MULTIAlloys

ADDING VALUE THROUGH EXPERIENCE

ALLOY 431

ALLOY INFORMATION SHEET

UNS S43100 W Nr 1.4057

HEAT AND/OR CREEP RESISTANT CORROSION RESISTANT OTHER

Alloy 431 is a martensitic stainless steel with the addition on nickel. Because of the 16% Cr, this alloy has a higher corrosion resistance compared to other martensitic alloys such as 410 and 420. It is preferable that this grade is used in a quenched and tempered condition which offers a wide range of mechanical properties depending on the tempering temperature.

431 is the most corrosion resistant of the conventionally hardenable stainless steels and applications are mostly shafting for valves and pumps. Bar which has been produced with tightened specifications on cleanliness may also be used in some safety critical applications.

NOTE: Further mechanical property data available on request

NOMINAL COMPOSITION (%)						
	Fe	Cr	Ni	Mo	C	Other
ALLOY 431	81	16	2.5	0.3 Max	0,16	

APPLICABLE SPECIFICATIONS	
PLATE, SHEET & STRIP	
PIPE, TUBE	
BAR	EN 10088-3
FASTENERS	
FORGINGS	
FITTINGS	
WELDING PRODUCTS	

TYPICAL MECHANICAL PROPERTIES (COND QT800) #	
TENSILE STRENGTH (MPa)	800 - 950
YIELD STRESS (MPa)	600 Min.
ELONGATION (% in 50mm)	14% Min (long)
HARDNESS (Brinell)	235 - 285
CHARPY IMPACT (J)	70 Min

TYPICAL PHYSICAL PROPERTIES #	
DENSITY (kg / cu m.)	7710
YOUNGS MODULUS (GPa)	215
THERMAL CONDUCTIVITY (W/m.C)	25
THERMAL EXPANSION (per Deg C)	0.0000106

 # - At room temperature

FABRICATION

Alloy 431 can be welded using most conventional welding processes, provided certain precautionary measures are taken. The metal must be preheated to between 200°C and 300°C and maintained at this temperature between passes in order to prevent the risk of cold cracking. A tempering heat treatment at 650°C is required after welding. Filler material must have similar properties to Alloy 431 especially if mechanical properties of the weld are to be similar to the parent metal.

When machining 431 in the annealed condition, there is a tendency to gall and build up on the cutting edge of the tool, which results in poor finishes. Thus machining parameter may need to be optimised in order to achieve good surface quality.

Please call for details of Stock, Delivery and Price

Detailed technical data available upon request

Note: Data shown are typical and full research should be done to determine the usefulness in any application or design. No warranty is expressed or implied and we assume no responsiblity for the accuracy, completeness or usefulness of the content.

PO BOX 30407, Kyalami, 1684, South Africa **T:** +27 (0) 11 466 2480 **F:** +27 (0) 11 466 1692
Sharecall: 0860 ALLOYS **E:** sales@multialloys.co.za **www.multialloys.co.za**