

## ASTM Grades A213/A213M

### Ferritic Steel<sup>A</sup> Composition, %

Grade	C	Mn	P	S	Si	Cr	Mo	Ti	V	Nb	N	Ni	Al
			Max	Max									
T2 <sup>c</sup>	.10/.20	.30/.61	0.025	0.025	.10/.30	.50/.81	.44/.65	—	—	—	—	—	—
T5	.15 max	.30/.60	0.025	0.025	.50 max	4.00/6.00	.45/.65	—	—	—	—	—	—
T5 <sup>b</sup>	.15 max	.30/.60	0.025	0.025	1.00/2.00	4.00/6.00	.45/.65	—	—	—	—	—	—
T5 <sup>c</sup>	.12 max	.30/.60	0.025	0.025	.50 max	4.00/6.00	.45/.65	<b>A</b>	—	—	—	—	—
T9	.15 max .05 min/15	.30/.60	0.025	0.025	.25/1.00	8.00/1.00	.90/1.10	—	—	—	—	—	—
T11	max .05 min/15	.30/.60	0.025	0.025	.50/1.00	1.00/1.50	.44/.65	—	—	—	—	—	—
T12 <sup>c</sup>	max	.30/.61	0.025	0.025	.50 max	.80/1.25	.44/.65	—	—	—	—	—	—
T17	.15/.25 .05 min/15	.30/.61	0.025	0.025	.15/.35	.80/1.25	—	—	0.15	—	—	—	—
T21	max	.30/.60	0.025	0.025	.50 max	2.65/3.35	.80/1.06	—	—	—	—	—	—
T22	.05 min/15 max	.30/.60	0.025	0.025	.50 max	1.90/2.60	.87/1.13	—	—	—	—	—	—
T91	.08/.12	.30/.60	0.02	0.01	.20/.50	8.00/9.50	.85/1.05	—	.18/.25	.06/.10	.030/.070	.40 max	.04 max
13Cr	.15/.22	.25/1.00	0.02	0.01	1.00 max	12.00/14.00	—	—	—	—	—	—	—

**A** Grade T5c shall have a titanium content of not less than four times the carbon content and not more than 0.70%.

**b** Grade 18Cr-2Mo shall have  $Ti + Nb = 0.20 + 4(C + N)$  min., 0.80 max.

**c** It is permissible to order T2 and T12 with 0.045 max. Sulfur.