Bulletin No.208

Trademarks and Alloys

Designations, Trade Names and Ordering Information for Alloys.

Patents

Originally, the alloys such as Monel Alloy 400, Inconel Alloy 600 and the Hastelloy Alloys B and C were patented and could only be manufactured and offered by the companies that held the patent rights. Some of the firms tried to extend those rights by coming out with various alloys such as B-2, C-4, C-276 and C-22, but for the most part the differences were quite minor. The main advantage of many of these follow-on alloys was that they did not have to be heat treated after welding to restore the corrosion resistance. Since we do not do much welding, on the primary vessel, that was not a major change to us. The patents on most of these alloys have expired by now. In the USA, patents expire in approximately 20 years.

Trademarks

Trademarks, as opposed to patents, never expire as long as the owner registers, uses and protects the trademark. Monel, Inconel, Incoloy are trademarks and are the property of Special Metals Corporation. Hastelloy is the trademark of Haynes International.

Now that the patents have expired, anyone can produce Alloy 400 or Alloy C-276, and many manufacturers do, but only the owners of the trademark can call it Monel Alloy 400 or Hastelloy Alloy C-276. In an effort to use proper terminology, we use the alloy designators when we publish our Reactors and Pressure Vessels catalog.

Limited Alloy Selection

Before the patents expired, these various alloy manufacturers produced a variety of alloys which were enough different so they would not have patent problems, but close enough so they were intended for the same applications. Carpenter 20Cb3, Hastelloy Alloy G and Incoloy Alloy 825 were all intended for sulfuric acid service. Incoloy 625 was intended for the same market as Hastelloy

C-276. Obviously, we would have inventory problems if we stocked three different materials for the same application, so we have chosen to stay with the alloy we think was the original or dominant in a class.

If your customer insists on another alloy, we will investigate the availability and if available, we will make the head and cylinder of the designated alloy for approximately $500 to cover the higher costs of one-at-a-time purchasing and production. We will strongly recommend the closest standard material for internal parts. If we have to exactly match these, expect to pay about $250 extra, per part. In some cases we will not be able to get the designated material at a reasonable cost or delivery time.

For vessels in PED Categories II and higher, the alloys must be on our list of pre-approved materials. This makes it quite difficult (expensive) to add new materials for PED vessels.

We certainly hope you will find this material helpful. As proud owners and defenders of the Parr trademark, we can certainly appreciate how these firms feel about theirs even if we get sloppy in our day-to-day conversations.

Designations Evolve

A number of years ago we had the opportunity to visit a motor manufacturer. The family had been in the business for three generations but had sold the original business and was starting over. We envied them the opportunity to start a whole new parts numbering system, but wondered how long they were able to go before it had to be modified. Some of our original numbers we assigned in the 19th century long before computers and other changes entered the picture with their own requirements. We have at least four systems for referring to these materials of construction and we hope the attached table will help you cross-relate them.

- The first column is the alloy designation.
- The second column is the trade name we commonly use.
- The third column is the abbreviation we use in our pressure catalog modular part number to identify the alloy (these were chosen to match trade names for ease of use by customers).
- The fourth column is the suffix we use in our parts part number to identify the alloy (these were chosen to sort the way we were listing these in our parts list).

Alloy Designation	Trade Name(1)	Catalog Abbreviation	Part Number Suffix
T316SS	“Stainless Steel”	SS	AD
Alloy 20Cb3	Carpenter 20	CS	CC
Alloy 400	Monel 400	MO	CM
Alloy 600	Inconel 600	IN	CT
Titanium Grade 2	“Titanium”	Ti2	CAD
Titanium Grade 4	“Titanium”	Ti4	CAA
Titanium Grade 7	“Titanium”	Ti7	CAB
Alloy B-3	Hastelloy B-3	HB	CG
Alloy C-276	Hastelloy C-276	HC	CH
Zirconium 702	Zircadyne 702	Zi	CXA
Zirconium 705	Zircadyne 705	Zi	CXB
Nickel 200	“Nickel”	Ni	CN
(1) Designations in quotes are material names not trade names.			

For more information on alloys, see the Parr catalog 4500, Stirred Reactors and Pressure Vessels.

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