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NASA TECH BRIEF

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Masking of Aluminum Surfaces Against Anodizing

The problem:

Development of a method of preserving limited unanodized areas when aluminum surfaces are anodized with chromic acid. Such areas, from which the coating is normally etched subsequently with acid, are required for such purposes as electrical contacts.

The solution:

Masking of the areas with a mixture of two commercial materials: a "maskant" (masking material) and a thickening agent. The mixture consists of (parts by weight) 98 parts maskant and 8 parts of a 1:3 solution of thickening agent in toluene.

How it's done:

Used alone, this mixture is successful when a heavy coat is dried for 16 hours before the anodizing. For protection of large areas it combines well with a certain self-adhesive plastic tape. The tape is rolled on the metal's surface, and a thick coating of the mixture is applied to the edges of the tape and over 0.5 inch of the adjacent metal before being dried for 16 hours. When used alone, the tape permits anodizing under its edges. Both protectants are easily stripped after the anodizing.

All test specimens anodized were immersed for from 10 to 30 minutes in an alkaline solution at 71°C; rinsed with a water spray before a 30-second dip in water; immersed for from 10 to 30 minutes at 21°C in a bath containing, per liter of water, 120.4 ml of nitric acid, 48 g of chromic acid, and 10 ml of hydrofluoric acid; and rinsed with a water spray before a 30-second dip in water.

They were then placed in water containing chromic acid at 60 g/liter and maintained between 32° and 38°C; a voltage was applied and gradually increased, to maintain constant current in the specimens, until the level reached 40 v. After 60 minutes of such treatment the specimens were withdrawn and allowed to drain briefly. They were then immersed for 5 minutes in a rinse tank maintained between 82° and 100°C, and at a pH between 5.0 and 7.0 with chromic acid, before drying under ambient conditions.

Notes:

1. Anodizers or electroplaters may be interested.
2. Documentation is available from:
   Clearinghouse for Federal Scientific
   and Technical Information
   Springfield, Virginia 22151
   Price $3.00
   Reference: TSP69-10335

Patent status:

No patent action is contemplated by NASA.

Source: R. E. Thompson and G. B. Crawford of
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