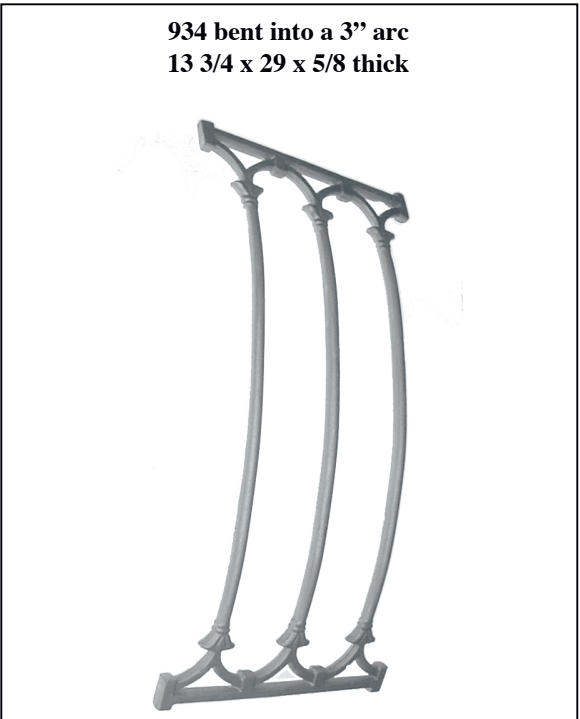
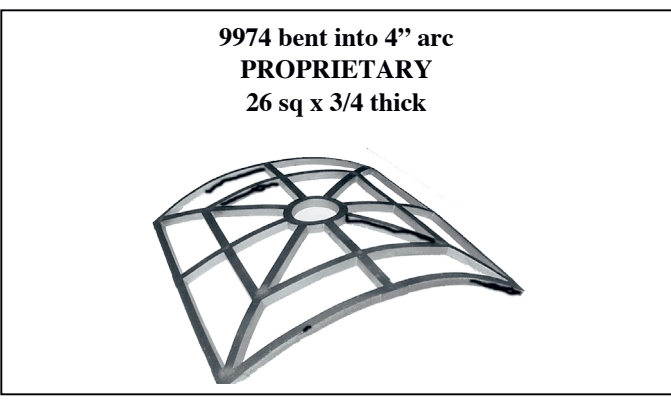
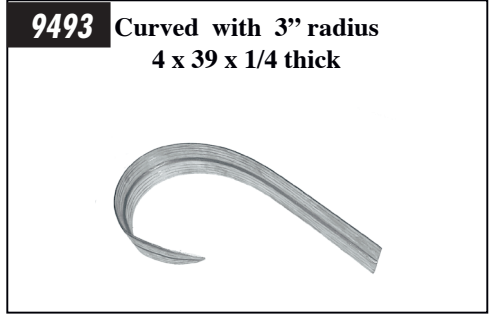


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Choosing The Right Alloy For The Right Custom Casting

The properties of aluminum alloys vary greatly. When specifying a custom casting, it's important to select the best alloy for your particular need.

By Jon P. McGraw
Alloy Casting Co.

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When choosing the alloy for an aluminum casting, it's important to select a type that provides the best detail and weldability, while at the same time having good foundry characteristics. A good aluminum alloy should contain silicon for high detail retention and flowability, and it should not contain elements detrimental to weldability, such as nickel. Nickel is harmful because of its high melting temperature.

Other properties to consider when choosing an alloy are strength, good corrosion resistance, and bendability. The projects described in this article show the advantages of matching the best alloy for a particular need. Table 1 summarizes the chemical compositions described in these scenarios.

Castings That Bend

Fabricators in the trade desire to make jobs look good. And, it sometimes helps if they also look unusual. One way to achieve this combination is for the castings to have the ability to bend into unusual shapes. Most casting have metal combinations that are stiff and difficult to bend, but is possible to find highly bendable alloys.

On the other hand, the casting in Figure 2 has a more consistent cross section of 3/8 inches by 1 1/4 inches, and we were able to achieve a much larger bend of 10 inches in a 27 inch length.

The most dramatic bends have been obtained in a leaf design, 4-1/2 inches by 40 inches, with a consistent 3/16 inch thickness., shown in Figure 3. These leaves were specially designed and a special alloy was chosen to provide maximum bending ability.

Good bending results can be obtained at room temperatures, and you can feel the casting stiffen as the hardening takes place. The twisting and compound bends of the leaves were obtained by heating the casting, bending, and reheating as necessary. It is a trial and error process, but it's possible to make some very dramatic shapes.



FIGURE 1: This rose panel can be bent 3 inches without cracking.

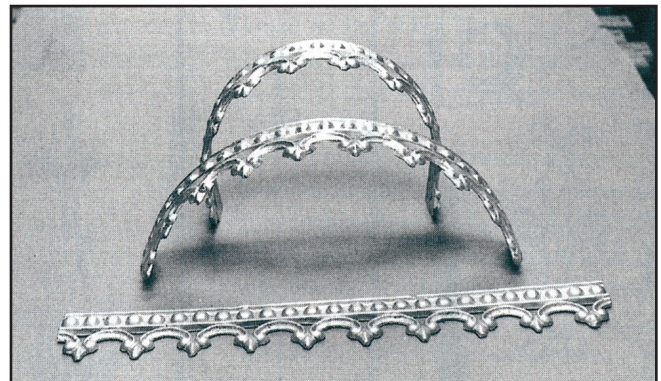


FIGURE 2: A more consistent cross section allows this trim frieze to bend 10 inches.

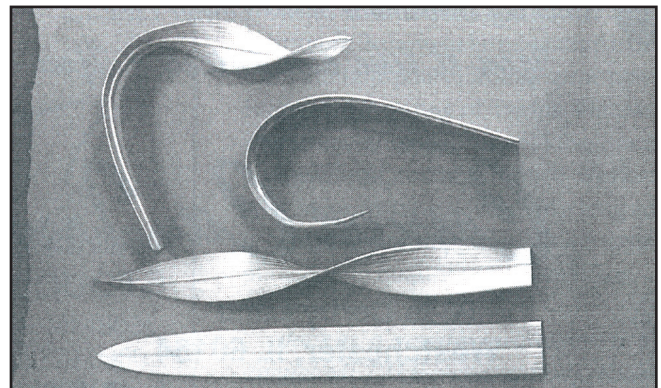


FIGURE 3: Maximum bending is obtained on these leaves. The bending was done with the assistance of heat.