

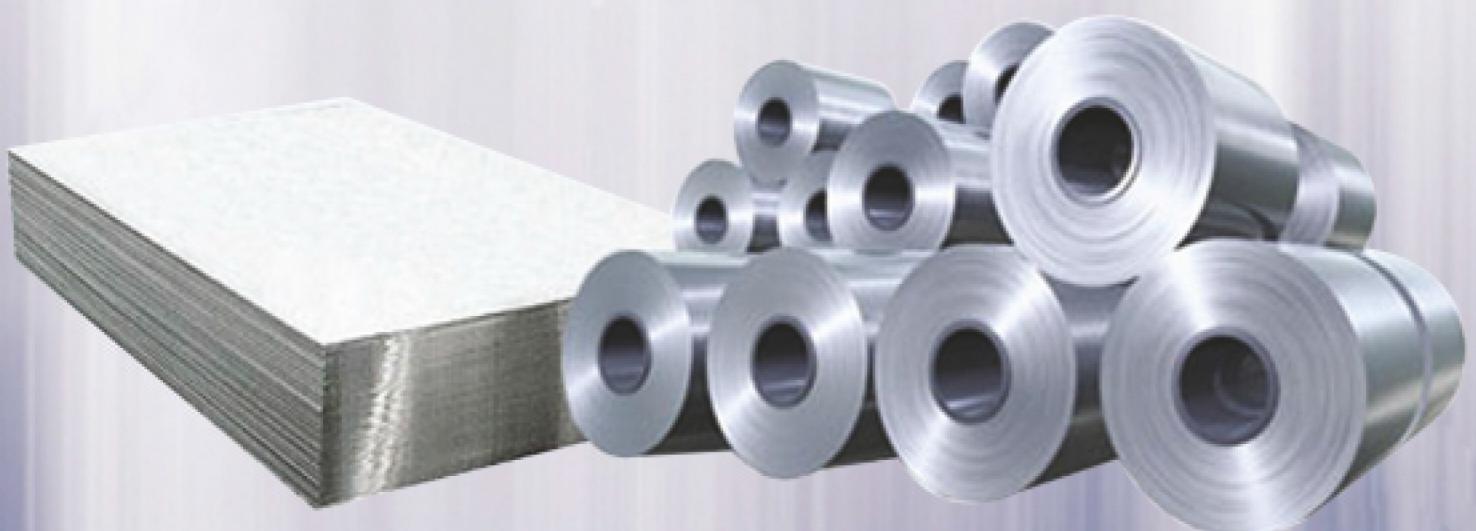


 Anupam metals India

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Sheet & Plate



ASTM A240

Chemical Composition Requirements, For Stainless Steel Plates

UNS Designation ^a	Type/C	Carbon/C	Manganese	Phosphorus	Sulfur	Silicon	Chromium	Nickel	Molybdenum	Nitrogen	Copper	Other Elements ^c
Austenitic (Chromium-Nickel) (Chromium-Manganese-Nickel)												
N08020	-	0.07	2.00	0.045	0.035	1.00	19.0-21.0	32.0-38.0	2.00-3.00	-	3.0-4.0	Cb83Cmin, 1.00 max
N08367	-	0.030	2.00	0.040	0.030	1.00	20.0-22.0	23.5-25.5	6.0-7.0	0.18-0.25	0.75	-
N08700	-	0.04	2.00	0.040	0.030	1.00	19.0-23.0	24.0-26.0	4.3-5.0	-	0.50	Cb83Cmin 0.40max
N08800	800 ^b	0.10	1.50	0.045	0.015	1.00	19.0-23.0	30.0-35.0	-	-	0.75	Fer439.5min Al 0.15-0.60 Ti 0.15-0.60
N08810	800H ^b	0.05-0.10	1.50	0.045	0.015	1.00	19.0-23.0	30.0-35.0	-	-	0.75	Fer439.5min Ti 0.15-0.60
N08811	-	0.06-0.10	1.50	0.040	0.015	1.00	19.0-23.0	30.0-35.0	-	-	0.75	Fer439.5min Ti 0.15-0.60 Al 0.15-0.60
N08904	904L ^b	0.020	2.00	0.045	0.035	1.00	19.0-23.0	23.0-28.0	4.0-6.0	0.10	1.0-2.0	-
N08926	-	0.020	2.00	0.030	0.010	0.50	19.0-21.0	24.0-26.0	6.0-7.0	0.15-0.25	0.5-1.5	-
S20100	201	0.15	5.5-7.5	0.060	0.030	1.00	16.0-18.0	35-5.5	-	0.25	-	-
S20103	-	0.03	5.5-7.5	0.045	0.015	0.75	16.0-18.0	35-5.5	-	0.25	-	-
S20153	-	0.03	6.4-7.5	0.045	0.015	0.75	16.0-17.5	4.0-5.0	0.10-0.25	1.00	-	-
S20161	-	0.15	4.0-6.0	0.040	0.040	3.0-4.0	15.0-18.0	4.0-6.0	0.08-0.20	-	-	-
S20200	202	0.15	7.5-10.0	0.060	0.030	1.00	17.0-19.0	4.0-6.0	0.25	-	-	-
S202400	-	0.030	7.0-9.0	0.040	0.030	1.00	15.0-17.0	15.0-3.00	0.15-0.30	-	-	-
S20431	-	0.12	5.0-7.0	0.045	0.030	1.00	17.0-18.0	20-4.0	0.10-0.25	1.5-3.5	-	-
S20432	-	0.08	3.0-5.0	0.045	0.030	1.00	17.0-18.0	4.0-6.0	0.05-0.20	2.00-3.00	-	-
S20433	-	0.08	5.5-7.5	0.045	0.030	1.00	17.0-18.0	35-5.5	0.10-0.25	1.5-3.5	-	-
S20510	XMa-19 ^b	0.06	4.0-6.0	0.040	0.030	0.75	20.5-23.5	11.5-13.5	1.00-3.00	0.20-0.40	-	Cb0.10-0.30 V 0.10-0.30
S21400	XMa-31 ^b	0.12	14.0-16.0	0.045	0.030	0.30-1.00	17.0-18.5	100	-	0.35max	-	-
S21600	XMa-17 ^b	0.08	7.5-9.0	0.045	0.030	0.75	17.5-22.0	50-7.0	2.00-3.00	0.25-0.50	-	-
S21603	XMa-18 ^b	0.03	7.5-9.0	0.045	0.030	0.75	17.5-22.0	50-7.0	2.00-3.00	0.25-0.50	-	-
S21600	-	0.10	7.0-9.0	0.060	0.030	3.5-4.5	16.0-18.0	8.0-9.0	0.08-0.18	-	-	-
S24000	XMa-29 ^b	0.08	11.5-14.5	0.060	0.030	0.75	17.0-19.0	23-3.7	-	0.20-0.40	-	-
S30100	301	0.15	2.00	0.045	0.030	1.00	16.0-18.0	60-8.0	-	0.10	-	-
S30103	301L ^b	0.03	2.00	0.045	0.030	1.00	16.0-18.0	60-8.0	-	0.20	-	-
S30153	301LN ^b	0.03	2.00	0.045	0.030	1.00	16.0-18.0	60-8.0	-	0.07-0.20	-	-
S30200	302	0.15	2.00	0.045	0.030	0.75	17.0-19.0	8.0-10.0	-	0.10	-	-
S30400	304	0.07	2.00	0.045	0.030	0.75	17.5-19.5	8.0-10.5	-	0.10	-	-
S30403	304L	0.030	2.00	0.045	0.030	0.75	17.5-19.5	8.0-12.0	-	0.10	-	-
S30409	304H	0.04-0.10	2.00	0.045	0.030	0.75	18.0-20.0	8.0-10.5	-	-	-	-
S30415	-	0.04-0.06	0.80	0.045	0.030	1.00-2.00	18.0-19.0	9.0-10.0	-	0.12-0.18	-	-
S30451	304N	0.08	2.00	0.045	0.030	0.75	18.0-20.0	8.0-10.5	-	0.10-0.16	-	-
S30452	XM-21 ^b	0.08	2.00	0.045	0.030	0.75	18.0-20.0	8.0-10.5	-	0.16-0.30	-	-
S30453	304LN	0.030	2.00	0.045	0.030	0.75	18.0-20.0	8.0-12.0	-	0.10-0.16	-	-
S30500	305	0.12	2.00	0.045	0.030	0.75	17.0-19.0	10.5-13.0	-	0.12-0.18	-	-
S30530	-	0.06	2.00	0.045	0.030	0.50-2.50	17.0-20.5	9.5-11.5	0.75-1.50	-	0.75-3.5	-
S30600	-	0.018	2.00	0.020	0.020	3.7-4.3	17.0-18.5	14.0-15.5	0.20	-	0.50	-
S30601	-	0.015	0.50-0.80	0.030	0.013	5.0-5.8	17.0-18.0	17.0-18.0	0.20	0.05	0.35	A10.80-1.50
S30615	-	0.16-0.24	2.00	0.030	0.030	3.2-4.0	17.0-19.5	13.5-16.0	-	-	-	Ce0.03-0.08
S30815	-	0.05-0.10	0.80	0.040	0.030	1.40-2.00	20.0-22.0	10.0-12.0	-	0.14-0.20	-	-
S30908	309S	0.08	2.00	0.045	0.030	0.75	22.0-24.0	12.0-15.0	-	-	-	-
S30909	309HG	0.04-0.10	2.00	0.045	0.030	0.75	22.0-24.0	12.0-15.0	-	-	-	-
S30940	309CBG	0.08	2.00	0.045	0.030	0.75	22.0-24.0	12.0-16.0	-	-	-	Cb103Cmin, 1.10 max

Continued

UNS Designation ^a	Type/C	Carbon/C	Manganese	Phosphorus	Sulfur	Silicon	Chromium	Nickel	Molybdenum	Nitrogen	Copper	Other Elements ^c
S30941	309HCB ^b	0.04-0.10	2.00	0.045	0.030	0.75	22.0-24.0	12.0-16.0	...	...	...	Cb10xCmin, 1.10 max B0.001-0.010
S31008	310S	0.08	2.00	0.045	0.030	1.50	24.0-26.0	19.0-22.0	...	...	...	-
S31009	310H ^b	0.04-0.10	2.00	0.045	0.030	0.75	24.0-28.0	19.0-22.0	...	...	...	Cb10xCmin, 1.10 max Cb10xCmin, 1.10 max
S31040	310CB ^b	0.08	2.00	0.045	0.030	1.50	24.0-26.0	19.0-22.0	...	...	...	-
S31041	310HCB ^b	0.04-0.10	2.00	0.045	0.030	0.75	24.0-28.0	19.0-22.0	...	...	...	Cb10xCmin, 1.10 max Cb10xCmin, 1.10 max
S31050	310MoLN ^b	0.020	2.00	0.030	0.010	0.50	24.0-26.0	20.5-23.5	1.60-2.60	0.09-0.15	...	-
S31060	...	0.05-0.10	1.00	0.040	0.030	0.50	22.0-24.0	10.0-12.5	...	0.18-0.25	...	Ce+La 0.025-0.070 B0.001-0.010
S31254	...	0.020	1.00	0.030	0.010	0.80	19.5-20.5	17.5-18.5	6.0-6.5	0.18-0.22	0.50-1.00	-
S31268	...	0.030	2.0-4.0	0.005	0.020	1.00	29.0-25.0	21.0-24.0	5.2-6.2	0.35-0.60	1.00-2.50	W1.50-2.50
S31277	...	0.020	3.00	0.030	0.010	0.50	20.5-23.0	26.0-28.0	6.5-8.0	0.30-0.40	0.50-1.50	-
S31600	316	0.08	2.00	0.045	0.030	0.75	16.0-18.0	10.0-14.0	2.00-3.00	0.10	...	-
S31603	316L	0.030	2.00	0.045	0.030	0.75	16.0-18.0	10.0-14.0	2.00-3.00	0.10	...	-
S31608	316H	0.04-0.10	2.00	0.045	0.030	0.75	16.0-18.0	10.0-14.0	2.00-3.00	...	...	-
S31635	316Ti ^b	0.08	2.00	0.045	0.030	0.75	16.0-18.0	10.0-14.0	2.00-3.00	0.10	...	Ti50(C+N) min.0.70max Cb10xC min.1.10max
S31640	316CB ^b	0.08	2.00	0.045	0.030	0.75	16.0-18.0	10.0-14.0	2.00-3.00	0.10	...	-
S31651	316N	0.08	2.00	0.045	0.030	0.75	16.0-18.0	10.0-14.0	2.00-3.00	0.10-0.16	...	-
S31653	316LN	0.30	2.00	0.045	0.030	0.75	16.0-18.0	10.0-14.0	2.00-3.00	0.10-0.16	...	-
S31700	317	0.08	2.00	0.045	0.030	0.75	18.0-20.0	11.0-15.0	3.0-4.0	0.10	...	-
S31703	317L	0.030	2.00	0.045	0.030	0.75	18.0-20.0	11.0-15.0	3.0-4.0	0.10	...	-
S31725	317LMF ^b	0.030	2.00	0.045	0.030	0.75	18.0-20.0	13.5-17.5	4.0-5.0	0.20	...	-
S31726	317LMN ^b	0.030	2.00	0.045	0.030	0.75	17.0-20.0	13.5-17.5	4.0-5.0	0.10-0.20	...	-
S31727	...	0.030	1.00	0.030	0.030	1.00	17.5-19.0	14.5-16.5	3.8-4.5	0.15-0.21	2.8-4.0	-
S31753	317LN ^b	0.030	2.00	0.045	0.030	0.75	18.0-20.0	11.0-15.0	3.0-4.0	0.10-0.22	...	-
S35115	865	0.030	1.00	0.045	0.030	0.50-1.50	0.020	1.00	23.0-25.0	19.0-22.0	1.50-2.50	...
S32050	...	0.030	1.50	0.035	0.010	1.00	22.0-24.0	20.0-23.0	6.0-6.8	0.21-0.32	...	-
S32053	...	0.030	1.00	0.045	0.030	0.75	17.0-19.0	9.0-12.0	...	0.10	...	Ti53(C+N) min.0.70max Ta43(C+N)
S32100	32100	0.08	2.00	0.045	0.030	0.75	17.0-19.0	9.0-12.0	...	...	...	-
S32109	3210H	0.04-0.10	2.00	0.045	0.030	0.75	17.0-19.0	9.0-12.0	...	...	...	-
S3215	...	0.07	2.00	0.045	0.030	4.8-6.0	16.5-19.5	19.0-22.0	0.30-1.50	1.50-2.50	...	-
S32654	...	0.020	2.0-4.0	0.030	0.005	0.50	24.0-25.0	21.0-23.0	7.0-8.0	0.45-0.55	0.30-0.60	Cd0.05-0.10 C0.025
S33228	...	0.04-0.08	1.00	0.020	0.015	0.30	26.0-28.0	31.0-33.0	...	...	...	T0.15-0.60 C0.10 C0.05-0.10 C0.025
S33400	334 ^b	0.08	1.00	0.030	0.015	1.00	18.0-20.0	19.0-21.0	...	...	...	-
S34565	...	0.030	5.0-7.0	0.030	0.010	1.00	23.0-25.0	16.0-18.0	4.0-5.0	0.40-0.60	...	Ca1.03min, 1.00max Cb0.83min, 1.00max (Cb+Ta)103G min.1.00max Ta0.10
S34700	347	0.08	2.00	0.045	0.030	0.75	17.0-19.0	9.0-13.0	...	...	...	-
S34709	347H	0.04-0.10	2.00	0.045	0.030	0.75	17.0-19.0	9.0-13.0	...	...	...	-
S34800	348	0.08	2.00	0.045	0.030	0.75	17.0-19.0	9.0-13.0	...	...	...	-

Continued

UNS Designation ^a	Type/C	Carbon/C	Manganese	Phosphorus	Sulfur	Silicon	Chromium	Nickel	Molybdenum	Nitrogen	Copper	Other Elements ^b
S34809	348H	0.04-0.10	2.00	0.045	0.030	0.75	17.0-19.0	9.0-13.0	-	-	-	(Cr+Ta)83C min.1.00max Ta<0.10 Co<0.20 Al<0.15-0.60
S30045	-	0.06-0.10	1.50	0.045	0.015	1.00	25.0-29.0	32.0-37.0	-	-	0.75	Ti0.15-0.60 Cr0.25-0.60 Ti0.40-1.00 Ca<0.03-0.10 Al<0.30
S35125	-	0.10	1.00-1.50	0.045	0.015	0.50	20.0-23.0	31.0-35.0	2.00-3.00	-	0.75	Ti0.15-0.60 Cr0.25-0.60 Ti0.40-1.00 Ca<0.03-0.10 Al<0.30
S35135	-	0.08	1.00	0.045	0.015	0.60-1.00	20.0-25.0	30.0-38.0	4.0-4.8	-	0.12-0.18	Ti0.40-1.00 Ca<0.03-0.10 Al<0.30
S35315	-	0.04-0.08	2.00	0.040	0.030	1.20-2.00	24.0-26.0	34.0-38.0	-	-	-	Ti0.40-1.00 Ca<0.03-0.10 Al<0.30
S36100	XMa15 ^c	0.08	2.00	0.030	0.030	1.50-2.50	17.0-19.0	17.5-18.5	-	-	0.75-1.50	Ti0.40-1.00 Ca<0.03-0.10 Al<0.30
S32815	-	0.030	2.00	0.040	0.020	5.5-6.5	13.0-15.0	13.0-17.0	0.75-1.50	-	0.75-1.50	Ti0.40-1.00 Ca<0.03-0.10 Al<0.30
S37200	-	0.000	2.00	0.045	0.030	1.00	24.0-26.0	6.5-6.5	1.20-2.00	0.14-0.20	-	Ti0.10-0.50 Al<0.30
S31200	-	0.03	1.00	0.030	0.030	0.75	24.0-26.0	5.5-7.5	2.5-3.5	0.10-0.30	-	Ti0.10-0.50 Al<0.30
S31803	-	0.030	2.00	0.030	0.020	1.00	21.0-23.0	4.5-6.5	2.5-3.5	0.08-0.20	-	Ti0.10-0.50 Al<0.30
S32001	-	0.030	4.0-6.0	0.040	0.030	1.00	19.5-21.5	1.00-3.00	0.60	0.05-0.17	1.00	Ti0.10-0.50 Al<0.30
S32003	-	0.030	2.00	0.030	0.020	1.00	19.5-22.5	3.0-4.0	1.50-2.00	0.14-0.20	-	Ti0.10-0.50 Al<0.30
S32011	-	0.040	4.0-6.0	0.040	0.030	1.00	21.0-22.0	1.35-1.70	0.10-0.80	0.20-0.25	0.10-0.80	Ti0.10-0.50 Al<0.30
S32002	-	0.030	2.00	0.040	0.010	1.00	21.5-24.0	1.00-2.80	0.45	0.18-0.26	-	Ti0.10-0.50 Al<0.30
S32205	2205 ^d	0.030	2.00	0.030	0.020	1.00	22.0-23.0	4.5-6.5	3.0-3.5	0.14-0.20	-	Ti0.10-0.50 Al<0.30
S32304	2304 ^e	0.030	2.50	0.040	0.030	1.00	21.5-24.5	3.0-5.5	0.05-0.60	0.05-0.20	0.05-0.60	Ti0.10-0.50 Al<0.30
S32806	-	0.030	1.00	0.040	0.015	0.90	24.0-26.0	5.5-7.2	3.0-3.5	0.08-0.20	-	Ti0.10-0.50 Al<0.30
S32620	-	0.030	1.50	0.035	0.020	0.80	24.0-26.0	5.5-8.0	3.0-4.0	0.20-0.35	0.50-2.00	Ti0.10-0.50 Al<0.30
S32950	2955 ^f	0.04	1.50	0.040	0.030	1.00	24.0-27.0	4.5-6.5	2.9-3.9	0.10-0.25	1.50-2.50	Ti0.10-0.50 Al<0.30
S32750	2307 ^g	0.030	1.20	0.035	0.020	0.80	24.0-26.0	6.0-8.0	3.0-5.0	0.24-0.32	0.50-1.00	Ti0.10-0.50 Al<0.30
S32780 ^h	-	0.030	1.00	0.030	0.010	1.00	24.0-26.0	6.0-8.0	3.0-4.0	0.20-0.30	0.50-1.00	Ti0.10-0.50 Al<0.30
S32900	-	0.030	0.80-1.50	0.030	0.010	0.75	23.0-25.0	2.0-5.00	1.00-2.00	-	-	Ti0.10-0.50 Al<0.30
S32906	-	0.030	2.00	0.035	0.010	0.80	28.0-30.0	5.8-7.5	1.50-2.50	0.30-0.40	0.80	Ti0.10-0.50 Al<0.30
S32950	-	0.030	1.00	0.030	0.020	0.80	26.0-29.0	3.5-5.2	1.00-2.50	0.15-0.35	-	Ti0.10-0.50 Al<0.30
S32974	-	0.030	2.0-4.0	0.040	0.030	1.00	24.0-26.0	6.0-8.0	2.5-3.5	0.24-0.32	0.20-0.80	Ti0.10-0.50 Al<0.30
S31921	-	0.030	2.0-4.0	0.040	0.030	1.00	19.0-22.0	2.0-4.0	1.00-2.00	0.14-0.20	-	Ti0.10-0.50 Al<0.30
S33803	-	0.015	0.50	0.020	0.0035	0.55	28.0-29.0	3.0-4.0	1.80-2.50	0.0200	-	Ti0.12% C+N min. 0.15-0.50 Al<0.10-0.30
S40600	405	0.08	1.00	0.040	0.030	1.00	11.5-14.5	0.60	-	-	-	Ti6X (C+N)min. 0.50 max. Cb 0.17
S40900L	409 ⁱ	0.030	1.00	0.040	0.020	1.00	10.5-11.7	0.50	-	0.0300	-	Ti8X (C+N)min. 0.75 max. Cb 0.10
S40910	-	0.030	1.00	0.040	0.020	1.00	10.5-11.7	0.60	-	0.0300	-	Ti8X (C+N)min. 0.75 max. Cb 0.10
S40920	-	0.030	1.00	0.040	0.020	1.00	10.5-11.7	0.50	-	0.0300	-	Ti10X (C+N)min. 0.75 max. Cb 0.05 min. Cb 0.18-0.40
S40930	-	0.030	1.00	0.040	0.020	1.00	10.5-11.7	0.50	-	0.0300	-	Ti10X (C+N)min. 0.75 max. Cb 0.05-0.20
S40945	-	0.030	1.00	0.040	0.030	1.00	10.5-11.7	0.50	-	0.0300	-	Ti10X (C+N)min. 0.75 max. Cb 0.05-0.20
S40975	-	0.030	1.00	0.040	0.030	1.00	10.5-11.7	0.50	-	0.0300	-	Ti10X (C+N)min. 0.75 max. Cb 0.05-0.20
S40977	410	0.08-0.15	1.50	0.040	0.015	1.00	10.5-12.5	0.30-1.00	-	0.0300	-	Ti10X (C+N)min. 0.75 max. Cb 0.05-0.20
S41000	-	0.030	1.00	0.040	0.030	1.00	11.5-13.5	0.75	-	-	-	Ti10X (C+N)min. 0.75 max. Cb 0.05-0.20
S41003	-	0.030	1.50	0.040	0.030	1.00	10.5-12.5	1.50	-	0.0300	-	Ti10X (C+N)min. 0.75 max. Cb 0.05-0.20

Continued

UNS Designation ^a	TypeC	Carbon	Manganese	Phosphorus	Sulfur	Silicon	Chromium	Nickel	Molybdenum	Nitrogen	Copper	Other Elements ^b
SA308	410S	0.08	1.00	0.040	0.030	1.00	11.5-13.5	0.60	-	-	-	Cb8(C+N)min, 0.60 max
SA304S	-	0.030	1.00	0.040	0.030	1.00	12.0-13.0	0.50	-	-	-	-
SA309	-	0.04	1.00	0.045	0.030	1.00	10.5-12.5	0.50-1.10	-	-	-	Ti0.30-0.50
SA500 ^c	-	0.05	0.90-1.00	0.030	0.030	0.60	11.5-14.0	3.5-5.5	0.50-1.00	-	-	-
SA203S	-	0.08	1.00	0.045	0.030	1.00	13.5-15.5	1.0-2.5	0.2-1.2	-	-	-
SA280	429G	0.12	1.00	0.040	0.030	1.00	14.0-16.0	-	-	-	-	Ti[0.20+4(C+N)] min.1.10(max. Al 0.15)
SA300	430	0.12	1.00	0.040	0.030	1.00	16.0-18.0	0.75	-	-	-	-
SA303S	439	0.030	1.00	0.040	0.030	1.00	17.0-19.0	0.50	-	-	-	-
SA340	434	0.12	1.00	0.040	0.030	1.00	16.0-18.0	-	0.75-1.25	-	-	-
SA360	436	0.12	1.00	0.040	0.030	1.00	16.0-18.0	-	0.75-1.25	-	-	-
SA383	-	0.030	1.00	0.040	0.030	1.00	17.0-19.0	0.50	-	-	-	(Ti+Cb) [0.20+4(C+N)] min.0.70(max. Al 0.15)
SA390	-	0.030	1.00	0.040	0.015	1.00	17.5-18.5	-	-	-	-	Ti[0.10-0.60]Cb [0.30+3(C)](min (Ti+Cb)[0.20+4(C+N)] min.0.80 max Cb[0.03(C+N)]
SA4400	444	0.025	1.00	0.040	0.030	1.00	17.5-19.5	1.00	1.75-2.50	0.035	-	-
SA4600	-	0.020	1.00	0.040	0.012	1.00	19.0-21.0	0.60	-	0.03	0.30-0.60	-
SA4626	XMA33U	0.06	0.75	0.040	0.020	0.75	25.0-27.0	0.80	0.75-1.50	0.04	0.20	Ti[0.20-1.00; Ti 7(C+N) min Cb 0.05-0.20 (Ni+Cu) 0.50 (Ti+Cb)[0.20+4 (C+N)](min.0.80 max)
SA4627	XMA27U	0.010N	0.40	0.020	0.020	0.40	25.0-27.5	0.90	0.75-1.50	0.015N	0.20	-
SA4635	-	0.025	1.00	0.040	0.030	0.75	24.5-26.0	3.5-4.5	3.5-4.5	0.035	-	-
SA4660	-	0.030	1.00	0.040	0.030	1.00	25.0-28.0	1.0-3.5	3.0-4.0	0.040	-	1.00, Ti+Cb [6(C+N)]min

Continued

UNS Designation ^a	Type C	Carbon D	Manganese	Phosphorus	Sulfur	Silicon	Chromium	Nickel	Molybdenum	Nitrogen	Copper	Other Elements ^b
S44700	—	0.010	0.30	0.025	0.020	0.20	28.0–30.0	0.15	3.5–4.2	0.020	0.15	(C+N) 0.025 (Ti+Cb) 0.20–1.00, (Ti+Cb) 6 X (C+N) min
S44735	—	0.030	1.00	0.040	0.030	1.00	28.0–30.0	1.00	3.6–4.2	0.045	—	(C+N) 0.025 (Ti+Cb) 0.20–1.00, (Ti+Cb) 6 X (C+N) min
S44800	—	0.010	0.30	0.025	0.020	0.20	28.0–30.0	0.50	3.5–4.2	0.020	0.15	(C+N) 0.025 (Ti+Cb) 0.20–1.00, (C+N) min
S44800	—	0.030	1.00	0.040	0.030	1.00	18.0–20.0	0.50	—	0.030	—	(C+N) 0.025 (Ti+Cb) 0.20–1.00, (C+N) min
S44935	—	0.030	0.30–0.60	0.030	0.020	0.50	20.0–24.0	—	—	—	0.50	La 0.04–0.20 Ti 0.03–0.20 Al 0.50

^a Maximum, unless range or minimum is indicated.^b Designation established in accordance with Practice E 527 and SAE J 1086.^c Unless otherwise indicated, a grade designation originally assigned by the American Iron and Steel Institute (AISI).^d Carbon analysis shall be reported to nearest 0.01 % except for the low-carbon types, which shall be reported to nearest 0.001 %.^e The terms Columbium (Cb) and Niobium (Nb) both relate to the same element.^f When two minimums or two maximums are listed for a single type, as in the case of both a value from a formula and an absolute value, the higher minimum or lower maximum shall apply.^g Common name, not a trademark, widely used, not associated with any one producer.^h Iron shall be determined arithmetically by difference of 100 minus the sum of the other specified elements.ⁱ (A + Ti) 0.85–1.20.^j Naming system developed and applied by AISI 7M.^k Cr + 3.3Mo + 16 N = 40 min.^l S40900 (Type 409) has been replaced by S40910, S40920, and S40930. Unless otherwise specified in the ordering information, an order specifying S40900 or Type 409 shall be satisfied by any one of S40910,^m 40920, or 540930 at the option of the seller. Material meeting the requirements of S40910, S40920, or 540930, may at the option of the manufacturer be certified as S40900.ⁿ Plate version of CA-ENMA.^o Product (check or verification) analysis tolerance over the maximum limit for C and N in X6Cr27 shall be 0.0002 %.

Mechanical Test Requirements - ASTM A240

UNS Designation	Type ^a	Tensile Strength, min		Yield Strength ^b , min		Elongation in 2 in. or 50 mm, min, %		Brinell	Rockwell B	Hardness, max ^c	Cold Bend ^d
		ksi	MPa	ksi	MPa	30 ^e	217				
Austenitic (Chromium-Nickel) (Chromium-Nickel-Nickel)											
N08020	-	80	560	35	240	30 ^f	217	95	100	not required	not required
N08367	Sheet and Strip Plates	-	100	690	45	310	30	241	192	not required	not required
N08700	-	95	655	45	310	30	241	192	90	not required	not required
N08800	-	80 ^g	590	35	240	30 ^f	205 ^g	192	not required	not required	not required
N08810	800H	75	520	30 ^g	205 ^g	30 ^f	205 ^g	192	not required	not required	not required
N08811	-	65	490	25	170 ^g	30	217	100	not required	not required	not required
N08904	904L	71	490	31	220	35	217	90	not required	not required	not required
N08926	-	94	650	43	285	35	217	95	not required	not required	not required
S20100	-	75	515	38	260	40	217	95	not required	not required	not required
S20100	201-1	95	655	45	310	40	241	100	not required	not required	not required
S20100	201-2	95	655	38	280	40	217	95	not required	not required	not required
S20103	201L ^h	95	655	45	310	45	241	100	not required	not required	not required
S20153	201LN ^h	95	655	50	345	40	255	25 ^h	not required	not required	not required
S20161	-	125	860	50	260	40	241	100	not required	not required	not required
S20200	-	202	90	620	38	330	35	241	100	not required	not required
S20400	-	95	655	48	320	45	310	100	not required	not required	not required
S20431	-	90	620	45	205	40	241	100	not required	not required	not required
S20432	-	75	515	30	240	40	217	95	not required	not required	not required
S20433	-	80	650	35	345	40	241	100	not required	not required	not required
S20910	XMA-19 ⁱ	105	725	60	415	30	241	100	not required	not required	not required
S21600	Sheet and Strip Plates	100	690	68	380	35	241	100	not required	not required	not required
S21603	Sheet and Strip Plates	100	690	60	415	40	241	100	not required	not required	not required
S21603	XMA-18 ⁱ	90	620	60	345	40	241	100	not required	not required	not required
S21600	Sheet and Strip Plates	100	690	60	415	40	241	100	not required	not required	not required
S24000	XMA-29C ⁱ	100	690	60	415	40	241	100	not required	not required	not required
S30100	301	75	515	39	205	40	241	100	not required	not required	not required
S30103	301LN ⁱ	80	590	32	220	45	241	100	not required	not required	not required
S30153	302	75	515	35	240	45	241	100	not required	not required	not required
S30200	304	75	515	30	205	40	201	92	not required	not required	not required
S30400	304L	70	485	25	170	40	201	92	not required	not required	not required
S30403	304H	75	515	30	205	40	201	92	not required	not required	not required
S30415	-	67	600	42	290	40	217	95	not required	not required	not required
S30451	304N	80	590	35	240	30	217	95	not required	not required	not required
S30452	XMA-21 ⁱ	-	-	-	-	-	-	-	-	-	-
Sheet and Strip Plates	-	90	620	50	345	30	241	100	not required	not required	not required
S30453	304LN	85	585	40	275	30	241	100	not required	not required	not required
S30500	305	75	515	30	205	40	217	95	not required	not required	not required
S30530	-	75	485	25	170	40	183	88	not required	not required	not required
S30900	-	78	515	30	205	40	201	92	not required	not required	not required
S30901	-	78	540	37	240	35	217	95	not required	not required	not required
S30515	-	90	620	40	275	35	217	95	not required	not required	not required

Continued

UNS Designation	Type ^a	Tensile Strength, min			Yield Strength ^b , min Mpa	Elongation in 2 in. or 50 mm. min, %	Hardness, max ^c Brinell	Rockwell B	Cold Bend ^d
		ksi	Mpa	ksi					
S30815	—	87	600	45	310	40	217	217	not required
S30908	308S	75	515	30	205	40	217	217	not required
S30909	309H	75	515	30	205	40	217	217	not required
S30940	309Cr ^e	75	515	30	205	40	217	217	not required
S30941	309HC ^f	75	515	30	205	40	217	217	not required
S31008	310S	75	616	30	205	40	217	217	not required
S31009	310H	75	515	30	205	40	217	217	not required
S31040	310Cr ^e	75	515	30	205	40	217	217	not required
S31041	310HC ^f	75	515	30	205	40	217	217	not required
S31050	310 M&LN ^g 1W 0.25 in. t > 0.25 in.	84	580	39	270	25	217	66	not required
S31050	—	78	540	37	255	25	217	66	not required
S31050	—	87	600	41	280	40	217	95	not required
S31254	Sheet and Strip Plate	100	690	45	310	35	223	223	not required
S31266	—	95	655	45	310	35	223	223	not required
S31277	—	109	750	61	420	35	—	—	not required
S31600	—	112	770	52	360	40	217	217	not required
S31603	316L	75	515	30	205	40	217	217	not required
S31609	316H	75	485	25	170	40	217	217	not required
S31635	316TR	75	515	30	205	40	217	217	not required
S31640	316Cr ^e	75	515	30	205	30	217	217	not required
S31651	316N	80	550	35	240	35	217	217	not required
S31653	316LN	75	515	30	205	40	217	217	not required
S31700	—	317	75	515	30	205	35	217	not required
S31703	317L	75	515	30	205	40	217	217	not required
S31725	317LM ^h	75	515	30	205	40	217	217	not required
S31726	317LM ^h	80	550	35	240	40	223	223	not required
S31727	—	80	550	35	245	35	217	217	not required
S31753	317LN	80	550	35	240	40	217	217	not required
S31755	317LN	85	585	40	275	40	241	241	100
S32060	—	98	676	48	330	40	250	250	—
S32063	—	93	640	43	295	40	217	217	—
S32100	321 ⁱ	75	515	30	205	40	217	217	not required
S32109	321H	75	515	30	205	40	217	217	not required
S32615L	—	80	550	32	220	25	—	—	not required
S32654	—	109	750	62	430	40	250	250	not required
S33226	—	73	600	27	185	30	217	217	not required
S33400	334 ^j	70	485	25	170	30	—	—	not required
S34665	—	115	795	60	415	35	241	241	not required
S34700	347H	75	616	30	205	40	201	201	not required
S34709	347H	75	515	30	205	40	201	201	not required
S34800	348 ^j	75	515	30	205	40	201	201	not required
S34809	348H	75	515	30	170	35	—	—	not required
S35045	—	70	485	25	205	35	—	—	not required
S35125	—	70	485	30	205	35	—	—	not required
S35135	Sheet and Strip Plate	80	650	30	205	30	—	—	not required
S35315	—	75	515	30	270	40	217	217	not required
S36100	XH 15 ^k	94	650	30	205	40	217	217	not required
S36815	—	78	540	37	255	30	—	—	not required

Quotations / Applications / Technical

Continued

UNS Designation	Type ^a	Tensile Strength, min		Yield Strength ^b , min		Elongation in 2 in. or 50 mm, min, %	Brinell	Rockwell B	Hardness, max ^c	Cold Bend ^d
		ksi	MPa	ksi	MPa					
S31200	—	100	690	65	450	25	290	31 ^e	—	not required
S31260	—	100	690	70	485	20	290	—	—	—
S31803	—	90	620	65	450	25	293	31 ^e	not required	not required
S32001	—	90	620	65	450	25	—	25 ^e	not required	not required
S32003	t # 0.187 in. [5.00 mm] t # 0.187 in. [5.00 mm]	100	690	70	485	25	293	31 ^e	not required	not required
S32101	t # 0.187 in. [5.00 mm] t > 0.187 in. [5.00 mm]	95	655	65	450	25	293	31 ^e	not required	not required
S32202	t # 0.187 in. [5.00 mm]	101	700	77	530	30	290	—	—	not required
S32205	t > 0.187 in. [5.00 mm]	94	650	65	450	30	290	—	—	not required
S32304	220S ^f 2304 ^f	95	655	65	450	25	293	31 ^e	not required	not required
S32306	—	87	600	58	400	25	290	32 ^e	not required	not required
S32520	—	90	620	65	450	18	302	32 ^e	not required	not required
S32550	—	112	770	80	560	25	310	—	—	not required
S32750	250T ^f	110	760	80	560	15	302	32 ^e	not required	not required
S32750	—	116	795	80	590	15	310	32 ^e	not required	not required
S32900	—	108	750	80	560	25	270	—	—	not required
S32900	329	90	620	70	485	15	269	28 ^e	not required	not required
S32906	t < 0.4 in. [10.0 mm] t # 0.4 in. [10.0 mm]	116	800	94	650	25.0	310	32 ^e	not required	not required
S32950 ^f	—	109	750	80	590	25.0	310	32 ^e	not required	not required
S32974	—	100	690	70	485	15	293	32 ^e	not required	not required
S32921	—	116	800	80	560	15	310	32 ^e	not required	not required
		90	620	65	450	25	293	31 ^e		
Ferritic or Martenitic (Chromium)										
S32803	—	87	600	72	500	16	241	100	not required	not required
S40900	40S	60	415	25	170	20	179	88	180	180
S40900 ^f	409 ^f	55	380	25	170	20	179	88	180	180
S40910	—	55	380	25	170	20	179	88	180	180
S40920	—	55	380	25	170	20	179	88	180	180
S40930	—	55	380	25	205	22	—	80	180	180
S40945	—	55	380	30	205	22	197	92	180	180
S40975	—	60	415	40	275	20	197	92	180	180
S40977	—	65	450	41	280	18	180	88	180	180
S41000	410	65	450	30	205	20	217	96	180	180
S41003	—	65	455	40	275	18	223	20 ^e	not required	not required
S41006	410S	60	415	30	205	220	183	89	180	180
S41045	—	55	380	30	205	22	183	89	180	180
S41050	—	60	415	30	205	22	183	89	180	180
S41500	—	115	795	90	620	15	302	32 ^e	not required	not required
S42035	—	80	550	55	380	16	180	88	180	180
S42000	429 ^f	65	450	30	205	220	183	89	180	180
S43000	430	65	450	30	205	220	183	89	180	180
S43035	439	60	415	30	205	22	183	89	180	180
S43400	434	65	450	35	240	22	—	89	180	180
S43600	436	65	450	35	240	22	—	89	180	180

Continued

UNS Designation	Type ^a	Tensile Strength, min			Yield Strength ^b , min Mpa	Elongation in 2 in. or 50 mm, min, %	Bend ^c	Hardness, max ^d Rockwell B	Cold Bend ^e
		ksi	MPa	ksi					
S43032	—	60	415	30	205	22	183	60	180
S43040	—	62	430	38	250	18	180	68	not required
S44400	—	60	415	40	275	20	217	96	180
S44500	—	62	427	30	205	22	—	63	180
S44626	XMA-33 ^f	68	470	45	310	20	217	96	180
S44627	XMA-27 ^f	65	450	40	275	22	187	90	180
S44635	—	60	620	75	515	20	269	28 ^g	180
S44690	—	65	585	65	450	18	24.1	100	180
S44700	—	60	550	60	415	20	223	20 ^h	180
S44735	—	60	550	60	415	18	255	25 ^h	180
S44800	—	60	550	60	415	20	223	20 ^h	180
S44890	—	60	415	30	205	22	—	90	180
S44535	—	58	400	38	250	25 ⁱ	—	50–90P	not required

A. Unless otherwise indicated, a grade designation originally assigned by the American Iron and Steel Institute (AISI).

B. Yield strength shall be determined by the offset method at 0.2 % in accordance with Test Methods and Definitions A.370. Unless otherwise specified (see Specification A.450/A.480M, paragraph 4.1.11, Ordering Information), an alternative method of determining yield strength may be based on total extension under load of 0.5 %.

C. Either Brinell or Rockwell B Hardness is permissible.

D. Bend tests are not required for chromium steels [item (b) or item (c)] thicker than 1 in. [25 mm] or for any austenitic or duplex [austenitic/ferritic] stainless steel regardless of thickness.

E. Elongation for thicknesses less than 0.015 in [0.38 mm] shall be 20 % minimum, 1 in. [25.4 mm].

F. Common name, not a trademark, widely used, not associated with any one producer.

G. Yield strength requirements shall not apply to material under 0.020 in [0.50 mm] in thickness.

H. Not applicable for thicknesses under 0.010 in. [0.25 mm].

I. Type 201 is generally produced with a chemical composition balanced for rich side (Type 201-1) or lean side (Type 201-2) austenitic stability depending on the properties required for specific applications.

J. Rockwell C scale.

K. Naming system developed and applied by ASTM.

L. For S32215, the grain size as determined in accordance with the Test Method E.112, Comparison Method, Plate II, shall be No. 3 or finer.

M. Prior to Specification A.240 – 88G, the tensile value for S32290 was 90 ksi.

N. S40900 (Type 409) has been replaced by S40910, S40920, and S40930. Unless otherwise specified in the ordering information, an order specifying S40900 or Type 409 shall be satisfied by any one of S40910, S40920, or S40930 at the option of the seller. Material meeting the requirements of S40910, S40920, or S40930, may at

**PERMITTED THICKNESS TOLERANCES IN INCH UNITS AS PER ASTM A480
FOR Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip**

Specified Thickness, INCH. [mm]	Thickness Tolerances, for the Thickness and Widths Given, Over and Under, INCH. [mm] Width (w), INCH. [mm]		
	1/16 [4.76] to 6 [152], incl w ≤ 6 [152]	Over 6 [152] to 12 [305], incl 6 [152] < w ≤ 12 [305]	Over 12 [305] to 24 [610], excl 12 [305] < w ≤ 24 [610]
0.002 [0.05] to 0.005 [0.13], excl	10 %	10 %	10 %
0.005 [0.13] to 0.010 [0.25], incl	0.0006 [0.015]	0.0008 [0.020]	0.001 [0.025]
Over 0.010 [0.25] to 0.012 [0.30], incl	0.001 [0.025]	0.001 [0.025]	0.001 [0.025]
Over 0.012 [0.30] to 0.015 [0.40], incl	0.001 [0.025]	0.0015 [0.04]	0.0015 [0.04]
Over 0.015 [0.40] to 0.020 [0.50], incl	0.001 [0.025]	0.0015 [0.04]	0.0015 [0.04]
Over 0.020 [0.50] to 0.029 [0.74], incl	0.0015 [0.04]	0.0015 [0.04]	0.002 [0.050]
Over 0.029 [0.74] to 0.035 [0.89], incl	0.0015 [0.04]	0.002 [0.050]	0.002 [0.050]
Over 0.035 [0.89] to 0.050 [1.27], incl	0.0025 [0.060]	0.003 [0.070]	0.003 [0.070]
Over 0.050 [1.27] to 0.069 [1.75], incl	0.003 [0.070]	0.003 [0.070]	0.003 [0.070]
Over 0.069 [1.75] to 0.100 [2.54], incl	0.003 [0.070]	0.003 [0.070]	0.004 [0.10]
Over 0.100 [2.54] to 0.125 [2.98], incl	0.004 [0.10]	0.004 [0.10]	0.005 [0.12]
Over 0.125 [2.98] to 0.161 [4.09], incl	0.005 [0.12]	0.005 [0.12]	0.005 [0.12]
Over 0.161 [4.09] to under 3/16 [4.76]	0.005 [0.12]	0.005 [0.12]	0.006 [0.15]

^a Thickness tolerances given in INCH. [mm] unless otherwise indicated.

Specified Thickness α_s , INCH. [mm]	Permitted Variation, Over and Under, INCH [mm], for specified width (w), w in INCH.		
	w ≤ 40 [1000]	40 [1000] ≤ w ≤ 50 [1300]	50 [1300] ≤ w ≤ 84 [2100]
0.001 [0.030]	0.001 [0.030]	...	...
0.0015 [0.04]	0.0015 [0.04]	0.0015 [0.04]	...
0.0015 [0.04]	0.0015 [0.04]	0.0015 [0.04]	...
0.002 [0.05]	0.002 [0.05]	0.002 [0.05]	...
0.002 [0.05]	0.002 [0.05]	0.002 [0.05]	...
0.0025 [0.06]	0.0025 [0.06]	0.0025 [0.06]	0.003 [0.08]
0.003 [0.08]	0.003 [0.08]	0.003 [0.08]	0.003 [0.08]
0.003 [0.08]	0.003 [0.08]	0.003 [0.08]	0.004 [0.10]
0.004 [0.10]	0.004 [0.10]	0.004 [0.10]	0.0045 [0.11]
0.004 [0.10]	0.004 [0.10]	0.004 [0.10]	0.005 [0.13]
0.005 [0.13]	0.005 [0.13]	0.005 [0.13]	0.006 [0.15]
0.007 [0.17]	0.007 [0.17]	0.007 [0.17]	0.007 [0.17]
0.007 [0.17]	0.007 [0.17]	0.007 [0.17]	0.0075 [0.19]
0.007 [0.17]	0.007 [0.17]	0.008 [0.20]	0.009 [0.23]
0.007 [0.17]	0.007 [0.17]	0.009 [0.23]	0.010 [0.25]

^a Thickness measurements are taken at least 1/16, INCH. [9.52 mm] from the edge of the sheet.

^b For specified thicknesses other than those shown, the tolerances for the next higher thickness shall apply.

Specified Thickness α_s , INCH. [mm]	Permitted Variations in Thickness of HOT-ROLLED, WIDE, Coil-Processed Product as Coil and Cut Lengths	
	Permitted Variations, INCH. [mm], Over and Under, Except as Indicated Otherwise, for Specified Width (w) INCH. [mm]	Specified Width (w) INCH. [mm] w ≤ 60 [1525]
0.072 [1.83]	0.006 [0.15]	0.009 [0.22]
>0.072 [1.83] to 0.083 [2.11]	0.007 [0.18]	0.010 [0.25]
>0.083 [2.11] to 0.098 [2.49]	0.008 [0.20]	0.011 [0.27]
>0.098 [2.49] to 0.114 [2.90]	0.009 [0.23]	0.012 [0.30]
>0.114 [2.90] to 0.130 [3.30]	0.011 [0.27]	0.013 [0.33]
>0.130 [3.30] to 0.145 [3.68]	0.012 [0.30]	0.013 [0.33]
>0.145 [3.68] to 0.1875 [4.76]	0.013 [0.33]	0.014 [0.35]
>0.1875 [4.76] to 0.250 [6.35]	-0.010 [0.25], +0.020 [0.50]	-0.010 [0.25], +0.020 [0.50]
>0.250 [6.35] to 0.3125 [7.94]	-0.010 [0.25], +0.022 [0.55]	-0.010 [0.25], +0.022 [0.55]
>0.3125 [7.94]	-0.010 [0.25], +0.030 [0.75]	-0.010 [0.25], +0.030 [0.75]

^a Thickness measurements are taken at least 1/16, INCH. [9.52 mm] from the edge of the sheet.

PERMITTED THICKNESS TOLERANCES IN SI UNITS AS PER ASTM A480M
FOR Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip

Specified Thickness (<i>t</i>), INCH. [mm]	Permitted Variations in Thickness of HOT-ROLLED MILL PLATE (Quarto Plate) ^{A,B,C}			
	Width (<i>w</i>), INCH. [mm]			
	<i>w</i> ≤ 84 [2134]	84 [2134] < <i>w</i> ≤ 120 [3048]	120 [3048] < <i>w</i> ≤ 144 [3658]	<i>w</i> > 144 [3658]
Tolerance Over Specified Thickness, <i>e</i> , INCH. [mm]				
<i>t</i> < 3/16 [4.76]	0.055 [1.35]	0.070 [1.78]	...	...
3/16 [4.76] ≤ <i>t</i> < 3/8 [9.52]	0.045 [1.14]	0.050 [1.27]	0.085 [2.16]	...
3/8 [9.52] ≤ <i>t</i> < 1/2 [19.05]	0.055 [1.40]	0.060 [1.52]	0.085 [2.16]	0.090 [2.29]
1/2 [19.05] ≤ <i>t</i> < 1 [25.40]	0.060 [1.52]	0.065 [1.65]	0.085 [2.16]	0.100 [2.54]
1 [25.40] ≤ <i>t</i> < 2 [50.80]	0.070 [1.78]	0.075 [1.90]	0.095 [2.41]	0.115 [2.92]
2 [50.80] ≤ <i>t</i> < 3 [76.20]	0.125 [3.20]	0.150 [3.80]	0.175 [4.45]	0.200 [5.08]
3 [76.20] ≤ <i>t</i> < 4 [101.6]	0.150 [3.81]	0.160 [4.06]	0.200 [5.08]	0.225 [5.72]
4 [101.6] ≤ <i>t</i> < 6 [152.4]	0.180 [4.57]	0.200 [5.08]	0.335 [8.50]	0.355 [9.02]
6 [152.4] ≤ <i>t</i> < 8 [203.2]	0.235 [6.00]	0.255 [6.48]	0.355 [9.02]	0.435 [11.0]
8 [203.2] ≤ <i>t</i> < 10 [254.0]	0.315 [8.00]	0.335 [8.50]	0.435 [11.0]	0.650 [14.0]

A. Thickness is measured along the longitudinal edges of the plate at least 1/8, INCH. [9.52 mm], but not more than 3 INCH. [76.20 mm], from the edge.
B. For plates up to 10 INCH. [254.0 mm], incl, in thickness, the tolerance under the specified thickness is 0.010 INCH. [0.25 mm].
C. For circles, the over thickness tolerances in this table apply to the diameter of the circle corresponding to the width ranges shown. For plates of irregular shape, the over thickness tolerances apply to the greatest width corresponding to the width ranges shown.

Permitted Variations in Thickness of COLD-ROLLED, NARROW, Coil-Processed Product as Coil and Cut Lengths			
Specified Thickness, mm	Thickness Tolerances, for the Thickness and Widths Given, Over and Under, mm, Width (<i>w</i>), mm		
	50 to 150, incl <i>w</i> ≤ 125	Over 150 to 300, incl 125 < <i>w</i> < 250	Over 300 to 600, excl 250 < <i>w</i> ≤ 600
Thickness Tolerances, <i>e</i> , mm			
0.15	0.010	0.015	0.020
0.25	0.015	0.020	0.025
0.50	0.025	0.030	0.035
0.75	0.030	0.040	0.050
1.00	0.030	0.040	0.050
1.25	0.035	0.045	0.050
1.50	0.040	0.050	0.060
1.75	0.050	0.060	0.070
2.00	0.060	0.060	0.070
2.50	0.050	0.070	0.080
3.00	0.060	0.070	0.090
4.00	0.070	0.070	0.090
4.99	0.070	0.070	0.090

NOTE: For specified thicknesses other than those shown, the tolerances for the next higher thickness shall apply. Thickness tolerances given in mm unless otherwise indicated.

Permitted Variations in Thickness of COLD-ROLLED, WIDE, Coil-Processed Product as Coil and Cut Lengths			
Specified Thickness, mm	Permitted Variation, Over and Under, mm, for specified width (<i>w</i>), <i>w</i> in mm		
	<i>w</i> ≤ 1000	1000 < <i>w</i> ≤ 1300	1300 < <i>w</i> ≤ 2100
0.30	0.03	...	...
0.40	0.04	0.04	...
0.50	0.045	0.05	...
0.60	0.05	0.05	...
0.80	0.06	0.06	...
1.00	0.065	0.06	0.07
1.20	0.08	0.08	0.08
1.50	0.08	0.08	0.10
2.00	0.10	0.10	0.11
2.50	0.10	0.11	0.13
3.00	0.13	0.13	0.15
4.00	0.17	0.17	0.17
5.00	0.17	0.17	0.19
6.00	0.17	0.20	0.23
8.00	0.17	0.22	0.25

Permitted Variations in Thickness of HOT-ROLLED PLATE MILL PLATE (Quarto Plate) ^{A,D}				
Specified Thickness, mm	Width (<i>w</i>), mm			
	<i>w</i> < 2100	2100 ≤ <i>w</i> < 3000	3000 ≤ <i>w</i> < 3600	<i>w</i> ≥ 3600
5	1.36	1.75	...	...
8	1.15	1.30	2.15	...
10	1.15	1.30	2.15	...
20	1.40	1.55	2.15	2.30
25	1.56	1.65	2.15	2.55
50	1.80	1.90	2.40	2.95
75	3.20	3.80	4.45	5.10
100	3.75	4.00	5.00	5.70
150	4.50	5.00	6.50	9.00
200	6.00	6.50	9.00	11.00
250	8.00	8.50	11.00	14.00

A. Thickness is measured along the longitudinal edges of the plate at least 10 mm but not more than 75 mm from the edge.
B. For circles, the over thickness tolerances in this table apply to the diameter of the circle corresponding to the width ranges shown. For plates of irregular shape, the over thickness tolerances apply to the greatest width corresponding to the width ranges shown. For plates up to 250 mm, incl, in thickness, the tolerance under the specified thickness is 0.30 mm.

NOTE: For specified thicknesses other than those shown, the tolerances for the next higher thickness shall apply. Thickness tolerances given in mm unless otherwise indicated.

Carbon Steel Structural plates - ASTM A36

CHEMICAL COMPOSITION						
GRADE	C	Mn	S	P	Si	Cu
ASTM A36	0.025 ^A	0.80-1.20 ^B	0.05	0.04	0.40 ^C	0.20MIN ^D

Notes: THE SINGLE VALUE SHOULD BE READ AS THE MAXIMUM CONTENT FOR EACH ITEM UNLESS AND OTHERWISE SPECIFIED.

- A- If the thickness of the plate is more than 40mm, C content up to 0.26 is acceptable. If the plate thickness is more than 65mm, C content up to 0.27 is acceptable. If the plate thickness is more than 100mm, C content up to 0.29 is acceptable.
- B- If the plate thickness is more than 65mm, Mn content should be in the range of 0.85 to 1.20
- C- If the plate thickness is more than 40mm, Si content should be in the range of 0.15 to 0.40
- D- Copper content needs to be specified only if copper steel is specified.

MECHANICAL PROPERTIES						
GRADE	TENSILE STRENGTH KSI [MPA]	YIELD POINT KSI [MPA] MIN	ELONGATION % MIN IN 50MM ^A	ELONGATION % MIN IN 200MM ^A		
ASTM A36	58-80 [400-550]	36 [250] ^B	23	20		

Notes:

A - FOR PLATES THICKNESS MORE THAN 200MM, MINIMUM YIELD POINT OF 220 MPA IS ACCEPTABLE.
B - FOR PLATES WIDER THAN 600MM [24 INCH], ELONGATION REQUIREMENT IS REDUCED TO 2 PERCENTAGE POINTS.

Low and Intermediate Tensile Strength Carbon Steel Plates - ASTM A283

CHEMICAL COMPOSITION						
GRADE	C	Mn	S	P	Si	Cu
ASTM A283 Gr.A	0.14	0.90	0.04	0.035	0.40 ^A	0.20 ^B
ASTM A283 Gr.B	0.17	0.90	0.04	0.035	0.40 ^A	0.20 ^B
ASTM A283 Gr.C	0.24	0.90	0.04	0.035	0.40 ^A	0.20 ^B
ASTM A283 Gr.D	0.27	0.90	0.04	0.035	0.40 ^A	0.20 ^B

Notes: THE SINGLE VALUE SHOULD BE READ AS THE MAXIMUM CONTENT FOR EACH ITEM UNLESS AND OTHERWISE SPECIFIED.

- A - If the plate thickness is more than 40mm, Si content should be in the range of 0.15 to 0.40.
- B - Copper content needs to be specified only if copper steel is specified.

MECHANICAL PROPERTIES						
GRADE	TENSILE STRENGTH KSI [MPA]	YIELD POINT KSI [MPA] MIN	ELONGATION % MIN IN 50MM ^A	ELONGATION % MIN IN 200MM ^A		
ASTM A283 Gr.A	45-60 [310-415]	24 [165]	30	27		
ASTM A283 Gr.B	50-65 [345-450]	27 [185]	28	25		
ASTM A283 Gr.C	55-75 [380-515]	30 [205]	25	22		
ASTM A283 Gr.D	60-80 [415-550]	33 [230]	23	20		

Notes:

A - FOR PLATES WIDER THAN 600MM [24 INCH], ELONGATION REQUIREMENT IS REDUCED TO 2 PERCENTAGE POINTS.

Pressure Vessel Plates, Carbon Steel, Low- And Intermediate- Tensile Strength - ASTM A285

CHEMICAL COMPOSITION						
GRADE	C	Mn	S	P		
ASTM A285 Gr.A	0.17	0.90	0.035	0.035		
ASTM A285 Gr.B	0.22	0.90	0.035	0.035		
ASTM A285 Gr.C	0.28	0.90	0.035	0.035		

Notes: THE SINGLE VALUE SHOULD BE READ AS THE MAXIMUM CONTENT FOR EACH ITEM UNLESS AND OTHERWISE SPECIFIED.

PRESSURE VESSEL PLATES, CARBON STEEL, LOW- AND INTERMEDIATE-TENSILE STRENGTH – MECHANICAL PROPERTIES						
GRADE	TENSILE STRENGTH KSI [MPA]	YIELD POINT KSI [MPA] MIN	ELONGATION % MIN IN 200MM	ELONGATION % MIN IN 200MM		
ASTM A285 Gr.A	45-65 [310-450]	24 [165]	30	27		
ASTM A285 Gr.B	50-70 [345-485]	27 [185]	28	25		
ASTM A285 Gr.C	55-75 [380-515]	30 [205]	27	23		

Notes:

Pressure Vessel Plates, Carbon Steel, For Intermediate- And Higher- Temperature Service - ASTM A515

CHEMICAL COMPOSITION						
GRADE	C	Mn	S	P	Si	
ASTM A515 Gr. 60	0.24 ^a	0.90	0.035	0.035	0.15-0.40	
ASTM A515 Gr. 65	0.28 ^a	0.90	0.035	0.035	0.15-0.40	
ASTM A515 Gr. 70	0.31 ^a	0.90	0.035	0.035	0.15-0.40	

Notes: THE SINGLE VALUE SHOULD BE READ AS THE MAXIMUM CONTENT FOR EACH ITEM UNLESS AND OTHERWISE SPECIFIED.

A - If the plate thickness is more than 25mm, C content up to 0.27 is acceptable, if the plate thickness is more than 50mm, C content up to 0.29 is acceptable.
 thickness is more than 100mm, C content up to 0.31 is acceptable.
 B - If the plate thickness is more than 25mm, C content up to 0.31 is acceptable, if the plate thickness is more than 50mm, C content up to 0.33 is acceptable.
 C - If the plate thickness is more than 25mm, C content up to 0.33 is acceptable, if the plate thickness is more than 50mm, C content up to 0.35 is acceptable.

PRESSURE VESSEL PLATES, CARBON STEEL, FOR INTERMEDIATE- AND HIGHER-TEMPERATURE SERVICE – MECHANICAL PROPERTIES						
GRADE	TENSILE STRENGTH KSI [MPA]	YIELD POINT KSI [MPA] MIN	ELONGATION % MIN IN 50MM	ELONGATION % MIN IN 200MM		
ASTM A515 Gr. 60	60-80 [415-550]	32 [220]	25	21		
ASTM A515 Gr. 65	65-85 [450-585]	35 [240]	23	19		
ASTM A515 Gr. 70	70-90 [485-620]	38 [260]	21	17		

Notes:

GRADE	CHEMICAL COMPOSITION					
	C	Mn	S	P	Si	
ASTM A516 Gr. 55	0.18 ^A	0.60-0.90 ^E	0.035	0.035	0.15-0.40	
ASTM A516 Gr. 60	0.21 ^A	0.60-0.90 ^E	0.035	0.035	0.15-0.40	
ASTM A516 Gr. 65	0.24 ^C	0.85-1.20	0.035	0.035	0.15-0.40	
ASTM A516 Gr. 70	0.27 ^D	0.85-1.20	0.035	0.035	0.15-0.40	

Notes: THE SINGLE VALUE SHOULD BE READ AS THE MAXIMUM CONTENT FOR EACH ITEM UNLESS AND OTHERWISE SPECIFIED.

A - If the plate thickness is more than $\frac{3}{8}$ ", C content up to 0.20 is acceptable. If the plate thickness is more than 50mm, C content up to 0.22 is acceptable. If the plate thickness is more than 100mm, C content up to 0.24 is acceptable. If the plate thickness is more than 200mm, C content up to 0.26 is acceptable.

B - If the plate thickness is more than 100mm, C content up to 0.23 is acceptable. If the plate thickness is more than 200mm, C content up to 0.25 is acceptable.

C - If the plate thickness is more than 100mm, C content up to 0.27 is acceptable. If the plate thickness is more than 100mm, C content up to 0.26 is acceptable. If the plate thickness is more than 50mm, C content up to 0.28 is acceptable.

D - If the plate thickness is more than $\frac{3}{8}$ ", C content up to 0.28 is acceptable. If the plate thickness is more than 100mm, C content up to 0.30 is acceptable.

E - If the plate thickness is more than $\frac{3}{8}$ ", Mn content should be in the range of 0.60 to 1.20.

F - If the plate thickness is more than $\frac{3}{8}$ ", Mn content should be in the range of 0.85 to 1.20.

MECHANICAL PROPERTIES

GRADE	TENSILE STRENGTH KSI [MPA]	YIELD POINT KSI [MPA] MIN	ELONGATION % MIN IN 50MM	ELONGATION % MIN IN 200MM
ASTM A516 Gr. 55	55-75 [380-515]	30 [205]	27	23
ASTM A516 Gr. 60	60-80 [415-550]	32 [220]	25	21
ASTM A516 Gr. 65	65-85 [450-585]	35 [240]	23	19
ASTM A516 Gr. 70	70-90 [485-620]	38 [260]	21	17

Notes:

Pressure Vessel Plates, Alloy Steel , High Strength, Quenched And Tempered - ASTM A517

CHEMICAL COMPOSITION													
GRADE	C	Mn	S	P	Si	Cr	Ni	Mo	V	Nb	B	Ti	Zr
ASTM A 517 GR. A	0.15-0.21	0.80-1.10	0.035	0.035	0.40-0.80	0.50-0.80		0.18-0.28			0.0025		0.05-0.15
ASTM A 517 GR. B	0.15-0.21	0.70-1.00	0.035	0.035	0.15-0.35	0.40-0.65		0.15-0.25	0.03-0.08		0.0005-0.005	0.01-0.04	
ASTM A 517 GR. E	0.12-0.20	0.40-0.70	0.035	0.035	0.10-0.40	1.40-2.00		0.40-0.60			0.001-0.005	0.01-0.10	
ASTM A 517 GR. F	0.10-0.20	0.60-1.00	0.035	0.035	0.15-0.35	0.40-0.65	0.70-1.00	0.40-0.60	0.03-0.08		0.0005-0.006		
ASTM A 517 GR. H	0.12-0.21	0.95-1.30	0.035	0.035	0.15-0.35	0.40-0.65	0.30-0.70	0.20-0.30	0.03-0.08		0.0005 MIN		
ASTM A 517 GR. P	0.12-0.21	0.45-0.70	0.035	0.035	0.20-0.35	0.85-1.20	1.20-1.50	0.45-0.60			0.001-0.005		
ASTM A 517 GR. Q	0.14-0.21	0.95-1.30	0.035	0.035	0.15-0.35	1.00-1.50	1.20-1.50	0.40-0.60	0.03-0.08				
ASTM A 517 GR. S	0.10-0.20	1.10-1.50	0.035	0.035	0.15-0.40			0.10-0.35	0.036		0.06		

Notes:

MECHANICAL PROPERTIES													
GRADE	TENSILE STRENGTH KSI [MPA]	YIELD POINT KSI [MPA] MIN	ELONGATION % MIN IN 50MM RECTANGULAR SPECIMEN % MIN	REDUCTION OF AREA ROUND SPECIMEN % MIN	REDUCTION OF AREA								
ASTM A 517 GR. A, B, E, F, H, P, Q, S 2.50 in. [65 mm] and Under	115-135 [795-930]	100 [690]	16	35	35								
ASTM A 517 GR. A, B, E, F, H, P, Q, S Over 2.50 to 6 in. [65 to 150 mm]	105-135 [725 to 930]	90 [620]	14		45								

Notes:

Pressure Vessel Plates, Alloy Steel, Chromium-molybdenum - ASTM A387

CHEMICAL COMPOSITION											
GRADE	C	Mn	S	P	Si	Cr	Ni	Mo	V	Nb	N
ASTM A387 Gr. 2	0.04 - 0.21	0.55 - 0.80	0.035	0.035	0.15 - 0.40	0.50 - 0.80			0.45 - 0.60		
ASTM A387 Gr. 12	0.05 - 0.17	0.40 - 0.65	0.035	0.035	0.15 - 0.40	0.80 - 1.15			0.45 - 0.60		
ASTM A387 Gr. 11	0.05 - 0.17	0.40 - 0.65	0.035	0.035	0.50 - 0.80	1.00 - 1.50			0.45 - 0.65		
ASTM A387 Gr. 22	0.05 - 0.15 ^A	0.30 - 0.60	0.035	0.035	0.50	2.00 - 2.50			0.90 - 1.10		
ASTM A387 Gr. 22L	0.10	0.30 - 0.60	0.035	0.035	0.50	2.00 - 2.50			0.90 - 1.10		
ASTM A387 Gr. 21	0.05 - 0.15 ^A	0.30 - 0.60	0.035	0.035	0.50	2.75 - 3.25			0.90 - 1.10		
ASTM A387 Gr. 21L	0.10	0.30 - 0.60	0.035	0.035	0.50	2.75 - 3.25			0.90 - 1.10		
ASTM A387 Gr. 5	0.15	0.30 - 0.60	0.030	0.035	0.50	4.00 - 6.00			0.45 - 0.65		
ASTM A387 Gr. 9	0.15	0.30 - 0.60	0.030	0.030	1.00	8.00 - 10.0			0.90 - 1.10	0.04	
ASTM A387 Gr. 91	0.08 - 0.12	0.30 - 0.60	0.010	0.020	0.20 - 0.50	8.00 - 9.50	0.40	0.85 - 1.05	0.18 - 0.25	0.06 - 0.10	0.03 - 0.07
										0.02	0.01
										0.01	0.01

Notes: THE SINGLE VALUE SHOULD BE READ AS THE MAXIMUM CONTENT FOR EACH ITEM UNLESS AND OTHERWISE SPECIFIED.

A - The carbon content for plates over 5 in. [125 mm] in thickness is 0.17 max on product analysis.

MECHANICAL PROPERTIES - CLASS 1											
GRADE	TENSILE STRENGTH KSI [MPA]	YIELD POINT KSI [MPA] MIN	ELONGATION % MIN IN 50MM	ELONGATION % MIN IN 200MM	REDUCTION OF AREA %			ROUND SPECI.	FLAT SPECI.		
ASTM A387 Gr. 2	55 - 80 [380 - 550]	33 [230]	22	18							
ASTM A387 Gr. 12	55 - 80 [380 - 550]	33 [230]	22	18							
ASTM A387 Gr. 11	60 - 85 [415 - 585]	35 [240]	22	19							
ASTM A387 Gr. 22	60 - 85 [415 - 585]	30 [205]	18					45	40		
ASTM A387 Gr. 22L	60 - 85 [415 - 585]	30 [205]	18					45	40		
ASTM A387 Gr. 21	60 - 85 [415 - 585]	30 [205]	18					45	40		
ASTM A387 Gr. 21L	60 - 85 [415 - 585]	30 [205]	18					45	40		
ASTM A387 Gr. 5	60 - 85 [415 - 585]	30 [205]	18					45	40		
ASTM A387 Gr. 9	60 - 85 [415 - 585]	30 [205]	18					45	40		
ASTM A387 Gr. 91	60 - 85 [415 - 585]	30 [205]						45	40		

MECHANICAL PROPERTIES - CLASS 2 ^A											
GRADE	TENSILE STRENGTH KSI [MPA]	YIELD POINT KSI [MPA] MIN	ELONGATION % MIN IN 50MM	ELONGATION % MIN IN 200MM	REDUCTION OF AREA %			ROUND SPECI.	FLAT SPECI.		
ASTM A387 Gr. 2	70 - 90 [485 - 620]	45 [310]	22	18							
ASTM A387 Gr. 12	65 - 85 [450 - 585]	40 [275]	22	19							
ASTM A387 Gr. 11	75 - 100 [515 - 690]	45 [310]	22	18							
ASTM A387 Gr. 22	75 - 100 [515 - 690]	45 [310]	18					45	40		
ASTM A387 Gr. 21	75 - 100 [515 - 690]	45 [310]	18					45	40		
ASTM A387 Gr. 5	75 - 100 [515 - 690]	45 [310]	18					45	40		
ASTM A387 Gr. 9	75 - 100 [515 - 690]	45 [310]	18					45	40		
ASTM A387 Gr. 91	85 - 110 [585 - 760]	60 [415]	18					45	40		

Notes:

A - NOT APPLICABLE TO ANNEALED PLATES.

Wear Resistance Plates

GRADE	CHEMICAL COMPOSITION										
	C	Mn	S	P	Si	Cr	Ni	Mo	V	Nb	B
Hardoxx HITuf	0.20	1.60	0.010	0.020	0.50 ^A	0.70	2.00	0.70	0.060 ^B	0.040	0.005
Hardoxx Extreme	0.47	1.00	0.010	0.015	0.70	1.20	2.50	0.80			0.004
Hardoxx 600	0.45 ^C	1.00	0.010	0.015	0.70	1.20	2.50	0.80			0.004
Hardoxx 550	0.37	1.30	0.010	0.020	0.50	1.40	1.40	0.60			0.004
Hardoxx 500	0.27 ^D	1.60	0.010	0.025	0.70	1.00 ^E	0.25 ^F	0.25 ^G			0.004
Hardoxx 450	0.21 ^H	1.60	0.010	0.025	0.70	0.25 ^I	0.25 ^J	0.25 ^K			0.004
Hardoxx 400	0.15 ^L	1.60	0.010	0.025	0.70	0.30 ^M	0.25 ^N	0.25 ^O			0.004

Notes: THE SINGLE VALUE SHOULD BE READ AS THE MAXIMUM CONTENT FOR EACH ITEM UNLESS AND OTHERWISE SPECIFIED.

- A – If the thickness of the plate is more than 70mm Si content up to 0.60 is acceptable.
- B – If the thickness of the plate is more than 70mm V content up to 0.90 is acceptable.
- C – If the thickness of the plate is more than 30mm C content up to 0.47 is acceptable.
- D – If the thickness of the plate is more than 11mm to 40mm Cr content up to 0.29 is acceptable. If the plate is more than 40mm C content up to 0.30 is acceptable.
- E – If the thickness of the plate is more than 40mm Cr content up to 1.50 is acceptable.
- F – Plates 13 to 32mm, Ni content up to 0.50 is acceptable. Plates 32 to 40mm, Ni content up to 1.00 is acceptable. For Plates thickness more than 40mm, Ni content up to 1.50 is acceptable.
- G – Plates 13 to 32mm, Mo content up to 0.30 is acceptable. For Plates more than 40mm, Mo content up to 0.60 is acceptable.
- H – Plates 20 to 50mm, C content up to 0.23 is acceptable. For Plates more than 50mm, C content up to 0.26 is acceptable.
- I – Plates 8 to 20mm, Cr content up to 0.50 is acceptable. Plates 20 to 40mm, Cr content up to 1.00 is acceptable. For Plates more than 40mm thickness, Cr content up to 1.40 is acceptable.
- J – Plates more than 50mm thickness, Ni content up to 1.00 is acceptable.
- K – Plates more than 40mm thickness, Mo content up to 0.60 is acceptable.
- L – Plates 20 to 32mm, C content up to 0.18 is acceptable. Plates 32 to 51mm, C content up to 0.22 is acceptable. Plates 51 to 80mm, C content up to 0.27 is acceptable. For Plates more than 80mm, C content up to 0.32 is acceptable.
- M – Plates 8 to 20mm, Cr content up to 0.50 is acceptable. Plates 20 to 32mm, Cr content up to 1.00 is acceptable. For Plates more than 32mm thickness, Cr content up to 1.40 is acceptable.
- N – Plates 20 to 51mm, Ni content up to 0.50 is acceptable. Plates 51 to 80mm, Ni content up to 1.00 is acceptable. For Plates more than 80mm thickness, Ni content up to 1.50 is acceptable.
- O – For Plates more than 32mm thickness, Mo content up to 0.60 is acceptable.

MECHANICAL PROPERTIES

GRADE	PLATE THICKNESS RANGE	TENSILE STRENGTH KSI [MPA] MIN	YIELD POINT KSI [MPA] MIN	ELONGATION % MIN	HARDNESS HBW	IMPACT ENERGY 1/4 DEPTH CHARPY-V, LONGITUDINAL (J)
Hardoxx HITuf	40 – 70MM	140 [980]	135 [950]	16	310 - 370	95 @ -40° C (-40° F)
Hardoxx HITuf	70 – 120MM	130 [900]	120 [880]	16	310 - 370	70 @ -40° C (-40° F)
Hardoxx Extreme	8 – 25MM				650 - 700	
Hardoxx 600	8 – 50MM				570 - 640	20 @ -40° C (-40° F)
Hardoxx 550	10 – 50MM				525 - 575	30 @ -40° C (-40° F)
Hardoxx 500	4 – 32MM				470 - 530	30 @ -40° C (-40° F)
Hardoxx 500	32 – 80MM				450 - 540	30 @ -40° C (-40° F)
Hardoxx 450	3 – 80MM	200 [1400]	170 [1200]	10	425 - 475	40 @ -40° C (-40° F)
Hardoxx 400	3 – 130mm	180 [1250]	145 [1000]	10	370 - 430	45 @ -40° C (-40° F)

Notes:

PERMITTED THICKNESS TOLERANCES IN INCH UNITS AS PER ASTM A6
FOR Rectangular, Carbon, High-Strength, Low-Alloy, and Alloy-Steel Plates, 15 INCH and Under in Thickness

Specified Thickness, INCH.	Permitted Variations Over Specified Thickness for Widths Given in INCHES.											
	48 and under	Over 48 to 60, excl	60 to 72, excl	72 to 84, excl	84 to 96, excl	96 to 108, excl	108 to 120, excl	120 to 132, excl	132 to 144, excl	144 to 168, excl	168 to 182, excl	182 and over
To 1/4, excl	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	...	...	...
1/4 to 5/16, excl	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	...	...	...
5/16 to 3/8, excl	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.05	...	...
3/8 to 7/16, excl	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.05	0.06	0.06	...
7/16 to 1/2, excl	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.05	0.06	0.06	...
1/2 to 5/8, excl	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.05	0.06	0.07	...
5/8 to 3/4, excl	0.03	0.03	0.03	0.03	0.04	0.04	0.05	0.05	0.06	0.07	0.07	0.07
3/4 to 1, excl	0.03	0.03	0.03	0.04	0.04	0.05	0.05	0.06	0.07	0.08	0.09	...
1 to 2, excl	0.06	0.06	0.06	0.06	0.06	0.07	0.08	0.10	0.10	0.11	0.13	0.16
2 to 3, excl	0.09	0.09	0.09	0.10	0.10	0.11	0.12	0.13	0.14	0.15	0.15	...
3 to 4, excl	0.11	0.11	0.11	0.11	0.13	0.14	0.14	0.14	0.15	0.15	0.17	...
4 to 5, excl	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.20	0.20	...
6 to 10, excl	0.23	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.27	0.28	...
10 to 12, excl	0.29	0.29	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.35	0.35	...
12 to 15, incl	0.29	0.29	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	...

NOTE

- 1 : Permitted variation under specified thickness, 0.01 INCH.
- 2 : Thickness to be measured at 1/8 to 1/4 INCH from the longitudinal edge.
- 3 : For thicknesses measured at any location other than that specified in Note 2, the permitted variations over specified thickness shall be 1 1/2 times the amounts in this table, rounded to the nearest 0.01 INCH.
- 4 : Where "..." appears in this table, there is no requirement.

PERMITTED THICKNESS TOLERANCES IN SI UNITS AS PER ASTM A6
FOR Rectangular, Carbon, High-Strength, Low-Alloy, and Alloy-Steel Plates, 15 INCH and Under in Thickness

Specified Thickness, mm.	Permitted Variations Over Specified Thickness for Widths Given in Millimeters, mm										
	1200 and Under	Over 1200 to 1500, excl	1500 to 1800, excl	1800 to 2100, excl	2100 to 2400, excl	2400 to 2700, excl	2700 to 3000, excl	3000 to 3300, excl	3300 to 3600, excl	3600 to 4200	4200 And Over
5.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	1.0	...	...
5.5	0.8	0.8	0.8	0.8	0.8	0.8	0.8	1.0	1.0	...	...
6.0	0.8	0.8	0.8	0.8	0.8	0.8	0.9	1.0	1.1	...	...
7.0	0.8	0.8	0.8	0.8	0.8	0.8	0.9	1.0	1.2	1.4	...
8.0	0.8	0.8	0.8	0.8	0.8	0.8	0.9	1.0	1.2	1.4	...
9.0	0.8	0.8	0.8	0.8	0.8	0.8	1.0	1.0	1.3	1.5	...
10.0	0.8	0.8	0.8	0.8	0.8	0.8	1.0	1.0	1.3	1.5	1.7
11.0	0.8	0.8	0.8	0.8	0.8	0.8	1.0	1.0	1.3	1.5	1.7
12.0	0.8	0.8	0.8	0.8	0.8	0.9	1.0	1.0	1.3	1.5	1.8
14.0	0.8	0.8	0.8	0.8	0.9	0.9	1.0	1.1	1.3	1.5	1.8
16.0	0.8	0.8	0.8	0.8	0.9	0.9	1.0	1.1	1.3	1.5	1.8
18.0	0.8	0.8	0.8	0.8	0.9	1.0	1.1	1.2	1.4	1.6	2.0
20.0	0.8	0.8	0.8	0.8	0.9	1.0	1.2	1.2	1.4	1.6	2.0
22.0	0.8	0.9	0.9	1.0	1.1	1.3	1.3	1.5	1.8	2.0	...
25.0	0.9	1.0	1.0	1.0	1.2	1.3	1.5	1.5	1.5	1.8	2.2
28.0	1.0	1.1	1.1	1.1	1.3	1.4	1.8	1.8	2.0	2.2	...
30.0	1.1	1.1	1.2	1.2	1.4	1.5	1.8	1.8	2.1	2.4	...
32.0	1.2	1.2	1.3	1.3	1.5	1.6	2.0	2.0	2.3	2.6	...
35.0	1.3	1.3	1.4	1.4	1.6	1.7	2.3	2.3	2.5	2.8	...
38.0	1.4	1.5	1.5	1.5	1.7	1.8	2.3	2.3	2.7	3.0	...
40.0	1.5	1.5	1.6	1.6	1.8	2.0	2.5	2.5	2.8	3.3	...
45.0	1.6	1.6	1.7	1.8	1.8	2.0	2.3	2.8	2.8	3.0	3.5
50.0	1.8	1.8	1.8	2.0	2.0	2.3	2.5	3.0	3.0	3.3	3.8
55.0	2.0	2.0	2.2	2.2	2.5	2.8	3.3	3.3	3.5	3.8	...
60.0	2.3	2.3	2.4	2.4	2.8	3.0	3.4	3.4	3.8	4.0	...
70.0	2.5	2.5	2.6	2.6	3.0	3.3	3.5	3.5	4.0	4.0	...
80.0	2.8	2.8	2.8	2.8	3.3	3.5	3.5	3.6	4.0	4.0	...
90.0	3.0	3.0	3.0	3.0	3.5	3.5	3.5	3.6	4.0	4.4	...
100.0	3.3	3.3	3.3	3.5	3.5	3.8	3.8	3.8	4.4	4.4	...
110.0	3.5	3.5	3.5	3.5	3.8	3.8	3.8	3.8	4.4	4.4	...
120.0	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	4.8	4.8	...
130.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.2	5.2	...
140.0	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	5.6	5.6	...
150.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.6	5.6	...
160.0	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	5.6	5.6	...
180.0	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	6.3	6.3	...
200.0	5.8	5.8	6.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0	...
250.0	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	8.5
300.0	7.5	7.5	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0

NOTE

- 1: Permitted variation under specified thickness, 0.3 mm.
- 2: Thickness to be measured at 10 to 20 mm from the longitudinal edge.
- 3: For specified thicknesses not listed in this table, the permitted variations in thickness shall be as given for the next higher value of specified thickness that is listed in this table.
- 4: For thickness measured at any location other than that specified in Note 2, the permitted variations over specified thickness shall be 1 1/2 times the amounts in this table, rounded to the nearest 0.1 mm.
- 5: Where "..." appears in this table, there is no requirement.



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