

MECHANICAL AND CHEMICAL VALUES FOR:
DUPLEX UNS 31803 BUTT WELD

This class covers the class of WP, made up of 4 categories and meet the requirements of ANSI B16.9. Pressure ratings are the same compatibility of matching pipe.

The categories are

- WP-S = SEAMLESS CONSTRUCTION
 WP-W = WELDED CONSTRUCTION WHERE CONSTRUCTION WELDS ARE RADIOGRAPHED
 WP-WX = WELDED CONSTRUCTION WHERE ALL WELDS ARE RADIOGRAPHED
 WP-WU = WELDED CONSTRUCTION WHERE ALL WELDS ARE ULTRASONICLY TESTED

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 otherwise stated)

%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) 60 450	(ksi) (mpa) 90 620	20	-	(BHN) 290	ASTM A815

**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