Padley & Venables Utilize One of Europe's Largest Carburizing Retorts in RA330®

Specifications

UNS: N08330 **W. Nr./EN:** 1.4886, 10095 **AMS:** 5592, 5716 **ASTM:** B 536, B 511, B 512, B 535, B 546, B 710, B 739
ASME: SB-536, SB-511, SB-535, SB-710

Chemical Composition, %

	Cr	Ni	Mn	Si	Cu	P	S	C	Fe
MIN	18.0	34.0	–	1.0	–	–	–	0.04	–
MAX	20.0	37.0	2.0	1.5	1.0	0.03	0.03	0.08	balance

Case History

Carbon and alloy steels are carburized to improve strength, hardness or wear resistance. Carburizing is one of the most effective heat treating operations. Heating a steel to a temperature above its transformation range, typically to about 1580° to 1740°F, while it is in the presence of a carbonaceous material (solid, liquid or gas) introduces carbon into a solid ferrous alloy. Later, quencing that alloy will develop a very hard and strong carburized case.

The above process does wonders for the steel being treated, but the same high temperatures and carburizing conditions that improve the treated steel's properties can also quickly destroy many alloys that might be used in the construction of furnaces, retorts and fixtures used in the process.

Case History, Continued

Padley & Venables, A Division of BRUNNER & LAY, International, have contained their metal destroying heat treating environment by selecting Rolled Alloys RA330 alloy for their large carburizing retort. The retort is the vessel that contains the hot 1652°F carburizing gas. In addition to carburizing, Padley & Venables also use this RA330 retort for higher temperature 1922°F hardening operations.

Padley & Venables selected RA330 alloy based on its performance in smaller retorts around the world. The original retort had a large cast alloy transition joint which caused various problems due to porosity and cracking near the welds. It was successfully replaced by a fabricated RA330 unit.

This is one of the largest gas carburizing retorts in Europe. The overall height is 31 feet and the diameter is 40 inches. The RA330 plate is 3/16" thick and the unit weight is approximately 3500 pounds.

RA330 alloy contains 35% Nickel, 19% Chromium, 1.25% Silicon and is the workhorse alloy of the thermal processing industries. RA330 is tough and most forgiving of process variations in temperature, carburization potential, oxidation potential and thermal cycling. The high silicon in RA330 enhances its carburization resistance.

Other RA330 alloy applications include furnace components, fixtures, conveyors, fans, and various pieces of incineration equipment.

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