Acid Etch vs Caustic Etch

Etching prepares the aluminum surface before anodizing and influences the finished texture. Choose it alongside the color and appearance requirements rather than leaving it as an unspecified preparation step.

Consideration	Caustic etch	Acid etch
NIA availability	Large and small lines	Large line
Appearance direction	Lower-gloss, etched appearance	Low-gloss, matte appearance
Selection focus	Desired texture and uniformity on the intended material	Reducing the visual prominence of certain extrusion imperfections
Approval method	Sample with the intended alloy and final finish	Sample with the intended alloy and final finish

What etching can and cannot do

Etching removes some surface metal and changes its texture. Acid etching can help conceal small surface irregularities, but neither approach repairs deep scratches, dents or geometric defects. Inspect incoming material and discuss visible imperfections before finishing.

Keep the comparison controlled

Compare pieces from the same material with the same final color and coating requirements. Changing the alloy or color at the same time makes it harder to tell which appearance difference came from the etch.

Acid Etch vs Caustic Etch

Planning and next steps

How to review comparison samples

1. Identify the starting material

Record alloy, temper, product form and any machining, welding or mechanical finishing.

2. Define the target appearance

State whether the priority is matte texture, reduced glare or reduced visibility of extrusion marks.

3. Compare the finished samples

Use consistent lighting and orientation. Look at texture, gloss and the visibility of the original surface features.

4. Record the selected preparation

Include it in the finish requirements with the approved sample identification.

Consider dimensional requirements

Because pretreatment can remove metal, tell NIA which dimensions or surfaces are critical. Final dimensions depend on the preparation as well as the subsequent anodic coating. Agree on allowances for the actual process instead of treating all etching as dimensionally neutral.

What to send for review

- A drawing or profile section showing overall dimensions and important surfaces.
- Photographs of the unfinished material and a description of visible defects.
- Alloy and temper, intended color, quantity and any acceptance specification.

Will acid etch hide every die line or scratch?

No. Discuss the specific material condition and approve representative samples. A matte appearance can reduce visibility without removing the underlying defect.

Review an etch and finish combination

Contact NIA with your drawing and project requirements to review the next step.

Sources: NIA Capabilities 2025, pages 7-8 and 10-11; large-line length corrected by NIA to 330 inches; Linetec - Acid Etch Anodize; Aluminum Anodizers Council - Specifying Anodized Aluminum.