

BONDERITE 1070F CLEANER/COATER PROCESS FOR MULTIMETALS

1. INTRODUCTION

Bonderite 1070F is formulated for spray and immersion application to steel, aluminium and zinc surfaces to simultaneously clean and develop a conversion coating. The process produces a uniform non-metallic phosphate coating which inhibits corrosion and increases the adhesion and durability of paint finishes.

The substantial increases in paint life results from the fact that the coating provides:

- A. A clean, soil-free surface.
- B. A corrosion-inhibiting base for paint.
- C. A non conducting bond between the base metal and the paint.

2. OPERATING SUMMARY

CHEMICAL	Bath Preparation per 1,000 litres
Bonderite 1070F	40 - 60 litres
Parco Primer 40	0.6 – 0.8 litres
OPERATION AND CONTROL	
Total Acid	6.9 – 11.0 points
Acid Consumed	0.0 - 0.3 points
Time Spray	30 seconds to 3 minutes
Immersion	1-5 minutes
Temperature	45-60°C

3. THE PROCESS

The complete process for the **Bonderite 1070F** treatment normally consists of the following steps:

- A. Treating with **Bonderite 1070F** processing solution (one or two stages.)
- B. Water rinsing.
- C. Post treatment.

3. THE PROCESS (continued)

- D. Deionised water rinse (optional).
- E. Drying

4. MATERIALS

Bonderite 1070F
Parco Primer 40
Parcolene 6
Parcolene (post treatment)
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 304L or 316L. The 316L being preferred for maximum tank life. In all cases, approved welding techniques must be used.

Process piping and pumps should be constructed of 316 or 304 stainless steel alloys. Various formulations of plastic pipe may be used with recommended support spacing. Schedule-80 generally recommended. PVC Type I is limited to maximum process temperatures of 60°C. CPVC and PP may be used up to a maximum process temperature of 90°C. PVDF may be used for all expected operating temperatures 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 Buna-N, 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 Buna-N, Hypalon, Viton or Teflon.

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

6. TREATING WITH BONDERITE 1070F PROCESS SOLUTION

Buildup

Fill the tank about three-fourths full with cold water. Add 40 to 60 litres of **Bonderite 1070F** for each 1,000 litres of working solution volume. Add sufficient water to bring the solution up to the working level and then heat to the operating temperature.

6. TREATING WITH BONDERITE 1070F PROCESS SOLUTION (continued)

Buildup (continued)

Operation	
Time:	Spray 30 seconds to 3 minutes Immersion 1 - 5 minutes
Temperature:	45 - 70°C
Application:	Power spray or immersion

After the best values for time and temperature have been established, they should be maintained closely. Temperature should be held within $\pm 3^{\circ}\text{C}$.

7. TESTING AND CONTROL

Never pipette by mouth. Use a pipette filler.

Total Acid

Pipette a 10 ml sample into a 150 ml beaker. Add 5 drops of Indicator 3, then titrate with Titrating Solution 11 to the development of a permanent pink colour. The ml of Titrating Solution 11 required, indicates the Total Acid value in points.

Total Acid range : 6.9 – 11.0 points

To increase value 1.0 points : 6.0 litres of **Bonderite 1070F** per 1,000 litres of solution volume.

Acid Consumed

- After adjusting the Total Acid points to the recommended range, pipette a 10 ml sample into a 150 ml beaker. Add 4 drops of Indicator 2.
- If the colour developed is green, the Acid Consumed = 0.0. This is the ideal condition of the bath.
- If the colour developed is blue, the bath is on the Acid Consumed side. Titrate with Titrating Solution 20 to a green end point. The ml of Titrating Solution 20 used is the Acid Consumed value in points.
- If the colour developed is yellow, the bath is on the Free Acid side. Titrate with Titrating Solution 11 to a green end point. The ml of Titrating Solution 11 used is the Free Acid value in points.

Optimum Acid Consumed range: 0.0-0.3 points

To increase value 0.1 point: 900 mls of **Parco Primer 40** per 1,000 litres of solution volume.

To decrease value 0.1 point: 320 mls of **Parcolene 6** per 1,000 litres of solution volume.

8. AFTER TREATMENT

Water Rinsing

After phosphating, the work is thoroughly rinsed with water at ambient temperatures for 20-40 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 coated metal, wet from the water rinse, is treated with a dilute **Parcolene** (post treatment) solution. This treatment materially increases the corrosion resistance of the coating and is an essential part of the process. A number of **Parcolene** products are available and our representative will recommend the proper one for each installation.

Deionised Water Rinse

A water rinse may be required following the post treatment. Deionised water is preferred but relatively pure tap water may be used. The paint used and the quality required for the finished part will determine if rinsing is necessary and if deionised water must be used.

9. STORAGE REQUIREMENTS

No special storage is needed for the products used in this process. **Bonderite 1070F** freezes at -10°C. Should it freeze, simply thaw it to room temperature and stir prior to use. Do not store with chlorine containing materials.

10. GENERAL MAINTENANCE

In the operation of the process, a small quantity of sludge is formed as a by-product of the coating reaction. This residue settles to the bottom of the tank and should be removed before its presence causes dusty coating, or interferes with the operation of the spraying system. A satisfactory method of removal 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.

11. WASTE DISPOSAL INFORMATION

Disposal information for the chemical, in the form as supplied, is given on the Material Safety Data Sheet.

The processing bath is slightly acidic and contains phosphate. Neutralisation and/or waste treatment of rinse water or processing solution may be required prior to discharge.

The processing bath and sludge which accumulates in the bath, 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.

12. 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 slightly acidic and may cause irritation of skin and eyes. Do not get in eyes, on skin or on clothing. In case of contact, follow the recommendations on the Material Safety Data Sheet for **Bonderite 1070F**.

DISCLAIMER

Any information given is, to the best of our knowledge, the best currently available, with respect to our products and their use, but it is subject to revision as additional knowledge and experience is gained. Such information is offered as a guideline for experimentation only and is not to be construed as a representation that the material is suitable for any particular purpose or use. Customers are encouraged to make their own enquiries as to the material's characteristics and, where appropriate, to conduct their own tests in the specific context of the material's intended use. This information is not a license to operate under nor is it intended to suggest infringement of any patent. We guarantee a uniform quality standard for this product. The only conditions and warranties accepted by Henkel in relation to this product or process are those implied by either Commonwealth or State statutes.

TESTING REAGENT & APPARATUS

(Order only those items which are not already on hand)

QUANTITY	ITEM
2*	Flask, glass, 250 ml
1	Beaker, graduated, plastic, 250 ml
2	Burette assembly, 25 ml automatic, glass
1 litre	Indicator 3 (Phenolphthalein)
1 litre	Indicator 2 (Bromocresol Green)
2	Indicator dropping bottle, 50 ml
2*	Pipette 10 ml volumetric, glass
1	Pipette filler
1	Measuring cylinder, graduated, plastic 100 ml
1	Thermometer, floating
5 litre	Titration Solution 11 (0.1N NaOH)
5 litre	Titration Solution 20 (0.1N H ₂ SO ₄)

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