



## Quality F11 (ASTM A182)

### PROPERTIES AND EMPLOYEMENTS

F11 (13CrMo4-5) is a mild steel with chrome, very tough, it can be case-hardened, it can be welded and it is resistant to creep 550°C. It is used for the fabrication of tubes, boilers and superheaters or for the transportation of overheated steam with a high pressure. It is easily machinable, even at the raw state of rolling or normalised.

### CORRESPONDENCE TO INTERNATIONAL DESIGNATIONS

Quality	Europe	Germany		France	Spain	G.B.	USA
	EN	DIN	W.n.	AFNOR	UNE	B.S.	ASTM
F11	13CrMo4-5	13CrMo4-4	1,7338	~10CD6	F2631	621	ASTM A182 F11 ASME SA 182

### CHEMICAL ANALYSIS



C	Mn	Si	P max	S max	Cr	Mo	Cu max
0,10 ÷ 0,20	0,30 ÷ 0,80	0,50 ÷ 1,00	0,040	0,040	1,00 ÷ 1,50	0,44 ÷ 0,65	0,35

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 <sub>e</sub> min	R <sub>m</sub> min	A min	Z min	Durezza HB
	N/mm <sup>2</sup>		%	%	max
F11	275	485	20	30	143÷207

### USUALLY AVAILABLE EX STOCK

M.T. Coloration	Quality	Heat treatment	Surface
	F11	Normalised and stress relieved	rolled / forged turned
	F11	Annealed	rolled