DATA SHEET

FERRALIUM® 255

UNS NO - S32550

Alloy 255 is a super duplex stainless steel which includes 25% chromium. Alloy 255 consists of copper expansion, which provides it with greater resistance to sulfuric acid than other super duplex grades. Due to its duplex structure alloy 255 also offers magnificent strength attributes and resistance to chloride ion stress corrosion cracking. Ferralium 255 sets a new standard for Super Duplex as the first to state 570N/mm2 as the minimum 0.2% Proof Stress. It offers magnificent corrosion resistance in a wide variety of corrosive chemicals, including phosphoric, sulphuric and nitric acids. In seawater and other chloride consists of environments Ferralium 255 also gives outstanding resistance to pitting and crevice corrosion, with Critical Pitting Temperature exceeding 50°C. Magnificent ductility and effect of strength at both ambient and sub-zero temperatures join with a high resistance to abrasion, erosion and cavitation erosion. Ferralium 255 is tested to the highest degree, utilizing tests intended to ensure that the trademarked product possesses high integrity, a correct phase balance and the absence of sigma and other deleterious phases. Ferralium 255 is especially applicable for large forgings, as the development of sigma phase is much less likely than it is for other Super Duplexes.

Applications

- Chemical Process Industry
- Marine Industry and Shipbuilding
- Oil and Gas Industry
- Pollution Control
- Copper Smelting
- Pulp and Paper Industry
- Food Industry
- Agrochemicals
- Civil Engineering

Characteristics

- Superior Corrosion Resistance
- Pitting
- Crevice Corrosion
- Chloride Stress Corrosion Cracking
- General Corrosion In Many Environments
- Good Ductility
- High Strength-To-Weight Ratio
- High Fatigue Strength In Marine Environments
- Superior Abrasion and Cavitation Erosion Resistance
- High Mechanical Strength - (over twice the yield strength of austenitic stainless steels)
- Good Fabricability

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Machining
Albeit generously harder than most different stainless steels, Alloy 255 can be effectively machined utilizing most common techniques. Slow speeds and heavy, steady feeds are required to overcome this alloy's tendency to work harden.

Forming
Alloy 255 can be effectively formed utilizing each and every technique of hot or cold working.

Welding
Alloy 255 can be effectively welded utilizing most common technique, including GTAW, GMAW and SMAW process. At the point when this filler metal is required, for joining with a disparate of higher alloy content, select the filler relating to the higher alloy material for best results.

Heat Treatment
The alloy reacts to annealing, yet is not age-hardenable.

Cold Working
This is a ductile alloy, like the stainless steels yet stiffer and it is promptly cold worked by standard means. Annealing must be done after cold work to restore corrosion resistance.

Hot Working
Forging might be done within the scope of 2220 F to 1700 F. A re-anneal must be done following forging in order to regain optimum corrosion resistance.

Annealing
Anneal at 1900°F and fast cool.

Hardening
Hardens are done by cold work only, but should be utilized in annealed condition for corrosion resistance.

Chemical Properties

C	N	Si	P	S	Cr	Mn	Ni	Cu	Mo
0.04	0.10 - 0.25	1.0	0.04	0.03	24.0 - 27.0	1.50	4.5 - 6.5	1.50 - 2.50	2.9 - 3.9

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Mechanical Properties

Tensile Strength (ksi)	0.2% Yield Strength (ksi)	Elongation% in 2 inches
110	80	15

Physical Properties

Properties	Units	Temperature in °C
Density	7.81 g/cm^3	Room
Specific Heat	0.113 Kcal/kg.C	20°
Melting Range	1385 - 1443.3°C	-
Modulus of Elasticity	199 KN/mm^2	20°
Electrical Resistivity	78.6 µΩ.cm	20°
Coefficient of Expansion	11.1 µm/m °C	20-100°
Thermal Conductivity	14.2 W/m-°K	20°

ASTM Specifications

Pipe / Tube (SMLS)	Tube Welded	Sheet / Plate	Bar	Fitting
A 790	A 789	A 240	A 479	A 815

Availability

MANUFACTURING
Fasteners
Custom Machining
Custom Fabrication
Piping / Spools
Stamped Parts
B/W Fittings
S/W Fittings
Flanges
Compression Fittings

RAW MATERIALS
Pipes
Tubes
Bars
Sheets
Plates
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-
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