



# SAFETY DATA SHEET STEEL PRODUCTS

CODE NO.: 0004 ORIGINAL ISSUE DATE: 05-81 REVISED DATE: 01-15

1. IDENTIFICATION		INFORMATION AND EMERGENCY TELEPHONE NUMBERS	
PRODUCT NAME:	Galvanized Sheet – Zinc Phosphate Coatings	(714) 637-4643	
COMMON NAME(S):	Bullnose, Open Angle Bullnose	MANUFACTURER	
CAS NO.:	Kerf Bullnose, Door & Window Trim, Eco Bullnose	Continuous Coating Corp. 520 West Grove Avenue Orange, California 92665	
2. INGREDIENTS AND RECOMMENDED OCCUPATIONAL EXPOSURE LIMITS			
NOTE: Steel products under normal conditions do not present an inhalation, ingestion or contact health hazard. (See Section 6.)			
BASE METAL, ALLOYING ELEMENTS AND METALLIC COATINGS	% WEIGHT	EXPOSURE LIMITS	
		OSHA PEL	ACGIH TLV
Zinc (1314-13-2)	5 max	5 mg / M <sup>3</sup>	10 mg / M <sup>3</sup> – Total Zn0 Dust 5 mg / M <sup>3</sup> – Resp. Zn0 Dust & Fume
Metallic Coating: Chromium	.3 / 1.3 .00003	1 mg / M <sup>3</sup> – Cr metal	0.5 mg / M <sup>3</sup> – Cr metal 0.05 mg / M <sup>3</sup> – Cr (VI) Compounds
NOTE: All commercial metals contain small amounts of various elements in addition to those specified. These small quantities, frequently referred to as "trace" or "residual" elements, generally originate in the raw materials used. Typical levels of commonly involved trace or residual elements that may be encountered in steel products are provided in annex 1 so that their potential hazards may be considered.			
3. PHYSICAL DATA			
MELTING POINT		APPEARANCE:	Metallic Gray
BASE METAL: 2750°F	METALLIC COATING: 800°F	ODOR:	No Odor
4. FIRE AND EXPLOSION HAZARD DATA			
Steel products in the solid state present no fire or explosion hazard.			
5. REACTIVITY DATA			
Stable under normal conditions of use, storage and transport. Will react with strong acid to liberate hydrogen. At temperatures above the melting point of the coating may liberate Zinc fumes. At temperatures above the melting point of the base metal may liberate fumes containing oxides of iron and alloying elements.			

## 6. HAZARD(S) IDENTIFICATION

CLASSIFICATION: H317 – Sensitization, Skin – Category 1A  
H351 – Carcinogenicity – Category 2

LABEL ELEMENTS:



WARNING: May cause an allergic skin reaction. (H317)  
Suspected of causing cancer. (H351)

### PRECAUTIONARY STATEMENT(S):

- Obtain special instructions before use. (P201)
- Do not handle until all safety precautions have been read and understood. (P202)
- Avoid breathing dust / fume (P261)
- Contaminated work clothing should not be allowed out of the workplace. (P271)
- Wear protective gloves. (P280)
- IF ON SKIN: Wash with plenty of water. (P302 and P352)
- IF skin irritation or rash occurs: Get medical advice / attention. (P321)
- Take off contaminated clothing and wash it before reuse (P362 and P364)
- IF exposed or concerned: Get medical advise / attention (P308 and P313)
- Store locked up. (P405)
- Dispose contents / container to approved disposal facility (P501).

## 7. SPILL OR LEAK PROCEDURES

NOT APPLICABLE TO STEEL IN THE SOLID STATE.

## 8. SPECIAL PROTECTION INFORMATION

RESPIRATORY: NIOSH / MSHA – approved dust and fume respirators should be used to avoid excessive inhalation of particulates. Appropriate respirator selection depends on the magnitude of exposure.

SKIN: Protective gloves should be worn as required for welding, burning or handling operations.

EYE: Use safety glasses or goggles as required for welding, burning, sanding, brazing, grinding, or machining to prevent excessive dust or fume exposure.

VENTILATION: Local exhaust ventillation should be provided when welding, burning, sawing, brazing, grinding or machining to prevent excessive dust or fume exposure.

OTHER PROTECTIVE EQUIPMENT: Depending upon the conditions of use and specific work situations, additional protective equipment and / or clothing may be required to control exposures.

## 9. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Operating with the potential for generating high concentrations of airborne particulates should be evaluated and controlled as necessary. Avoid breathing metal fumes and / or dusts.

OTHER COMMENTS: IARC (Suppl. 1, 29-30, 1979) has determined that there is sufficient evidence of increased lung cancer among workers in the chromate producing industry and possibly chromium alloy workers. This determination is supported by sufficient evidence for carcinogenicity to animals and possible mutagenicity testing of Cr VI compounds.

THIS INFORMATION IS TAKEN FROM SOURCES OR BASED UPON DATA BELIEVED TO BE RELIABLE; HOWEVER, CONTINUOUS COATING CORPORATION MAKES NO WARRANTY AS TO THE ABSOLUTE CORRECTNESS OR SUFFICIENCY OF ANY OF THE FOREGOING OR THAT ADDITIONAL OR OTHER MEASURES MAY NOT BE REQUIRED UNDER PARTICULAR CONDITIONS.



Type of Bulletin: Technical Process Bulletin  
Product Title: BONDERITE® 37S  
Product View: BONDERITE® 37S  
Description: Zinc Phosphate Conversion Coating Process for Stripline  
Status: complete

# Technical Process Bulletin

Technical Process Bulletin No. 230505  
This Revision: 06/13/2006

BONDERITE® 37S  
Zinc Phosphate Conversion Coating Process for Stripline

## 1. Introduction:

BONDERITE 37S chemicals are formulated primarily for treating hot-dip galvanized surfaces which are to be processed and painted in a continuous stripline operation. Electroplated zinc and steel surfaces may also be treated with slight variations in the procedure.

The BONDERITE 37S treatment converts the surface of the metal to a non-metallic, crystalline, zinc phosphate coating which inhibits corrosion increases the adhesion and durability of paint finishes so that the material may be fabricated after painting. The substantial increase in the life of paint results from the fact that the process provides:

- A. A clean, grease-free surface.
- B. A corrosion-inhibiting base for paint.
- C. A non-conducting bond between the base metal and the paint.
- D. A chemically inert surface which prevents reaction between the metal surface and paint ingredients.

## 2. Operating Summary:



<u>Chemical:</u> <u>gallons:</u>	<u>Bath Preparation per 100</u>
BONDERITE 37S Makeup gallons)	58 pounds (5.3
<u>Operation and Control</u>	
Total Acid	25 to 27 points (ml)
Free Acid (ml)	2.0 to 3.5 points
Time	5 to 15 seconds
Temperature Fahrenheit	140° to 160°

### 3. The Process:

The complete process for the BONDERITE 37S treatment normally consists of the following steps:

- A. Cleaning and conditioning
- B. Hot water rinsing
- C. Treating with the BONDERITE 37S processing solution
- D. Cold water rinsing
- E. Treating with a post treatment solution
- F. Drying

### 4. Materials:

BONDERITE 37S Makeup  
 BONDERITE 37S Replenishing  
 BONDERITE 37S Replenishing B  
 BONDERITE 37S Replenishing C  
 PARCO® CLEANER  
 PARCOLENE® (post treatment)  
 PARCOLENE Z (conditioning pretreatment)  
 Testing reagents and Apparatus.

### 5. Equipment:

Process tanks and housings may be fabricated from mild steel plate, however, equipment life will be greatly extended by using a 300 series alloy stainless steel, such as 304 or 316. The 316L being preferred for maximum tank life.

Process piping and pumps should likewise be constructed of 316 or 304 stainless steel alloys. Various formulations of plastic pipe may be used with recommended support spacing, schedule 80 being generally recommended. PVC Type I is limited to maximum process temperatures of 140° F. CPVC and PE may be used up to a maximum process temperature of 190° F. PVDF may be used for all expected temperature ranges and may reduce the rate of scale buildup in process piping.

Heat exchanger plates should be polished 316 stainless steel. If gas fired burner tubes are used, they should be made of schedule 80 mild steel pipe or equivalent. All process circulation pump seals, valve seats, door seals, etc., which come into contact with the process solution and occasional acid equipment cleaners, should be EDPM, Viton™ or Teflon™. Note that while Hypalon™ is compatible with the process solution, it is not compatible with acid equipment cleaners which may be used.

Chemical feed pump parts and other elastomers which may come into contact with the concentrated replenishing chemical should be EDPM, Hypalon, Viton or Teflon.

Support equipment available from Henkel Surface Technologies for this process includes: chemical feed pumps, level controls, transfer pumps and bulk storage tanks.

Our sales representative should be consulted for information on Henkel Surface Technologies automatic process control equipment for this process and any additional questions. In addition, the "Henkel Surface Technologies Equipment Design Manual" may be consulted.

#### 6. Surface Preparation:

##### Cleaning:

All metal to be treated with the processing solution must be free from grease, oil and other foreign matter before the treatment. A complete line of cleaners is available and our representative will recommend the proper one for each installation.

##### Water Rinsing:

After cleaning, the metal must be thoroughly rinsed with water. The rinse should be overflowed continuously at a rate which will keep it clean and free from scum and contamination.

##### Surface Conditioning:

PARCOLENE Z or other conditioning pretreatment is required in the process to obtain the proper coating crystal structure. Our representative can recommend the best method for its use. In lines with only one water rinse stage after the cleaner, the surface conditioning agent is placed in the rinse stage.

#### 7. Treating with the BONDERITE 37S Processing Solution:

##### Buildup:

Fill the tank about three-fourths full with cold water. Add 58 pounds (5.3 gallons) of BONDERITE 37S Makeup for each 100 gal of working solution volume. Add sufficient water to bring the solution up to the working level and then heat to the operating temperature.

##### Operation:

Time: 5 to 15 seconds.  
Temperature: 140° to 160° Fahrenheit.

Desired coating weights on hot-dip galvanized metal are 150 to 250 mg per sq ft of surface area which normally will be obtained if the bath is operated in the temperature range of 145° to 155° Fahrenheit. If necessary, the bath temperature may be varied slightly outside of the 145° to 155° Fahrenheit range to obtain the desired coating weight. The concentration should not be changed.

#### 8. Testing and Control:

Never pipet by mouth, use a pipet filler.

##### Total Acid:

Pipet a 10 ml sample into a 150-ml beaker. Add 5 drops of Indicator 3. Titrate with Titrating Solution 11 to the development of a permanent pink color. The ml of Titrating Solution 11 used is the total acid value in points.

Total acid range: 25 to 27 points (ml).

To increase value 1.0 point: 1.8 pounds of BONDERITE 37S Replenishing per 100 gallons of solution volume.

Replenishing is best accomplished by adding the chemical continuously with a metering pump into a turbulent area of the tank. Adjust the metering rate to hold the total acid value within the specified range.

##### Free Acid:

Pipet a 10 ml sample into a 150 ml beaker. Add 5 drops of Indicator 11. Titrate with Titrating Solution 11 until the yellow color just changes to bluish green by daylight or fluorescent light, or to blue-violet by incandescent light. The ml of Titrating Solution 11 used is the free acid value in points.

Free acid range: 2.0 - 3.5 points (ml).

To increase value 0.1 point: Add 0.5 pound (7 fluid ounces) of BONDERITE 37S Replenisher per 100 gallons of solution volume.

To decrease free acid 0.1 point: Add 0.7 ounce of soda ash (dissolved in water) per 10 gallons of solution volume.

##### Mechanical Loss:

Replace any drop in points due to a mechanical loss of solution (sludge cleanout, leaks, etc.) by adding 2.2 pounds of BONDERITE 37S Makeup for each 100 gal of working solution volume for each total acid point required. It is important not to use Replenishing for this purpose.

#### 9. After Treatment:

##### Water Rinse:

After BONDERIZING<sup>®</sup>, the work must be thoroughly spray rinsed with cold water using a minimum rinse time of 3 seconds. The rinse should be continuously overflowed, and the flow should be regulated with the rate of production so that the main body of the rinse never becomes excessively contaminated.

##### Post Treatment:

The BONDERIZED<sup>®</sup> metal, damp from the water rinse, is treated with a hot, dilute post treatment solution for 2 to 5 seconds. This treatment materially increases the corrosion resistance of the BONDERITE coating, and is an essential part of the process. A number of PARCOLENE (post treatment) chemicals are available, and the proper one for each installation will be recommended.

##### Drying:

The treated strip should be dried immediately after the post treatment. Strip which does not dry quickly should be force dried with an air knife or other suitable means.

#### 10. Storage Requirements:

No special storage requirements are required for the chemicals. If the products do freeze after extended storage at low temperatures, thaw in a warm place and stir thoroughly before using.

#### 11. General Maintenance:

To obtain satisfactory results, an adequate volume of solution should be continuously sprayed on the work while it is in the processing zone. Partial or total clogging of the nozzles is the most common cause of poor spraying, so a periodic inspection and cleaning schedule should be established to keep the nozzles open.

In the operation of the process, some insoluble residue, normally referred to as sludge, is formed as a by-product of the chemical reaction. This material settles to the bottom of the tank and should be removed regularly before its presence causes dusty coatings or interferes with the operation of the spraying system. An excellent method of removal is an arrangement whereby a portion of the solution and sludge is pumped into a settling tank from which the settled sludge may be periodically discharged into containers, preferably after the solution is returned to the processing tank. The pump (for desludging) should preferably be made from stainless steel, but mild steel may be used with a somewhat shorter life. Another satisfactory method is to transfer the solution to a rinse tank, leaving as much sludge as possible in the bottom of the processing tank. The sludge may then be removed by any convenient means.

When the solution has been heated for some time, scale will form on the heating unit and must be removed at intervals so that adequate heat transfer will occur and the proper processing temperature will be maintained. To remove the scale, dry the heat transfer surface either by removing it from the solution or by pumping the solution from the tank. The scale may then be removed by a suitable chemical or mechanical method.

#### 12. Waste Disposal Information:

Applicable regulations covering disposal and discharge of chemicals should be consulted and followed.

Disposal information for chemicals in the form as supplied is given on the Material Safety Data Sheet for each product.

The BONDERITE 37S processing bath is acidic and contains phosphate, fluoride and heavy metals based on the chemicals as supplied. Waste treatment and neutralization may be required prior to discharge to the sewer. (Refer to Waste Treatment Information Bulletin WT1002 available on request.

The BONDERITE 37S processing bath and sludge can contain ingredients other than those present in the chemical as supplied and analysis of the solution and/or sludge may be required prior to disposal.

#### 13. Precautionary Information:

When handling the chemical products used in this process, the first aid and handling recommendations on the Material Safety Data Sheet for each product should be read, understood and followed.



The processing bath is acidic and may cause irritation of the skin and eyes. The bath contains nickel which can cause sensitization or allergic skin reactions which may be accentuated by heat and humidity. Do not get in eyes, on skin or on clothing. See Material Safety Data Sheet for appropriate protective clothing. In case of contact, follow the recommendations on the Material Safety Data Sheet for BONDERITE 375 Makeup or Replenishing.



Testing Reagents and Apparatus  
(Order only those items which are not already on hand)

<u>Code</u>	<u>Quantity</u>	<u>Item</u>
592462	2*	Beaker, 150-ml
592477	1	Buret Assembly, 25-ml Automatic
592398	1 qt	Indicator 3 (Phenolphthalein)
592475	1	Indicator Dropping Bottle
592492	2*	Pipet, 10-ml Volumetric
592494	1	Pipet Filler
594334	1	Thermometer, Floating
592427	1 gal	Titrating Solution 11 (0.1N NaOH)

\* Includes one more than actually required, to allow for possible breakage.

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<sup>®</sup>Registered trademark of Henkel Corporation.

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Verborgene Felder: 17 Parker Amchem

Form Revised 04 June 2001



continuous coating corporation

**MATERIAL SAFETY DATA SHEET  
STEEL PRODUCTS**

CODE NO. 0004

ORIGINAL ISSUE DATE: 5-81

REVISED DATE: 11-88

<b>I. IDENTIFICATION</b>		INFORMATION AND EMERGENCY TELEPHONE NUMBERS	
PRODUCT NAME: Galvanized Sheet - Zinc Phosphate Coatings		(714) 637-4643	
COMMON NAME(S): Same CAS NO.:		MANUFACTURER: Continuous Coating Corp. 520 West Grove Avenue Orange, California 92665	

**II. INGREDIENTS AND RECOMMENDED OCCUPATIONAL EXPOSURE LIMITS**

NOTE: Steel products under normal conditions do not present an inhalation, ingestion or contact health hazard. (See Section VI.)

BASE METAL, ALLOYING ELEMENTS AND METALLIC COATINGS	% WEIGHT	EXPOSURE LIMITS	
		OSHA PEL	ACGIH TLV
Zinc (1314-13-2)	5 max	5 mg/M <sup>3</sup>	10 mg/M <sup>3</sup> -Total ZnO Dust 5 mg/M <sup>3</sup> -Resp. ZnO Dust & Fume
Metallic Coating: Chromium	.3/1.3 .00003	1 mg/M <sup>3</sup> - Cr metal	0.5 mg/M <sup>3</sup> - Cr metal 0.05 mg/M <sup>3</sup> - Cr (VI) compounds

NOTE: All commercial metals contain small amounts of various elements in addition to those specified. These small quantities, frequently referred to as "trace" or "residual" elements, generally originate in the raw materials used. Typical levels of commonly involved trace or residual elements that may be encountered in steel products are provided in Annex I so that their potential hazards may be considered.

**III. PHYSICAL DATA**

MELTING POINT BASE METAL: 2750°F METALLIC COATING: 800°F	APPEARANCE Metallic Gray AND ODOR: No Odor
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**IV. FIRE AND EXPLOSION HAZARD DATA**

Steel products in the solid state present no fire or explosion hazard.

**V. REACTIVITY DATA**

Stable under normal conditions of use, storage and transport. Will react with strong acid to liberate hydrogen. At temperatures above the melting point of the coating may liberate Zinc fumes. At temperatures above the melting point of the base metal may liberate fumes containing oxides of iron and alloying elements.



## VI. HEALTH HAZARD DATA

**NOTE:** Steel products under normal conditions do not present an inhalation, ingestion or contact health hazard. However, operations, such as, burning, welding, sawing, brazing, grinding, and possibly machining, etc., which results in elevating the temperature of the product to or above its melting point or results in the generation of airborne particulates, may present health hazard.

### EFFECTS OF OVEREXPOSURE:

Chronic inhalation of high concentrations of iron oxide fumes or dusts may lead to a benign pneumoconiosis (siderosis). Inhalation of high concentrations of ferric

#### MAJOR EXPOSURE HAZARD

INHALATION  SKIN CONTACT  EYE CONTACT  INGESTION

oxide may possibly enhance the risk of lung cancer development in workers exposed to pulmonary carcinogens. The inhalation of high concentrations of freshly formed oxide fumes and dusts of Manganese, Copper, Lead and/or Zinc in the respirable particle size range can cause an influenza-like illness termed metal fume fever. Typical symptoms last 12 to 48 hours and are characterized by metallic taste in the mouth, dryness and irritation of the throat, followed by weakness, muscle pain, fever and chills.

Repeated or prolonged exposure to hexavalent chromium compounds may cause respiratory irritation, nose bleed, ulceration and perforation of the nasal septum. Industrial exposure to certain forms of hexavalent chromium has been related to an increased incidence of lung cancer (See Section IX).

### EMERGENCY AND FIRST AID PROCEDURES

For overexposure to airborne fumes and particulates, remove exposed person to fresh air. If breathing is difficult or has stopped, administer artificial respiration or oxygen as indicated. Seek medical attention promptly.

Treat metal fume fever by bed rest and administer a pain and fever reducing medication.

## VII. SPILL OR LEAK PROCEDURES

NOT APPLICABLE TO STEEL IN THE SOLID STATE

## VIII. SPECIAL PROTECTION INFORMATION

**RESPIRATORY:** NIOSH/MSHA - approved dust and fume respirators should be used to avoid excessive inhalation of particulates. Appropriate respirator selection depends on the magnitude of exposure.

**SKIN:** Protective gloves should be worn as required for welding, burning or handling operations.

**EYE:** Use safety glasses or goggles as required for welding, burning, sawing, brazing, grinding or machining to prevent excessive dust or fume exposure.

**VENTILATION:** Local exhaust ventilation should be provided when welding, burning, sawing, brazing, grinding or machining to prevent excessive dust or fume exposure.

**OTHER PROTECTIVE EQUIPMENT:** Depending upon the conditions of use and specific work situations, additional protective equipment and/or clothing may be required to control exposures.

## IX. SPECIAL PRECAUTIONS

### PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Operating with the potential for generating high concentrations of airborne particulates should be evaluated and controlled as necessary. Avoid breathing metal fumes and/or dusts.

**OTHER COMMENTS:** IARC (Suppl. 1,29-30, 1979) has determined that there is sufficient evidence of increased lung cancer among workers in the chromate producing industry and possibly chromium alloy workers. This determination is supported by sufficient evidence for carcinogenicity to animals and possible mutagenicity testing of Cr VI compounds.

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