

Table 1A (Cont'd)
Section I; Section III, Division 1, Classes 2 and 3,* Section VIII, Division 1; and Section XII
Maximum Allowable Stress Values, S, for Ferrous Materials
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec. No.	Type/Grade	Alloy		Size/Thickness, in.	Group
					Design./UNS No.	Class/Condition/ Temper		
1	18Cr-2Mo	Plate	SA-240	...	S44400	...	...	7 2
2	18Cr-2Mo	Wld. tube	SA-268	...	S44400	...	...	7 2
3	18Cr-2Mo	Smls. tube	SA-268	...	S44400	...	...	7 2
(23) 4	18Cr-Ti	Plate	SA-240	...	S43932	...	...	7 2
5	18Cr-Ti	Wld. tube	SA-268	TP439	S43035	...	...	7 2
6	18Cr-Ti	Smls. tube	SA-268	TP439	S43035	...	...	7 2
7	18Cr-Ti	Wld. pipe	SA-731	TP439	S43035	...	...	7 2
8	18Cr-Ti	Smls. pipe	SA-731	TP439	S43035	...	...	7 2
9	18Cr-Ti	Wld. tube	SA-803	TP439	S43035	...	...	7 2
10	18Cr-Ti	Smls. tube	SA-268	TP430 Ti	S43036	...	...	7 2
11	18Cr-Ti	Wld. tube	SA-268	TP430 Ti	S43036	...	...	7 2
12	18Cr-Ti	Bar	SA-479	439	S43035	...	...	7 2
13	26Cr-3Ni-3Mo	Plate	SA-240	26-3-3	S44660	...	≤ ² / ₁₀	10K 1
14	26Cr-3Ni-3Mo	Smls. tube	SA-268	26-3-3	S44660	...	≤ ² / ₁₀	10K 1
15	26Cr-3Ni-3Mo	Wld. tube	SA-268	26-3-3	S44660	...	≤ ² / ₁₀	10K 1
16	26Cr-3Ni-3Mo	Wld. tube	SA-268	26-3-3	S44660	...	≤ ² / ₁₀	10K 1
17	26Cr-3Ni-3Mo	Wld. tube	SA-803	26-3-3	S44660	...	≤ ² / ₁₀	10K 1
18	27Cr	Smls. tube	SA-268	TP446-1	S44600	...	...	10I 1
19	27Cr-1Mo	Forgings	SA-182	FXM-27Cb	S44627	...	...	10I 1
20	27Cr-1Mo	Plate	SA-240	XM-27	S44627	...	...	10I 1
21	27Cr-1Mo	Wld. tube	SA-268	TPXM-27	S44627	...	...	10I 1
22	27Cr-1Mo	Smls. tube	SA-268	TPXM-27	S44627	...	...	10I 1
23	27Cr-1Mo	Bar	SA-479	XM-27	S44627	...	...	10I 1
24	27Cr-1Mo	Smls. pipe	SA-731	TPXM-27	S44627	...	...	10I 1
25	27Cr-1Mo	Wld. pipe	SA-731	TPXM-27	S44627	...	...	10I 1
26	27Cr-1Mo-Ti	Smls. pipe	SA-731	TPXM-33	S44626	...	...	10I 1
27	27Cr-1Mo-Ti	Wld. pipe	SA-731	TPXM-33	S44626	...	...	10I 1
28	27Cr-1Mo-Ti	Plate	SA-240	XM-33	S44626	...	...	10I 1
29	27Cr-1Mo-Ti	Smls. tube	SA-268	TPXM-33	S44626	...	...	10I 1
30	27Cr-1Mo-Ti	Wld. tube	SA-268	TPXM-33	S44626	...	...	10I 1
31	29Cr-4Mo	Bar	SA-479	...	S44700	...	...	10J 1
32	29Cr-4Mo	Plate	SA-240	...	S44700	...	...	10J 1
33	29Cr-4Mo	Smls. tube	SA-268	29-4	S44700	...	...	10J 1
34	29Cr-4Mo	Wld. tube	SA-268	29-4	S44700	...	...	10J 1
35	29Cr-4Mo-2Ni	Bar	SA-479	...	S44800	...	...	10K 1
36	29Cr-4Mo-2Ni	Plate	SA-240	...	S44800	...	...	10K 1
37	29Cr-4Mo-2Ni	Smls. tube	SA-268	29-4-2	S44800	...	...	10K 1
38	29Cr-4Mo-2Ni	Wld. tube	SA-268	29-4-2	S44800	...	...	10K 1
39	29Cr-4Mo-Ti	Smls. tube	SA-268	...	S44735	...	...	10J 1
40	29Cr-4Mo-Ti	Wld. tube	SA-268	...	S44735	...	...	10J 1
41	Mn- ¹ / ₄ Mo	Forgings	SA-372	D	K14508	...	...	...
42	Mn- ¹ / ₄ Mo-V	Castings	SA-487	2	J13005 A	...	...	3 3
43	Mn- ¹ / ₄ Mo-V	Castings	SA-487	2	J13005 B	...	...	3 3
44	Mn- ¹ / ₂ Mo	Plate	SA-302	A	K12021	...	...	3 2
45	Mn- ¹ / ₂ Mo	Wld. pipe	SA-672	H75	K12021	...	...	3 2

Table 1A (Cont'd)
Section I; Section III, Division 1, Classes 2 and 3,* Section VIII, Division 1; and Section XII
Maximum Allowable Stress Values, S, for Ferrous Materials
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Applicability and Max. Temperature Limits (NP = Not Permitted) (SPT = Supports Only)				External Pressure Chart No.	Notes
			I	III	VIII-1	XII		
1	60	40	NP	NP	650	650	CS-2	G19
2	60	40	NP	NP	650	650	CS-2	G19, G24
3	60	40	NP	NP	650	650	CS-2	G19
4	60	30	NP	NP	600	600	CS-2	G19
5	60	30	800	NP	800	650	CS-2	G19, G24
6	60	30	800	NP	800	650	CS-2	G19
7	60	30	800	NP	NP	NP	CS-2	G19, G24
8	60	30	800	NP	NP	NP	CS-2	G19
9	60	30	NP	NP	600	600	CS-2	G19, G24
10	60	35	NP	NP	800	NP	CS-2	G19
11	60	35	NP	NP	800	NP	CS-2	G19, G24
12	70	40	NP	NP	1000	650	CS-2	G19, G22, T4
13	85	65	NP	NP	700	650	HA-5	G19
14	85	65	NP	700	700	650	HA-5	G19, H5
15	85	65	NP	700	NP	NP	HA-5	G19, H5, W12
16	85	65	NP	NP	700	650	HA-5	G19, G24
17	85	65	NP	NP	600	600	HA-5	G19, G24
18	70	40	700	NP	650	650	CS-2	G19
19	60	35	NP	NP	650	650	HA-2	G19
20	65	40	NP	650	650	650	HA-2	G19
21	65	40	NP	NP	650	650	HA-2	G19, G24
22	65	40	NP	650	650	650	HA-2	G19
23	65	40	NP	700	650	650	HA-2	G19, G22
24	65	40	NP	NP	650	650	HA-2	G19
25	65	40	NP	NP	650	650	HA-2	G19, G24
26	65	40	NP	NP	650	650	HA-2	G19
27	65	40	NP	NP	650	650	HA-2	G19, G24
28	68	45	NP	NP	650	650	HA-6	G19
29	68	45	NP	NP	650	650	HA-6	G19
30	68	45	NP	NP	650	650	HA-6	G19, G24
31	70	55	NP	NP	600	600	HA-6	G19, G22
32	80	60	NP	NP	600	600	HA-6	G19
33	80	60	NP	NP	600	600	HA-6	G19
34	80	60	NP	NP	600	600	HA-6	G19, G24
35	70	55	NP	NP	600	600	HA-6	G19, G22
36	80	60	NP	NP	600	600	HA-6	G19
37	80	60	NP	NP	600	600	HA-6	G19
38	80	60	NP	NP	600	600	HA-6	G19, G24
39	75	60	NP	NP	600	600	HA-6	G19
40	75	60	NP	NP	600	600	HA-6	G19, G24
41	105	65	NP	650	650	650	CS-5	G25, W2, W11
42	85	53	NP	700 (SPT)	650	650	CS-3	G1
43	90	65	NP	NP	650	650	CS-5	G1
44	75	45	1000	700	1000	650	CS-3	G11, S2, T3
45	75	45	NP	700	NP	NP	CS-3	S6, W10, W12

Table 1A (Cont'd)
Section I; Section III, Division 1, Classes 2 and 3,* Section VIII, Division 1; and Section XII
Maximum Allowable Stress Values, S, for Ferrous Materials
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
	100	150	200	250	300	400	500	600	650	700	750	800	850	900
1	17.1	...	17.1	...	16.6	16.2	15.9	15.4	15.1	...	...	...	...	...
2	14.6	...	14.6	...	14.1	13.8	13.5	13.1	12.8	...	...	...	...	...
3	17.1	...	17.1	...	16.6	16.2	15.9	15.4	15.1	...	...	...	...	...
4	17.1	...	17.1	...	15.7	14.6	13.9	13.6	...	...	...	...	...	...
5	14.6	...	14.6	...	13.3	12.4	11.8	11.6	11.5	11.5	11.4	11.2	...	...
6	17.1	...	17.1	...	15.7	14.6	13.9	13.6	13.6	13.5	13.4	13.2	...	...
7	14.6	...	14.6	...	13.3	12.4	11.8	11.6	11.5	11.5	11.4	11.2	...	...
8	17.1	...	17.1	...	15.7	14.6	13.9	13.6	13.6	13.5	13.4	13.2	...	...
9	14.6	...	14.6	...	13.3	12.4	11.8	11.6	...	...	...	...	...	...
10	17.1	...	17.1	...	16.6	16.1	15.8	15.4	15.1	14.8	14.5	14.0	...	...
11	14.6	...	14.6	...	14.1	13.7	13.4	13.1	12.9	12.6	12.3	11.9	...	...
12	20.0	...	20.0	...	19.3	18.8	18.4	17.9	17.7	17.3	16.9	16.4	15.8	12.2
13	24.3	...	24.3	...	24.2	23.9	23.8	23.6	23.5	23.4	...	...	...	...
14	24.3	...	24.3	...	24.2	23.9	23.8	23.6	23.5	23.4	...	...	...	...
15	24.3	...	24.3	...	24.2	23.9	23.8	23.6	23.5	23.4	...	...	...	...
16	20.6	...	20.6	...	20.6	20.3	20.2	20.1	20.0	19.9	...	...	...	...
17	20.6	...	20.6	...	20.6	20.3	20.2	20.1	...	...	...	...	...	...
18	20.0	...	20.0	...	19.3	18.8	18.4	17.9	17.7	17.3	...	...	...	...
19	17.1	...	17.1	...	16.6	16.1	16.1	16.1	16.1	...	...	...	...	...
20	18.6	...	18.6	...	18.3	18.1	18.1	18.1	18.1	...	...	...	...	...
21	15.8	...	15.8	...	15.5	15.4	15.4	15.4	15.4	...	...	...	...	...
22	18.6	...	18.6	...	18.3	18.1	18.1	18.1	18.1	...	...	...	...	...
23	18.6	...	18.6	...	18.3	18.1	18.1	18.1	18.1	18.1	...	...	...	...
24	18.6	...	18.6	...	18.3	18.1	18.1	18.1	18.1	...	...	...	...	...
25	15.8	...	15.8	...	15.5	15.4	15.4	15.4	15.4	...	...	...	...	...
26	18.6	...	18.6	...	18.4	18.2	18.0	17.6	17.3	...	...	...	...	...
27	15.8	...	15.8	...	15.7	15.4	15.3	15.0	14.7	...	...	...	...	...
28	19.4	...	19.4	...	19.3	19.0	18.8	18.4	18.1	...	...	...	...	...
29	19.4	...	19.4	...	19.3	19.0	18.8	18.4	18.1	...	...	...	...	...
30	16.5	...	16.5	...	16.4	16.2	16.0	15.7	15.4	...	...	...	...	...
31	20.0	...	20.0	...	19.3	19.2	19.2	19.2	...	...	...	...	...	...
32	22.9	...	22.8	...	22.1	21.9	21.9	21.9	...	...	...	...	...	...
33	22.9	...	22.8	...	22.1	21.9	21.9	21.9	...	...	...	...	...	...
34	19.4	...	19.4	...	18.8	18.6	18.6	18.6	...	...	...	...	...	...
35	20.0	...	19.6	...	19.3	19.2	18.9	18.6	...	...	...	...	...	...
36	22.9	...	22.4	...	22.1	21.9	21.6	21.3	...	...	...	...	...	...
37	22.9	...	22.4	...	22.1	21.9	21.6	21.3	...	...	...	...	...	...
38	19.4	...	19.1	...	18.8	18.6	18.4	18.1	...	...	...	...	...	...
39	21.4	...	21.0	...	20.7	20.5	20.3	20.0	...	...	...	...	...	...
40	18.2	...	17.9	...	17.6	17.5	17.2	17.0	...	...	...	...	...	...
41	30.0	...	30.0	30.0	30.0	30.0	30.0	30.0	30.0	...	...	...	...	...
42	24.3	...	24.3	...	24.3	24.2	24.2	24.2	24.1	24.1	...	...	...	...
43	25.7	...	25.7	...	25.7	25.6	25.6	25.6	25.6	...	...	...	...	...
44	21.4	...	21.4	...	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	20.0	13.7
45	21.4	...	21.4	...	21.4	21.4	21.4	21.4	21.4	21.4	...	...	...	...

Table 1A (Cont'd)
Section I; Section III, Division 1, Classes 2 and 3,* Section VIII, Division 1; and Section XII
Maximum Allowable Stress Values, S, for Ferrous Materials
 (*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
1
2
3
4
5
6
7
8
9
10
11
12	9.2	6.5	...	...	...	...	...	...	...	...	...	...	...	...	...
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44	8.2	4.8	...	...	...	...	...	...	...	...	...	...	...	...	...
45

(23)

Table U (Cont'd)
Tensile Strength Values, S_u , for Ferrous and Nonferrous Materials

Line No.	Nominal Composition	Product Form	Spec. No.	Type/Grade	Alloy Desig./UNS No.	Class/Condition/ Temper	Size/Thickness, in.	Min. Tensile Strength, ksi
Ferrous Materials (Cont'd)								
1	17Cr-7Ni-1Al	Forgings	SA-705	631	S17700	RH950	...	185
2	18Cr-2Mo	Plate	SA-240	...	S44400	...	...	60
3	18Cr-2Mo	Smls. & wld. tube	SA-268	...	S44400	...	...	60
4	18Cr-Ti	Plate	SA-240	...	S43932	...	...	60
5	18Cr-Ti	Smls. & wld. tube	SA-268	TP439	S43035	...	...	60
6	18Cr-Ti	Wld. tube	SA-803	TP439	S43035	...	...	60
7	18Cr-Ti	Smls. & wld. pipe	SA-731	TP439	S43035	...	...	60
8	18Cr-Ti	Smls. & wld. tube	SA-268	TP430 Ti	S43036	...	...	60
9	18Cr-Ti	Bar	SA-479	439	S43035	...	...	70
10	26Cr-3Ni-3Mo	Plate	SA-240	26-3-3	S44660	...	$\leq^{2/10}$	85
11	26Cr-3Ni-3Mo	Smls. & wld. tube	SA-268	26-3-3	S44660	...	$\leq^{2/10}$	85
12	26Cr-3Ni-3Mo	Wld. tube	SA-803	26-3-3	S44660	...	$\leq^{2/10}$	85
13	27Cr	Smls. tube	SA-268	TP446-1	S44600	...	...	70
14	27Cr-1Mo	Forgings	SA-182	FXM-27Cb	S44627	...	...	60
15	27Cr-1Mo	Plate	SA-240	XM-27	S44627	...	...	65
16	27Cr-1Mo	Smls. & wld. tube	SA-268	TPXM-27	S44627	...	...	65
17	27Cr-1Mo	Bar	SA-479	XM-27	S44627	...	...	65
18	27Cr-1Mo	Smls. & wld. pipe	SA-731	TPXM-27	S44627	...	...	65
19	27Cr-1Mo-Ti	Smls. & wld. pipe	SA-731	TPXM-33	S44626	...	...	65
20	27Cr-1Mo-Ti	Plate	SA-240	XM-33	S44626	...	...	68
21	27Cr-1Mo-Ti	Smls. & wld. tube	SA-268	TPXM-33	S44626	...	...	68
22	29Cr-4Mo	Bar	SA-479	...	S44700	...	...	70
23	29Cr-4Mo	Plate	SA-240	...	S44700	...	...	80
24	29Cr-4Mo	Smls. & wld. tube	SA-268	29-4	S44700	...	...	80
25	29Cr-4Mo-2Ni	Bar	SA-479	...	S44800	...	...	70
26	29Cr-4Mo-2Ni	Plate	SA-240	...	S44800	...	...	80
27	29Cr-4Mo-2Ni	Smls. & wld. tube	SA-268	29-4-2	S44800	...	...	80
28	29Cr-4Mo-Ti	Smls. & wld. tube	SA-268	...	S44735	...	...	75
29	Mn- $\frac{1}{4}$ Mo	Forgings	SA-372	D	K14508	...	...	105
30	Mn- $\frac{1}{4}$ Mo-V	Castings	SA-487	2	J13005	A	...	85
31	Mn- $\frac{1}{4}$ Mo-V	Castings	SA-487	2	J13005	B	...	90
32	Mn- $\frac{1}{2}$ Mo	Plate	SA-302	A	K12021	...	...	75
33	Mn- $\frac{1}{2}$ Mo	Wld. pipe	SA-672	H75	K12021	...	...	75
34	Mn- $\frac{1}{2}$ Mo	Plate	SA-302	B	K12022	...	...	80
35	Mn- $\frac{1}{2}$ Mo	Plate	SA-533	A	K12521	1	...	80
36	Mn- $\frac{1}{2}$ Mo	Plate	SA-533	A	K12521	2	...	90
37	Mn- $\frac{1}{2}$ Mo	Plate	SA-533	A	K12521	3	...	100
38	Mn- $\frac{1}{2}$ Mo- $\frac{1}{4}$ Ni	Plate	SA-533	D	K12529	1	...	80
39	Mn- $\frac{1}{2}$ Mo- $\frac{1}{4}$ Ni	Plate	SA-533	D	K12529	2	...	90
40	Mn- $\frac{1}{2}$ Mo- $\frac{1}{4}$ Ni	Plate	SA-533	D	K12529	3	...	100
41	Mn- $\frac{1}{2}$ Mo- $\frac{1}{2}$ Ni	Plate	SA-302	C	K12039	...	...	80
42	Mn- $\frac{1}{2}$ Mo- $\frac{1}{2}$ Ni	Plate	SA-533	B	K12539	1	...	80
43	Mn- $\frac{1}{2}$ Mo- $\frac{1}{2}$ Ni	Wld. pipe	SA-672	H80	K12039	...	...	80
44	Mn- $\frac{1}{2}$ Mo- $\frac{1}{2}$ Ni	Wld. pipe	SA-672	J80	K12539	...	...	80
45	Mn- $\frac{1}{2}$ Mo- $\frac{1}{2}$ Ni	Plate	SA-533	B	K12539	2	...	90

Table U (Cont'd)
Tensile Strength Values, S_u , for Ferrous and Nonferrous Materials

Tensile Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding														
Line No.	100	200	300	400	500	600	650	700	750	800	850	900	950	1000
	Ferrous Materials (Cont'd)													
1	185.0	...	...	...	...	...	...	...	...	...	...	...	...	...
2	60.0	60.0	58.2	56.8	55.5	53.9	52.9	51.8	50.4	48.9	47.1	44.9	42.2	38.9
3	60.0	60.0	58.2	56.8	55.5	53.9	52.9	51.8	50.4	48.9	47.1	44.9	42.2	38.9
4	60.0	60.0	57.9	56.4	55.2	53.8	53.0	51.9	50.7	49.2	47.3	45.0	42.3	39.0
5	60.0	60.0	57.9	56.4	55.2	53.8	53.0	51.9	50.7	49.2	47.3	45.0	42.3	39.0
6	60.0	60.0	57.9	56.4	55.2	53.8	53.0	51.9	50.7	49.2	47.3	45.0	42.3	39.0
7	60.0	60.0	57.9	56.4	55.2	53.8	53.0	51.9	50.7	49.2	47.3	45.0	42.3	39.0
8	60.0	60.0	57.9	56.4	55.2	53.8	53.0	51.9	50.7	49.2	47.3	45.0	42.3	39.0
9	70.0	70.0	67.6	65.8	64.4	62.8	61.8	60.6	59.1	57.3	55.2	52.5	49.3	45.4
10	85.0	85.0	84.8	83.7	83.2	82.8	82.4	81.8	...	...	...	...	...	...
11	85.0	85.0	84.8	83.7	83.2	82.8	82.4	81.8	...	...	...	...	...	...
12	85.0	85.0	84.8	83.7	83.2	82.8	82.4	81.8	...	...	...	...	...	...
13	70.0	70.0	67.6	65.8	64.4	62.8	61.8	60.6	59.1	57.3	55.2	52.5	49.3	45.4
14	60.0	60.0	58.1	56.5	56.5	56.5	56.5	...	...	...	...	...	...	...
15	65.0	65.0	64.0	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5
16	65.0	65.0	64.0	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5
17	65.0	65.0	64.0	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5
18	65.0	65.0	64.0	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5
19	65.0	65.0	64.6	63.6	62.9	61.7	60.7	59.3	57.3	54.5	...	...	...	...
20	68.0	68.0	67.6	66.5	65.8	64.5	63.5	62.0	59.9	57.0	...	...	...	...
21	68.0	68.0	67.6	66.5	65.8	64.5	63.5	62.0	59.9	57.0	...	...	...	...
22	70.0	69.8	67.6	67.2	67.2	67.2	67.2	67.2	67.2	...	...	...	...	...
23	80.0	79.8	77.2	76.8	76.8	76.8	76.8	76.8	76.8	...	...	...	...	...
24	80.0	79.8	77.2	76.8	76.8	76.8	76.8	76.8	76.8	...	...	...	...	...
25	70.0	68.7	67.6	67.1	66.2	65.3	64.8	64.3	63.5	...	...	...	...	...
26	80.0	78.6	77.3	76.7	75.7	74.6	74.1	73.5	72.6	...	...	...	...	...
27	80.0	78.6	77.3	76.7	75.7	74.6	74.1	73.5	72.6	...	...	...	...	...
28	75.0	73.7	72.5	71.9	70.9	69.9	69.5	68.9	68.0	...	...	...	...	...
29	105.0	105.0	105.0	105.0	105.0	105.0	105.0	105.0	102.7	95.5	87.3	79.1	72.3	68.7
30	85.0	85.0	85.0	84.6	84.6	84.6	84.5	84.5	...	...	...	...	...	...
31	90.0	90.0	90.0	89.5	89.5	89.5	89.5	89.5	...	...	...	...	...	...
32	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	72.4	68.6	63.7	57.9
33	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	72.4	68.6	63.7	57.9
34	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	77.3	73.1	68.0	61.7
35	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	77.3	73.1	68.0	61.7
36	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	86.9	82.3	76.4	69.4
37	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	96.6	91.4	84.9	77.1
38	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	77.3	73.1	68.0	61.7
39	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	86.9	82.3	76.4	69.4
40	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	96.6	91.4	84.9	77.1
41	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	77.3	73.1	68.0	61.7
42	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	77.3	73.1	68.0	61.7
43	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	77.3	73.1	68.0	61.7
44	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	77.3	73.1	68.0	61.7
45	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	86.9	82.3	76.4	69.4

Table U (Cont'd)
Tensile Strength Values, S_u , for Ferrous and Nonferrous Materials

Tensile Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding													
Line No.	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
Ferrous Materials (Cont'd)													
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45

(23)

Table Y-1 (Cont'd)
Yield Strength Values, S_y , for Ferrous and Nonferrous Materials

Line No.	Nominal Composition	Product Form	Spec. No.	Type/Grade	Alloy Desig./UNS No.	Class/Condition/ Temper
Ferrous Materials (Cont'd)						
1	15Cr-5Ni-3Cu	Forgings	SA-705	XM-12	S15500	H925
2	15Cr-5Ni-3Cu	Bar	SA-564	XM-12	S15500	H900
3	15Cr-5Ni-3Cu	Forgings	SA-705	XM-12	S15500	H900
4	15Cr-6Ni-Cu-Mo	Bar	SA-564	XM-25	S45000	H1150
5	15Cr-6Ni-Cu-Mo	Forgings	SA-705	XM-25	S45000	H1150
6	15Cr-6Ni-Cu-Mo	Bar	SA-564	XM-25	S45000	H1100
7	15Cr-6Ni-Cu-Mo	Forgings	SA-705	XM-25	S45000	H1100
8	15Cr-6Ni-Cu-Mo	Bar	SA-564	XM-25	S45000	H1050
9	15Cr-6Ni-Cu-Mo	Forgings	SA-705	XM-25	S45000	H1050
10	15Cr-6Ni-Cu-Mo	Bar	SA-564	XM-25	S45000	H1025
11	15Cr-6Ni-Cu-Mo	Forgings	SA-705	XM-25	S45000	H1025
12	15Cr-6Ni-Cu-Mo	Bar	SA-564	XM-25	S45000	H1000
13	15Cr-6Ni-Cu-Mo	Forgings	SA-705	XM-25	S45000	H1000
14	15Cr-6Ni-Cu-Mo	Bar	SA-564	XM-25	S45000	H950
15	15Cr-6Ni-Cu-Mo	Forgings	SA-705	XM-25	S45000	H950
16	15Cr-6Ni-Cu-Mo	Bar	SA-564	XM-25	S45000	H900
17	15Cr-6Ni-Cu-Mo	Forgings	SA-705	XM-25	S45000	H900
18	17Cr	Smls. & wld. tube	SA-268	TP430	S43000	...
19	17Cr	Plate	SA-240	430	S43000	...
20	17Cr	Bar	SA-479	430	S43000	...
21	17Cr-4Ni-4Cu	Bar	SA-564	630	S17400	H1150M
22	17Cr-4Ni-4Cu	Forgings	SA-705	630	S17400	H1150M
23	17Cr-4Ni-4Cu	Bar	SA-564	630	S17400	H1150
24	17Cr-4Ni-4Cu	Plate	SA-693	630	S17400	H1150
25	17Cr-4Ni-4Cu	Forgings	SA-705	630	S17400	H1150
26	17Cr-4Ni-4Cu	Bar	SA-564	630	S17400	H1100
27	17Cr-4Ni-4Cu	Plate	SA-693	630	S17400	H1100
28	17Cr-4Ni-4Cu	Forgings	SA-705	630	S17400	H1100
29	17Cr-4Ni-4Cu	Bar	SA-564	630	S17400	H1075
30	17Cr-4Ni-4Cu	Plate	SA-693	630	S17400	H1075
31	17Cr-4Ni-4Cu	Forgings	SA-705	630	S17400	H1075
32	17Cr-4Ni-4Cu	Bar	SA-564	630	S17400	H1025
33	17Cr-4Ni-4Cu	Forgings	SA-705	630	S17400	H1025
34	17Cr-4Ni-4Cu	Forgings	SA-705	630	S17400	H925
35	17Cr-4Ni-4Cu	Forgings	SA-705	630	S17400	H900
36	17Cr-7Ni-1Al	Forgings	SA-705	631	S17700	TH1050
37	17Cr-7Ni-1Al	Forgings	SA-705	631	S17700	RH950
38	18Cr-2Mo	Plate	SA-240	...	S44400	...
39	18Cr-2Mo	Smls. & wld. tube	SA-268	...	S44400	...
(23) 40	18Cr-Ti	Plate	SA-240	...	S43932	...
41	18Cr-Ti	Smls. & wld. tube	SA-268	TP439	S43035	...
42	18Cr-Ti	Wld. tube	SA-803	TP439	S43035	...
43	18Cr-Ti	Smls. & wld. pipe	SA-731	TP439	S43035	...
44	18Cr-Ti	Smls. & wld. tube	SA-268	TP430 Ti	S43036	...
45	18Cr-Ti	Bar	SA-479	439	S43035	...

Table Y-1 (Cont'd)
Yield Strength Values, S_y , for Ferrous and Nonferrous Materials

Line No.	Size/Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes
Ferrous Materials (Cont'd)				
1	...	170	155	...
2	...	190	170	...
3	...	190	170	...
4	...	125	75	...
5	$\geq 1/2$	125	75	...
6	...	130	105	...
7	$\geq 1/2$	130	105	...
8	...	145	135	...
9	$\geq 1/2$	145	135	...
10	...	150	140	...
11	$\geq 1/2$	150	140	...
12	...	160	150	...
13	$\geq 1/2$	160	150	...
14	...	170	160	...
15	$\geq 1/2$	170	160	...
16	...	180	170	...
17	$\geq 1/2$	180	170	...
18	...	60	35	...
19	...	65	30	...
20	...	70	40	...
21	...	115	75	...
22	...	115	75	...
23	...	135	105	...
24	...	135	105	...
25	...	135	105	...
26	...	140	115	...
27	...	140	115	...
28	...	140	115	...
29	...	145	125	...
30	...	145	125	...
31	...	145	125	...
32	...	155	145	...
33	...	155	145	...
34	...	170	155	...
35	...	190	170	...
36	...	170	140	...
37	...	185	150	...
38	...	60	40	...
39	...	60	40	...
40	...	60	30	...
41	...	60	30	...
42	...	60	30	...
43	...	60	30	...
44	...	60	35	...
45	...	70	40	...

Table Y-1 (Cont'd)
Yield Strength Values, S_y , for Ferrous and Nonferrous Materials

Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding

Line No.	100	150	200	250	300	350	400	450	500
Ferrous Materials (Cont'd)									
1	155.0	147.7	144.3	141.5	139.2	137.2	135.5	133.8	132.2
2	170.0	162.0	158.2	155.2	152.7	150.5	148.6	146.8	145.0
3	170.0	162.0	158.2	155.2	152.7	150.5	148.6	146.8	145.0
4	75.0	...	...	...	...	...	...	...	...
5	75.0	...	...	...	...	...	...	...	...
6	105.0	...	...	...	...	...	...	...	...
7	105.0	...	...	...	...	...	...	...	...
8	135.0	...	...	...	...	...	...	...	...
9	135.0	...	...	...	...	...	...	...	...
10	140.0	...	...	...	...	...	...	...	...
11	140.0	...	...	...	...	...	...	...	...
12	150.0	...	...	...	...	...	...	...	...
13	150.0	...	...	...	...	...	...	...	...
14	160.0	...	...	...	...	...	...	...	...
15	160.0	...	...	...	...	...	...	...	...
16	170.0	...	...	...	...	...	...	...	...
17	170.0	...	...	...	...	...	...	...	...
18	35.0	33.1	32.2	31.5	31.1	...	30.5	...	30.1
19	30.0	28.4	27.6	27.0	26.6	...	26.2	...	25.8
20	40.0	37.8	36.8	36.0	35.5	...	34.9	...	34.4
21	75.0	71.2	69.4	67.8	66.4	...	64.1	...	62.1
22	75.0	71.2	69.4	67.8	66.4	...	64.1	...	62.1
23	105.0	99.7	97.1	94.9	93.0	...	89.7	...	87.0
24	105.0	99.7	97.1	94.9	93.0	...	89.7	...	87.0
25	105.0	99.7	97.1	94.9	93.0	...	89.7	...	87.0
26	115.0	109.2	106.3	103.9	101.8	...	98.3	...	95.2
27	115.0	109.2	106.3	103.9	101.8	...	98.3	...	95.2
28	115.0	109.2	106.3	103.9	101.8	...	98.3	...	95.2
29	125.0	118.7	115.6	113.0	110.7	...	106.8	...	103.5
30	125.0	118.7	115.6	113.0	110.7	...	106.8	...	103.5
31	125.0	118.7	115.6	113.0	110.7	...	106.8	...	103.5
32	145.0	...	134.1	...	128.4	...	123.9	...	120.1
33	145.0	137.7	134.1	131.0	128.4	...	123.9	...	120.1
34	155.0	147.2	143.3	140.1	137.3	...	132.4	...	128.4
35	170.0	161.5	157.2	153.6	150.5	...	145.2	...	140.8
36	140.0	...	...	...	...	...	...	...	...
37	150.0	...	...	...	...	...	...	...	...
38	40.0	36.5	34.8	33.5	32.4	...	30.8	...	29.4
39	40.0	36.5	34.8	33.5	32.4	...	30.8	...	29.4
40	30.0	27.4	25.9	24.6	23.5	...	21.9	...	20.9
41	30.0	27.4	25.9	24.6	23.5	...	21.9	...	20.9
42	30.0	27.4	25.9	24.6	23.5	...	21.9	...	20.9
43	30.0	27.4	25.9	24.6	23.5	...	21.9	...	20.9
44	35.0	...	30.2	...	27.4	...	25.5	...	24.4
45	40.0	36.5	34.6	32.8	31.3	...	29.1	...	27.9

Table Y-1 (Cont'd)
Yield Strength Values, S_y , for Ferrous and Nonferrous Materials

Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding										
Line No.	550	600	650	700	750	800	850	900	950	1000
	Ferrous Materials (Cont'd)									
1	130.5	128.6	125.9	123.8	...	...	...	...	...	...
2	143.1	141.0	138.0	135.7	...	...	...	...	...	...
3	143.1	141.0	138.0	135.7	...	...	...	...	...	...
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18	...	29.5	29.0	28.3	27.5	26.4	25.2	23.7	22.0	20.1
19	...	25.3	24.8	24.3	23.6	22.7	21.6	20.3	18.9	17.2
20	...	33.7	33.1	32.4	31.4	30.2	28.8	27.1	25.2	23.0
21	...	60.5	...	...	...	...	...	...	...	...
22	...	60.5	...	...	...	...	...	...	...	...
23	...	84.7	83.6	82.5	81.1	79.4	76.9	73.2	67.9	60.2
24	...	84.7	83.6	82.5	81.1	79.4	76.9	73.2	67.9	60.2
25	...	84.7	83.6	82.5	81.1	79.4	76.9	73.2	67.9	60.2
26	...	92.7	91.5	90.3	88.9	86.9	84.2	80.2	74.4	66.0
27	...	92.7	91.5	90.3	88.9	86.9	84.2	80.2	74.4	66.0
28	...	92.7	91.5	90.3	88.9	86.9	84.2	80.2	74.4	66.0
29	...	100.8	99.5	98.2	96.6	94.5	91.5	87.2	80.8	71.7
30	...	100.8	99.5	98.2	96.6	94.5	91.5	87.2	80.8	71.7
31	...	100.8	99.5	98.2	96.6	94.5	91.5	87.2	80.8	71.7
32	118.4	...	...	...	...	...	...	...	...	...
33	118.4	116.9	115.4	113.9	...	...	...	...	...	...
34	...	125.0	123.4	121.7	...	...	...	...	...	...
35	...	137.1	135.3	133.5	...	...	...	...	...	...
36
37
38	...	28.0	27.3	26.6	25.9	25.1	24.2	23.2	22.1	20.7
39	...	28.0	27.3	26.6	25.9	25.1	24.2	23.2	22.1	20.7
40	...	20.5	20.3	20.2	20.1	19.8	19.4	18.8	17.9	16.6
41	...	20.5	20.3	20.2	20.1	19.8	19.4	18.8	17.9	16.6
42	...	20.5	20.3	20.2	20.1	19.8	19.4	18.8	17.9	16.6
43	...	20.5	20.3	20.2	20.1	19.8	19.4	18.8	17.9	16.6
44	...	23.9	23.7	23.6	23.4	23.1	22.6	21.9	20.9	...
45	...	27.3	27.1	26.9	26.7	26.4	25.9	25.0	23.8	22.2

Table Y-1 (Cont'd)
Yield Strength Values, S_y , for Ferrous and Nonferrous Materials

Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding

Line No.	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
Ferrous Materials (Cont'd)													
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45

Table Y-1 (Cont'd)
Yield Strength Values, S_y , for Ferrous and Nonferrous Materials

Line No.	Nominal Composition	Product Form	Spec. No.	Type/Grade	Alloy Desig./UNS No.	Class/Condition/ Temper
Ferrous Materials (Cont'd)						
1	26Cr-3Ni-3Mo	Plate	SA-240	26-3-3	S44660	...
2	26Cr-3Ni-3Mo	Smls. & wld. tube	SA-268	26-3-3	S44660	...
3	26Cr-3Ni-3Mo	Wld. tube	SA-803	26-3-3	S44660	...
4	27Cr	Smls. tube	SA-268	TP446-1	S44600	...
5	27Cr-1Mo	Forgings	SA-182	FXM-27Cb	S44627	...
6	27Cr-1Mo	Plate	SA-240	XM-27	S44627	...
7	27Cr-1Mo	Smls. & wld. tube	SA-268	TPXM-27	S44627	...
8	27Cr-1Mo	Bar	SA-479	XM-27	S44627	...
9	27Cr-1Mo	Smls. & wld. pipe	SA-731	TPXM-27	S44627	...
10	27Cr-1Mo-Ti	Smls. & wld. pipe	SA-731	TPXM-33	S44626	...
11	27Cr-1Mo-Ti	Plate	SA-240	XM-33	S44626	...
12	27Cr-1Mo-Ti	Smls. & wld. tube	SA-268	TPXM-33	S44626	...
13	29Cr-4Mo	Bar	SA-479	...	S44700	...
14	29Cr-4Mo	Plate	SA-240	...	S44700	...
15	29Cr-4Mo	Smls. & wld. tube	SA-268	29-4	S44700	...
16	29Cr-4Mo-2Ni	Bar	SA-479	...	S44800	...
17	29Cr-4Mo-2Ni	Plate	SA-240	...	S44800	...
18	29Cr-4Mo-2Ni	Smls. & wld. tube	SA-268	29-4-2	S44800	...
19	29Cr-4Mo-Ti	Smls. & wld. tube	SA-268	...	S44735	...
20	Mn- $\frac{1}{4}$ Mo	Forgings	SA-372	D	K14508	...
21	Mn- $\frac{1}{4}$ Mo-V	Castings	SA-487	2	J13005	A
22	Mn- $\frac{1}{4}$ Mo-V	Castings	SA-487	2	J13005	B
23	Mn- $\frac{1}{2}$ Mo	Plate	SA-302	A	K12021	...
24	Mn- $\frac{1}{2}$ Mo	Wld. pipe	SA-672	H75	K12021	...
25	Mn- $\frac{1}{2}$ Mo	Plate	SA-302	B	K12022	...
26	Mn- $\frac{1}{2}$ Mo	Plate	SA-533	A	K12521	1
27	Mn- $\frac{1}{2}$ Mo	Plate	SA-533	A	K12521	2
28	Mn- $\frac{1}{2}$ Mo	Plate	SA-533	A	K12521	3
29	Mn- $\frac{1}{2}$ Mo- $\frac{1}{4}$ Ni	Plate	SA-533	D	K12529	1
30	Mn- $\frac{1}{2}$ Mo- $\frac{1}{4}$ Ni	Plate	SA-533	D	K12529	2
31	Mn- $\frac{1}{2}$ Mo- $\frac{1}{4}$ Ni	Plate	SA-533	D	K12529	3
32	Mn- $\frac{1}{2}$ Mo- $\frac{1}{2}$ Ni	Plate	SA-302	C	K12039	...
33	Mn- $\frac{1}{2}$ Mo- $\frac{1}{2}$ Ni	Plate	SA-533	B	K12539	1
34	Mn- $\frac{1}{2}$ Mo- $\frac{1}{2}$ Ni	Wld. pipe	SA-672	H80	K12039	...
35	Mn- $\frac{1}{2}$ Mo- $\frac{1}{2}$ Ni	Wld. pipe	SA-672	J80	K12539	...
36	Mn- $\frac{1}{2}$ Mo- $\frac{1}{2}$ Ni	Plate	SA-533	B	K12539	2
37	Mn- $\frac{1}{2}$ Mo- $\frac{1}{2}$ Ni	Wld. pipe	SA-672	J90	K12539	...
38	Mn- $\frac{1}{2}$ Mo- $\frac{1}{2}$ Ni	Plate	SA-533	B	K12539	3
39	Mn- $\frac{1}{2}$ Mo- $\frac{1}{2}$ Ni	Wld. pipe	SA-672	J100	K12539	...
40	Mn- $\frac{1}{2}$ Mo- $\frac{3}{4}$ Ni	Plate	SA-302	D	K12054	...
41	Mn- $\frac{1}{2}$ Mo- $\frac{3}{4}$ Ni	Plate	SA-533	C	K12554	1
42	Mn- $\frac{1}{2}$ Mo- $\frac{3}{4}$ Ni	Plate	SA-533	E	K12554	1
43	Mn- $\frac{1}{2}$ Mo- $\frac{3}{4}$ Ni	Plate	SA-533	C	K12554	2
44	Mn- $\frac{1}{2}$ Mo- $\frac{3}{4}$ Ni	Plate	SA-533	E	K12554	2
45	Mn- $\frac{1}{2}$ Mo- $\frac{3}{4}$ Ni	Plate	SA-533	C	K12554	3

Table Y-1 (Cont'd)
Yield Strength Values, S_y , for Ferrous and Nonferrous Materials

Line No.	Size/Thickness, in.	Min. Tensile Strength, ksi	Min. Yield Strength, ksi	Notes
Ferrous Materials (Cont'd)				
1	$\leq 2/10$	85	65	...
2	$\leq 2/10$	85	65	...
3	$\leq 2/10$	85	65	...
4	...	70	40	...
5	...	60	35	...
6	...	65	40	...
7	...	65	40	...
8	...	65	40	...
9	...	65	40	...
10	...	65	40	...
11	...	68	45	...
12	...	68	45	...
13	...	70	55	...
14	...	80	60	...
15	...	80	60	...
16	...	70	55	...
17	...	80	60	...
18	...	80	60	...
19	...	75	60	...
20	...	105	65	...
21	...	85	53	...
22	...	90	65	...
23	...	75	45	...
24	...	75	45	...
25	...	80	50	...
26	...	80	50	...
27	...	90	70	...
28	...	100	83	...
29	...	80	50	...
30	...	90	70	...
31	...	100	83	...
32	...	80	50	...
33	...	80	50	...
34	...	80	50	...
35	...	80	50	...
36	...	90	70	...
37	...	90	70	...
38	...	100	83	...
39	...	100	83	...
40	...	80	50	...
41	...	80	50	...
42	...	80	50	...
43	...	90	70	...
44	...	90	70	...
45	...	100	83	...

Table Y-1 (Cont'd)
Yield Strength Values, S_y , for Ferrous and Nonferrous Materials

Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding									
Line No.	100	150	200	250	300	350	400	450	500
Ferrous Materials (Cont'd)									
1	65.0	60.6	58.3	56.4	54.7	...	52.3	...	50.6
2	65.0	60.6	58.3	56.4	54.7	...	52.3	...	50.6
3	65.0	60.6	58.3	56.4	54.7	...	52.3	...	50.6
4	40.0	36.5	34.6	32.8	31.3	...	29.1	...	27.9
5	35.0	32.1	30.3	28.8	27.6	...	25.7	...	24.8
6	40.0	36.6	34.5	32.8	31.3	...	29.3	...	28.3
7	40.0	36.6	34.5	32.8	31.3	...	29.3	...	28.3
8	40.0	36.6	34.5	32.8	31.3	...	29.3	...	28.3
9	40.0	36.6	34.5	32.8	31.3	...	29.3	...	28.3
10	40.0	36.9	35.1	33.4	31.9	...	29.4	...	27.7
11	45.0	41.5	39.5	37.6	35.9	...	33.1	...	31.1
12	45.0	41.5	39.5	37.6	35.9	...	33.1	...	31.1
13	55.0	50.8	48.4	46.4	44.7	...	42.6	...	41.6
14	60.0	55.4	52.8	50.6	48.8	...	46.4	...	45.4
15	60.0	55.4	52.8	50.6	48.8	...	46.4	...	45.4
16	55.0	49.0	45.8	43.0	40.7	...	36.9	...	34.3
17	60.0	53.4	49.9	47.0	44.4	...	40.2	...	37.4
18	60.0	53.4	49.9	47.0	44.4	...	40.2	...	37.4
19	60.0	53.4	49.9	47.0	44.4	...	40.2	...	37.4
20	65.0	62.8	61.5	60.4	59.6	...	58.6	...	58.2
21	53.0	51.2	50.4	49.4	48.2	...	45.2	...	42.4
22	65.0	62.8	61.8	60.6	59.1	...	55.4	...	52.0
23	45.0	43.3	42.3	41.6	40.9	...	39.8	...	38.8
24	45.0	43.3	42.3	41.6	40.9	...	39.8	...	38.8
25	50.0	48.1	47.0	46.2	45.5	...	44.2	...	43.2
26	50.0	48.1	47.0	46.2	45.5	...	44.2	...	43.2
27	70.0	67.3	65.9	64.7	63.7	...	61.9	...	60.4
28	83.0	79.8	78.1	76.7	75.5	...	73.4	...	71.6
29	50.0	48.1	47.0	46.2	45.5	...	44.2	...	43.2
30	70.0	67.3	65.9	64.7	63.7	...	61.9	...	60.4
31	83.0	79.8	78.1	76.7	75.5	...	73.4	...	71.6
32	50.0	48.1	47.0	46.2	45.5	...	44.2	...	43.2
33	50.0	48.1	47.0	46.2	45.5	...	44.2	...	43.2
34	50.0	48.1	47.0	46.2	45.5	...	44.2	...	43.2
35	50.0	48.1	47.0	46.2	45.5	...	44.2	...	43.2
36	70.0	67.3	65.9	64.7	63.7	...	61.9	...	60.4
37	70.0	67.3	65.9	64.7	63.7	...	61.9	...	60.4
38	83.0	79.8	78.1	76.7	75.5	...	73.4	...	71.6
39	83.0	79.8	78.1	76.7	75.5	...	73.4	...	71.6
40	50.0	48.1	47.0	46.2	45.5	...	44.2	...	43.2
41	50.0	48.1	47.0	46.2	45.5	...	44.2	...	43.2
42	50.0	48.1	47.0	46.2	45.5	...	44.2	...	43.2
43	70.0	67.3	65.9	64.7	63.7	...	61.9	...	60.4
44	70.0	67.3	65.9	64.7	63.7	...	61.9	...	60.4
45	83.0	79.8	78.1	76.7	75.5	...	73.4	...	71.6

Table Y-1 (Cont'd)
Yield Strength Values, S_y , for Ferrous and Nonferrous Materials

Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding										
Line No.	550	600	650	700	750	800	850	900	950	1000
	Ferrous Materials (Cont'd)									
1	...	49.7	49.5	49.3	...	...	...	...	...	...
2	...	49.7	49.5	49.3	...	...	...	...	...	...
3	...	49.7	49.5	49.3	...	...	...	...	...	...
4	...	27.3	27.1	26.9	26.7	26.4	25.9	25.0	23.8	22.2
5	...	24.6	24.6	...	...	...	...	...	...	...
6	...	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0
7	...	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0
8	...	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0
9	...	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0
10	...	26.7	26.4	26.4	...	...	...	...	...	...
11	...	30.0	29.7	29.6	...	...	...	...	...	...
12	...	30.0	29.7	29.6	...	...	...	...	...	...
13	...	41.3	41.1	40.6	39.7	...	...	...	...	...
14	...	45.0	44.8	44.3	43.3	...	...	...	...	...
15	...	45.0	44.8	44.3	43.3	...	...	...	...	...
16	...	32.9	32.6	32.4	32.1	...	...	...	...	...
17	...	35.9	35.6	35.3	35.0	...	...	...	...	...
18	...	35.9	35.6	35.3	35.0	...	...	...	...	...
19	...	35.9	35.6	35.3	35.0	...	...	...	...	...
20	...	57.6	57.0	56.0	54.7	53.0	50.9	48.5	45.8	43.1
21	...	40.9	40.5	39.8	...	...	...	...	...	...
22	...	50.2	49.7	48.8	...	...	...	...	...	...
23	...	37.9	37.3	36.7	35.8	34.8	33.3	31.4	28.9	25.5
24	...	37.9	37.3	36.7	35.8	34.8	33.3	31.4	28.9	25.5
25	...	42.1	41.5	40.7	39.8	38.6	37.0	34.9	32.1	28.4
26	...	42.1	41.5	40.7	39.8	38.6	37.0	34.9	32.1	28.4
27	...	58.9	58.0	57.0	55.7	54.1	51.9	48.9	45.0	39.7
28	...	69.8	68.8	67.6	66.1	64.1	61.5	58.0	53.3	47.1
29	...	42.1	41.5	40.7	39.8	38.6	37.0	34.9	32.1	28.4
30	...	58.9	58.0	57.0	55.7	54.1	51.9	48.9	45.0	39.7
31	...	69.8	68.8	67.6	66.1	64.1	61.5	58.0	53.3	47.1
32	...	42.1	41.5	40.7	39.8	38.6	37.0	34.9	32.1	28.4
33	...	42.1	41.5	40.7	39.8	38.6	37.0	34.9	32.1	28.4
34	...	42.1	41.5	40.7	39.8	38.6	37.0	34.9	32.1	28.4
35	...	42.1	41.5	40.7	39.8	38.6	37.0	34.9	32.1	28.4
36	...	58.9	58.0	57.0	55.7	54.1	51.9	48.9	45.0	39.7
37	...	58.9	58.0	57.0	55.7	54.1	51.9	48.9	45.0	39.7
38	...	69.8	68.8	67.6	66.1	64.1	61.5	58.0	53.3	47.1
39	...	69.8	68.8	67.6	66.1	64.1	61.5	58.0	53.3	47.1
40	...	42.1	41.5	40.7	39.8	38.6	37.0	34.9	32.1	28.4
41	...	42.1	41.5	40.7	39.8	38.6	37.0	34.9	32.1	28.4
42	...	42.1	41.5	40.7	39.8	38.6	37.0	34.9	32.1	28.4
43	...	58.9	58.0	57.0	55.7	54.1	51.9	48.9	45.0	39.7
44	...	58.9	58.0	57.0	55.7	54.1	51.9	48.9	45.0	39.7
45	...	69.8	68.8	67.6	66.1	64.1	61.5	58.0	53.3	47.1

Table Y-1 (Cont'd)
Yield Strength Values, S_y , for Ferrous and Nonferrous Materials

Yield Strength, ksi (Multiply by 1000 to Obtain psi), for Metal Temperature, °F, Not Exceeding

Line No.	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650
Ferrous Materials (Cont'd)													
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45

Table 1A (Cont'd)
Section I; Section III, Division 1, Classes 2 and 3,* Section VIII, Division 1; and Section XII
Maximum Allowable Stress Values, S, for Ferrous Materials
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec. No.	Type/Grade	Alloy	Class/	Size/	P-No.	Group No.
					Desig./	Condition/	Thickness,		
					UNS No.	Temper	mm		
1	18Cr-2Mo	Plate	SA-240	...	S44400	...	...	7	2
2	18Cr-2Mo	Wld. tube	SA-268	...	S44400	...	...	7	2
3	18Cr-2Mo	Smls. tube	SA-268	...	S44400	...	...	7	2
(23) 4	18Cr-Ti	Plate	SA-240	...	S43932	...	...	7	2
5	18Cr-Ti	Wld. tube	SA-268	TP439	S43035	...	...	7	2
6	18Cr-Ti	Smls. tube	SA-268	TP439	S43035	...	...	7	2
7	18Cr-Ti	Wld. pipe	SA-731	TP439	S43035	...	...	7	2
8	18Cr-Ti	Smls. pipe	SA-731	TP439	S43035	...	...	7	2
9	18Cr-Ti	Wld. tube	SA-803	TP439	S43035	...	...	7	2
10	18Cr-Ti	Smls. tube	SA-268	TP430 Ti	S43036	...	...	7	2
11	18Cr-Ti	Wld. tube	SA-268	TP430 Ti	S43036	...	...	7	2
12	18Cr-Ti	Bar	SA-479	439	S43035	...	...	7	2
13	26Cr-3Ni-3Mo	Plate	SA-240	26-3-3	S44660	...	≤5	10K	1
14	26Cr-3Ni-3Mo	Smls. tube	SA-268	26-3-3	S44660	...	≤5	10K	1
15	26Cr-3Ni-3Mo	Wld. tube	SA-268	26-3-3	S44660	...	≤5	10K	1
16	26Cr-3Ni-3Mo	Wld. tube	SA-268	26-3-3	S44660	...	≤5	10K	1
17	26Cr-3Ni-3Mo	Wld. tube	SA-803	26-3-3	S44660	...	≤5	10K	1
18	27Cr	Smls. tube	SA-268	TP446-1	S44600	...	...	10I	1
19	27Cr-1Mo	Forgings	SA-182	FXM-27Cb	S44627	...	...	10I	1
20	27Cr-1Mo	Plate	SA-240	XM-27	S44627	...	...	10I	1
21	27Cr-1Mo	Wld. tube	SA-268	TPXM-27	S44627	...	...	10I	1
22	27Cr-1Mo	Smls. tube	SA-268	TPXM-27	S44627	...	...	10I	1
23	27Cr-1Mo	Bar	SA-479	XM-27	S44627	...	...	10I	1
24	27Cr-1Mo	Smls. pipe	SA-731	TPXM-27	S44627	...	...	10I	1
25	27Cr-1Mo	Wld. pipe	SA-731	TPXM-27	S44627	...	...	10I	1
26	27Cr-1Mo-Ti	Smls. pipe	SA-731	TPXM-33	S44626	...	...	10I	1
27	27Cr-1Mo-Ti	Wld. pipe	SA-731	TPXM-33	S44626	...	...	10I	1
28	27Cr-1Mo-Ti	Plate	SA-240	XM-33	S44626	...	...	10I	1
29	27Cr-1Mo-Ti	Smls. tube	SA-268	TPXM-33	S44626	...	...	10I	1
30	27Cr-1Mo-Ti	Wld. tube	SA-268	TPXM-33	S44626	...	...	10I	1
31	29Cr-4Mo	Bar	SA-479	...	S44700	...	...	10J	1
32	29Cr-4Mo	Plate	SA-240	...	S44700	...	...	10J	1
33	29Cr-4Mo	Smls. tube	SA-268	29-4	S44700	...	...	10J	1
34	29Cr-4Mo	Wld. tube	SA-268	29-4	S44700	...	...	10J	1
35	29Cr-4Mo-2Ni	Bar	SA-479	...	S44800	...	...	10K	1
36	29Cr-4Mo-2Ni	Plate	SA-240	...	S44800	...	...	10K	1
37	29Cr-4Mo-2Ni	Smls. tube	SA-268	29-4-2	S44800	...	...	10K	1
38	29Cr-4Mo-2Ni	Wld. tube	SA-268	29-4-2	S44800	...	...	10K	1
39	29Cr-4Mo-Ti	Smls. tube	SA-268	...	S44735	...	...	10J	1
40	29Cr-4Mo-Ti	Wld. tube	SA-268	...	S44735	...	...	10J	1
41	Mn-1/4Mo	Forgings	SA-372	D	K14508	...	...	...	...
42	Mn-1/4Mo-V	Castings	SA-487	2	J13005	A	...	3	3
43	Mn-1/4Mo-V	Castings	SA-487	2	J13005	B	...	3	3
44	Mn-1/2Mo	Plate	SA-302	A	K12021	...	...	3	2
45	Mn-1/2Mo	Wld. pipe	SA-672	H75	K12021	...	...	3	2

Table 1A (Cont'd)
Section I; Section III, Division 1, Classes 2 and 3,* Section VIII, Division 1; and Section XII
Maximum Allowable Stress Values, S, for Ferrous Materials
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Min. Tensile Strength, MPa	Min. Yield Strength, MPa	Applicability and Max. Temperature Limits (NP = Not Permitted) (SPT = Supports Only)				External Pressure Chart No.	Notes
			I	III	VIII-1	XII		
1	415	275	NP	NP	343	343	CS-2	G19
2	415	275	NP	NP	343	343	CS-2	G19, G24
3	415	275	NP	NP	343	343	CS-2	G19
4	415	205	NP	NP	316	316	CS-2	G19
5	415	205	427	NP	427	343	CS-2	G19, G24
6	415	205	427	NP	427	343	CS-2	G19
7	415	205	427	NP	NP	NP	CS-2	G19, G24
8	415	205	427	NP	NP	NP	CS-2	G19
9	415	205	NP	NP	316	316	CS-2	G19, G24
10	415	240	NP	NP	427	NP	CS-2	G19
11	415	240	NP	NP	427	NP	CS-2	G19, G24
12	485	275	NP	NP	538	343	CS-2	G19, G22, T4
13	585	450	NP	NP	371	343	HA-5	G19
14	585	450	NP	371	371	343	HA-5	G19, H5
15	585	450	NP	371	NP	NP	HA-5	G19, H5, W12
16	585	450	NP	NP	371	343	HA-5	G19, G24
17	585	450	NP	NP	316	316	HA-5	G19, G24
18	485	275	371	NP	343	343	CS-2	G19
19	415	240	NP	NP	343	343	HA-2	G19
20	450	275	NP	343	343	343	HA-2	G19
21	450	275	NP	NP	343	343	HA-2	G19, G24
22	450	275	NP	343	343	343	HA-2	G19
23	450	275	NP	371	343	343	HA-2	G19, G22
24	450	275	NP	NP	343	343	HA-2	G19
25	450	275	NP	NP	343	343	HA-2	G19, G24
26	450	275	NP	NP	343	343	HA-2	G19
27	450	275	NP	NP	343	343	HA-2	G19, G24
28	470	310	NP	NP	343	343	HA-6	G19
29	470	310	NP	NP	343	343	HA-6	G19
30	470	310	NP	NP	343	343	HA-6	G19, G24
31	485	380	NP	NP	316	316	HA-6	G19, G22
32	550	415	NP	NP	316	316	HA-6	G19
33	550	415	NP	NP	316	316	HA-6	G19
34	550	415	NP	NP	316	316	HA-6	G19, G24
35	485	380	NP	NP	316	316	HA-6	G19, G22
36	550	415	NP	NP	316	316	HA-6	G19
37	550	415	NP	NP	316	316	HA-6	G19
38	550	415	NP	NP	316	316	HA-6	G19, G24
39	515	415	NP	NP	316	316	HA-6	G19
40	515	415	NP	NP	316	316	HA-6	G19, G24
41	725	450	NP	343	343	343	CS-5	G25, W2, W11
42	585	365	NP	371 (SPT)	343	343	CS-3	G1
43	620	450	NP	NP	343	343	CS-5	G1
44	515	310	538	371	538	343	CS-3	G11, S2, T3
45	515	310	NP	371	NP	NP	CS-3	S6, W10, W12

Table 1A (Cont'd)
Section I; Section III, Division 1, Classes 2 and 3,* Section VIII, Division 1; and Section XII
Maximum Allowable Stress Values, S, for Ferrous Materials
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, MPa (Multiply by 1000 to Obtain kPa), for Metal Temperature, °C, Not Exceeding														
	40	65	100	125	150	200	250	300	325	350	375	400	425	450	475
1	118	118	118	116	114	112	110	107	105	104	...	...	...	...	...
2	101	101	101	99.0	97.1	95.3	93.5	91.3	89.7	87.7	...	...	...	...	...
3	118	118	118	116	114	112	110	107	105	104	...	...	...	...	...
4	118	118	118	113	108	101	96.6	94.0	93.8	...	...	...	...	...	...
5	101	101	100	96.5	91.5	85.9	81.9	80.3	79.7	79.3	79.2	78.6	77.3	76.1	...
6	118	118	118	113	108	101	96.6	94.0	93.8	93.7	93.0	92.3	91.1	89.8	...
7	101	101	100	96.5	91.5	85.9	81.9	80.3	79.7	79.3	79.2	78.6	77.3	76.1	...
8	118	118	118	113	108	101	96.6	94.0	93.8	93.7	93.0	92.3	91.1	89.8	...
9	101	101	100	96.5	91.5	85.9	81.9	80.3	79.7	...	...	...	...	...	...
10	118	118	118	116	114	111	109	107	105	104	102	99.7	97.0	93.8	...
11	100	100	100	98.5	97.0	94.6	92.8	90.8	89.7	88.3	86.7	84.8	82.5	79.7	...
12	138	138	138	136	133	130	127	124	123	121	119	116	113	110	91.7
13	168	168	168	167	167	165	164	163	162	162	161	...	...	...	...
14	168	168	168	167	167	165	164	163	162	162	161	...	...	...	...
15	168	168	168	167	167	165	164	163	162	162	161	...	...	...	...
16	142	142	142	142	142	140	139	139	138	138	137	...	...	...	...
17	142	142	142	142	142	140	139	139	138	...	...	...	...	...	...
18	138	138	138	136	133	130	127	124	123	121	119	...	...	...	...
19	118	118	118	116	114	111	111	111	111	111	...	...	...	...	...
20	128	128	128	127	126	125	125	125	125	125	...	...	...	...	...
21	109	109	109	108	107	106	106	106	106	106	...	...	...	...	...
22	128	128	128	127	126	125	125	125	125	125	...	...	...	...	...
23	128	128	128	127	126	125	125	125	125	125	125	...	...	...	...
24	128	128	128	127	126	125	125	125	125	125	...	...	...	...	...
25	109	109	109	108	107	106	106	106	106	106	...	...	...	...	...
26	128	128	128	128	127	126	124	122	121	119	...	...	...	...	...
27	109	109	109	109	108	106	106	104	103	101	...	...	...	...	...
28	134	134	134	134	133	131	130	128	126	124	...	...	...	...	...
29	134	134	134	134	133	131	130	128	126	124	...	...	...	...	...
30	114	114	114	113	113	112	111	109	108	106	...	...	...	...	...
31	138	138	138	135	133	132	132	132	132	...	...	...	...	...	...
32	158	158	157	155	152	151	151	151	151	...	...	...	...	...	...
33	158	158	157	155	152	151	151	151	151	...	...	...	...	...	...
34	134	134	134	132	130	128	128	128	128	...	...	...	...	...	...
35	138	137	135	134	133	132	131	129	128	...	...	...	...	...	...
36	158	156	154	153	152	151	149	147	147	...	...	...	...	...	...
37	158	156	154	153	152	151	149	147	147	...	...	...	...	...	...
38	134	133	131	130	130	128	127	125	124	...	...	...	...	...	...
39	148	146	144	144	143	141	140	139	138	...	...	...	...	...	...
40	125	125	123	122	121	121	119	118	117	...	...	...	...	...	...
41	207	207	207	207	207	207	207	207	207	207	...	...	...	...	...
42	168	168	168	168	168	167	167	167	167	166	166	...	...	...	...
43	177	177	177	177	177	177	177	177	177	177	...	...	...	...	...
44	148	148	148	148	148	148	148	148	148	148	148	148	148	142	107
45	148	148	148	148	148	148	148	148	148	148	148	...	...	...	...

Table 1A (Cont'd)
Section I; Section III, Division 1, Classes 2 and 3;* Section VIII, Division 1; and Section XII
Maximum Allowable Stress Values, S, for Ferrous Materials
(*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Maximum Allowable Stress, MPa (Multiply by 1000 to Obtain kPa), for Metal Temperature, °C, Not Exceeding																
	500	525	550	575	600	625	650	675	700	725	750	775	800	825	850	875	900
1
2
3
4
5
6
7
8
9
10
11
12	69.9	53.5	36.6	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44	68.1	43.1	23.1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
45

(23)

Table U (Cont'd)
Tensile Strength Values, S_u , for Ferrous and Nonferrous Materials

Line No.	Nominal Composition	Product Form	Spec. No.	Type/Grade	Alloy Desig./UNS No.	Class/Condition/ Temper	Size/ Thickness, mm	Min. Tensile Strength, MPa
Ferrous Materials (Cont'd)								
1	15Cr-6Ni-Cu-Mo	Forgings	SA-705	XM-25	S45000	H1100	$t \geq 13$	895
2	15Cr-6Ni-Cu-Mo	Bar	SA-564	XM-25	S45000	H1050	...	1000
3	15Cr-6Ni-Cu-Mo	Forgings	SA-705	XM-25	S45000	H1050	$t \geq 13$	1000
4	15Cr-6Ni-Cu-Mo	Bar	SA-564	XM-25	S45000	H1025	...	1035
5	15Cr-6Ni-Cu-Mo	Forgings	SA-705	XM-25	S45000	H1025	$t \geq 13$	1035
6	15Cr-6Ni-Cu-Mo	Bar	SA-564	XM-25	S45000	H1000	...	1105
7	15Cr-6Ni-Cu-Mo	Forgings	SA-705	XM-25	S45000	H1000	$t \geq 13$	1105
8	15Cr-6Ni-Cu-Mo	Bar	SA-564	XM-25	S45000	H950	...	1170
9	15Cr-6Ni-Cu-Mo	Forgings	SA-705	XM-25	S45000	H950	$t \geq 13$	1170
10	15Cr-6Ni-Cu-Mo	Bar	SA-564	XM-25	S45000	H900	...	1240
11	15Cr-6Ni-Cu-Mo	Forgings	SA-705	XM-25	S45000	H900	$t \geq 13$	1240
12	17Cr	Smls. & wld. tube	SA-268	TP430	S43000	...	...	415
13	17Cr	Plate	SA-240	430	S43000	...	...	450
14	17Cr	Bar	SA-479	430	S43000	...	...	485
15	17Cr-4Ni-4Cu	Bar	SA-564	630	S17400	H1150M	...	795
16	17Cr-4Ni-4Cu	Forgings	SA-705	630	S17400	H1150M	...	795
17	17Cr-4Ni-4Cu	Bar	SA-564	630	S17400	H1150	...	930
18	17Cr-4Ni-4Cu	Plate	SA-693	630	S17400	H1150	...	930
19	17Cr-4Ni-4Cu	Forgings	SA-705	630	S17400	H1150	...	930
20	17Cr-4Ni-4Cu	Bar	SA-564	630	S17400	H1100	...	965
21	17Cr-4Ni-4Cu	Plate	SA-693	630	S17400	H1100	...	965
22	17Cr-4Ni-4Cu	Forgings	SA-705	630	S17400	H1100	...	965
23	17Cr-4Ni-4Cu	Bar	SA-564	630	S17400	H1075	...	1000
24	17Cr-4Ni-4Cu	Plate	SA-693	630	S17400	H1075	...	1000
25	17Cr-4Ni-4Cu	Forgings	SA-705	630	S17400	H1075	...	1000
26	17Cr-4Ni-4Cu	Bar	SA-564	630	S17400	H1025	...	1070
27	17Cr-4Ni-4Cu	Forgings	SA-705	630	S17400	H1025	...	1070
28	17Cr-4Ni-4Cu	Forgings	SA-705	630	S17400	H925	...	1170
29	17Cr-4Ni-4Cu	Forgings	SA-705	630	S17400	H900	...	1310
30	17Cr-7Ni-1Al	Forgings	SA-705	631	S17700	TH1050	...	1170
31	17Cr-7Ni-1Al	Forgings	SA-705	631	S17700	RH950	...	1275
32	18Cr-2Mo	Plate	SA-240	...	S44400	...	...	415
33	18Cr-2Mo	Smls. & wld. tube	SA-268	...	S44400	...	...	415
(23) 34	18Cr-Ti	Plate	SA-240	...	S43932	...	...	415
35	18Cr-Ti	Smls. & wld. tube	SA-268	TP439	S43035	...	...	415
36	18Cr-Ti	Wld. tube	SA-803	TP439	S43035	...	...	415
37	18Cr-Ti	Smls. & wld. pipe	SA-731	TP439	S43035	...	...	415
38	18Cr-Ti	Smls. & wld. tube	SA-268	TP430 Ti	S43036	...	...	415
39	18Cr-Ti	Bar	SA-479	439	S43035	...	...	485
40	26Cr-3Ni-3Mo	Plate	SA-240	26-3-3	S44660	...	≤ 5	585
41	26Cr-3Ni-3Mo	Smls. & wld. tube	SA-268	26-3-3	S44660	...	≤ 5	585
42	26Cr-3Ni-3Mo	Wld. tube	SA-803	26-3-3	S44660	...	≤ 5	585
43	27Cr	Smls. tube	SA-268	TP446-1	S44600	...	...	485
44	27Cr-1Mo	Forgings	SA-182	FXM-27Cb	S44627	...	...	415
45	27Cr-1Mo	Plate	SA-240	XM-27	S44627	...	...	450

Table U (Cont'd)
Tensile Strength Values, S_u , for Ferrous and Nonferrous Materials

Tensile Strength, MPa (Multiply by 1000 to Obtain kPa), for Metal Temperature, °C, Not Exceeding															
Line No.	40	100	150	200	250	300	325	350	375	400	425	450	475	500	525
Ferrous Materials (Cont'd)															
1	895	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	1000	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	1000	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	1035	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	1035	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	1105	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	1105	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	1170	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	1170	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	1240	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	1240	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	414	413	405	399	394	386	380	373	365	354	341	326	309	290	268
13	448	448	439	432	426	418	412	405	395	383	369	353	335	314	290
14	483	482	473	465	459	450	444	435	425	412	398	380	360	338	313
15	795	795	795	775	759	749	744	737	728	715	697	674	643	605	556
16	795	795	795	775	759	749	744	737	728	715	697	674	643	605	556
17	931	931	931	907	889	877	871	863	852	837	816	789	753	708	651
18	931	931	931	907	889	877	871	863	852	837	816	789	753	708	651
19	931	931	931	907	889	877	871	863	852	837	816	789	753	708	651
20	965	965	965	941	922	910	903	894	883	868	846	818	781	734	675
21	965	965	965	941	922	910	903	894	883	868	846	818	781	734	675
22	965	965	965	941	922	910	903	894	883	868	846	818	781	734	675
23	1000	1000	1000	974	955	943	936	927	915	899	877	847	809	761	699
24	1000	1000	1000	974	955	943	936	927	915	899	877	847	809	761	699
25	1000	1000	1000	974	955	943	936	927	915	899	877	847	809	761	699
26	1069	1069	1069	1041	1021	1007	...	...	...	...	...	...	...	...	...
27	1069	1069	1069	1041	1021	1007	991	981	978	...	...	...	...	...	...
28	1172	1172	1172	1142	1120	1105	1097	1086	1073	...	...	...	...	...	...
29	1310	1310	1310	1276	1252	1235	1226	1214	1199	...	...	...	...	...	...
30	1170	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	1275	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	414	413	401	392	384	375	369	363	356	347	338	327	314	298	279
33	414	413	401	392	384	375	369	363	356	347	338	327	314	298	279
34	414	413	399	389	382	374	369	364	357	349	340	328	315	299	280
35	414	413	399	389	382	374	369	364	357	349	340	328	315	299	280
36	414	413	399	389	382	374	369	364	357	349	340	328	315	299	280
37	414	413	399	389	382	374	369	364	357	349	340	328	315	299	280
38	414	414	399	390	382	374	369	364	357	349	340	328	315	299	280
39	483	482	466	454	446	436	431	424	417	407	396	383	367	348	326
40	586	586	585	578	574	572	570	567	563	...	...	...	...	...	...
41	586	586	585	578	574	572	570	567	563	...	...	...	...	...	...
42	586	586	585	578	574	572	570	567	563	...	...	...	...	...	...
43	483	482	466	454	446	436	431	424	417	407	396	383	367	348	326
44	414	413	400	390	390	390	390	390	...	...	...	...	...	...	...
45	448	448	441	438	438	438	438	438	438	438	438	438	438	438	438

Table U (Cont'd)
Tensile Strength Values, S_u , for Ferrous and Nonferrous Materials

Tensile Strength, MPa (Multiply by 1000 to Obtain kPa), for Metal Temperature, °C, Not Exceeding															
Line No.	550	575	600	625	650	675	700	725	750	775	800	825	850	875	900
Ferrous Materials (Cont'd)															
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45

(23)

Table U (Cont'd)
Tensile Strength Values, S_u , for Ferrous and Nonferrous Materials

Line No.	Nominal Composition	Product Form	Spec. No.	Type/Grade	Alloy Desig./UNS No.	Class/Condition/ Temper	Size/ Thickness, mm	Min. Tensile Strength, MPa
Ferrous Materials (Cont'd)								
1	27Cr-1Mo	Smls. & wld. tube	SA-268	TPXM-27	S44627	...	...	450
2	27Cr-1Mo	Bar	SA-479	XM-27	S44627	...	...	450
3	27Cr-1Mo	Smls. & wld. pipe	SA-731	TPXM-27	S44627	...	...	450
4	27Cr-1Mo-Ti	Smls. & wld. pipe	SA-731	TPXM-33	S44626	...	...	450
5	27Cr-1Mo-Ti	Plate	SA-240	XM-33	S44626	...	...	470
6	27Cr-1Mo-Ti	Smls. & wld. tube	SA-268	TPXM-33	S44626	...	...	470
7	29Cr-4Mo	Bar	SA-479	...	S44700	...	...	485
8	29Cr-4Mo	Plate	SA-240	...	S44700	...	...	550
9	29Cr-4Mo	Smls. & wld. tube	SA-268	29-4	S44700	...	...	550
10	29Cr-4Mo-2Ni	Bar	SA-479	...	S44800	...	...	485
11	29Cr-4Mo-2Ni	Plate	SA-240	...	S44800	...	...	550
12	29Cr-4Mo-2Ni	Smls. & wld. tube	SA-268	29-4-2	S44800	...	...	550
13	29Cr-4Mo-Ti	Smls. & wld. tube	SA-268	...	S44735	...	...	515
14	Mn- $\frac{1}{4}$ Mo	Forgings	SA-372	D	K14508	...	...	725
15	Mn- $\frac{1}{4}$ Mo-V	Castings	SA-487	2	J13005	A	...	585
16	Mn- $\frac{1}{4}$ Mo-V	Castings	SA-487	2	J13005	B	...	620
17	Mn- $\frac{1}{2}$ Mo	Plate	SA-302	A	K12021	...	...	515
18	Mn- $\frac{1}{2}$ Mo	Wld. pipe	SA-672	H75	K12021	...	...	515
19	Mn- $\frac{1}{2}$ Mo	Plate	SA-302	B	K12022	...	...	550
20	Mn- $\frac{1}{2}$ Mo	Plate	SA-533	A	K12521	1	...	550
21	Mn- $\frac{1}{2}$ Mo	Plate	SA-533	A	K12521	2	...	620
22	Mn- $\frac{1}{2}$ Mo	Plate	SA-533	A	K12521	3	...	690
23	Mn- $\frac{1}{2}$ Mo- $\frac{1}{4}$ Ni	Plate	SA-533	D	K12529	1	...	550
24	Mn- $\frac{1}{2}$ Mo- $\frac{1}{4}$ Ni	Plate	SA-533	D	K12529	2	...	620
25	Mn- $\frac{1}{2}$ Mo- $\frac{1}{4}$ Ni	Plate	SA-533	D	K12529	3	...	690
26	Mn- $\frac{1}{2}$ Mo- $\frac{1}{2}$ Ni	Plate	SA-302	C	K12039	...	...	550
27	Mn- $\frac{1}{2}$ Mo- $\frac{1}{2}$ Ni	Plate	SA-533	B	K12539	1	...	550
28	Mn- $\frac{1}{2}$ Mo- $\frac{1}{2}$ Ni	Wld. pipe	SA-672	H80	K12039	...	...	550
29	Mn- $\frac{1}{2}$ Mo- $\frac{1}{2}$ Ni	Wld. pipe	SA-672	J80	K12539	...	...	550
30	Mn- $\frac{1}{2}$ Mo- $\frac{1}{2}$ Ni	Plate	SA-533	B	K12539	2	...	620
31	Mn- $\frac{1}{2}$ Mo- $\frac{1}{2}$ Ni	Wld. pipe	SA-672	J90	K12539	...	...	620
32	Mn- $\frac{1}{2}$ Mo- $\frac{1}{2}$ Ni	Plate	SA-533	B	K12539	3	...	690
33	Mn- $\frac{1}{2}$ Mo- $\frac{1}{2}$ Ni	Wld. pipe	SA-672	J100	K12539	...	...	690
34	Mn- $\frac{1}{2}$ Mo- $\frac{3}{4}$ Ni	Plate	SA-302	D	K12054	...	...	550
35	Mn- $\frac{1}{2}$ Mo- $\frac{3}{4}$ Ni	Plate	SA-533	C	K12554	1	...	550
36	Mn- $\frac{1}{2}$ Mo- $\frac{3}{4}$ Ni	Plate	SA-533	E	K12554	1	...	550
37	Mn- $\frac{1}{2}$ Mo- $\frac{3}{4}$ Ni	Plate	SA-533	C	K12554	2	...	620
38	Mn- $\frac{1}{2}$ Mo- $\frac{3}{4}$ Ni	Plate	SA-533	E	K12554	2	...	620
39	Mn- $\frac{1}{2}$ Mo- $\frac{3}{4}$ Ni	Plate	SA-533	C	K12554	3	...	690
40	Mn- $\frac{1}{2}$ Ni-V	Plate	SA-225	C	K12524	...	...	725
41	Mn-V	Castings	SA-487	1	J13002	A	...	585
42	Mn-V	Castings	SA-487	1	J13002	B	...	620
43	1 $\frac{1}{2}$ Si- $\frac{1}{2}$ Mo	Smls. pipe	SA-335	P15	K11578	...	...	415
44	$\frac{1}{2}$ Ni- $\frac{1}{2}$ Cr- $\frac{1}{4}$ Mo-V	Castings	SA-487	4	J13047	A	...	620
45	$\frac{1}{2}$ Ni- $\frac{1}{2}$ Cr- $\frac{1}{4}$ Mo-V	Castings	SA-487	4	J13047	B	...	725

Table U (Cont'd)
Tensile Strength Values, S_u , for Ferrous and Nonferrous Materials

Tensile Strength, MPa (Multiply by 1000 to Obtain kPa), for Metal Temperature, °C, Not Exceeding															
Line No.	40	100	150	200	250	300	325	350	375	400	425	450	475	500	525
	Ferrous Materials (Cont'd)														
1	448	448	441	438	438	438	438	438	438	438	438	438	438	438	438
2	448	448	441	438	438	438	438	438	438	438	438	438	438	438	438
3	448	448	441	438	438	438	438	438	438	438	438	438	438	438	438
4	448	448	445	439	435	428	423	416	407	394	377	359	...	...	...
5	469	469	466	459	455	448	443	436	426	412	394	376	...	...	...
6	469	469	466	459	455	448	443	436	426	412	394	376	...	...	...
7	483	480	466	463	463	463	463	463	463	463	...	...	...	...	...
8	552	548	532	530	530	530	530	530	530	530	...	...	...	...	...
9	552	548	532	530	530	530	530	530	530	530	...	...	...	...	...
10	483	473	466	463	458	452	449	446	443	438	...	...	...	...	...
11	552	541	533	529	523	516	513	510	506	500	...	...	...	...	...
12	552	541	533	529	523	516	513	510	506	500	...	...	...	...	...
13	517	507	500	496	490	484	481	478	474	469	...	...	...	...	...
14	724	724	724	724	724	724	724	724	723	707	662	611	560	513	484
15	586	586	586	583	583	583	583	583	583	...	...	...	...	...	...
16	621	621	620	617	617	617	617	617	617	...	...	...	...	...	...
17	517	517	517	517	517	517	517	517	517	517	517	503	480	452	418
18	517	517	517	517	517	517	517	517	517	517	517	503	480	452	418
19	552	552	552	552	552	552	552	552	552	552	552	537	512	482	446
20	552	552	552	552	552	552	552	552	552	552	552	537	512	482	446
21	621	621	621	621	621	621	621	621	621	621	621	604	576	543	501
22	689	689	689	689	689	689	689	689	689	689	689	671	640	603	557
23	552	552	552	552	552	552	552	552	552	552	552	537	512	482	446
24	621	621	621	621	621	621	621	621	621	621	621	604	576	543	501
25	689	689	689	689	689	689	689	689	689	689	689	671	640	603	557
26	552	552	552	552	552	552	552	552	552	552	552	537	512	482	446
27	552	552	552	552	552	552	552	552	552	552	552	537	512	482	446
28	552	552	552	552	552	552	552	552	552	552	552	537	512	482	446
29	552	552	552	552	552	552	552	552	552	552	552	537	512	482	446
30	621	621	621	621	621	621	621	621	621	621	621	604	576	543	501
31	621	621	621	621	621	621	621	621	621	621	621	604	576	543	501
32	689	689	689	689	689	689	689	689	689	689	689	671	640	603	557
33	689	689	689	689	689	689	689	689	689	689	689	671	640	603	557
34	552	552	552	552	552	552	552	552	552	552	552	537	512	482	446
35	552	552	552	552	552	552	552	552	552	552	552	537	512	482	446
36	552	552	552	552	552	552	552	552	552	552	552	537	512	482	446
37	621	621	621	621	621	621	621	621	621	621	621	604	576	543	501
38	621	621	621	621	621	621	621	621	621	621	621	604	576	543	501
39	689	689	689	689	689	689	689	689	689	689	689	671	640	603	557
40	724	724	724	724	724	724	724	724	723	718	667	616	...	...	...
41	586	...	...	...	...	...	...	...	...	...	...	...	...	...	...
42	621	...	...	...	...	...	...	...	...	...	...	...	...	...	...
43	414	414	414	414	414	414	414	414	414	414	414	402	384	362	334
44	621	621	621	621	621	621	621	621	621	...	...	...	...	...	...
45	724	724	724	724	724	724	724	724	724	...	...	...	...	...	...

Table U (Cont'd)
Tensile Strength Values, S_u , for Ferrous and Nonferrous Materials

Tensile Strength, MPa (Multiply by 1000 to Obtain kPa), for Metal Temperature, °C, Not Exceeding															
Line No.	550	575	600	625	650	675	700	725	750	775	800	825	850	875	900
	Ferrous Materials (Cont'd)														
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45

Table Y-1 (Cont'd)
Yield Strength Values, S_y , for Ferrous and Nonferrous Materials

Line No.	Nominal Composition	Product Form	Spec. No.	Type/Grade	Alloy Desig./UNS No.	Class/Condition/ Temper	
Ferrous Materials (Cont'd)							
1	15Cr-5Ni-3Cu	Forgings	SA-705	XM-12	S15500	H925	
2	15Cr-5Ni-3Cu	Bar	SA-564	XM-12	S15500	H900	
3	15Cr-5Ni-3Cu	Forgings	SA-705	XM-12	S15500	H900	
4	15Cr-6Ni-Cu-Mo	Bar	SA-564	XM-25	S45000	H1150	
5	15Cr-6Ni-Cu-Mo	Forgings	SA-705	XM-25	S45000	H1150	
6	15Cr-6Ni-Cu-Mo	Bar	SA-564	XM-25	S45000	H1100	
7	15Cr-6Ni-Cu-Mo	Forgings	SA-705	XM-25	S45000	H1100	
8	15Cr-6Ni-Cu-Mo	Bar	SA-564	XM-25	S45000	H1050	
9	15Cr-6Ni-Cu-Mo	Forgings	SA-705	XM-25	S45000	H1050	
10	15Cr-6Ni-Cu-Mo	Bar	SA-564	XM-25	S45000	H1025	
11	15Cr-6Ni-Cu-Mo	Forgings	SA-705	XM-25	S45000	H1025	
12	15Cr-6Ni-Cu-Mo	Bar	SA-564	XM-25	S45000	H1000	
13	15Cr-6Ni-Cu-Mo	Forgings	SA-705	XM-25	S45000	H1000	
14	15Cr-6Ni-Cu-Mo	Bar	SA-564	XM-25	S45000	H950	
15	15Cr-6Ni-Cu-Mo	Forgings	SA-705	XM-25	S45000	H950	
16	15Cr-6Ni-Cu-Mo	Bar	SA-564	XM-25	S45000	H900	
17	15Cr-6Ni-Cu-Mo	Forgings	SA-705	XM-25	S45000	H900	
18	17Cr	Smls. & wld. tube	SA-268	TP430	S43000	...	
19	17Cr	Plate	SA-240	430	S43000	...	
20	17Cr	Bar	SA-479	430	S43000	...	
(23)	21	17Cr-4Ni-4Cu	Bar	SA-564	630	S17400	H1150M
(23)	22	17Cr-4Ni-4Cu	Forgings	SA-705	630	S17400	H1150M
23	17Cr-4Ni-4Cu	Bar	SA-564	630	S17400	H1150	
24	17Cr-4Ni-4Cu	Plate	SA-693	630	S17400	H1150	
25	17Cr-4Ni-4Cu	Forgings	SA-705	630	S17400	H1150	
26	17Cr-4Ni-4Cu	Bar	SA-564	630	S17400	H1100	
27	17Cr-4Ni-4Cu	Plate	SA-693	630	S17400	H1100	
28	17Cr-4Ni-4Cu	Forgings	SA-705	630	S17400	H1100	
29	17Cr-4Ni-4Cu	Bar	SA-564	630	S17400	H1075	
30	17Cr-4Ni-4Cu	Plate	SA-693	630	S17400	H1075	
31	17Cr-4Ni-4Cu	Forgings	SA-705	630	S17400	H1075	
32	17Cr-4Ni-4Cu	Bar	SA-564	630	S17400	H1025	
33	17Cr-4Ni-4Cu	Forgings	SA-705	630	S17400	H1025	
34	17Cr-4Ni-4Cu	Forgings	SA-705	630	S17400	H925	
35	17Cr-4Ni-4Cu	Forgings	SA-705	630	S17400	H900	
36	17Cr-7Ni-1Al	Forgings	SA-705	631	S17700	TH1050	
37	17Cr-7Ni-1Al	Forgings	SA-705	631	S17700	RH950	
38	18Cr-2Mo	Plate	SA-240	...	S44400	...	
39	18Cr-2Mo	Smls. & wld. tube	SA-268	...	S44400	...	
(23)	40	18Cr-Ti	Plate	SA-240	...	S43932	...
41	18Cr-Ti	Smls. & wld. tube	SA-268	TP439	S43035	...	
42	18Cr-Ti	Wld. tube	SA-803	TP439	S43035	...	
43	18Cr-Ti	Smls. & wld. pipe	SA-731	TP439	S43035	...	
44	18Cr-Ti	Smls. & wld. tube	SA-268	TP430 Ti	S43036	...	
45	18Cr-Ti	Bar	SA-479	439	S43035	...	

Table Y-1 (Cont'd)
Yield Strength Values, S_y , for Ferrous and Nonferrous Materials

Line No.	Size/Thickness, mm	Min. Tensile Strength, MPa	Min. Yield Strength, MPa	Notes
Ferrous Materials (Cont'd)				
1	...	1170	1070	...
2	...	1310	1170	...
3	...	1310	1170	...
4	≥13	860	515	...
5	≥13	860	515	...
6	≥13	895	725	...
7	≥13	895	725	...
8	≥13	1000	930	...
9	≥13	1000	930	...
10	≥13	1035	965	...
11	≥13	1035	965	...
12	≥13	1105	1035	...
13	≥13	1105	1035	...
14	≥13	1170	1105	...
15	≥13	1170	1105	...
16	≥13	1240	1170	...
17	≥13	1240	1170	...
18	...	415	240	...
19	...	450	205	...
20	...	485	275	...
21	...	795	515	...
22	...	795	515	...
23	...	930	725	...
24	...	930	725	...
25	...	930	725	...
26	...	965	795	...
27	...	965	795	...
28	...	965	795	...
29	...	1000	860	...
30	...	1000	860	...
31	...	1000	860	...
32	...	1070	1000	...
33	...	1070	1000	...
34	...	1170	1070	...
35	...	1310	1170	...
36	...	1170	965	...
37	...	1275	1035	...
38	...	415	275	...
39	...	415	275	...
40	...	415	205	...
41	...	415	205	...
42	...	415	205	...
43	...	415	205	...
44	...	415	240	...
45	...	485	275	...

Table Y-1 (Cont'd)
Yield Strength Values, S_y , for Ferrous and Nonferrous Materials

Yield Strength, MPa (Multiply by 1000 to Obtain kPa), for Metal Temperature, °C, Not Exceeding										
Line No.	40	65	100	125	150	175	200	225	250	275
Ferrous Materials (Cont'd)										
1	1069	1019	990	973	959	947	936	926	915	905
2	1172	1117	1086	1067	1052	1039	1026	1015	1004	993
3	1172	1117	1086	1067	1052	1039	1026	1015	1004	993
4	517	...	...	...	...	...	...	...	...	...
5	517	...	...	...	...	...	...	...	...	...
6	724	...	...	...	...	...	...	...	...	...
7	724	...	...	...	...	...	...	...	...	...
8	931	...	...	...	...	...	...	...	...	...
9	931	...	...	...	...	...	...	...	...	...
10	965	...	...	...	...	...	...	...	...	...
11	965	...	...	...	...	...	...	...	...	...
12	1030	...	...	...	...	...	...	...	...	...
13	1030	...	...	...	...	...	...	...	...	...
14	1100	...	...	...	...	...	...	...	...	...
15	1100	...	...	...	...	...	...	...	...	...
16	1170	...	...	...	...	...	...	...	...	...
17	1170	...	...	...	...	...	...	...	...	...
18	241	228	221	217	214	212	211	209	208	207
19	207	196	189	186	183	182	181	180	178	177
20	276	261	252	248	245	243	241	239	238	236
21	517	...	476	...	457	...	443	...	430	...
22	517	...	476	...	457	...	443	...	430	...
23	724	688	666	652	641	630	620	611	603	595
24	724	688	666	652	641	630	620	611	603	595
25	724	688	666	652	641	630	620	611	603	595
26	793	754	729	714	701	690	680	669	660	651
27	793	754	729	714	701	690	680	669	660	651
28	793	754	729	714	701	690	680	669	660	651
29	862	819	793	777	763	750	738	727	717	708
30	862	819	793	777	763	750	738	727	717	708
31	862	819	793	777	763	750	738	727	717	708
32	1000	960	918	899	885	870	857	844	832	822
33	1000	950	919	901	885	870	856	844	832	822
34	1069	1018	983	963	946	930	915	902	890	878
35	1172	1114	1078	1056	1037	1020	1004	989	976	963
36	965	...	...	...	...	...	...	...	...	...
37	1030	...	...	...	...	...	...	...	...	...
38	276	252	238	230	223	218	213	209	204	200
39	276	252	238	230	223	218	213	209	204	200
40	207	189	176	168	162	156	152	148	145	143
41	207	189	176	168	162	156	152	148	145	143
42	207	189	176	168	162	156	152	148	145	143
43	207	189	176	168	162	156	152	148	145	143
44	241	221	206	197	189	182	177	172	169	167
45	276	252	236	225	215	208	202	197	193	191

Table Y-1 (Cont'd)
Yield Strength Values, S_y , for Ferrous and Nonferrous Materials

Yield Strength, MPa (Multiply by 1000 to Obtain kPa), for Metal Temperature, °C, Not Exceeding										
Line No.	300	325	350	375	400	425	450	475	500	525
	Ferrous Materials (Cont'd)									
1	894	881	864	852	...	...	...	...	...	...
2	980	967	947	934	...	...	...	...	...	...
3	980	967	947	934	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...
18	205	202	199	194	189	182	175	166	156	145
19	176	173	170	167	162	157	150	142	134	124
20	234	231	227	223	216	209	200	190	179	166
21	420	...	...	...	...	...	...	...	...	...
22	420	...	...	...	...	...	...	...	...	...
23	588	581	575	568	559	548	533	512	483	441
24	588	581	575	568	559	548	533	512	483	441
25	588	581	575	568	559	548	533	512	483	441
26	644	636	629	621	612	600	584	561	530	483
27	644	636	629	621	612	600	584	561	530	483
28	644	636	629	621	612	600	584	561	530	483
29	700	692	684	676	666	653	635	610	575	524
30	700	692	684	676	666	653	635	610	575	524
31	700	692	684	676	666	653	635	610	575	524
32	811	...	...	...	...	...	...	...	...	...
33	812	803	793	784	...	...	...	...	...	...
34	868	858	848	838	...	...	...	...	...	...
35	952	941	930	919	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...
37	...	...	...	...	...	...	...	...	...	...
38	196	191	187	183	178	173	168	162	155	147
39	196	191	187	183	178	173	168	162	155	147
40	142	141	140	139	139	137	134	131	126	119
41	142	141	140	139	139	137	134	131	126	119
42	142	141	140	139	139	137	134	131	126	119
43	142	141	140	139	139	137	134	131	126	119
44	165	164	163	162	161	159	157	...	153	147
45	189	188	187	185	184	182	179	174	167	158

Table Y-1 (Cont'd)
Yield Strength Values, S_y , for Ferrous and Nonferrous Materials

Yield Strength, MPa (Multiply by 1000 to Obtain kPa), for Metal Temperature, °C, Not Exceeding

Line No.	550	575	600	625	650	675	700	725	750	775	800	825	850	875	900
Ferrous Materials (Cont'd)															
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45

(23)

(23)

(23)

Table Y-1 (Cont'd)
Yield Strength Values, S_y , for Ferrous and Nonferrous Materials

Line No.	Nominal Composition	Product Form	Spec. No.	Type/Grade	Alloy Desig./UNS No.	Class/Condition/ Temper
Ferrous Materials (Cont'd)						
1	26Cr-3Ni-3Mo	Plate	SA-240	26-3-3	S44660	...
2	26Cr-3Ni-3Mo	Smls. & wld. tube	SA-268	26-3-3	S44660	...
3	26Cr-3Ni-3Mo	Wld. tube	SA-803	26-3-3	S44660	...
4	27Cr	Smls. tube	SA-268	TP446-1	S44600	...
5	27Cr-1Mo	Forgings	SA-182	FXM-27Cb	S44627	...
6	27Cr-1Mo	Plate	SA-240	XM-27	S44627	...
7	27Cr-1Mo	Smls. & wld. tube	SA-268	TPXM-27	S44627	...
8	27Cr-1Mo	Bar	SA-479	XM-27	S44627	...
9	27Cr-1Mo	Smls. & wld. pipe	SA-731	TPXM-27	S44627	...
10	27Cr-1Mo-Ti	Smls. & wld. pipe	SA-731	TPXM-33	S44626	...
11	27Cr-1Mo-Ti	Plate	SA-240	XM-33	S44626	...
12	27Cr-1Mo-Ti	Smls. & wld. tube	SA-268	TPXM-33	S44626	...
13	29Cr-4Mo	Bar	SA-479	...	S44700	...
14	29Cr-4Mo	Plate	SA-240	...	S44700	...
15	29Cr-4Mo	Smls. & wld. tube	SA-268	29-4	S44700	...
16	29Cr-4Mo-2Ni	Bar	SA-479	...	S44800	...
17	29Cr-4Mo-2Ni	Plate	SA-240	...	S44800	...
18	29Cr-4Mo-2Ni	Smls. & wld. tube	SA-268	29-4-2	S44800	...
19	29Cr-4Mo-Ti	Smls. & wld. tube	SA-268	...	S44735	...
20	Mn- $\frac{1}{4}$ Mo	Forgings	SA-372	D	K14508	...
21	Mn- $\frac{1}{4}$ Mo-V	Castings	SA-487	2	J13005	A
22	Mn- $\frac{1}{4}$ Mo-V	Castings	SA-487	2	J13005	B
23	Mn- $\frac{1}{2}$ Mo	Plate	SA-302	A	K12021	...
24	Mn- $\frac{1}{2}$ Mo	Wld. pipe	SA-672	H75	K12021	...
25	Mn- $\frac{1}{2}$ Mo	Plate	SA-302	B	K12022	...
26	Mn- $\frac{1}{2}$ Mo	Plate	SA-533	A	K12521	1
27	Mn- $\frac{1}{2}$ Mo	Plate	SA-533	A	K12521	2
28	Mn- $\frac{1}{2}$ Mo	Plate	SA-533	A	K12521	3
29	Mn- $\frac{1}{2}$ Mo- $\frac{1}{4}$ Ni	Plate	SA-533	D	K12529	1
30	Mn- $\frac{1}{2}$ Mo- $\frac{1}{4}$ Ni	Plate	SA-533	D	K12529	2
31	Mn- $\frac{1}{2}$ Mo- $\frac{1}{4}$ Ni	Plate	SA-533	D	K12529	3
32	Mn- $\frac{1}{2}$ Mo- $\frac{1}{2}$ Ni	Plate	SA-302	C	K12039	...
33	Mn- $\frac{1}{2}$ Mo- $\frac{1}{2}$ Ni	Plate	SA-533	B	K12539	1
34	Mn- $\frac{1}{2}$ Mo- $\frac{1}{2}$ Ni	Wld. pipe	SA-672	H80	K12039	...
35	Mn- $\frac{1}{2}$ Mo- $\frac{1}{2}$ Ni	Wld. pipe	SA-672	J80	K12539	...
36	Mn- $\frac{1}{2}$ Mo- $\frac{1}{2}$ Ni	Plate	SA-533	B	K12539	2
37	Mn- $\frac{1}{2}$ Mo- $\frac{1}{2}$ Ni	Wld. pipe	SA-672	J90	K12539	...
38	Mn- $\frac{1}{2}$ Mo- $\frac{1}{2}$ Ni	Plate	SA-533	B	K12539	3
39	Mn- $\frac{1}{2}$ Mo- $\frac{1}{2}$ Ni	Wld. pipe	SA-672	J100	K12539	...
40	Mn- $\frac{1}{2}$ Mo- $\frac{3}{4}$ Ni	Plate	SA-302	D	K12054	...
41	Mn- $\frac{1}{2}$ Mo- $\frac{3}{4}$ Ni	Plate	SA-533	C	K12554	1
42	Mn- $\frac{1}{2}$ Mo- $\frac{3}{4}$ Ni	Plate	SA-533	E	K12554	1
43	Mn- $\frac{1}{2}$ Mo- $\frac{3}{4}$ Ni	Plate	SA-533	C	K12554	2
44	Mn- $\frac{1}{2}$ Mo- $\frac{3}{4}$ Ni	Plate	SA-533	E	K12554	2
45	Mn- $\frac{1}{2}$ Mo- $\frac{3}{4}$ Ni	Plate	SA-533	C	K12554	3

Table Y-1 (Cont'd)
Yield Strength Values, S_y , for Ferrous and Nonferrous Materials

Line No.	Size/Thickness, mm	Min. Tensile Strength, MPa	Min. Yield Strength, MPa	Notes
Ferrous Materials (Cont'd)				
1	≤5	585	450	...
2	≤5	585	450	...
3	≤5	585	450	...
4	...	485	275	...
5	...	415	240	...
6	...	450	275	...
7	...	450	275	...
8	...	450	275	...
9	...	450	275	...
10	...	450	275	...
11	...	470	310	...
12	...	470	310	...
13	...	485	380	...
14	...	550	415	...
15	...	550	415	...
16	...	485	380	...
17	...	550	415	...
18	...	550	415	...
19	...	515	415	...
20	...	725	450	...
21	...	585	365	...
22	...	620	450	...
23	...	515	310	...
24	...	515	310	...
25	...	550	345	...
26	...	550	345	...
27	...	620	485	...
28	...	690	570	...
29	...	550	345	...
30	...	620	485	...
31	...	690	570	...
32	...	550	345	...
33	...	550	345	...
34	...	550	345	...
35	...	550	345	...
36	...	620	485	...
37	...	620	485	...
38	...	690	570	...
39	...	690	570	...
40	...	550	345	...
41	...	550	345	...
42	...	550	345	...
43	...	620	485	...
44	...	620	485	...
45	...	690	570	...

Table Y-1 (Cont'd)
Yield Strength Values, S_y , for Ferrous and Nonferrous Materials

Yield Strength, MPa (Multiply by 1000 to Obtain kPa), for Metal Temperature, °C, Not Exceeding										
Line No.	40	65	100	125	150	175	200	225	250	275
Ferrous Materials (Cont'd)										
1	448	418	399	387	377	368	362	356	351	347
2	448	418	399	387	377	368	362	356	351	347
3	448	418	399	387	377	368	362	356	351	347
4	276	252	236	225	215	208	202	197	193	191
5	241	222	206	197	190	183	178	174	172	170
6	276	253	235	225	215	208	203	199	196	194
7	276	253	235	225	215	208	203	199	196	194
8	276	253	235	225	215	208	203	199	196	194
9	276	253	235	225	215	208	203	199	196	194
10	276	255	239	229	220	211	204	198	193	189
11	310	287	269	257	247	238	230	222	216	212
12	310	287	269	257	247	238	230	222	216	212
13	379	351	330	318	308	300	295	290	288	286
14	414	382	360	347	336	327	321	316	314	312
15	414	382	360	347	336	327	321	316	314	312
16	379	338	311	294	280	267	256	247	239	233
17	414	369	339	321	305	291	279	269	261	254
18	414	369	339	321	305	291	279	269	261	254
19	414	369	339	321	305	291	279	269	261	254
20	448	433	422	416	411	407	404	403	402	400
21	365	353	346	340	332	323	313	304	295	289
22	448	433	424	416	407	396	384	372	362	354
23	310	299	290	286	282	278	275	272	269	266
24	310	299	290	286	282	278	275	272	269	266
25	345	332	323	318	314	309	305	302	299	296
26	345	332	323	318	314	309	305	302	299	296
27	483	464	452	445	439	433	428	423	418	414
28	572	551	536	528	520	513	507	501	496	490
29	345	332	323	318	314	309	305	302	299	296
30	483	464	452	445	439	433	428	423	418	414
31	572	551	536	528	520	513	507	501	496	490
32	345	332	323	318	314	309	305	302	299	296
33	345	332	323	318	314	309	305	302	299	296
34	345	332	323	318	314	309	305	302	299	296
35	345	332	323	318	314	309	305	302	299	296
36	483	464	452	445	439	433	428	423	418	414
37	483	464	452	445	439	433	428	423	418	414
38	572	551	536	528	520	513	507	501	496	490
39	572	551	536	528	520	513	507	501	496	490
40	345	332	323	318	314	309	305	302	299	296
41	345	332	323	318	314	309	305	302	299	296
42	345	332	323	318	314	309	305	302	299	296
43	483	464	452	445	439	433	428	423	418	414
44	483	464	452	445	439	433	428	423	418	414
45	572	551	536	528	520	513	507	501	496	490

Table Y-1 (Cont'd)
Yield Strength Values, S_y , for Ferrous and Nonferrous Materials

Yield Strength, MPa (Multiply by 1000 to Obtain kPa), for Metal Temperature, °C, Not Exceeding										
Line No.	300	325	350	375	400	425	450	475	500	525
	Ferrous Materials (Cont'd)									
1	344	342	341	340	...	...	...	...	...	...
2	344	342	341	340	...	...	...	...	...	...
3	344	342	341	340	...	...	...	...	...	...
4	189	188	187	185	184	182	179	174	167	158
5	170	170	170	...	...	...	...	...	...	...
6	193	193	193	193	193	193	193	193	193	193
7	193	193	193	193	193	193	193	193	193	193
8	193	193	193	193	193	193	193	193	193	193
9	193	193	193	193	193	193	193	193	193	193
10	186	183	182	182	...	...	...	...	...	...
11	208	206	205	204	...	...	...	...	...	...
12	208	206	205	204	...	...	...	...	...	...
13	285	284	283	279	273	...	...	...	...	...
14	311	310	308	305	298	...	...	...	...	...
15	311	310	308	305	298	...	...	...	...	...
16	229	226	224	223	221	...	...	...	...	...
17	249	247	245	243	241	...	...	...	...	...
18	249	247	245	243	241	...	...	...	...	...
19	249	247	245	243	241	...	...	...	...	...
20	399	396	392	385	377	366	353	339	323	306
21	284	281	278	274	...	...	...	...	...	...
22	348	345	341	336	...	...	...	...	...	...
23	263	260	256	252	247	240	231	220	206	187
24	263	260	256	252	247	240	231	220	206	187
25	292	289	285	280	274	267	257	245	229	208
26	292	289	285	280	274	267	257	245	229	208
27	409	404	398	392	384	374	361	343	321	291
28	485	479	473	465	455	443	427	407	380	345
29	292	289	285	280	274	267	257	245	229	208
30	409	404	398	392	384	374	361	343	321	291
31	485	479	473	465	455	443	427	407	380	345
32	292	289	285	280	274	267	257	245	229	208
33	292	289	285	280	274	267	257	245	229	208
34	292	289	285	280	274	267	257	245	229	208
35	292	289	285	280	274	267	257	245	229	208
36	409	404	398	392	384	374	361	343	321	291
37	409	404	398	392	384	374	361	343	321	291
38	485	479	473	465	455	443	427	407	380	345
39	485	479	473	465	455	443	427	407	380	345
40	292	289	285	280	274	267	257	245	229	208
41	292	289	285	280	274	267	257	245	229	208
42	292	289	285	280	274	267	257	245	229	208
43	409	404	398	392	384	374	361	343	321	291
44	409	404	398	392	384	374	361	343	321	291
45	485	479	473	465	455	443	427	407	380	345

Table Y-1 (Cont'd)
Yield Strength Values, S_y , for Ferrous and Nonferrous Materials

Yield Strength, MPa (Multiply by 1000 to Obtain kPa), for Metal Temperature, °C, Not Exceeding

Line No.	550	575	600	625	650	675	700	725	750	775	800	825	850	875	900
Ferrous Materials (Cont'd)															
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45