

**Introduction: [REDACTED] Evaluation of Scrub Pad
Abrasion of Anodized Aluminum**

OBJECTIVE:

Optimal wet-abrasive cleaning of anodized aluminum with minimal loss of the anodization coating.

SYNOPSIS:

Compared effects of different abrasives on anodized aluminum that produce minimal damage and are more efficient.

The value of functional, particle-free performance, as well as cost-of-ownership are critical.

SCOPE:

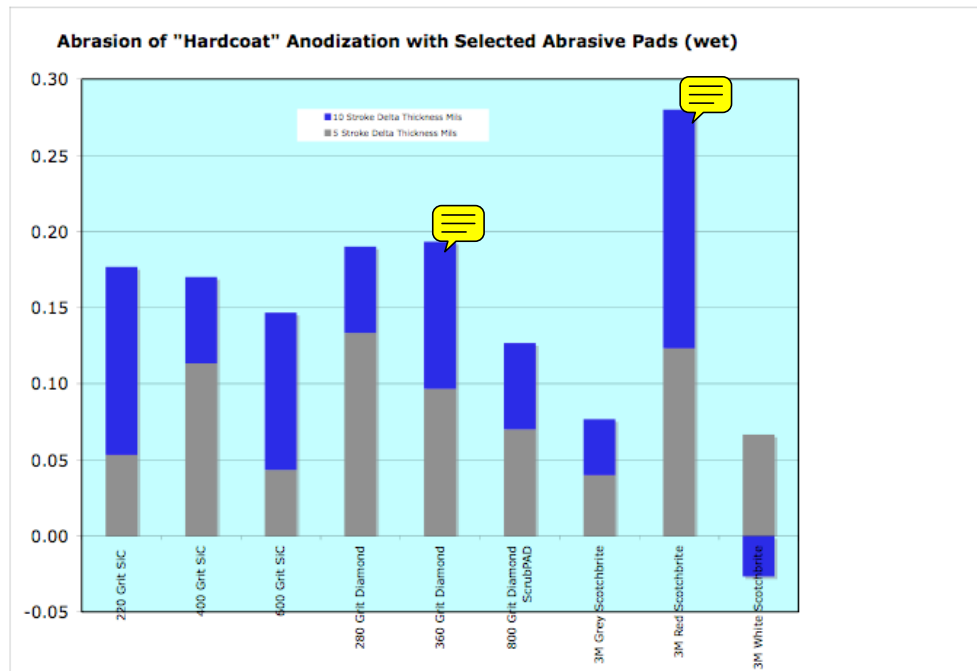
Six scrub pads with 3 selected grit sizes in Diamond and 3 selected grit sizes in Silicon Carbide were compared to 3 selected grit sizes of 3M Scotchbrite™ abrasive pads:

- 220 Grit Silicon-Carbide ScrubPAD™
- 400 Grit Silicon-Carbide ScrubPAD™
- 600 Grit Silicon-Carbide ScrubPAD™
- 280 Grit Diamond ScrubPAD™
- 360 Grit Diamond ScrubPAD™
- 800 Grit Diamond ScrubPAD™
- 3M Red Scotchbrite™
- 3M Grey Scotchbrite™
- 3M White Scotchbrite™

SUBSTRATE COUPONS

- Aluminum Coupons, 6061-T6, 2" Diameter X 0.25" thick, 16 RA (initially)
- Hard-Anodized, MIL-SPEC-A-8625-C, Type III Class 1, .0025" thick

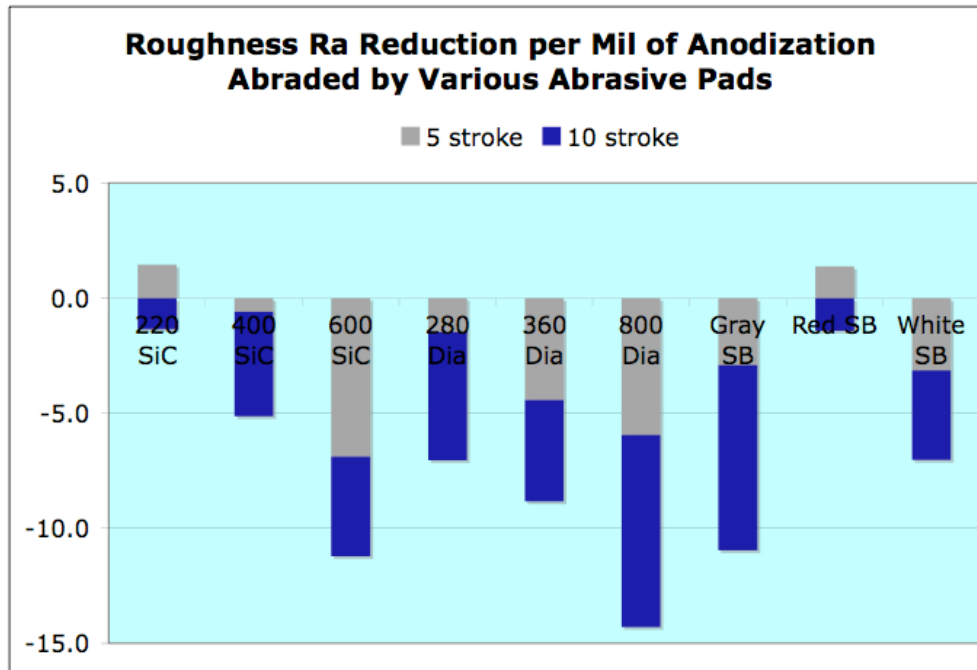
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Comparing the effects of the abrasive pads on newly anodized aluminum show that there is a difference in the amount of removal of coating ranging from slight deposition, in the case of White Scotchbrite™ after only 5 strokes (increasing 0.6 mils after 10 strokes) to 0.28 mils (about 10% of the coating) after 10 strokes in the case of red Scotchbrite™.

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The resultant smoothing of the coating relative to the amount of coating lost defines a real 'figure-of-merit':



CONCLUSION;

Fine uniform Diamond abrasive produces the most effective and efficient abrasive cleaning.

At the other end of the abrasive spectrum, Red Scotchbrite™ produces at least 30% more surface damage after 10 strokes than any other abrasive tested. Removing 10% of the coating thickness is disproportionately harmful because top-seal is lost; once the sealed top surface is removed the part's substrate aluminum is susceptible to chemical attack via the pores in the anodization.