PLATES & SHEETS

HOT ROLLED BLACK SHEETS

COMMERCIAL QUALITY A-569

Size (In.)	Nom. Thickness	Weight Per Sheet
7GA x 48 x 96	(.1793)	240.0 (Lbs.)
x 48 x 120		300.0
x 48 x 144		360.0
x 48 x 240		600.0
x 60 x 120		375.0
x 60 x 240		750.0
x 72 x 120		450.0
x 72 x 144		540.0
x 72 x 240		900.0
10GAx 48 x 96	(.1345)	180.0 (Lbs.)
x 48 x 120		225.0
x 48 x 144		270.0
x 60 x 120		281.3
x 72 x 120		337.5
x 72 x 144		405.0
11GAx 48 x 96	(.1196)	160.0 (Lbs.)
x 48 x 120		200.0
x 48 x 144		240.0
x 60 x 120		250.0
x 72 x 120		300.0
x 72 x 144		360.0
12GAx 48 x 96	(.1046)	140.0 (Lbs.)
x 48 x 120		175.0
x 48 x 144		210.0
x 60 x 96		175.0
x 60 x 120		218.8
x 72 x 120		262.5
x 72 x 144		315.0
14GAx 36 x 144	(.0747)	112.5 (Lbs.)
x 48 x 96		100.0
x 48 x 120		125.0
x 48 x 144		150.0
x 60 x 120		156.25
x 60 x 144		187.5
x 72 x 120		187.5
16GAx 36 x 120	(.0598)	75.0 (Lbs.)
x 48 x 96		80.0
x 48 x 120		100.0
x 48 x 144		120.0
x 48 x 168		140.0
x 60 x 96		100.0
x 60 x 120		125.0
x 60 x 144		150.0
x 60 x 168		175.0

COLD ROLLED BLACK SHEETS

CLASS A COMMERCIAL QUALITY

Size (In.)	Nom. Thickness	Weight Per Sheet
18GAx48 X96	(.0478)	64.0 (Lbs.)
x48 x 120		80.0
20GAx48 x 120	(.0359)	60.0 (Lbs.)

STANDARD WEIGHT OF GAUGES

UNCOATED SHEETS

Number of Gauge	Weight Per Square Foot	Approx. Thick. in. Fractions of an inch	Number of Gauge	Weight Per Square Foot	Approx. Thick. in Fractions of an inch
7	7.5	3/16	19	1.75	7/160
8	6.875	11/64	20	1.5	3/80
9	6.25	5/32	21	1.375	11/320
10	5.625	9/64	22	1.25	1/32
11	5.	1/8	23	1.125	9/320
12	4.375	7/64	24	1.	1/40
13	3.75	3/32	25	.875	7/320
14	3.125	5/64	26	.75	3/160
15	2.812	9/128	27	.688	11/640
16	2.5	1/16	28	.625	1/64
17	2.25	9/160	29	.562	9/640
18	2.	1/20	30	.5	1/80

GALVANIZED SHEETS

LOCKFORMING QUALITY

Size (In.)	Nom. Thickness	Weight Per Sheet
10GAx 48 x120	(.1345)	231.2 (Lbs.)
12GAx 48 x120	(.1196)	181.2 (Lbs.)
14GAx 48 x96	(.0747)	105.0 (Lbs.)
x 48 x120		131.2
16GAx 36 x96	(.0598)	63.7 (Lbs.)
x 36 x120		79.7
x 48 x96		85.0
x 48 x120		106.2
18GAx 36 x120	(.0478)	64.7 (Lbs.)
x 48 x96		69.0
x 48 x120		86.2
20GAx 36 x96	(.0359)	39.7 (Lbs.)
x 36 x120		49.7
x 48 x96		53.0
x 48 x120		66.2
22GAx 36 x96	(.0299)	33.7 (Lbs.)
x 36 x120		42.2
x 48 x96		45.0
x 48 x120		56.2
24GAx 36 x96	(.0239)	27.7
x 36 x120		34.7
x 48 x96		37.0
48 x120		46.2
26GAx 36 x96	(.0179)	21.7 (Lbs.)
x 36 x120		27.2
x 48 x96		29.0
x 48 x120		36.2
28GAx 36 x96	(.0149)	18.7
x 36 x120		23.4

PERFORATED SHEETS

LOCKFORMING QUALITY

21GAx48x96 with 1/8" Diameter Holes on 1/4" centers
18GAx48x120 with 1/2" Diameter Holes on 11/16" centers

CARBON STEEL PLATES

HOT ROLLED AND SHEARED
A-36, 283 GRADE D, & ABS HULL QUALITY

Thickness Inch	Stock Width Inches	Weight Per Sq. Ft. (Lbs.)
3/16	48-60-72-84-96-120	7.66
1/4	48-60-72-84-96-108-120	10.21
5/16	48-60-72-84-96-120	12.76
3/8	48-60-72-84-96-108-120	15.32
7/16	48-60-72-84-96-108-120	17.87
1/2	48-60-72-84-96-108-120	20.42
9/16	72	22.98
5/8	48-60-72-84-96-120	25.52
3/4	48-60-72-84-96-120	30.63
7/8	48-60-72-84-96	35.74
1	48-60-72-84-96	40.84
1 1/8	48-72-96	45.94
1 1/4	48-60-72-96	51.05
1 3/8	48-72	56.16
1 1/2	48-60-72-96	61.26
1 5/8	72	66.36
1 3/4	48-60-72-84-96	71.47
1 7/8	96	76.58
2	48-60-72-84-96	81.68
2 1/4	48-72-84-96	91.85
2 1/2	48-72-96	102.10
2 3/4	72	112.31
3	48-72-96	122.52
3 1/2	48-72	142.94
3 3/4	48	153.15
4	48-72-96	163.36
5	48-72	204.20
6	48-60-72	245.04
7	48	285.88
8	48	326.72

WEIGHTS OF THICKNESSES OF ROLLED CARBON STEEL PLATES

Thick-ness In.	Lbs. Per Sq. Ft.	Thick-ness In.	Lbs. Per Sq. Ft.	Thick-ness In.	Lbs. Per Sq. Ft.
3/16	7.66	1 1/8	66.36	4 1/2	173.57
1/4	10.21	1 1/4	71.47	4 1/2	183.78
5/16	12.76	1 1/8	76.58	4 3/4	193.99
3/8	15.32	2	81.68	5	204.20
7/16	17.87	2 1/8	86.74	5 1/2	224.62
1/2	20.42	2 1/4	91.85	6	245.04
9/16	22.98	2 3/8	97.00	6 1/2	265.46
5/8	25.52	2 1/2	102.10	7	285.88
11/16	28.09	2 5/8	107.20	7 1/2	306.30
3/4	30.63	2 3/4	112.31	8	326.72
7/8	35.74	2 7/8	117.42	8 1/2	347.14
1	40.84	3	122.52	9	367.56
1 1/8	45.94	3 1/4	132.73	10	408.40
1 1/4	51.05	3 1/2	142.94	11	449.24
1 3/8	56.16	3 3/4	153.15	12	490.08
1 1/2	61.26	4	163.36		

FLOOR PLATES
DIAMOND PATTERN AND 4 WAY SAFETY PATTERN

Thickness In.	Width In.	Weight Per Sq. ft. (Lbs.)
16GA	48	3.00
14GA	48	3.75
1/8	48	6.16
	60	6.16
	72	6.16
3/16	48	8.71
	60	8.71
	72	8.71
	96	8.71
1/4	48	11.26
	60	11.26
	72	11.26
	96	11.26
5/16	48	13.81
	60	13.81
	72	13.81
	96	13.81
3/8	48	16.37
	60	16.37
	72	16.37
	96	16.37
1/2	48	21.47
	60	21.47
	72	21.47
	96	21.47
5/8	72	26.58
	96	26.58
3/4	48	31.68
	72	31.68
	96	31.68

CALL CHATHAM STEEL FOR HIGH STRENGTH & ALLOY STEELS

HIGH STRENGTH LOW ALLOY (WEATHERING) STEELS A242, A588, A606 TYPE IV

A family of premier, atmospheric corrosion resistant (weathering) high strength low alloy structural steel shapes, plates and bars for welded, riveted or bolted construction but intended primarily for

use in welded bridges and buildings, where savings in weight or added durability are important. The atmospheric corrosion resistance of this steel in most environments is substantially better than that of most carbon structural steels with or without copper addition. In fact, the corrosion resistance is aproximately four times that of A36.

ASTM A572-50

High-Strength Low-Alloy Columbium — Vanadium Structural Steel

This specification covers four grades of high-strength low alloy structural steel shapes, plates, sheet piling and bars. Grades 42 and 50 are intended for riveted, bolted, or welded construction of bridges, buildings and other structures. Grades 60 and 65 are intended for riveted or bolted construction of bridges, or for riveted, bolted or welded construction in other applications.

For welded bridge construction notch toughness is an important requirement. The use of columbium, vanadium, and nitrogen or combinations thereof, within certain limitations shall be at the option of the producer.

ASTM A709

The standard specification for carbon and high-strength low-alloy structural steel shapes, plates, and bars and quenched and tempered alloy steel for structural plates intended for use in bridges. It is available in six grades and four yield strength levels.

A709-36	A709-50W	A709-100
A709-50	A709-70W	A709-100W

Grades 50W, 70W and 100W have enhanced atmospheric corrosion resistance.

The ASTM A709 specification meets all the requirements of the American Association of State Highway and Transportation Officials (AASHTO) codes.

ASTM A656

Hot-Rolled Structural Steel, High-Strength Low-Alloy Plate with Improved Formability

This specification covers high-strength, low-alloy, hot rolled structural steel plate for use in truck frames, brackets, crane booms, rail cars, and similar applications. Steels that conform to this specification offer improved formability. These steels shall be made to a killed steel fine grain practice, and include specified alloying elements. These steels are normally furnished as rolled.The product is furnished in two types and four strength grades.

Grade 50	Grade 70
Grade 60	Grade 80

PRESSURE VESSEL QUALITY (PVQ) PLATE

ASTM A516

This specification covers carbon steel plates intended primarily for service in welded pressure vessels where improved notch toughness is important. Plates under this specification are available in four grades.

Grade 55	Grade 65
Grade 60	Grade 70

Plates 1.50" and under in thickness are normally supplied in the “as-rolled” condition. The plates may be ordered normalized or stress relieved or both. Plates over 1.50" thick are required to be normalized. A516 grade 70 is the grade that is stocked by most warehouses.

Other pressure vessel quality (PVQ) plates not as popular as A516 are ASTM A285, ASTM A515 and ASTM A387. ASTM A285 and ASTM A515 have basically been replaced by ASTM A516. ASTM 387 is an alloy (PVQ) plate.

QUENCHED AND TEMPERED STEEL

ASTM A514

This ASTM specification covers quenched and tempered alloy steel plates of structural quality in thickness of 6" and under, intended primarily for use in welded bridges and other structures. When the steel is to be welded, it is presupposed that a welding procedure suitable for the grade of steel and intended use or service will be utilized.

There are fourteen different grades of A514, each differing in their chemistry. Although A514 is produced to a maximum thickness of 6", not all of the grades are available to that thickness.

This specification is utilized primarily for its high yield to weight ratio. Plates 2.50" and under have a minimum yield strength of 100,000 psi. Plates over 2.50" to 6" have a minimum yield strength of 90,000 psi. These yield strengths are approximately three times the strength of A-36.

All steel plates have a particular hardness value. A514, being a quenched and tempered alloy steel has a Brinell hardness range of 235-293 through 3/4" thickness per ASTM specifications. This Brinell hardness will not appear on any mill certification, since A514 is used for strength only.

ABRASION RESISTANT STEEL PLATE

Steel plate comes in a wide range of hardness. Hardness in steel can be defined as resistance to penetration. Abrasion resistant plate is manufactured to a Brinell hardness. Hardness is measured using a Brinell test. The smaller the indentation on the plate surface after the Brinell test, means less penetration and the "harder" the plate surface. Hardness in steel is directly proportional to tensile strength. As hardness and strength increases, the formability and weldability of steel decreases. Even though there is a direct correlation between steel hardness and tensile strength, mill producers will not certify to both.

There are two types of abrasion:

1. Impact abrasion — surface is worn away by chipping, spalling or cutting caused by hard materials striking the surface.
2. Sliding abrasion — surface is worn away by friction, such as sand sliding down a chute.

There are no specific ASTM specifications for abrasion resistant (AR) steel. Over the years, steel producers, end users and wear plate distributions have developed trade names and specifications for a general group of applications that have become standard in the industry.

Because there are no published standards there can be a great deal of flexibility in the chemistries used.

AR steels are usually tested for surface hardness only.

The specific AR steels fall into the following ranges.

TYPE	GRADE	BRINELL	RANGE
Carbon as rolled	AR235	235 Typical	(not tested) - has an approximate brinell hardness of 235
Alloy (Q+T)	AR321	321 min	321-363
Alloy (Q+T)	AR360	360 min	360-444
Alloy (Q+T)	AR400	360 min	360-444
Alloy (Q+T)	AR500	477 min	477-534
Alloy (Q+T)	400 Formable	360 min	360-444
Alloy (Q+T)	500 Formable	477 min	477-534

The 400 formable and 500 formable combine the benefits of a low sulfur, low carbon equivalent chemistry to improve both welding and cold forming characteristics beyond traditional abrasion resistant steels. Also, unlike traditional AR steels, the 400 formable steel has a through-thickness hardness.

STANDARD MILL PRACTICE

Rectangular sheared plates and Universal mill plates

WIDTH AND LENGTH TOLERANCE FOR SHEARED PLATES
(1½ in. and under in thickness)

LENGTH TOLERANCE ONLY FOR UNIVERSAL MILL PLATES
(2½ in. and under in thickness)

Specified Dimensions, In.		Variations over Specified Width and Length for Thicknesses. In., and Equivalent Weights, lb. per sq. ft, Given							
		To 5/16 excl.		5/16 to 5/8, excl.		5/8 to 1, excl.		1 to 2, incl.[a]	
Length	Width	To 15.3, exc.		15.3 to 25.5, excl.		25.5 to 40.8, excl.		40.8 to 81.7, Incl.	
		Width	Length	Width	Length	Width	Length	Width	Length
To 120, excl	To 60 excl.	3/8	1/2	7/16	5/8	1/2	3/4	5/8	1
	60 to 84, excl.	7/16	5/8	1/2	11/16	5/8	7/8	3/4	1
	84 to 108, excl.	1/2	3/4	5/8	7/8	3/4	1	1	1 1/8
	108 and over	5/8	7/8	3/4	1	7/8	1 1/8	1 1/8	1 1/4
120 to 240, excl.	To 60 excl.	3/8	3/4	1/2	7/8	5/8	1	3/4	1 1/8
	60 to 84, excl.	1/2	3/4	5/8	7/8	3/4	1	7/8	1 1/4
	84 to 108, excl.	9/16	7/8	11/16	15/16	13/16	1 1/8	1	1 3/8
	108 and over	5/8	1	3/4	1 1/8	7/8	1 1/4	1 1/8	1 3/8
240 to 360, excl.	To 60 excl.	3/8	1	1/2	1 1/8	5/8	1 1/4	3/4	1 1/2
	60 to 84, excl.	1/2	1	5/8	1 1/8	3/4	1 1/4	7/8	1 1/2
	84 to 108, excl.	9/16	1	11/16	1 1/8	7/8	1 3/8	1	1 1/2
	108 and over	11/16	1 1/8	7/8	1 1/4	1	1 3/8	1 1/4	1 3/4
360 to 480, excl.	To 60 excl.	7/16	1 1/8	1/2	1 1/4	5/8	1 3/8	3/4	1 5/8
	60 to 84, excl.	1/2	1 1/4	5/8	1 3/8	3/4	1 1/2	7/8	1 5/8
	84 to 108, excl.	9/16	1 1/4	3/4	1 3/8	7/8	1 1/2	1	1 7/8
	108 and over	3/4	1 3/8	7/8	1 1/2	1	1 5/8	1 1/4	1 7/8
480 to 600, excl.	To 60 excl.	7/16	1 1/4	1/2	1 1/2	5/8	1 5/8	3/4	1 7/8
	60 to 84, excl.	1/2	1 3/8	5/8	1 1/2	3/4	1 5/8	7/8	1 7/8
	84 to 108, excl.	5/8	1 3/8	3/4	1 1/2	7/8	1 5/8	1	1 7/8
	108 and over	3/4	1 1/2	7/8	1 5/8	1	1 3/4	1 1/4	1 7/8
600 to 720, excl.	To 60 excl.	1/2	1 3/4	5/8	1 7/8	3/4	1 7/8	7/8	2 1/4
	60 to 84, excl.	5/8	1 3/4	3/4	1 7/8	7/8	1 7/8	1	2 1/4
	84 to 108, excl.	5/8	1 3/4	3/4	1 7/8	7/8	1 7/8	1 1/8	2 1/4
	108 and over	7/8	1 3/4	1	2	1 1/8	2 1/4	1 1/4	2 1/2
720 and over	To 60 excl.	9/16	2	3/4	2 1/8	7/8	2 1/4	1	2 3/4
	60 to 84, excl.	3/4	2	7/8	2 1/8	1	2 1/4	1 1/8	2 3/4
	84 to 108, excl.	3/4	2	7/8	2 1/4	1	2 1/4	1 1/4	2 3/4
	108 and over	1	2	1 1/8	2 3/8	1 1/4	2 1/2	1 3/8	3

[a]Permissible variations in length apply also to Universal Mill plates up to 12 in. in width for thicknesses over 2 to 2½ in., incl. except for alloy steels up to 2¾ in. thick.

Notes: Permissible variations under specified width and length, 1/4 in.
Table applies to all steels listed in ASTM A6.

STANDARD MILL PRACTICE

Rectangular sheared plates and Universal mill plates

WIDTH TOLERANCE FOR UNIVERSAL MILL PLATES (15 in. and under in thickness)

Specified Width In.	Variations Over Specified Width for Thickness, in., and Equivalent Weights, lb. per sq. ft. Given					
	To 3/16, excl.	3/16 to 1/4, excl.	5/16 to 1, excl.	1 to 2 Incl.	Over 2 to 10 Incl.	Over 10 to15 Incl.
	To 15.3, excl.	15.3 to 25.5, excl.	25.5 to 40.8, excl.	40.8 to 81.7 incl.	81.7 to 409.0 incl.	409.0 to 613.0, incl.
Over 8 to 20 excl.	1/8	1/8	3/16	1/4	3/8	1/2
20 to 36, excl.	3/16	1/4	5/16	3/8	7/16	9/16
36 and over	5/16	3/8	7/16	1/2	9/16	5/8

Notes: Permissible variation under specified width, 1/8 in.
Table applies to all steels listed in ASTM A6.

CAMBER TOLERANCE FOR CARBON STEEL SHEARED AND GAS CUT RECTANGULAR PLATES

Maximum permissible camber, in. (all thicknesses) = 1/8 in. x (total length, ft./5)

CAMBER TOLERANCE FOR CARBON STEEL UNIVERSAL MILL PLATES, HIGH-STRENGTH AND HIGH-STRENGTH LOW—ALLOY STEEL SHEARED AND GAS CUT RECTANGULAR PLATES, UNIVERSAL MILL PLATES, SPECIAL CUT PLATES

Dimension in.		Camber for Thicknesses and Widths Given
Thickness	Width	
To 2, incl	All	1/8 in. x (total length, ft./5)
Over 2 to 15, incl.	To 30, incl.	3/16 in. x (total length, ft./5)
Over 2 to 15, incl.	Over 30 to 60, incl.	1/2 in. x (total length, ft./t)

STANDARD MILL PRACTICE

Rectangular sheared plates and Universal mill plates

FLATNESS TOLERANCES (CARBON STEEL ONLY)

Specified Thickness, in.	Flatness Tolerances for Specified Widths, In.							
	To 36, excl.	36 to 48, excl.	48 to 60, excl.	60 to 72, excl.	72 to 84, excl.	84 to 96, excl.	96 to 108, excl.	108 to 120, excl.
To ¼, excl.	9/16	3/4	15/16	1 1/4	1 3/8	1 1/2	1 5/8	1 3/4
¼ to ⅜, excl.	1/2	5/8	3/4	15/16	1 1/8	1 1/4	1 3/8	1 1/2
⅜ to ½, excl.	1/2	7/16	5/8	3/4	7/8	1	1 1/8	
½ to ¾, excl.	7/16	1/2	9/16	5/8	7/8	5/8	3/4	1	1
¾ to 1, excl.	7/16	1/2	9/16	5/8	5/8	5/8	3/4	7/8
1 to 2, excl.	3/8	1/2	1/2	9/16	9/16	5/8	5/8	5/8
2 to 4, excl.	5/16	3/8	7/16	1/2	1/2	1/2	1/2	9/16
4 to 6, excl.	3/8	7/16	1/2	1/2	9/16	9/16	5/8	3/4
6 to 8, excl.	7/16	1/2	1/2	5/8	1 1/16	3/4	7/8	7/8

General Notes:

1. The longer dimension specified is considered the length, and permissible variations in flatness along the length should not exceed the tabular amount for the specified width in plates up to 12 ft. in length.
2. The flatness variations across the width should not exceed the tabular amount for the specified width.
3. When the longer dimension is under 36 in., the permissible variation should not exceed 1/4 in. When the longer dimension is from 36 to 72 in., incl., the permissible variation should not exceed 75% of the tabular amount for the specified width, but in no case less than 1/4 in.
4. These variations apply to plates which have a specified minimum tensile strength of not more than 60,000 psi or compatible chemistry or hardness. The limits in the table are increased 50% for plate specified to a higher minimum tensile strength or compatible chemistry or hardness.

FLATNESS TOLERANCES (HIGH-STRENGTH LOW ALLOY AND ALLOY STEEL, HOT ROLLED OR THERMALLY TREATED)

Specified Thickness, in.	Flatness Tolerances for Specified Widths, In.							
	To 36, excl.	36 to 48, excl.	48 to 60, excl.	60 to 72, excl.	72 to 84, excl.	84 to 96, excl.	96 to 108, excl.	108 to 120, excl.
To ¼, excl.	13/16Qx1 1/8	1 3/8	1 7/8	2	2 1/4	2 3/8	2 5/8	
¼ to ⅜, excl.	3/4	15/16	1 1/8	1 3/8	1 3/4	1 7/8	2	2 1/4
⅜ to ½, excl.	3/4	7/8	15/16	15/16	1 1/8	1 5/16	1 1/2	1 5/8
½ to ¾, excl.	5/8	3/4	13/16	7/8	1	1 1/8	1 1/4	1 3/8
¾ to 1, excl.	5/8	3/4	7/8	7/8	15/16	1	1 1/8	1 5/16
1 to 2, excl.	9/16	5/8	3/4	13/16	7/8	15/16	1	1
2 to 4, excl.	1/2	9/16	11/16	3/4	3/4	3/4	3/4	7/8
4 to 6, excl.	9/16	11/16	3/4	3/4	7/8	7/8	15/16	1 1/8
6 to 8, excl.	5/8	3/4	3/4	15/16	1	1 1/8	1 1/4	1 5/16

General Notes:

1. The longer dimension specified is considered the length, and variations from a flat surface along the length should not exceed the tabular amount for the specified width in plates up to 12 ft. in length.
2. The flatness variation across the width should not exceed the tabular amount for the specified width.
3. When the longer dimension is under 36 in., the variation should not exceed ¾ in. When the larger dimension is from 36 to 72 in. incl. the variation should not exceed 75% of the tabular amount for the specified width.

OTHER AVAILABLE PRODUCTS AND GRADES

Plates and Sheets

Alloy	4130	CQ Alloy Steel AQ MIL-S 18729 AMS6350
	4140	Alloy Steel Plate
	4340	CQ Alloy Steel AQ AMS 6359
	6150	Steel Plate
	MIL-DTE-46100E	Armor Plate