GARDACID® P 4299

Non-Chromated, Liquid Acidic Material for Deoxidizing and Desmutting Aluminum and Aluminum Alloys

PRIMARY APPLICATION

GARDACID® P 4299, formerly DEOXIDIZER LNC, is a non-chromated, acidic material for removing oxides, alkaline etching smut and discoloration from aluminum and aluminum alloys. It is used before chromate conversion coating, non-chrome conversion coating, anodizing, electrical resistance welding, and other operations that require a very low level of surface contamination.

It performs well in hard water, requires no heat, deoxidizes rapidly and rinses freely. Gardacid P 4299 meets Boeing Process Specification BAC 5765, Cleaning and Deoxidizing Aluminum Alloys, and can be used to meet the requirements of SAE-AMS-W-6858, Welding, Resistance: Spot and Seam.

CHEMICAL CHARACTERISTICS

Chemical Composition	Blend of iron salts, nitric acid and fluoride
Appearance	Dark reddish-brown liquid
Specific Gravity	1.48 at 20°C (68°F)
Normal Working Concentrations	10 – 20% by volume
Normal Working Temperatures	Ambient: 50° - 100°F (10° - 38°C)
pH	Less than 1.0 at 10% by volume

APPLICATION PROCEDURE

Surfaces should be clean and free of organic contaminants. Immerse in a 10 - 20% by volume solution of Gardacid P 4299 at ambient temperature. Immersion time is normally 1 - 5 minutes. Process parameters will vary depending on the age of the bath and the degree of smut, oxidation or other contaminant on the surface. The solution should be air agitated. Rinse thoroughly in clean ambient temperature water.

A bath of Gardacid P 4299 has an etch rate on alloy 2024-T3 aluminum that ranges between 0.03 and 0.10 mils/surface/hour, depending upon the age and concentration of the bath.

SOLUTION CONTROL

Gardacid P 4299 should be monitored and replenished on a regular basis, for example daily, by the ferric iron titration, Gardotest Procedure 25. On a less frequent basis, for example weekly or monthly, Gardacid P 4299 should be monitored and replenished by the total acid titration, Gardotest Procedure 150.

Ferric Iron (Gardotest Procedure 25):

1. Place a 5 ml sample of the bath into an Erlenmeyer flask.
2. Add about 50 ml of deionized water.
3. Add 30 - 40 drops of Gardotest Indicator 195 (Sulfosalicylic Acid). The color will turn dark red.
4. Titrate with Gardotest Solution 90 (0.1M Disodium EDTA) until the color turns yellow.
5. Titration result should yield 11.6 to 23.6 ml Gardotest Solution 90 (0.1M Disodium EDTA) for a 10 – 20% by volume of Gardacid P 4299

Total Acid Gardotest Procedure 150:

1. Place a 10 ml sample of the bath into an Erlenmeyer flask.
2. Add about 100 ml of deionized water.
3. Add about 30 ml* of Gardotest Solution 10 (Potassium Fluoride).
4. Add 5 - 10 drops of Gardotest Indicator 2 (Phenolphthalein).
5. Titrate with Gardotest Solution 37 (1 N Alkali) until the solution turns from colorless to pink.
6. Titration result should yield 3.9 to 7.7 ml Gardotest Solution 37 (1 N Alkali) for a 10 – 20% by volume of Gardacid P 4299.

Replenishment: Normal replenishment, based on the ferric iron titration is with additions of Gardacid P 4299. For every milliliter of Gardotest Solution 90 (0.1M Disodium EDTA) lacking, add 8.3 gallons of Gardacid P 4299 per 1000 gallons of solution. As the bath is used, the total acid of the Gardacid P 4299 solution will also decrease. For every 1 ml Gardotest solution 37 (1 N NaOH) lacking, add 23.75 gallon of Gardobond Additive H 7140/1 per 1000 gallon of bath.

*Standard Gardotest Procedure 150 only calls for 10 ml Gardotest Solution 10. The amount has been intentionally increased here to 30 ml.

EQUIPMENT

Automatic Control: The Chemetall Electrodeless Conductivity/Concentration Control System and Chemical Metering Pump can be used to monitor and automatically maintain the concentration of this product using conductivity. Please contact the Chemetall Process Equipment and Engineering Department for specific recommendations.

NOTES ON USE (See Safety Data Sheet)

Tanks, piping and equipment should be constructed of alloy 316L stainless steel or lined with polypropylene, CPVC, PTFE (Teflon) or PVDF (Kynar) or other material as approved by the equipment manufacturer. Elastomer for pump and valve seals etc. should be Viton.

Keep concentrate away from combustible, organic and readily oxidizable materials. Avoid prolonged contact of concentrate with glass, ceramic or concrete. If contact is made, rinse surface thoroughly with water. Avoid contact or mixing with chlorine-releasing materials.

SAFETY AND HANDLING

Prior to handling and use of any of the materials referenced in this document, the Safety Data Sheets should be read and understood by all personnel in contact with these materials.

KEEP OUT OF REACH OF CHILDREN

STORAGE

Dry indoor storage at temperatures between 40°F and 100°F (4.4°C and 37.8°C) is recommended, away from any incompatible materials referenced in the Safety Data Sheets. All containers should be tightly closed when not in use.

DISPOSAL

Any disposal of the materials referenced in this document should be in accordance with all applicable federal, state, providential and local regulations. The process solution can contain components other than those present in the materials as supplied. Analysis of process solutions may be required prior to disposal.

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