



Quality F91 (ASTM A182)

PROPERTIES AND EMPLOYEMENTS

F91 (X10CrMoVNb9-1), is an alloy steel with chrome and an addition of nb, which has elevated mechanical characteristics and it is very often used in the chemical and petrochemical industries for the fabrication of flanges, valves, tubes and for equipments that require an excellent creep resistance and to embrittlement because of hydrogen under pressure and at an elevated temperature (up to 600°C).

CORRESPONDENCE TO INTERNATIONAL DESIGNATIONS

Quality	Europe	Germany		France	Spain	G.B.	USA
	EN	DIN	W.n.	AFNOR	UNE	B.S.	ASTM
F91	X10CrMoVNb9-1	X10CrMoVNb9-1	1,4903	-	-	-	ASTM A182 F91 ASME SA 182

CHEMICAL ANALYSIS



C	Mn	Si	P max	S max	Cr	Ni max	Mo	Zr max	Al	N	Nb	V
0,08 ÷ 0,12	0,30 ÷ 0,60	0,20 ÷ 0,50	0,020	0,010	8,00 ÷ 9,50	0,40	0,85 ÷ 1,05	0,01	0,020	0,03 ÷ 0,07	0,06 ÷ 0,10	0,10 ÷ 0,25

Concentration limits of the elements that are not indicated in the table can be deduced in the en 10020 regulation.

MECHANICAL CHARACTERISTICS

Steel	Normalisation temperature 900°C min – tempering temperature 620°C min				
Symbolic	R _e min	R _m min	A min	Z min	Durezza HB
	N/mm ²		%	%	max
F91	415	620	20	40	190÷248

USUALLY AVAILABLE EX STOCK

M.T. Coloration	Quality	Heat treatment	Surface
	F91	Normalised and stress relieved	rolled peeled / forged turned
	F91	Annealed	rolled