

# Clearing the Confusion Over Wrought Iron

Is it rod iron? Is it rot iron? Or is it wrought iron?

By Todd Daniel

One of the most confusing terms in the ornamental metals business is the phrase "wrought iron." However, the confusion is understandable since even dictionaries cannot agree on a single definition. The first thing to clear up is the spelling. Many consumers spell the metal "rod iron" or "rot iron."

Secondly, when the public talks about wrought iron, they could be referring to one of three things - actual wrought iron, hand forged items, or the "look" of wrought iron. Your challenge is to determine what the customer actually wants.

When someone calls your shop and says he wants a "rod iron table," that person has something clear in mind. Chances are, he's thinking about an old piece of metal furniture that his grandfather made. The table he envisions is black, full of scrolls, and pretty.

Now could that customer actually want genuine wrought iron? Not likely. Does he want something hammered out at the forge or is he just looking for the silvery black finish characteristic of wrought iron?

In most cases, when your shop receives a "rod iron" call, you may have to play detective to find out what the customer is thinking about. You've probably had so many "rod iron" calls that you are used to them, but they are still a little frustrating.

The following is an attempt to clear up some of the confusion about wrought iron by breaking the term down into its most commonly accepted definitions.

## Definition 1: The Metal

One reason behind the confusion is that somewhere between the time that grandpa made his wrought iron table and today, the actual metal went out of production in the U.S. During the 1960s, one plant after another discontinued its wrought iron operations until the last plant ceased operations in 1969.



**Figure1:** This drawing shows the "bread dough" characteristic of wrought iron, as compared to the "snap off" qualities of modern steel(below)

The reason wrought iron was phased out is simple- the process is very labor intensive and costly. In the old days, a laborer had to hold the metal with tongs and "work" it under a steam hammer. In addition, recycling of scrap added downward pressure on the price of steel. According to one estimate, production wrought iron cost nearly twice as much as steel.



Currently, the only way to get true wrought iron is to import it from Europe or find an old bridge, wagon wheel axle, or other antique item. The scarcity of the metal is unfortunate for the ornamental iron industry because wrought iron is an ideal metal to work with. The metal is corrosion resistant, handles stress well, and can accept a thicker finish.

Rather than having the "snap-off" characteristic of modern steels, true wrought is like bread dough or candy taffy [Figure 1].

The reason behind the metal's unusual properties is the addition of iron silicate. This glasslike slag is interwoven in the iron and gives the metal its "dough-like" form [Figure 2]. In a single square inch there may be 250,000 or more of these little slag fibers. By their very nature, the fibers help the metal do a better job of absorbing stress.

The slag in wrought iron also provides natural corrosion resistance. Let's face it, nearly all ferrous metals rust, but wrought iron does a better job at handling it. As corrosion progresses, the fibers tend to disperse the rust into an even film, which gives the metal a natural brownish appearance. This film repels the scattering spotty corrosive attack that other metals endure.

Because of its corrosion resistance, wrought was the metal of choice in earlier years for marine use, bridges, and girders. In fact, in extremely corrosive areas, an architect may still specify the metal. Another niche where wrought is still alive and well is in the craft of knifemaking.

According to Bob Bergman of Postville Blacksmith, who regularly works with true wrought iron, wrought's low carbon content makes it easy to weld. "Wrought can stand tremendous heat and is more forgiving," says Bergman. "It is better structurally for old time blacksmithing."

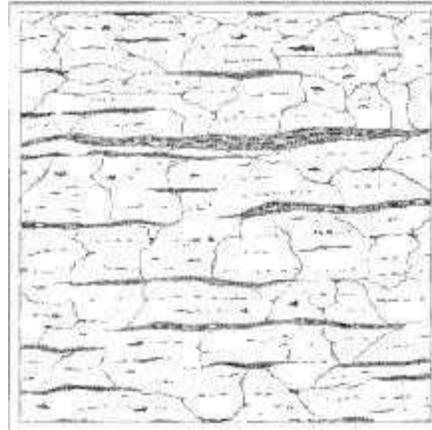
Yet another advantage of wrought is that its rough and irregular surface can hold a finish better [Figure 3]. Reportedly, wrought iron can carry a zinc galvanizing coating that is 25 percent to 40 percent thicker than what would be accepted by a smoother metal.

It is no small wonder the word "wrought iron" is still used, even though the actual metal itself is a hard-to-find item. For at least 5,000 years craftsmen have used wrought iron to make functional items and works of art. Some of the world's most famous metalwork is made of wrought iron.

A 1971 article that appeared in Fabricator magazine made an eloquent defense for wrought iron. Written by William F. Kruse, the column compared wrought iron and steel with Carrara marble and cement. He argued: "Marble does cost more than concrete, but they both have their proper place. Neither really substitutes for the other." His reasoning was that true wrought should not have been phased out by cheaper substitutes.

He went on to say, "If death could come to a whole ancient and honorable industry as a result of market erosion brought on by technologically cheapened substitutes, may not similar erosion threaten the continued existence of the entire ornamental metals industry?"

Mr. Kruse's prophetic warning may have been a little off base. For one thing, the ornamental metal industry cannot take the blame for the demise of wrought iron. It was the plants that discontinued the metal when they no longer found it profitable. And second, the arrival of cheaper substitutes didn't mean the industry was "selling out" - it just means change is inevitable in any industry.



**Figure2: Shown are the glass like siliceous slag fibres that are locked in high purity iron base metal. These fibers give wrought iron its unique qualities. The drawing represents a x100 magnification**

### **Definition II: Wrought or "Worked"**

More likely, when people talk about wrought iron they probably mean metal that is worked. It is generally accepted that "wrought" means any metal that is hammered, twisted or bent into shape, as compared to "cast" which is poured at a foundry. The common vision of the public is of a blacksmith hammering wrought iron on an anvil with a coal forge in the background.

By definition, this form of wrought means "to be forged and formed in a plastic state developing an ornamental effect." In other words, "wrought" describes both a process of working metal and a type of metal.

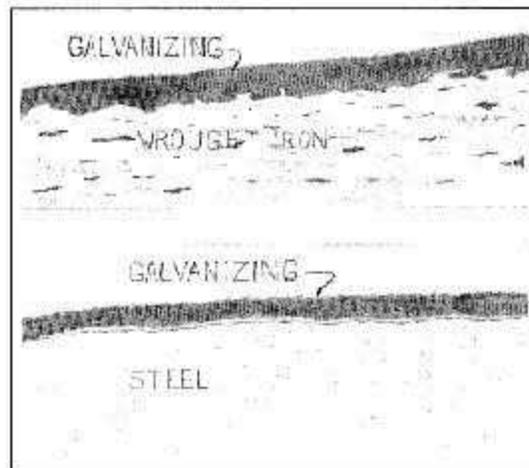
Not surprisingly, nearly all "wrought iron" products produced these days are actually made of mild steel. As a fabricator, the only time you may ever need to use genuine wrought iron is if it is specified for reproduction work.

As Bob Bergman describes, "It's a term that went from steel making to a term now largely used to describe crafts making."

Technically speaking, any metal can be "wrought," but the common usage and perception is that "wrought" applies to ferrous metals. Now, the question is: does the client actually want something made at a forge or just the "look" of wrought iron. This leads us to our next definition.

### **Definition III: The "Look" of Wrought Iron**

Actually, you don't even need to own a forge if all the client wants is the "look" of wrought iron. Achieving the look can be as easy as putting a hammered texture on a mild steel bar. You may also wish to knock the corners off your stock. Better yet, use coarse emery paper to bring out some of the natural silver in the metal. The goal is to rough up the surface so it won't have the smooth "machine made" appearance of stock metals.



**Figure3: The course surface of wrought iron helps it to take on and retain a heavier coat of protective finishing. Steel, on the other hand has a much smoother surface.**

Another way to give steel a "wrought" look is with the finish. In the old days, a blacksmith would finish his work with wax and a little soot from the forge. The mixture would give the metal its famous dull black appearance with silvery highlights.

Wax can still be used for interior applications, but it's important to instruct the customer on how and when to re-wax the item. Any wax like Miniwax, Beeswax, or Johnson's Paste Wax will work.

Applying a clear coat is another option for interior work. On outside jobs, a clear coat will not resist the elements as well as a good paint system. If you do decide to use a paint system to give an exterior item a "wrought" look, be careful. If the paint is placed too thick, it will fill in a lot of detail.

### **Conclusion**

As every fabricator knows, good communication up front is a key to avoiding problems later. When the words "wrought iron" come up, proceed with caution. The term has different meanings for different people and a major misunderstanding could mean "eating the big one." Take the time to determine if your customer wants a forged product or just the "look," or maybe they would be open to having the item wrought in aluminum. And if a client insists on genuine wrought iron, don't brush them off too quickly. There are a few applications where true wrought iron is still used.

### *Sources:*

A "thank you" to Bob Bergman of Postville Blacksmith for his help with this story.

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