

50 GRADES OF STAINLESS STEEL



The BSSA has selected 50 Grades of Stainless Steel as its theme for 2014. Each week throughout the year, we will showcase one grade and illustrate the variety of corrosion resistant, mechanical and physical properties which determine its suitability for a wide range of applications.

#10

310 1.4845 S31008



Heat Treatment Basket
Courtesy of NeoNickel



Fasteners for Furnace Linings
Courtesy of Hague Fasteners

310 is the “workhorse” high temperature steel. Its fully austenitic structure allows it to double as a non-magnetic stainless steel at normal temperatures.

Approximate Composition – 25% Cr 20% Ni (Exact composition ranges vary between EN and ASTM standards).

This grade combines the following characteristics:

- Excellent oxidation resistance to 1050°C
- Good carburisation resistance
- Good sulphidation resistance
- Good resistance to molten metals
- Low magnetic permeability

310 is the most common grade of heat resistant stainless steel. It is the most likely heat

resistant grade to be stocked in a wide range of product forms and will cope with a wide range of high temperature conditions. The high Cr (25%) contributes to the general “strength” of the passive layer. The high Ni (20%) reduces the differential in thermal expansion between the passive layer and the base metal, thereby increasing resistance to spalling in thermal cycling conditions.

The high Ni content leads to a fully austenitic structure which gives a very low magnetic response. The high alloy content also gives a high resistance to martensite formation on cold working. Therefore, 310 is also used in specialised non-magnetic applications. It is more widely available than the “correct” non-magnetic grades like 304LN and 316LN.

Applications which illustrate these features include:

Heat treatment furnaces and accessories, power generation, cement production, burners, metal sintering, waste incineration, refractory anchors, glass making, scientific instruments.

[Find out more about the 50 Grades of Stainless Steel campaign](#) →

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