

GARDACID® P 4589

Liquid Acidic Material for Conditioning Aluminum and Aluminum Alloys

PRIMARY APPLICATION

GARDACID® P 4589, formerly DEOXIDIZER 34L, is a liquid acidic material designed to quickly remove oxide and smut from aluminum and aluminum alloys. It is also used to brighten copper and its alloys. Non-foaming Gardacid P 4589 is formulated to provide a long solution life.

CHEMICAL CHARACTERISTICS

Chemical Composition	Contains sulfuric acid and chromate salts
Appearance	As Received: Orange-red liquid As Used: Orange-red solution
Odor	None
Specific Gravity	1.359
Bulk Density	1.359 g/l (11.3 pounds/gallon)
Flash Point	None
Foam Tendency	None
Recommended Diluents.....	Water
Maximum Solubility	Complete
Behavior in Hard Water.....	Good
Rinsability	Good
Biodegradable Surfactants.....	Not applicable (non-surfactant material)
Phosphate-Free	Yes
Normal Working Concentrations.....	10% by volume with water
Normal Operating Temperatures	10° to 49°C (50° to 120°F)
pH at Working Concentrations	0.4
Effect of working solutions on metals	Rate of metal loss from 24-hour immersion Gardacid P 4589 at 10% by volume, 49°C (120°F), projected for one year, is as follows:

metal (alloy)	mm/yr	in/yr
steel (1010)	21.62	0.851
stainless steel (316)	0.00	0.000
stainless steel (403)	0.00	0.000
copper	12.78	0.503
brass	12.27	0.483
aluminum (3003)	8.48	0.334
magnesium	attacks	attacks
galvanized steel	attacks	attacks

APPLICATION PROCEDURE

For Etching and De-smutting Aluminum:

Follow this 4-step procedure:

1. Etch in Gardacid P 4589, 2 – 12% by volume, 49° to 66°C (120° – 150°F) from 15 seconds to 4 minutes. (Etch deepens with longer immersion time.)
2. Rinse thoroughly in cold running water.
3. Immerse parts in Gardacid P 4589 at 10% by volume, 10° – 49°C (50° – 120°F) for 1 to 7 minutes to remove smut.
4. Rinse promptly in cold running water and dry down.

For Deoxidizing Aluminum Alloys Prior to Conversion Coating or Resistance Welding:

Preclean with Gardoclean T 5847, formerly Aluminum Cleaner NST, at 8% by volume, 49° – 54°C (120° – 130°F), or with Chemetall Gardoclean T 164, formerly Aluminum Cleaner 164, at 60 g/l, 71° – 82°C (8 oz/gal, 160° – 180°F) until the surface is clean (in other words water-break free.)

Follow steps 2, 3 and 4 in procedure for de-smutting aluminum.

SOLUTION CONTROL

For concentrations use Gardotest Procedure 137.

Sample Size: 5.0 mls

Factor: 0.48

EQUIPMENT

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)

Gardacid P 4589 is not recommended for aluminum castings that have a high silicon content. Tanks should be constructed of alloy 316 stainless steel, CPVC, PVDF, PTFE or other suitable material. Gardacid P 4589 is a strong oxidizer. Keep concentrate and solutions away from combustible, organic and readily-oxidizable materials. Avoid contact or mixing with chlorine-releasing materials. In case of spills or leakage, flush area with plenty of water. Do not mop or dry with paper, rags, saw dust, or straw broom.

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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North American Headquarters
675 Central Avenue
New Providence, NJ 07974
Tel: 908-464-6900
Toll-free: 800-526-4473
Fax: 908-464-7914

Chemetall Canada
100 Milverton Drive
5th Floor
Mississauga, Ontario L5R 4H1
Tel: 905-791-1628
Toll-free: 877-311-1471

Chemetall Mexicana, S.A. de C.V.
Avenida El Tepeyac No. 1420-B
Parque Industrial O'Donnell-Aeropuerto
El Marqués, Querétaro
C.P. 76250, México
Querétaro Tel: +52 (442) 227 2000
Monterrey Tel: +52 (81) 8371 2517

Chemetall U.S.
1100 Technology Drive
Jackson, MI 49201
Tel: 517-787-4846
Toll-free: 877-941-3800
Fax: 517-787-5538

Chemetall U.S.
46716 Lakeview Blvd.
Fremont, CA 94538
Tel: 408-387-5340
Fax: 408-809-2883