

Lorin Ready Reference

Forming & Fabricating Anodized Aluminum

Bending

- Handling pre-anodized stock has been found to be similar to handling other metals.
- Half-hard tempers are more often used because of their formability and structural integrity.
- Where possible, use scrap material to adjust the depth of the stroke required to accomplish the desired bend.
- Gradual bending of the material will help to minimize crazing of the anodic film.
- Strippable surface protection will protect the anodized surface during the bending process.
- 2T or 3T radius recommended.

Laminating

- Polyfilm surface protection is helpful and can be left on throughout the production process.
- Clean the substrate with a clean brush prior to laminating.
- Cut the sheet to size using sharp shears or a saw.
- Consider experimenting with saw and feed speed on scrap material prior to full production runs.
- Cut into the sheet so that the rough edges are on the back-side.
- Spray-guide contact adhesives work best. Apply them on the anodized aluminum first, then on the core material.

Roll Forming

- In many cases, no tooling changes are required when transitioning from other metals to anodized aluminum.
- Pre-anodized aluminum will take all minimum bend-radii as specified by the Aluminum Association.
- As with other metals, tooling should be kept polished.
- Chrome-plated rolls typically perform the best.
- Using surface protection will sometimes eliminate the need for lubricants.

Stamping & Blanking

- No major modifications in tool design are necessary.
- Consider reducing male-female die clearance to 2%-8%.
- Keep dies sharp.
- Consider adding a looping pit ahead of the press allows for smooth coil feeding.
- Synthetic grippers on feed work best.
- Lubricants may be eliminated, depending on the process.
- Use lint-less gloves when handling pre-anodized stock.
- Anodized blanks are protected and stackable.

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Welding

Welding Types & Techniques Recommended for Anodized Aluminum

- **TIG Welding** – Preferred for anodized / aluminum welding as a general all-metal welding type. Produces high quality, clean welds with no sparks or spatter.
- **Laser Welding** – Works on a wide range of materials, including anodized aluminum. Laser beam is focused on a specific area of the material causing it to turn to liquid and then back to a solid as the beam moves on.
- **Pulse Technique** – Pushes the anodized layer out of the “puddle” giving a uniform bead that is more natural aluminum color instead of the dull gray color that typically results from welding anodized aluminum.

General Welding Information – Anodized Aluminum

- In general, when anodized aluminum or aluminum is welded, the resulting seam is a dull gray color.
- Because the oxide layer has a higher melting point than the aluminum, it improves welding and the visual appearance of the weld seam if the anodized finish is removed in advance.

Filler Options for Welded Anodized Aluminum Seams

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- Because the oxide layer has a higher melting point than the aluminum, it improves welding and the visual appearance of the weld seam if the anodized finish is removed in advance.

Options to Welding Anodized Aluminum

- Glue / Adhesives
- Screws
- Minor Design Modifications

Responding to Push Back on Welding Anodized Aluminum

- **Anodized aluminum doesn't look good when welded.**
It depends on the type of welding that you use, as well as various filler options referenced above. Welded stainless steel requires post-welding refinishing including surface sanding or touch-up – and with all of the other advantages of anodized aluminum, small changes in the finishing process will result in big benefits to the bottom line.
There are also options in the design of the finished product that will “hide” the weld seam with minimal impact on the production / fabrication of the finished part.
- **Anodized aluminum is difficult to weld.**
In fact, the TIG and Laser Welding techniques referenced above are used on aluminum and anodized aluminum currently in window spacers, appliance components and other decorative applications.