

MECHANICAL AND CHEMICAL VALUES FOR:
DUPLEX UNS 31803 PIPE

The method of manufacture can be either seamless or automatic welding, with no addition of filler metal. Pipe may be hot or cold finished but must always be furnished in the heat treated condition.

DUPLEX, AN AUSTENITIC FERRITIC IRON CHROMIUM-NICKEL ALLOY WITH MOLYBDENUM ADDITION. GOOD RESISTANCE TO PITTING, HAS A HIGH TENSILE STRENGTH AND HIGHER RESISTANCE TO STRESS CORROSION CRACKING AT MODERATE TEMPERATURES TO THAT OF CONVENTIONAL AUSTENITIC STAINLESS STEELS

CHEMICAL COMPOSITION (All values are maximum unless stated otherwise)

%C	%Cr	%Ni	%mo	%Mn	%S	%P	%Si	%N
0.03	21.0-23.0	4.5-6.5	2.5-3.5	2.00	0.020	0.030	1.00	0.08-0.20

MECHANICAL PROPERTIES

YIELD STRENGTH	TENSILE STRENGTH	ELONGATION (MIN)	REDUCTION OF AREA (MIN)	HARDNESS (MAXIMUM)	ASTM SPECIFICATION
(ksi) (mpa) 65 450	(ksi) (mpa) 90 620	25	-	(HB) (HRC) 290 30.5	ASTM A790

**PREn (PITTING RESISTANCE EQUIVALENT) - (%Cr) + (3.3 x %Mo) + (16 x %N)
HEAT TREATMENT**

SOLUTION ANNEALED AT 1020 DEG C—1100 DEG C WATER QUENCH
EQUIVALENT GRADES

UNS	SB EN	SWEDEN SS	GERMANY DIN	FRANCE ANFOR	SANDVIK +
31803	1.4462	2377	X 2 CrNiMoN 22.5.3	Z2 CND 22.05.03	SAF 2205

Duplex is a material having an approximate equal amount of austenite and ferrite. These combine excellent corrosion resistance with high strength. Mechanical properties are approximately double those of singular austenitic steel and resistance to stress corrosion cracking is superior to type 316 stainless steel in chloride solutions. Duplex material has a ductile / brittle transition at approximately - 50 deg°C. High temperature use is usually restricted to a maximum temperature of 300deg°C for indefinite use due to embrittlement.