparation Specification No.1 - Solvent Cleaning
–	SSPC-PA 2	Measurement of Dry Coating Thickness with Magnetic Gages
–	SSPC-SP7	Brush-Off blast cleaning.
–	SSPC-SP10	Near-white metal blast cleaning.

3.0 HEALTH AND SAFETY

The safety regulations must be duly observed during the execution of processes and during use of paint, of the thinner, of the materials and equipment required.

Paints can be toxic, corrosive and flammable, Safety Data sheets of the products being used must be available and understood.

Each worker must be equipped with appropriate Personal Protection Equipment.

Products in excess must be disposed of, according to the applicable environmental rules and laws and Safety Data sheets.

4.0 AREAS NOT TO BE COATED

The following areas should not be subjected to any processing: surfaces of aluminium, brass, glass, plastic surfaces plated, nameplates, stems, the facing profile of the flanges, bearings, electrical instrumentation (such as limit switches, junction boxes).

Those areas are covered with tape protection (or other suitable means) before work.

Due care must be taken to prevent the abrasive grit entering inside the valve.

5.0 ENVIRONMENTAL CONDITIONS

The application of the coatings shall NOT be done if the temperature, relative humidity, surface temperature weather conditions, moisture, dust and light condition are outside the limit imposed by the paint manufacturer, typically:

- Ambient temperature below 5°C
- Relative humidity above 85%,
- Metal surface temperature is less than 3°C above the ambient dew point
- Outside daylight hours on exterior locations.
- Valves shall be protected from rain.
- No surface preparation shall be done during raining.
- Painting application shall not be done when it is raining or with heavy winds.

6.0 SURFACES PREPARATION AND CLEANING

Before blast cleaning, metal surfaces are cleaned and degreased thoroughly with suitable solvents or biodegradable alkaline solutions for those areas showing oil stains or grease (as per SSPC-SP1).

Before blasting, the areas not to be coated, as described in previous section, must be protected.

Surface preparation of carbon steel, low alloy and stainless steel shall be in accordance to painting system. For stainless steel use non-metallic abrasive or stainless stell wire brushing to avoid contamination.

The abrasive used must be dry, clean, free of contaminants.

Compressed air used for blast cleaning shall be checked to ensure it is free from water and oil. (blotter test)

Blast cleaning is followed by a careful de-dusting of the surfaces using dry compressed air, free of oil and other impurities; if necessary soft non-metallic brushes will be used. Special care must be taken for pockets and corners.

Visual assessments of the clean and de-dusted surfaces show everywhere metal finish almost white equal to grade Sa 2 ½, according to ISO 8501-1.

Roughness Rz shall be as indicated in the painting system, according to ISO 8503.

7.0 APPLICATION OF THE COATING

Painting cycles are:

- System B for carbon steel valves
- System A for SS valves.

And are attached to this procedure.

The paintings must be provided by the paint manufacturer, in sealed containers clearly identifiable. The containers remain sealed until the time of their use. No paint will be used after the expiry date.

The interval between the cleaning of the surface and application of primer shall be minimized as much as possible and the two operations are always performed on the same day, before any traces of oxidation may show. Primer coat will be applied within 4 hours of blast cleaning.

At the time of application of the primer, the surfaces are clean and free of dust.

The coating is not applied at the ends that will be then subjected to welding.

The cut-back margins of the ends to be welded is about 50 mm.

The technical requirements for application are in accordance with the Product Data Sheets issued by the manufacturer of the paint.

Welds, corners, edges, bolts, nuts and all the hard-to-reach areas are coated by brush with the technique of stripe-coat for each layer of coating. In order to obtain the proper thickness

and to avoid visual holidays. The remaining surfaces are covered by the conventional system spray or airless spray.

During the application, the thickness of wet paint is controlled by using special tools. After complete drying, the thickness of the paint must be within the specified values.

Adhesion qualification test plates, if required by the Customer Specification and QCP, shall be prepared at the same time and under the same conditions as the production coating work.

8.0 INSPECTION AND TESTING

Inspection and tests shall be as per Specification 123A90-DDL-MAT-SP-60006 Rev 00 table 9-1 and doc. 1724000518-QC-ITP-00002

Test type	Method	Frequency	Acceptance criteria	Consequence
Environmental conditions	Ambient and steel temperature. Relative humidity. Dew point.	Before start of each shift + minimum twice per shift.	In accordance with specified requirements	No blasting or coating
Visual examination	Visual for sharp edges weld spatter slivers, rust grade, etc. ISO 8501-3	100 % of all surfaces	No defects, see specified requirements	Defects to be repaired
Cleanliness	a) ISO 8501-1 b) ISO 8502-3	a) 100 % visual of all surfaces b) Spot checks	a) In accordance with specified requirements b) Maximum quantity and size rating 2	a) Reblasting b) Recleaning and retesting until acceptable
Salt test	ISO 8502-6 and ISO 8502-9	Spot checks	Maximum conductivity corresponding to 20 mg/m2 NaCl	Repeated washing with potable water and retesting until acceptable
Roughness	Comparator, stylus instrument or testex tape (see ISO 8503)	Each component or once per 10 m2	As specified	Reblasting
Visual examination of coating	Visual to determine curing, contamination, solvent retention, pinholes/popping, sagging and surface defects	100 % of surface after each coat	According to specified requirements	Repair of defects
Film thickness	ISO 19840. Calibration on a smooth surface	ISO 19840	ISO 19840, and coating system data sheet	Repair, additional coats or recoating as appropriate
Adhesion	ISO 4624, using equipment with an automatic centred pulling force, and carried out when coating system are fully cured	Spot checks	ISO 4624	Coating to be rejected

8.1 Final Surface condition

The surface to be coated shall be clean, dry, free from oil/grease, and have the specified roughness and cleanliness until the first coat is applied.

Dust, blast abrasives etc. shall be removed from the surface after blast cleaning such that the particle quantity and particle size do not exceed rating 2 of ISO 8502-3.

The maximum content of soluble impurities on the blasted surface as sampled using ISO 8502-6 and distilled water, shall not exceed a conductivity measured in accordance with ISO 8502-9 corresponding to a NaCl content of 20 mg/m2.

8.1 Roughness of Surfaces

The roughness of metal surfaces is measured according to standard ISO 8503, and the roughness Rz will be between 40-70 µm (grade fine-medium G).
Grade fine for stainless steel & medium for carbon steel.

8.2 Temperature - Relative humidity - Dew point

Ambient temperature, relative humidity and dew point, before and during the blasting and coating, are measured with a hygrothermal device.

8.3 Thickness of Coating

The wet thickness of all layers of the coating is controlled during application.
The test is performed according to either standard ISO 19840.
The range of acceptability for each measurement spot is between 0.8 x NDFT and 2x NDFT (Nominal Dry Film Thickness). The nominal DFT is shown in the painting cycle.

8.4 Visual Control

The visual inspection takes place during all phases of surface preparation and after applying each coat of paint. There must be no evidence of: drops, sagging, gaps, bubbles, orange peel, pin-holes, areas free of paint.

8.5 Adhesion Verification

Adhesion test according to ISO4624, pull-off test.

9.0 REPAIR OF COATING

Any damaged areas are repaired as follows:

a) Damage to coating with exposure of the metal surface

METAL SURFACE PREPARATION:

- SSPC-SP1 and ISO 8501-1 Sa 2 ½ - 3;
- Where the blasting is not possible, perform surface preparation according to ISO 8501 - St 3 (acceptable only for limited areas).

Reapply the full coatign system.

The total dry thickness shall be at least the required minimum.

Repeat the acceptance checks.

b) Damage Without exposing the metal surface

METAL SURFACE PREPARATION:

- SSPC-SP1 and cleaning of the damaged area and adjacent areas.

Reapply the full coatign system (or eventually only intermediate and finish).

The total dry thickness shall be at least the required minimum.

Repeat the acceptance checks.

10.0 HANDLING, PACKING, SHIPPING

The coated material is handled with appropriate precautions in order not to cause damage to parts or to the coating.

Individual pieces on the same pallet/box are separated from each other by strips of rubber or padding so that the pieces do not hit against each other.

If transport strips/ropes, chains are used, proper saddles/protection/partitions or other protective means must be used to prevent damages.

11.0 INSPECTION RECORDS AND REPORTS

The report shall show, as a minimum, the information about the paint used and the quality checks performed, in accordance to the QCP.

Annex 1

Painting cycles:

- System A
- System B

ANNEX 1

Table of Coating System A – *Tabella del Sistema di rivestimento A*			
Applicable to:	Surface Preparation	Soating System	Min DFT (µm)
Stainless Steel surfaces of: ATEX Exd IIC Safety Valves	Cleaning: Sweep Blasting Roughness: Rz 25-85 µm Fine / Medium Grade G	First Coat: Carbomastic 15LT ATEX Top coat: Carbothane 134 HP	100 50
		Complete Coating Sistem	150
Final Colour: RAL 9002			

Table of Coating System B – *Tabella del Sistema di rivestimento B*			
Applicable to:	Surface Preparation	Soating System	Min DFT (µm)
Carbon Steel surfaces of: ATEX Exd IIC Safety Valves	Cleaning: Sa 2 1/2 Roughness: Rz 25-85 µm Medium Grade G	First coat: Carbozinc 858 Second coat: Carbomastic 15LT ATEX Top coat: Carbothane 134 HP	60 100 50
		Complete Coating Sistem	210
Final Colour: RAL 9002			

Note:
-Carbozinc 858 and Carbomastic 15LT ATEX have a surface resistivity of less than 1 Giga Ohm as required by EN 80079-36 point 6.7.5 (Equipment -Group II) paragraph a) d)
-The top coat, although not having a surface resistivity of less than 1 Giga Ohm, being applied at a DFT of less than 200 microns, is in accordance with EN 80079-36 para. 6.7.5 paragraph a) d).

ANNEX 2

- Data Sheet of Carbomastic 15LT ATEX
- Data Sheet of carbothane 134 HP
- Data sheet of Carbozinc 858
- Test report of Carbomastic 15 LT ATEX

Carbomastic 15 LT ATEX

PRODUCT DATA SHEET

SELECTION & SPECIFICATION DATA

Generic Type	Two-components, modified Epoxymastic.
Description	Carbomastic 15 LT Atex is a high build coating with excellent adhesion and low temperature (ambient) curing. It is a modified epoxy mastic with antistatic and dissipative agents according to CEI EN 60079 (electric construction for explosive gas atmospheres).
Features	• Carbomastic 15 LT Atex has fast curing at Low Temperature (ambient). • High solid give good coverage and reduce solvent emissions. • In accorsance with CEI EN 60079.
Color	Black.
Finish	Semi-Gloss
Primer	It has to be applied over organic or inorganic zinc primers. A mist coat may be required to minimize bubbling over inorganic zinc primers.
Dry Film Thickness	100 - 300 microns (3.94 - 11.81 mils) per coat Normally 150µm.
Solids Content	By Volume 79% +/- 2%
Theoretical Coverage Rate	31.1 m²/l at 25 microns (1267 ft²/gal at 1.0 mils) 7.9 m²/l at 98 microns (322 ft²/gal at 3.9 mils) 2.6 m²/l at 295 microns (107 ft²/gal at 11.8 mils) Allow for loss in mixing and application.
Dry Temp. Resistance	Continuous: 70°C (158°F) Non-Continuous: 120°C (248°F)
Limitations	Epoxies lose gloss, discolor and eventually chalk in sunlight exposure. Not recommended for immersion service in acids, alkalies or solvents.
Topcoats	Carbocrylic 1290 Atex

SUBSTRATES & SURFACE PREPARATION

General	Surfaces must be clean and dry. Employ adequate methods to remove dirt, dust, oil and all other contaminants that could interfere with adhesion of the coating.
Stainless Steel	SSPC-SP16 with non metallic abrasive and surface profile roughness of 35-50 µm.(1.4-2.0 mils).

MIXING & THINNING

Mixing	Power mix separately, then combine and power mix. DO NOT MIX PARTIAL KITS.
Thinning	May be thinned up to 15% by volume with Thinner#2. Use of thinners other than those supplied by Carboline may adversely affect product performance and void product warranty, whether expressed or implied.

MIXING & THINNING

Ratio	By volume: Carbomastic 15 LT Atex part A: 1 Carbomastic 15 LT Atex part B: 1
Pot Life	1,5 Hours at 20°C (68°F) and less at higher temperatures. Pot life ends when coating becomes too viscous to use.

APPLICATION EQUIPMENT GUIDELINES

Listed below are general equipment guidelines for the application of this product. Job site conditions may require modifications to these guidelines to achieve the desired results.

General	The following spray equipment has been found suitable and is available from manufacturers such as Binks, DeVilbiss and Graco. Lap each pass 50%.
Conventional Spray	Pressure pot equipped with dual regulators, 3/8" I.D. minimum material hose, 0.070" I.D. fluid tip and appropriate air cap.
Airless Spray	Pump Ratio: *30:1 GPM Output: *11.5 liters/min (GPM Output: 3.0 (min)) Material Hose: 3/8" I.D. minimum Tip Size: * 0.023" - 0.027" Output PSI: * 2000 - 2400 Filter: *60 mesh * PTFE packings are recommended and available from equipment manufacturers.
Brush & Roller (General)	For touch up, small areas and strip-coat only.
Brush	Use a medium bristle brush. Avoid excessive rebrushing.
Roller	Use a medium nap roller cover with phenolic core. Avoid excessive rerolling.

APPLICATION CONDITIONS

Condition	Material	Surface	Ambient	Humidity
Minimum	5°C (41°F)	2°C (36°F)	2°C (36°F)	0%
Maximum	35°C (95°F)	75°C (167°F)	40°C (104°F)	90%

Industry standards are for substrate temperatures during application to be 5 °F (3 °C) above the dew point. Condensation due to substrate temperatures below the dew point can cause flash rusting on prepared steel and interfere with proper adhesion to the substrate.
Normal Condition:
Material:15-30°C (59-86°F) Surface:15-30°C (59-86°F) Ambient:15-30°C (59-86°F) Humidity:35-80% Special application techniques may be required above or below normal application conditions.

CURING SCHEDULE

Surface Temp.	Dry to Recoat or Topcoat	Final Cure
5°C (41°F)	18 Hours	7 Days
10°C (50°F)	10 Hours	5 Days
20°C (68°F)	6 Hours	3 Days
30°C (86°F)	4 Hours	2 Days

These times are based on recommended DFT. Higher film thickness, insufficient ventilation or cooler temperatures (ambient) will require longer cure times and could result in solvent entrapment and premature failure.
Note 1: Carbomastic 15 LT ATEX contains conductive pigments and cannot be holiday tested.

CLEANUP & SAFETY

Cleanup	Use Thinner#2. In case of spillage, absorb and dispose of in accordance with local applicable regulations.
Safety	Read and follow all caution statements on this product data sheet and on the SDS for this product. Employ normal workmanlike safety precautions. Hypersensitive persons should wear protective clothing, gloves and use protective cream on face, hands and all exposed areas.
Ventilation	When used as a tank lining or in enclosed areas, thorough air circulation must be used during and after application until the coating is cured. The ventilation system should be capable of preventing the solvent vapor concentration from reaching the lower explosion limit for the solvents used. In addition to ensuring proper ventilation, appropriate respirators must be used by all application personnel.
Caution	This product contains flammable solvents. Keep away from sparks and open flames. All electrical equipment and installations should be made and grounded in accordance with the National Electric Code. In areas where explosion hazards exist, workers should be required to use non-ferrous tools and wear conductive and non-sparking shoes.

PACKAGING, HANDLING & STORAGE

Shelf Life	Carbomastic 15 LT Atex part A: 12 months at 24°C (75°F) Carbomastic 15 LT Atex part B: 12 months at 24°C (75°F)
Storage Temperature & Humidity	5-38°C (41-100°F) 0-90% RH
Flash Point (Setaflash)	Carbomastic 15 LT Atex part A: 5°C (41°F) Carbomastic 15 LT Atex part B: 24°C (75°F)
Storage	Store Indoors.
Packaging	Carbomastic 15 LT Atex part A: 10 liters Carbomastic 15 LT Atex part B: 10 liters

WARRANTY

To the best of our knowledge the technical data contained herein is true and accurate on the date of publication and is subject to change without prior notice. User must contact Carboline Company to verify correctness before specifying or ordering. No guarantee of accuracy is given or implied. We guarantee our products to conform to Carboline quality control. We assume no responsibility for coverage, performance, injuries or damages resulting from use. Carbolines sole obligation, if any, is to replace or refund the purchase price of the Carboline product(s) proven to be defective, at Carbolines option. Carboline shall not be liable for any loss or damage. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY CARBOLINE, EXPRESS OR IMPLIED, STATUTORY, BY OPERATION OF LAW, OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. All of the trademarks referenced above are the property of Carboline International Corporation unless otherwise indicated.

Carbothane 134 HP

PRODUCT DATA SHEET

SELECTION & SPECIFICATION DATA

Generic Type	Aliphatic Acrylic Polyurethane
Description	Thin film, high gloss finish with exceptional weathering performance characteristics. Used extensively in virtually all industrial markets, it provides a smooth, durable finish that has superior resistance to corrosion, abrasion and chemical exposure.
Features	• High solids, low VOC content • Excellent weatherability • Exceeds SSPC Paint 36 specification for a Level 3 urethane • Available in custom colors • Excellent flow characteristics allow for application by spray or roller • Superior impact and abrasion resistance • Indefinite recoatability • VOC compliant
Color	Refer to Carboline Color Guide. Certain colors, particularly in non-leaded safety oranges, reds and yellows may require multiple coats for adequate hiding. Check color suitability before use.
Finish	Gloss
Primer	Refer to Substrates & Surface Preparation.
Dry Film Thickness	51 - 76 microns (2 - 3 mils) per coat
Solids Content	By Volume 65% +/- 2%
Theoretical Coverage Rate	25.6 m²/l at 25 microns (1043 ft²/gal at 1.0 mils) 12.8 m²/l at 50 microns (521 ft²/gal at 2.0 mils) 8.5 m²/l at 75 microns (348 ft²/gal at 3.0 mils) Allow for loss in mixing and application.
VOC Values	**As Supplied** : 2.5 lbs./gal (300 g/l) These are nominal values and may vary slightly with color.
Dry Temp. Resistance	Continuous: 93°C (200°F) Non-Continuous: 121°C (250°F) Discoloration and loss of gloss is observed above 200°F (93°C).
Limitations	*The alignment of aluminum flakes in aluminum-filled finishes is very dependent on application conditions and techniques. Care must be taken to keep conditions as constant as possible to reduce variations in final appearance. It is also advisable to work from a single batch of material since variations can occur from batch to batch. For more information consult Carboline Technical Service Department.
Topcoats	Carbothane® 134 Clear Coat when required

SUBSTRATES & SURFACE PREPARATION

General	Surfaces must be clean and dry. Employ adequate methods to remove dirt, dust, oil and all other contaminants that could interfere with adhesion of the coating. For all surfaces prime with specific Carboline primer as recommended by your Carboline sales representative. Refer to the specific primer's Product Data Sheet for detailed requirements.

SUBSTRATES & SURFACE PREPARATION

Galvanized Steel	Prime with specific Carboline primer as recommended by your Carboline Sales Representative. Refer to the specific primer's Product Data Sheet for substrate preparation requirements.
Previously Painted Surfaces	Lightly sand to roughen and degloss the surface. Existing paint must attain a minimum 3A rating in accordance with ASTM D3359 "X-Scribe" adhesion test.

MIXING & THINNING

Mixing	Power mix Part A separately, then combine with Part B and power mix. DO NOT MIX PARTIAL KITS.
Thinning	Consult your local Carboline representative for a proper thinner recommendation based on your local air permitting regulations and method of application. Use of thinners other than those supplied or recommended by Carboline may adversely affect product performance and void product warranty, whether expressed or implied.
Ratio	4:1 Ratio (A to B)
Pot Life	4 Hours at 75°F (24°C) and less at higher temps. Pot life ends when coating becomes too viscous to use. MOISTURE CONTAMINATION WILL SHORTEN POT LIFE AND CAUSE GELLATION.

APPLICATION EQUIPMENT GUIDELINES

Listed below are general equipment guidelines for the application of this product. Job site conditions may require modifications to these guidelines to achieve the desired results.

Spray Application (General)	This is a high solids coating and may require adjustments in spray techniques. Wet film thickness is easily and quickly achieved. Spray equipment is available from manufacturers such as Binks, DeVilbiss and Graco.
Conventional Spray	Pressure pot equipped with dual regulators, 3/8" I.D. minimum material hose, 0.070" I.D. fluid tip and appropriate air cap.
Airless Spray	*Pump Ratio: 30:1 (min.) GPM Output: 3.0 (min.) Material Hose: 3/8" I.D. (min.) Tip Size: 0.015-0.017" Output PSI: 2100-2400 Filter Size: 60 mesh *PTFE packings are recommended and available from the pump manufacturer.
Brush & Roller (General)	Multiple coats may be required to obtain desired appearance, recommended dry film thickness and adequate hiding. Avoid excessive re-brushing or rerolling. For best results, tie-in within 10 minutes at 75°F (24°C).
Brush	Recommended for touch-up only. Use a medium, natural bristle brush.
Roller	Use a short-nap mohair roller cover with phenolic core.

APPLICATION CONDITIONS

Condition	Material	Surface	Ambient	Humidity
Minimum	10°C (50°F)	2°C (35°F)	2°C (35°F)	0%
Maximum	38°C (100°F)	49°C (120°F)	35°C (95°F)	80%

Industry standards are for substrate temperatures to be 5°F(3°C) above the dew point. Caution: This product is moisture sensitive in the liquid stage and until fully cured. Protect from high humidity, dew and moisture contact until fully cured. Application and/or curing in humidities above maximum, or exposure to moisture from rain or dew may result in a loss of gloss and/or micro-bubbling of the product.

CURING SCHEDULE

Surface Temp.	Dry to Handle	Dry to Recoat & Topcoat w/ other finishes	Final Cure General
2°C (35°F)	18 Hours	18 Hours	14 Days
10°C (50°F)	10 Hours	10 Hours	7 Days
24°C (75°F)	4 Hours	4 Hours	3 Days
32°C (90°F)	1 Hour	1 Hour	1 Day

These times are based on a 2.0 mil (50 micron) dry film thickness. Higher film thickness, insufficient ventilation or cooler temperatures will require longer cure times and could result in solvent entrapment and premature failure.
***Maximum recoat times are indefinite.** Surface must be clean and dry. As part of good painting practice it is recommended to test for adhesion by wiping the surface with thinner. If the film shows a slight "tack" the surface is suitable for recoating without extensive surface preparation such as abrading.

CLEANUP & SAFETY

Cleanup	Use Thinner 2 or Acetone. In case of spillage, dispose of in accordance with local applicable regulations.
Safety	Read and follow all caution statements on this product data sheet and on the MSDS for this product and use personal protective equipment as directed.
Ventilation	When used in enclosed areas, thorough air circulation must be used during and after application until the coating is cured. The ventilation system should be capable of preventing the solvent vapor concentration from reaching the lower explosion limit for the solvents used. User should test and monitor exposure levels to insure all personnel are below guidelines. If not able to monitor levels, use MSHA / NIOSH approved respirator.

PACKAGING, HANDLING & STORAGE

Shelf Life	Part A: Min. 24 months at 75°F (24°C) Part B: Min. 24 months at 75°F (24°C) *Shelf Life: when kept at recommended storage conditions and in original unopened containers.
Storage Temperature & Humidity	40° -110°F (4°-43°C) 0-80% Relative Humidity
Flash Point (Setaflash)	Carbothane 134 HP (Part A): 90°F (32°C) Urethane Converter (Part B): 127°F (53°C)
Storage	Store Indoors.

PACKAGING, HANDLING & STORAGE

This product is solvent based and not affected by excursions below these published storage temperatures, down to 10°F, for a duration of no more than 14 days. Always inspect the product prior to use to make sure it is smooth and homogeneous when properly mixed.

WARRANTY

To the best of our knowledge the technical data contained herein is true and accurate on the date of publication and is subject to change without prior notice. User must contact Carboline Company to verify correctness before specifying or ordering. No guarantee of accuracy is given or implied. We guarantee our products to conform to Carboline quality control. We assume no responsibility for coverage, performance, injuries or damages resulting from use. Carbolines sole obligation, if any, is to replace or refund the purchase price of the Carboline product(s) proven to be defective, at Carbolines option. Carboline shall not be liable for any loss or damage. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY CARBOLINE, EXPRESS OR IMPLIED, STATUTORY, BY OPERATION OF LAW, OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. All of the trademarks referenced above are the property of Carboline International Corporation unless otherwise indicated.

Carbozinc 858

PRODUCT DATA SHEET

SELECTION & SPECIFICATION DATA

Generic Type	Two-components zinc filled, cross-linked epoxy primer.
Description	Carbozinc 858 is a high solid, organic zinc epoxy primer designed for corrosion protection of structural steel in salt and weathering environments. The paint is easy to apply and protects steel galvanically. Provides tough and abrasion resistant film.
Features	• Outstanding application properties • Protects steel galvanically • Cures at low temperatures down to 2°C • Cured film is tough and abrasion resistant • Widely used within petrochemical-, offshore shipping- and other heavy industries in severe environments with appropriate topcoat • No induction time • Prequalified in accordance with NORSOK M-501, Rev.6 System 1. • **N.B. an applied film of 90 microns DFT of Carbozinc 858 achieved accredited test certification for NORSOK M-501, Rev 4 System 1.**
Color	Bluish grey Green
Finish	Flat
Wet Film Thickness	80 - 230 µm per coat.
Dry Film Thickness	50 - 150 microns (1.95 - 5.9 mils) per coat
Solid(s) Content	By volume: 65 ± 2% Zinc content in dry film: 84 %
Theoretical Coverage Rates	13 m²/l at 50 µm 4,3 m²/l at 150 µm Allow for loss in mixing and application.
Dry Temp. Resistance	Continuous: 150°C (302°F) Non-Continuous: 200°C (392°F)
Limitations	Not recommended for direct exposure to strong acids and alkalies.
Topcoats	May be topcoated with epoxy, polyurethane or others as recommended by Carboline.

SUBSTRATES & SURFACE PREPARATION

General	Surface must be clean and dry. Employ adequate methods to remove dirt, dust, oil and all other contaminants that could interfere with adhesion of the coating.
Steel	Surface preparation to be minimum St 3 (ISO 8501-1). Alternatively, ultra high pressure water jetting to Nace No. 7 min. C Vis WJ-2. Max flash rust; C Vis WJ-2M.

MIXING & THINNING

Mixing	Power mix separately, then add part B to Part A and power mix well. DO NOT MIX PARTIAL KITS.
Thinning	Normally not required. May be thinned up to 10 % with Carboline Thinner #2.

MIXING & THINNING

Ratio	3 : 1 (A to B) by volume
Pot Life	4 hours at 24°C and longer at lower temperatures.

APPLICATION EQUIPMENT GUIDELINES

Listed below are general equipment guidelines for the application of this product. Job site conditions may require modifications to these guidelines to achieve the desired results.

Airless Spray	Pump ratio: 30:1 (min.) GPM Output: 3.0 (min.) Material Hose: 3/8" I.D. (min.) Tip Size: 0.017-0.021" Output PSI: 2000-2200 (140-160 kg/cm²) Filter Size: 60 mesh Teflon packings are recommended and available from the pump manufacturer
Brush & Roller (General)	Recommended for touch up, stripe coating and hard-to-reach areas
Brush	Recommended using a soft bristle brush.
Roller	Generally not recommended for priming purposes

APPLICATION CONDITIONS

Condition	Material	Surface	Ambient	Humidity
Minimum	4°C (39°F)	2°C (36°F)	2°C (36°F)	0%
Maximum	30°C (86°F)	50°C (122°F)	45°C (113°F)	95%

CURING SCHEDULE

Surface Temp.	Dry to Handle or Recoat	Final Cure
2°C (36°F)	8 Hours	10 Days
10°C (50°F)	5 Hours	5 Days
24°C (75°F)	2 Hours	3 Days
32°C (90°F)	1 Hour	2 Days

CLEANUP & SAFETY

Cleanup	Use Carboline Thinner #2 or Acetone. In case of spillage, absorb and dispose of in accordance with local applicable regulations.
Safety	Read and follow all caution statements on this product data sheet and on the MSDS for this product. Employ normal workmanlike safety precautions. Hypersensitive persons should wear protective clothing, gloves and use protective cream on face, hands and all exposed areas.
Ventilation	When used in enclosed areas, thorough air circulation must be used during and after application until the coating is cured. The ventilation system should be capable of preventing the solvent vapor concentration from reaching the lower explosion limit for the solvents used.

CLEANUP & SAFETY

Caution	This product contains flammable solvents. Keep away from sparks and open flames. All electrical equipment and installations should be made and grounded in accordance with applicable regulations. In areas where explosion hazards exist, workmen should be required to use non-ferrous tools and wear conductive and non-sparking shoes.

PACKAGING, HANDLING & STORAGE

Shelf Life	Part A: 9 months (24°C) Part B: 2 years (24°C)
Storage Temperature & Humidity	5° - 45°C 0 - 95% relative humidity
Storage	Store indoors.
Packaging	Part A 7,5 litres Part B 2,5 litres

WARRANTY

To the best of our knowledge the technical data contained herein is true and accurate on the date of publication and is subject to change without prior notice. User must contact Carboline Company to verify correctness before specifying or ordering. No guarantee of accuracy is given or implied. We guarantee our products to conform to Carboline quality control. We assume no responsibility for coverage, performance, injuries or damages resulting from use. Carbolines sole obligation, if any, is to replace or refund the purchase price of the Carboline product(s) proven to be defective, at Carbolines option. Carboline shall not be liable for any loss or damage. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY CARBOLINE, EXPRESS OR IMPLIED, STATUTORY, BY OPERATION OF LAW, OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. All of the trademarks referenced above are the property of Carboline International Corporation unless otherwise indicated.

Rapporto di prova n. R-AX-561-0711-02B

RESISTIVITA' SUPERFICIALE

Committente	**CARBOLINE ITALIA S.p.a.** Via Milano, 150 20093 Cologno Monzese
Oggetto	**Provini materiale metallico con rivestimento isolante** Marca: **----** Denominazione materiale: **CARBOMASTIC 15 LT ATEX** Riferimento: n. identificativo ELETTRA **11142 A-B-C**
Norme di riferimento	**EN 60079-0:2007**
Tipologia di prove	**Resistenza superficiale**

Revisione	**2°**	Data emissione	**06/12/2011**
Stesura:	**Ing. L. Spinelli**	Approvazione:	**Ing. L. Spinelli**

Timbro

*Questo documento può essere riprodotto **solo integralmente**. Ogni riproduzione parziale o semplice citazione è ammessa soltanto dopo autorizzazione scritta rilasciata da Elettra s.r.l.*

ELETTRA s.r.l.
Laboratorio **Elettrolab**
P.Iva e C.F. 05541190483

Via Matteucci, 10
50041 Calenzano
Tel. +39-055-8827323
Fax. +39-055-0516924
www.elettrasrl.eu

Bureau Veritas Appointed Laboratory
Organization with Management System
Certificate ISO 9001:2000; ISO 17025:2005

Notified Body Directive
2006/95/CE
2004/108/CE

INDICE

1. SCOPO **3**
2. IDENTIFICAZIONE DELL'OGGETTO IN PROVA **3**
3 . DIRETTIVE E NORMATIVE DI RIFERIMENTO **5**
4. VERIFICHE ED ANALISI DI CONFORMITÀ **5**
4.1 Prova resistenza superficiale 5

1. SCOPO

Il presente documento è stato redatto con lo scopo di documentare le prove di resistenza superficiale condotte sui provini in oggetto, in accordo ai requisiti della norma presa come riferimento.

Lo svolgimento delle prove è stato eseguito nelle condizioni e con le metodologie definite dalle normative applicabili ed i risultati da esse derivanti sono stati riportati nel presente documento. L'analisi qui svolta riguarda il provino nelle condizioni di consegna dal committente; in particolare sono stati utilizzati n.3 campioni per tipo di provino prelevati dal committente relativamente al materiale metallico verniciato

I risultati delle misure riportati nel presente documento si riferiscono esclusivamente all'esemplare esaminato e nelle condizioni di misura specificate. Qualsiasi estensione dei risultati ad altri campioni o ad altre condizioni di misura è fuori degli scopi di questo documento.

2. IDENTIFICAZIONE DELL'OGGETTO IN PROVA

- Provino:	**Materiale metallico verniciato**
- Costruttore:	**Carboline Italia s.p.a.**
- Tipo materiale:	**CARBOMASTIC 15 LT ATEX**
- Numero di riferimento:	**11142 A-B-C;**
- Spessore:	**3,6mm**
- Lunghezza e larghezza:	**100x200mm**
- N. provini:	**3 per tipo**
- Data ricevimento provini:	**27/07/2011**
- Data esecuzione prove:	**29/07/2011÷30/07/2011**

Foto provini
CARBOMASTIC 15 LT ATEX



3 . DIRETTIVE E NORMATIVE DI RIFERIMENTO

CEI EN 60079-0:2007	Costruzioni elettriche per atmosfere esplosive per la presenza di Gas Parte 0: Regole generali. 2° edizione. 2007

4. VERIFICHE ED ANALISI DI CONFORMITÀ

Le prove sono state condotte su n. 3 provini per tipo, di dimensioni 200x100 mm circa, spessore 3,6mm, di metallo verniciato, contraddistinti dal numero ELETTRA 11142A-B-C. I provini sono stati preventivamente puliti con acqua distillata, poi con alcool isopropilico e poi nuovamente con acqua distillata. I provini sono stati mantenuti in equilibrio con l'ambiente per 48h La temperatura e l'umidità ambiente di laboratorio si sono mantenute entro 23 ± 3°C - 45 ± 10% .

4.1 Prova resistenza superficiale

Norme di riferimento:
- Specifica di base: EN 60079-0 par. 26.13

Strumenti utilizzati
- Calibratore Fluke 5100B sn 4700010
Data scadenza taratura: 29/12/2011 (certificato Elettra 107/10)

- Multimetro Agilent Technologies 34401A sn US37028187
Data scadenza taratura: 14/07/2012 (Certificato di calibrazione ACCREDIA 8049_2011_ACCRT emesso da Tesi srl)

Modalità di prova
Dopo il precondizionamento sui provini sono stati appoggiati gli elettrodi di misura, a distanza 10mm l'uno dall'altro, disposti parallelamente lungo l'asse maggiore del provino. Ai provini è stata applicata la tensione di 500V in tensione continua e rilevato il valore di corrente. La prova è stata ripetuta invertendo la polarità delal tensione di prova ed assumendo il valore medio delle due letture.

Incertezze di misura (a 2σ)

5%

Risultati:

CARBOMASTIC 15 LT ATEX

Provino 1	Provino 2	Provino 3
0 MΩ	0 MΩ	0 MΩ