



**MATERIALI FERROSI FORGIATI PER FLANGE - MATERIAL SPECIFICATIONS FOR FLANGES**

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ASTM Specifications				COMPOSIZIONE CHIMICA % - CHEMICAL REQUIREMENTS %													
TIPO TYPE	SPECIFIC.	SIMBOLO O CLASSE SYMBOL OR CLASS	GRADO GRADE	C	Mn	P max.	S max.	Si	Ni	Cr	Mo	Cu max.	V max.	Co max.			
ACCIAI AL C. CARBON STEELS	A105	-	-	0.35 max.	0.60-1.05	0.040	0.050	0.35 max.	0.40 max.	0.30 max.	0.12 max.	0.40	0.03	0.02			
	A181	CLASS 60 CLASS 70	-	0.35 max.	1.10 max.	0.050	0.050	0.35 max.	-	-	-						
	A350	LF1 LF2 LF3	- - -	0.30 max. 0.30 max. 0.20 max.	0.75-1.05 1.35 max. 0.90 max.	0.035 0.035 0.035	0.040 0.040 0.040	0.15-0.30 0.15-0.30 0.20-0.35	0.40 max. 0.40 max. 3.25-3.75	0.30 max. 0.30 max. 0.30 max.	0.12 max. 0.12 max. 0.12 max.	Cu 0.40 max. V 0.03 max. Co 0.02 max.					
ACCIAI FERRITICI FERRITIC STEELS ACCIAI LEGATI - ALLOY S.	A182 *	F1 F2 F5a F6a F9 F11 F12 F22	Carb. Moly. 0.5Cr-0.5Mo 4-6 Cr 13 Cr 9 Cr 1.25Cr-0.5Mo 1Cr-0.5Mo Cr-Mo	0.28 max. 0.21 max. 0.25 max. 0.15 max. 0.15 max. 0.10-0.20 0.10-0.20 0.15 max.	0.60-0.90 0.30-0.80 0.60 max. 1.00 max. 0.30-0.60 0.30-0.80 0.30-0.60 0.30-0.60	0.045 0.040 0.040 0.040 0.030 0.040 0.040 0.040	0.045 0.040 0.030 0.030 0.030 0.040 0.040 0.040	0.15-0.35 0.10-0.60 0.50 max. 1.00 max. 0.50-1.00 0.50-1.00 0.10-0.60 0.50 max.	- - 0.50 max. 0.50 max. - - - -	- 0.50-0.81 4.00-6.00 11.50-13.50 - 1.00-1.50 0.80-1.25 2.00-2.50	0.44-0.65 0.44-0.65 0.44-0.65 - 0.90-1.10 0.44-0.65 0.44-0.65 0.87-1.13						
ACCIAI AUSTENITICI AUSTENITIC STEELS ACC. INOSSIDABILI - STAINLESS S.	A162 *	F304 F304H F304L F310 F316 F316H F316L F321 F321H F347 F347H F348 F348H F10	18 Cr-8 Ni 25 Cr-20 Ni 18 Cr-8 Ni Mo 18 Cr-8 Ni Ti 18 Cr-8 Ni Cb 20 Ni-8 Cr	0.08 max. 0.04-0.10 0.035 max. 0.08 max. 0.04-0.10 0.035 max. 0.15 max. 0.04-0.10 0.08 max. 0.04-0.10 0.08 max. 0.08 max. 0.04-0.10 0.04-0.10	2.00 max. 2.00 max. 2.00 max. 2.00 max. 2.00 max. 2.00 max. 2.00 max. 2.00 max. 2.00 max. 2.00 max. 2.00 max. 2.00 max. 2.00 max. 0.50-0.80	0.040 0.040 0.040 0.040 0.040 0.040 0.030 0.030 0.030 0.030 0.030 0.030 0.030 0.030	0.030 0.030 0.030 0.030 0.030 0.030 0.030 0.030 0.030 0.030 0.030 0.030 0.030 0.030	1.00 max. 1.00 max. 1.00 max. 1.00 max. 1.00 max. 1.00 max. 1.00 max. 1.00 max. 1.00 max. 1.00 max. 1.00 max. 1.00 max. 1.00 max. 1.00-1.40	8.00-11.00 8.00-11.00 8.00-13.00 19.00-22.00 10.00-14.00 10.00-14.00 10.00-15.00 9.00-12.00 9.00-12.00 9.00-13.00 9.00-13.00 9.00-13.00 9.00-13.00 19.00-22.00	18.00-20.00 18.00-20.00 18.00-20.00 24.00-26.00 16.00-18.00 16.00-18.00 16.00-18.00 17.00 min. 17.00 min. 17.00-20.00 17.00-20.00 17.00-20.00 17.00-20.00 7.00-9.00	- - - - 2.00-3.00 2.00-3.00 - - - - - - -	Ti5xCmin. Ti4xCmin.		max. 0.60	Cb+Ta 8xCmin. Cb+Ta10xCmin. Cb+Ta10xCmin. Cb+Ta 8xCmin.		max. 1.00%

\* Tantalum max 0.10

**MATERIALI FERROSI IN LAMIERA PER FLANGE - MATERIAL SPECIF. FOR PRESSURE VESSEL PLATES**

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ASTM Specifications			COMPOSIZIONE CHIMICA % - CHEMICAL REQUIREMENTS %														
TIPO TYPE	SPECIFIC.	GRADO GRADE	C max - x Spess. - Thick.							Mn	P max.	S max.	Si	Ni	Cr	Mo	
ACCIAI AL C. CARBON STEELS	A515 ▼ ★	60	0.24	≤ 1"	0.27	> 1"	0.29	> 2"	0.31	> 4"	0.98 max.	0.035	0.040	0.13-0.45	-	-	
		70	0.31		0.33	> 2"	0.35	> 4"	0.35	> 8"	1.30 max.	0.035	0.040	0.13-0.45	-	-	
	A516 ●	70	0.27	≤ 1/2"	0.28	> 1/2"	0.30	> 2"	0.31	> 4"	0.79-1.30	0.035	0.040	0.13-0.45	-	-	
A537	CLASS 1									≤ 1 1/2" - 0.64-1.46 > 1 1/2" - 0.92-1.72	0.035	0.040	0.13-0.55	-	-		
ACCIAI LEGATI ALLOY STEELS	A203	B	0.21	≤ 2"	0.24	> 2"	0.25	> 4"	-	≤ 2" - 0.78 max	0.035	0.040	0.13-0.45	2.03-2.57	-	-	
		E	0.20		0.23	> 4"	-	> 2" - 0.88 max.	0.035	0.040	0.13-0.45	3.18-3.82	-	-			
	A204	A	0.18	≤ 1"	0.21	> 1"	0.23	> 2"	0.25	> 4"	0.98 max.	0.035	0.040	0.13-0.45	-	-	0.41-0.64
		B	0.20		0.23	> 2"	0.25	> 4"	0.27	> 4"	0.98 max.	0.035	0.040	0.13-0.45	-	-	0.41-0.64
	C	0.23		0.26	2"	0.28	4"	0.28		0.98 max.	0.035	0.040	0.13-0.45	-	-	0.41-0.64	
A387	11 22			0.17 0.15						0.35-0.73 0.25-0.66	0.035 0.035	0.040 0.035	0.44-0.86 0.50 max.	0.94-1.56 1.88-2.62	-	0.40-0.70 0.85-1.15	

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- ▼ ★ - PER MEDIE E ALTE TEMPERATURE - FOR INTERMEDIATE AND HIGHER-TEMPERATURE SERVICE
- ★ - PER ALTE TEMPERATURE - FOR HIGH-TEMPERATURE SERVICE
- - PER MEDIE E BASSE TEMPERATURE - FOR MODERATE AND LOWER-TEMPERATURE SERVICE