HOT-ROLLED RAIL STEEL BARS

(Produced from Tee-Section Rails)

COMMERCIAL STANDARD CS150-48

Effective Date for New Production From October 20, 1948

A RECORDED VOLUNTARY STANDARD
OF THE TRADE

UNITED STATES DEPARTMENT OF COMMERCE

CHARLES SAWYER, Secretary

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COMMERCIAL STANDARD FOR HOT-ROLLED RAIL STEEL BARS

(Produced from Tee-Section Rails)

On January 30, 1948, at the instance of the Rail Steel Bar Association, a Recommended Commercial Standard for Hot-Rolled Rail Steel Bars was presented to interested producers, distributors, and users for written acceptance. Those concerned have since accepted and approved the standard as shown herein.

Project Manager: E. C. BARRETT, Commodity Standards Division, National Bureau of Standards.

Technical Adviser: A. H. STANG, and B. S. JAFFE, Mechanics Division, National Bureau of Standards.

COMMERCIAL STANDARD CS150–48

for

HOT-ROLLED RAIL STEEL BARS

(Produced from Tee-Section Rails)

PURPOSE

1. The purpose of this commercial standard is to establish an attainable standard of quality, recognized standard sizes and manufacturing tolerances considered standard for the industry, and to provide efficient designation of size and properties as a basis of common understanding between manufacturers, distributors, and users of rail steel products other than concrete reinforcing bars, which are covered in Simplified Practice Recommendation R26.

SCOPE

2. This commercial standard provides minimum specifications for properties and covers nominal dimensions, size tolerances, weights, shipping practice, and standard marking for hot-rolled rail steel products, which currently are in general use and demand. Wording of a declaration for a label to indicate compliance with the commercial standard is also included.

GENERAL REQUIREMENTS

3. The following nomenclature, symbols, dimensions, tolerances, types, and properties are recognized by the industry as standard for hot-rolled rail steel products.

4. Rail steel is the established trade and technical term used to identify products of the industry and is applied consistently as an accurate description of the industry's variety of products in all sizes.

5. Where practicable in production and use, the usual railhead insignia may be rolled on the bar surface to designate the grade. Where such is impracticable, the registered insignia may be shown on the tags.

6. For the purpose of ordering, it is the industry practice to designate the nominal section dimensions of products in inches and fractions or decimals.

7. Materials should be ordered in specified lengths or ranges of random length in feet and inches, and, when multiple lengths are ordered, the specified lengths should include the amount required for any loss in cutting the desired number of units. Specifications for definite long lengths with no shorts are acceptable but are subject to negotiation. Orders are acceptable for given sections in total linear feet, total weight, or specified number of pieces of a given length.

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On quantities of a size up to 10 tons, shipment of 10 percent over or under is permissible, and on quantities of a size 10 tons and over, shipment of 5 percent over or under is permissible.

8. Length, dimension, and straightness tolerances are in inches and fractions, or decimals, as listed. Weight variations will be based on a percentage of the nominal weight in pounds.

9. Users accustomed to the metric system may select equivalent section dimensions and lengths by means of conversion tables for the purpose of ordering and determining quantities. (See appendix.)

10. The product offered shall be considered one type of steel, that is, the quality available as rolled from standard tee-section railroad rails.

11. Physical properties as rolled shall conform to the requirements of this commercial standard.

12. Certain methods and customs followed in the industry as regular procedure in the absence of agreement to the contrary between the manufacturers and the purchaser are:

(a) Inspections and tests for acceptance of the material, when required, shall be made prior to shipment from the mill. For this purpose, the producer affords the purchaser's inspector, without charge, all reasonable facilities to determine that the material is being furnished in accordance with specifications.

(b) Producers generally made free replacement of defective material. Producers do not accept liability for unauthorized charges on defective material, and when defective material is encountered by the consignee, the producer should be notified promptly. Material should not be returned for any reason without instructions from the producer.

(c) Bars and shapes (other than concrete reinforcing bars) are invoiced on mill scale weights. On checking by the consignee, 1 percent is considered a permissible variation from invoiced weights to account for differences in kind, type, location, and accuracy of scales and errors by the weighers. Although invoices may show the number of bars in each lift, the tally should be regarded as approximate and the weight shall govern.

DETAIL REQUIREMENTS

13. *Rail steel products.*

(a) Rail steel products shall be rolled from standard tee-section steel rails. No other materials, such as those known by the terms "rerolled," "rail steel equivalent," and "rail steel quality," shall be substituted.

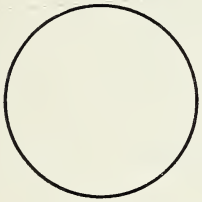
(b) The minimum tensile properties shall conform to the following: Yield strength, minimum: 50,000 lb/in.^{2}. Tensile strength, minimum: 80,000 lb/in.^{2}. In general, hot-rolled rail steel bars (rounds, squares, octagons, diamonds, triangles, ovals, flats, and bands) shall be tested in full section "as rolled." However, on all sections, at manufacturer's option, machined test specimens in accordance with the current Standard Methods of Tension Testing of Metallic Materials, ASTM Serial Designation E8, are permissible. A retest shall be performed if test specimens develop flaws or break outside the middle third of the gage length.

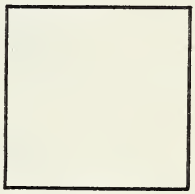
(c) Rail steel products will not be sold to definite chemical analysis, but by special agreement with the producer, may be supplied, when they are available, from rails with a desired range of carbon and manganese.

(d) Rail steel products shall be rolled to specified dimensions within tolerances given in tables 20 to 29, inclusive, and shall be free from injurious defects.

14. *Sizes.*—The sizes of rail steel products customary to the industry are listed in tables 1 to 19, inclusive. Nominal dimensions in inches or gage, together with approximate weights in pounds per foot, are shown.

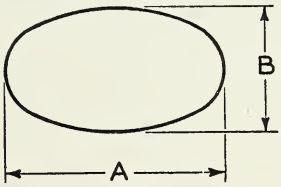
TABLE 1. *Bars—rounds and squares*





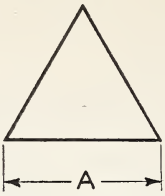
Size	Weight	
	Rounds	Squares
in.	*lb/ft*	*lb/ft*
3/8	0.376	0.478
1/2	.668	.850
9/16	.845	1.076
5/8	1.043	1.328
11/16	1.262	1.607
3/4	1.502	1.913
7/8	2.044	2.603
1	2.670	3.400
1 1/8	3.380	4.303
1 1/4	4.172	5.313

TABLE 2. *Oval bars*



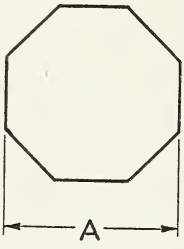
Size		Weight
A	B	
in.	*in.*	*lb/ft*
5/8	5/16	0.490
3/4	5/16	.584
3/4	3/8	.700
7/8	7/16	.944

TABLE 3. *Equilateral triangle bars*



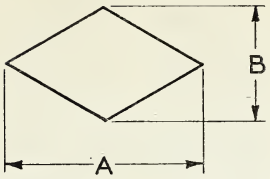
Size	Weight
in.	*lb/ft*
7/16	0.340
9/16	.560
5/8	.580
3/4	.930

TABLE 4. *Octagon bars*



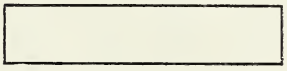
Size	Weight
in.	*lb/ft*
1/2	0.70
5/8	1.10
3/4	1.58
7/8	2.16
1	2.82
1 1/8	3.56

TABLE 5. *Diamond bars*



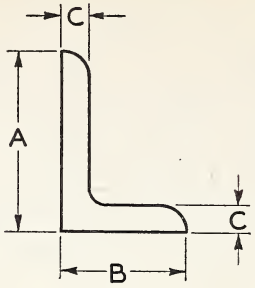
Size		Weight
A	B	
in.	*in.*	*lb/ft*
7/8	5/8	1.020
13/16	1 1/16	1.05
7/8	3/4	1.120

TABLE 6. *Flats and bands*



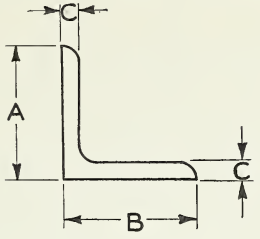
Width	Weights, in pounds per linear foot in sizes rolled												
	Thickness, inches												
	7/64	1/8	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	3/4	7/8	1
in.	*lb*	*lb*	*lb*	*lb*	*lb*	*lb*	*lb*	*lb*	*lb*	*lb*	*lb*	*lb*	*lb*
5/8	0.233	0.266	0.399	0.531	0.664	0.797	0.930	1.06	------	------	------	------	------
3/4	.279	.319	.478	.636	.797	.957	1.116	1.275	1.434	1.59	------	------	------
7/8	.326	.372	.558	.743	.929	1.116	1.302	1.487	1.674	1.86	2.23	------	------
1	.376	.425	.638	.850	1.06	1.28	1.49	1.70	1.92	2.12	2.55	------	------
1 1/8	------	.478	.717	.957	1.20	1.43	1.68	1.92	2.15	2.39	2.87	------	------
1 1/4	------	.531	.797	1.06	1.33	1.59	1.86	2.12	2.39	2.65	3.19	3.72	4.25
1 3/8	------	.585	.875	1.17	1.46	1.76	2.05	2.34	2.63	2.92	3.51	4.09	4.68
1 1/2	------	------	.957	1.28	1.59	1.92	2.23	2.55	2.87	3.19	3.83	4.47	5.10
1 5/8	------	------	1.04	1.38	1.73	2.08	2.42	2.72	3.11	3.46	4.15	4.84	5.53
1 3/4	------	------	1.15	1.49	1.86	2.23	2.60	2.98	3.35	3.72	4.47	5.20	5.95
2	------	------	1.28	1.70	2.12	2.55	2.98	3.40	3.83	4.25	5.10	------	------
2 1/4	------	------	1.44	1.92	2.39	2.87	3.35	3.83	4.30	4.78	5.75	------	------
2 1/2	------	------	1.59	2.12	2.65	3.19	3.72	4.25	------	------	------	------	------
2 3/4	------	------	1.75	2.34	2.92	3.51	4.09	4.67	------	------	------	------	------
3	------	------	1.91	2.55	3.19	3.83	4.46	5.10	------	------	------	------	------
3 1/4	------	------	2.07	2.76	3.45	4.15	------	------	------	------	------	------	------
3 1/2	------	------	2.23	2.98	3.72	4.47	------	------	------	------	------	------	------
3 3/4	------	------	2.39	3.19	3.99	------	------	------	------	------	------	------	------
4	------	------	2.55	3.40	4.25	------	------	------	------	------	------	------	------
4 1/4	------	------	2.71	3.61	4.52	------	------	------	------	------	------	------	------
4 1/2	------	------	2.87	3.83	4.78	------	------	------	------	------	------	------	------
4 3/4	------	------	3.03	4.04	------	------	------	------	------	------	------	------	------
5	------	------	3.19	4.25	------	------	------	------	------	------	------	------	------

TABLE 7. *Angles—unequal legs*



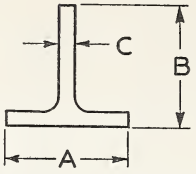
Size				Weight	Size				Weight
A	B	C			A	B	C		
in.	*in.*	*in.*	*gage*	*lb/ft*	*in.*	*in.*	*in.*	*gage*	*lb/ft*
1	⅝	7/64		0.56	1¾	1½	7/64		1.14
			11	.62				11	1.28
		⅛		.64			⅛		1.30
		9/64		.72			9/64		1.49
		5/32		.80			5/32		1.65
		3/16		.92			3/16		1.96
							¼		2.55
1 1/16	1 3/16	⅛		.75			5/16		3.13
		3/16		1.08			⅜		3.67
1⅜	⅞	7/64		0.80	2	1		11	1.18
			11	.87			⅛		1.23
		⅛		.91			5/32		1.55
		9/64		1.02			3/16		1.80
		5/32		1.14			¼		2.34
		3/16		1.32			⅜		3.35
		¼		1.80				11	1.34
1⅜	1	7/64		.85	2	1⅜	⅛		1.39
		⅛		.96			5/32		1.71
		9/64		1.08			3/16		2.04
		5/32		1.20			¼		2.66
		3/16		1.40				11	1.38
1⅜	1⅛	7/64		0.89	2	1½	⅛		1.44
			11	.97			9/64		1.62
		⅛		1.01			5/32		1.80
		9/64		1.13			3/16		2.12
		5/32		1.25			¼		2.77
		3/16		1.48			5/16		3.39
		¼		1.92			⅜		3.99
1½	1		11	0.97	2½	1½	⅛		1.64
		⅛		1.01			3/16		2.44
		9/64		1.13			¼		3.19
		5/32		1.25			5/16		3.92
		3/16		1.48			⅜		4.80
1½	1¼		11	1.07	2½	2		11	1.79
		⅛		1.12			⅛		1.86
		9/64		1.25			9/64		2.09
		5/32		1.38			5/32		2.34
		3/16		1.64			3/16		2.75
		¼		2.13			¼		3.62
							5/16		4.50
			13	0.83			⅜		5.30
			12	.97					
			11	1.05	3	2	3/16		3.07
1¾	1	⅛		1.10			¼		4.10
		5/32		1.35			5/16		5.00
		3/16		1.60			⅜		5.90
1¾	1¼	⅛		1.23	3	2½	3/16		3.39
		3/16		1.80			¼		4.50
		¼		2.34			5/16		5.60
							⅜		6.60

TABLE 8. *Angles—equal legs*



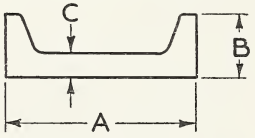
Size				Weight	Size				Weight
A	B	C			A	B	C		
in.	*in.*	*in.*	*gage*	*lb/ft*	*in.*	*in.*	*in.*	*gage*	*lb/ft*
		7/64		0.52			7/64		1.26
			11	.57				11	1.38
		1/8		.59			1/8		1.44
3/4	3/4	9/64		.66			9/64		1.62
		5/32		.75	1 3/4	1 3/4	5/32		1.78
		3/16		.84			3/16		2.12
		1/4		.94			1/4		2.77
							5/16		3.39
		3/32		.54			3/8		3.99
		7/64		.61					
			11	.67				11	1.58
7/8	7/8	1/8		.70			1/8		1.65
		9/64		.77			9/64		1.85
		5/32		.85	2	2	5/32		2.06
		3/16		1.60			3/16		2.44
							1/4		3.19
		3/32		0.64			5/16		3.92
		7/64		.71			3/8		4.70
			11	.77					
1	1	1/8		.80				11	1.79
		9/64		.88			1/8		1.86
		5/32		.98			9/64		2.10
		3/16		1.16	2 1/4	2 1/4	5/32		2.34
		1/4		1.48			3/16		2.75
							1/4		3.62
			11	0.87			5/16		4.50
1 1/8	1 1/8	1/8		.91			3/8		5.30
		3/32		.78				11	2.00
		7/64		.88			1/8		2.08
			11	.97			9/64		2.32
		1/8		1.01			5/32		2.54
1 1/4	1 1/4	9/64		1.13	2 1/2	2 1/2	3/16		3.07
		5/32		1.25			1/4		4.10
		3/16		1.48			5/16		5.00
		1/4		1.93			3/8		5.90
		5/16		2.33					
		5/32		1.40			3/16		3.71
1 3/8	1 3/8	9/16		1.68	3	3	1/4		4.90
							5/16		6.10
		7/64		1.08			3/8		7.20
			11	1.18					
		1/8		1.23					
		9/64		1.37					
1 1/2	1 1/2	5/32		1.52					
		3/16		1.80					
		1/4		2.34					
		5/16		2.86					
		3/8		3.35					

TABLE 9. *Tees—equal*



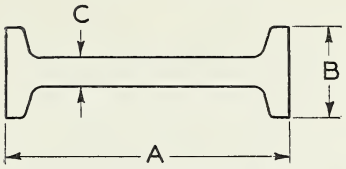
Size			Weight
A	B	C	
in.	*in.*	*in.*	*lb/ft*
1¼	1¼	⅛	1.15
		3/16	1.50
1⅜	1⅜	⅛	1.20
		9/64	1.25
1½	1½	⅛	1.35
		3/16	1.90

TABLE 10. *Channels*



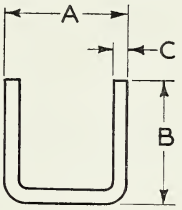
Size			Weight
A	B	C	
in.	*in.*	*in.*	*lb/ft*
1	⅜	⅛	0.68
	½	⅛	.84
1¼	½	3/16	1.25
	9/16	¼	1.49
1½	½	3/16	1.33
	⅝	5/16	2.05
1¾	13/16	⅜	3.10
2	9/16	3/16	1.86
	⅞	7/16	4.00
2⅛	7/16	5/32	1.60
2½	7/16	⅛	1.46
	15/32	5/32	1.72
	½	3/16	1.99
	9/16	¼	2.52

TABLE 11. I-*Beams*



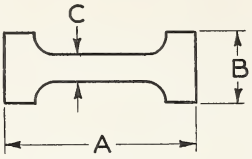
Size			Weight
A	B	C	
in.	*in.*	*in.*	*lb/ft*
1½	5/8	1/8	1.30
	21/32	5/32	1.40
	11/16	3/16	1.60
	3/4	1/4	2.00
2⅛	5/8	1/8	1.46
	21/32	5/32	1.70
	11/16	3/16	1.91
	3/4	1/4	2.30

TABLE 12. U-*Bars*



Size			Weight
A	B	C	
in.	*in.*	*in.*	*lb/ft*
1¼	17/32	5/32	1.50
	15/16	3/16	1.50
	1¼	3/16	1.90
1 5/16	7/8	3/16	1.50
	15/16	1/4	2.00
	1 5/16	5/16	2.48

TABLE 13. *Channeled flats—square cornered*



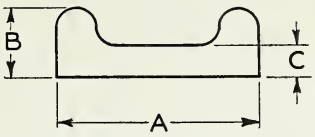
Size			Weight
A	B	C	
in.	*in.*	*in.*	*lb/ft*
1¼	7/16	3/16	1.25
	½	¼	1.50
	9/16	5/16	1.75
	⅝	⅜	2.00
1½	7/16	3/16	1.50
	½	¼	1.85
	9/16	5/16	2.15
	⅝	⅜	2.45
1¾	7/16	3/16	1.75
	½	¼	2.20
	9/16	5/16	2.50
	⅝	⅜	2.88
2	7/16	3/16	2.10
	½	¼	2.40
	9/16	5/16	2.82
	⅝	⅜	3.25

TABLE 14. *Channeled flats—round-cornered*

(Outside corners rounded on approximately ¼-in. radius)

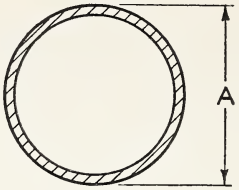
Size			Weight
A	B	C	
in.	*in.*	*in.*	*lb/ft*
2	⅜	5/32	1.725
	13/32	5/32	1.92
	7/16	3/16	2.13
2	½	¼	2.55
	½	9/32	2.56
	9/16	5/16	2.98
	⅝	⅜	3.40

TABLE 15. *Channels—round-cornered*



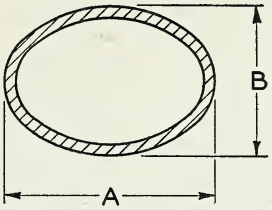
Size			Weight
A	B	C	
in.	*in.*	*in.*	*lb/ft*
1½	7/16	3/16	1.38
	½	5/32	1.28
	½	¼	1.69
	9/16	5/16	2.01
	5/8	3/8	2.32
1¾	5/8	¼	2.25
	1 1/16	5/16	2.65
2	9/16	3/16	1.88
	5/8	¼	2.30
	1 1/16	5/16	2.72

TABLE 16. *Tubing—round, butted, or welded*



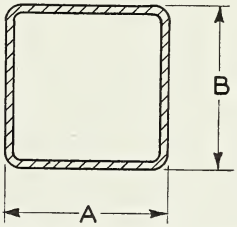
Diameter	Wall thicknesses		Approximate weight
in.	*in.*	*BWG* (nearest)	*lb/ft*
0.84	0.065	16	0.53
	.076	15	.64
	.103	12	.81
1.00	.069	16	.68
	.086	14	.84
	.112	12	1.06
1.05	.071	16	0.75
	.086	14	.89
	.112	12	1.12
	.144	9	1.39
1.25	.073	15	0.92
	.86	14	1.06
1.31	.082	14	1.08
	.093	13	1.21
	.102	12	1.33
	.125	11	1.60
	.178	7	2.17
1.50	.082	14	1.25
	.087	14	1.30
	.105	12	1.56
	.156	9	2.30
1.62	.090	13	1.50
	.108	12	1.80
	.135	10	2.20
	.156	9	2.45
	.191	7	3.00
1.66	.095	13	1.60
	.112	12	1.85
	.140	10	2.27
	.156	9	2.50
	.194	7	3.05
1.9	.097	13	1.87
	.112	12	2.14
	.132	10	2.50
2.37	.102	12	2.50
	.119	11	2.88
	.154	9	3.50

TABLE 17. *Tubing—oval, welded*



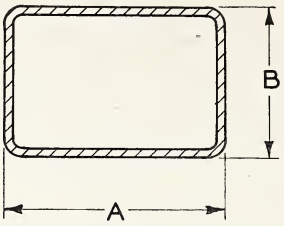
Size		Wall thicknesses		Approximate weight
A	B			
in.	*in.*	*in.*	*BWG* (nearest)	*lb/ft*
1 7/16	1 1/16	0.086	14	1.06
1 1/2	1 1/8	.093	13	1.21
1 3/4	1 1/4	.087	14	1.30
		.105	12	1.56

TABLE 18. *Tubing—square, welded*



Size		Wall thicknesses		Approximate weight
A	B			
in.	*in.*	*in.*	*BWG* (nearest)	*lb/ft*
1	1	0.073	15	0.92
		.086	14	1.06
		.102	13	1.33
1 1/4	1 1/4	.086	14	1.31
		.108	12	1.80
		.135	10	2.20
1 1/2	1 1/2	.097	13	1.87
		.112	12	2.14
		.132	10	2.50
1 7/8	1 7/8	.102	12	2.50
		.119	11	2.88
		.154	9	3.50
2	2	.102	12	2.50
		.119	11	2.88
		.154	9	3.50

TABLE 19. *Tubing—rectangular, welded*



Size		Wall thicknesses		Approximate weight
A	B			
			BWG	
in.	*in.*	*in.*	(nearest)	*lb/ft*
1½	1	0.090	13	1.50
		.108	12	1.80
		.135	10	2.20
2	1½	.162	8	3.15
2¼	1⅜	.102	12	2.50
		.119	11	2.55
		.154	9	3.50

TOLERANCES

15. Rail steel products are offered to comply with the results of good rolling mill practice without subsequent processing of the bars for accuracy of cross section. Rail steel bars and shapes shall comply with the limitations for good mill practice recognized by the industry.

The permissible variations in size, length, straightness, and weight of rail steel bars and shapes are shown in tables 20 to 29, inclusive.

TABLE 20. *Angles*

The longer leg of an unequal angle determines the size for permissible variations. Permissible "off square" in either direction, 1½ degrees

Dimensions: Tolerances—over or under

Specified length of leg	Thickness			Length of leg		
	To 3/16 in., incl.	Over 3/16 to 3/8 in., incl.	Over 3/8 in.	To 3/16 in., incl.	Over 3/16 to 1/4 in., incl.	Over 1/4 in.
	in.	*in.*	*in.*	*in.*	*in.*	*in.*
To 1 in. incl	0.008	0.010	----------	1/32	3/64	[a]
Over 1 to 2 in. incl	.010	.010	0.012	3/64	1/16	[a]
Over 2 to 3 in. incl	.012	.015	.015	1/16	1/16	[a]

[a] By agreement.

TABLE 21. *Square and round edge flats*

The standard classification of flat hot-rolled bars defines bars as not over 6 in. wide and not under 0.203 in. thick

Dimensions: Tolerances

Specified widths	Thickness (over or under)		Width	
	To ½ in., incl.	Over ½ in. to 1 in., incl.	Over	Under
	in.	*in.*	*in.*	*in.*
To 1 in. incl	0.008	0.010	1/32	1/32
Over 1 to 2 in. incl	.012	.015	1/32	1/32
Over 2 to 4 in. incl	.015	.020	1/16	1/32
Over 4 to 6 in. incl	.015	.020	3/32	1/16

TABLE 22. *Rounds and squares*

(Merchant bars only)

Out-of-round is the difference between the maximum and minimum diameters of the bar, measured at the same cross section. Out-of-square is the difference in the two dimensions at the same cross section of a square bar, each dimension being the distance between opposite faces

Dimensions: Tolerances

Specified sizes	Variation from size (over or under)	Out-of-round or square
	in.	*in.*
Over 5/16 to 7/16 in., incl	0.012	0.018
Over 7/16 to 5/8 in., incl	.015	.022
Over 5/8 to 7/8 in., incl	.015	.022
Over 7/8 to 1 in., incl	.015	.022
Over 1 to 1⅛ in., incl	.020	.030
Over 1⅛ to 1¼ in., incl	.020	.030

TABLE 23. *Octagons*

Dimensions: Tolerances

Specified sizes between opposite sides	Variations from size		Difference in 3 or 4 measurements
	Over	Under	
	in.	*in.*	*in.*
To ½ in., incl	0.010	0.007	0.015
Over ½ to 1 in., incl	.015	.015	.020
Over 1 to 1½ in., incl	.021	.015	.025

TABLE 24. *Channels*

Measurement for depth of section and width of flanges are over-all. This table does not include special channel sections

Dimensions: Tolerances

Specified size of channel	Variation from sizes (over or under)				Taper of outer side of either flange per inch of width
	Depth	Width of flange	Thickness of web		
			To 3/16 in., incl.	Over 3/16 in.	
	in.	*in.*	*in.*	*in.*	*in.*
To 1½ in. incl	1/32	1/32	0.010	0.015	3/64
Over 1½ to 3 in., incl	1/16	1/16	.015	.020	3/64

Table 25. *Tees*

Stem-off-square is the variation from its true position on the center line of stem measured at the point. The longer member of an unequal tee determines the size for tolerances. Measurements for both width and depth are over all

Dimensions: Tolerances

Specified size of tee	Width or depth (over or under)	Thickness of flange (over or under)	Thickness of stem		Stem-off-square
			Over	Under	
	in.	*in.*	*in.*	*in.*	*in.*
To 1¼ in., incl	3/64	0.010	0.005	0.020	1/32
Over 1¼ to 2 in., incl	1/16	.012	.010	.020	1/16
Over 2 to 3 in., incl	3/32	.015	.015	.020	3/32

Table 26. *All bars and shapes except angles*

Where a plus or minus tolerance from specified length is desired and order so specifies, half of tolerances may be taken over and half under

Length: Tolerances

Rounds, squares, and octagons	Flats		Variations over specified length; no variations under				
	Thickness	Width	To 5 feet incl.	Over 5 to 10 feet incl.	Over 10 to 20 feet incl.	Over 20 to 30 feet incl.	Over 30 to 40 feet incl.
			in.	*in.*	*in.*	*in.*	*in.*
To 1 in. incl	To 1 in. incl	To 3 in. incl	3/8	1/2	5/8	3/4	1¼
Over 1 to 2 in., incl	Over 1 in	To 3 in., incl	1/2	5/8	3/4	1	1½
Over 1 to 2 in., incl	To 1 in., incl	Over 3 to 6 in., incl	1/2	5/8	3/4	1	1½
Over 2 in	Over 1 in	Over 3 to 6 in., incl	3/4	1	1¼	1½	1¾
Other sections except angles classified as bars			1/2	5/8	3/4	1	1½

Table 27. *Angles*

Where a plus or minus tolerance from specified length is desired and order so specifies, half of tolerances may be taken over and half under

Lengths: Tolerances

Angles (equal or unequal leg)	Variations over specified length for lengths given; no variations under			
	To 10 ft., incl.	Over 10 ft. to 20 ft., incl.	Over 20 ft. to 30 ft., incl.	Over 30 ft. to 40 ft., incl.
	in.	*in.*	*in.*	*in.*
Any dimension to 3 in., incl	1/4	1/2	1	1½

Table 28. *Straightness tolerances*

Bars—rounds, squares, octagons, and flats:
¼ in. in any 5 ft., but may not exceed ¼ in. times number of feet of length divided by 5.

Shapes:
⅛ in. in any 5 ft., but may not exceed ⅛ in. times number of feet of length divided by 5.

TABLE 29. *Weight variations*

Permissible variations in weight of bar-sized angles, tees, and channels, 3½ percent over or under the theoretical weight.
Permissible variations in weight of structural tubing, 5 percent over or under the theoretical weight.
Variations will apply on the average weight of each section of any one shipment.

SPECIAL REQUIREMENTS

16. Rail steel products may be specified for special uses with requirements more restrictive than for ordinary practice. Features requiring special operations (as distinguished from ordinary practice) are subject to special agreement and classified as special practice, for example:

(a) Selection of raw materials for certain special properties or for limited tensile strength constitutes a special practice.

(b) When dimension tolerances more restrictive than standard are required, the material shall be specified "close tolerance" and constitutes a special practice.

(c) When length tolerances more restrictive than listed are desired or when square-cut ends free from burs are desired, machine cutting on one or both ends may be ordered and constitutes a special practice.

(d) Annealing, normalizing, or stress relieving beyond that available through careful hot-bed control constitutes a special practice.

(e) Machine straightening for less than listed straightness tolerances constitutes a special practice.

(f) Bundling to accomodate special unloading devices without regard for customary mill handling practices constitutes a special practice.

CERTIFICATION AND LABELING

17. *Identification.*—As assurance that rail steel products supplied comply with all requirements of this commercial standard, manufactures may include the following statement in conjunction with their name and address on labels:

> Complies with CS150–48 as developed by the trade and issued by the United States Department of Commerce.

18. *Labeling and certification.*—The following symbol or seal (fig. 1) and certificate of compliance are used in trade literature, advertisements and on shipping tags by members of the Rail Steel Bar Association to identify products manufactured according to this commercial standard.

CERTIFICATE OF COMPLIANCE

The rail steel products identified with the above insignia have been manufactured by a member of the Rail Steel Bar Association and declared by the undersigned to conform to Commercial Standard CS150–48, as developed by the trade, under the procedure of the National Bureau of Standards, and issued by the United States Department of Commerce.

Signed_____
Name of company_____

EFFECTIVE DATE

19. Having been passed through the regular procedure of the Commodity Standards Division, and approved by the acceptors hereinafter listed, this commercial standard was issued by the United States Department of Commerce, effective from October 20, 1948.

Edwin W. Ely,
Chief, Commodity Standards Division.

HISTORY OF PROJECT

20. On August 13, 1947, the Rail Steel Bar Association requested the cooperation of the National Bureau of Standards in the establishment of a commercial standard for hot-rolled rail steel bars produced from standard T-section rails.

21. Following receipt of this request by the Bureau, copies of a proposed commercial standard for hot-rolled rail steel bars were circulated on October 15, 1947, to selected representatives of manufacturers, distributors, and consumers for advance comment. All comment was carefully considered, after which the standard was adjusted in accordance with composite recommendations of those concerned and circulated on January 30, 1948, to the trade for written acceptance.

22. Upon receipt of official acceptances estimated to represent a satisfactory majority of the production by volume, and in the absence of active valid opposition, the standard was promulgated on September 20, 1948, as Commercial Standard CS150–48.

STANDING COMMITTEE

23. The following individuals comprise the membership of the standing committee, which is to review, prior to circulation for acceptance, revisions proposed to keep the standard abreast of progress. Comment concerning the standard and suggestions for revision may be addressed to any member of the committee or to the Commodity Standards Division, National Bureau of Standards, which acts as secretary for the committee.

W. H. Jacobs (chairman), Rail Steel Bar Association, 38 South Dearborn Street, Chicago 3, Ill.
H. W. Beatty, Inland Steel Co., 38 South Dearborn Street, Chicago 3, Ill.
L. E. Yentzer, Calumet Steel Division, Borg-Warner Corp., 310 South Michigan, Chicago 4, Ill.
W. P. Rathell, Missouri Rolling Mill Corporation, 6800 Manchester Avenue, St. Louis 10, Mo.
G. O. Hultberg, Republic Steel Corporation, Republic Building, Cleveland 1, Ohio.
L. G. Swisher, Haggard & Marcusson Co., 1109 W. Thirty-seventh Street, Chicago 9, Ill.
C. F. Baittinger, Penn Metal Corporation, Oregon Ave. and Swanson Street, Philadelphia 48, Pa.
Earl Sundin, Minneapolis Moline Power Equipment Co., Moline, Ill.

APPENDIX

Decimal and millimeter equivalents of parts of an inch

4ths	8ths	16ths	32nds	64ths	Decimals of an inch	Millimeters
				1	0.015625	0.397
			1	2	.03125	.794
				3	.046875	1.191
		1	2	4	.0625	1.588
				5	.078125	1.984
			3	6	.09375	2.381
				7	.109375	2.778
	1	2	4	8	.1250	3.175
				9	.140625	3.572
			5	10	.15625	3.969
				11	.171875	4.366
		3	6	12	.1875	4.763
				13	.203125	5.159
			7	14	.21875	5.556
				15	.234375	5.953
1	2	4	8	16	.2500	6.350
				17	.265625	6.747
			9	18	.28125	7.144
				19	.296875	7.541
		5	10	20	.3125	7.938
				21	.328125	8.334
			11	22	.34375	8.731
				23	.359375	9.128
	3	6	12	24	.375	9.525
				25	.390625	9.922
			13	26	.40625	10.32
				27	.421875	10.72
		7	14	28	.4375	11.11
				29	.453125	11.51
			15	30	.46875	11.91
				31	.484375	12.30
2	4	8	16	32	.500	12.70
				33	.515625	13.10
			17	34	.53125	13.49
				35	.546875	13.89
		9	18	36	.5625	14.29
				37	.578125	14.68
			19	38	.59375	15.08
				39	.609375	15.48
	5	10	20	40	.625	15.88
				41	.640625	16.27
			21	42	.65625	16.67
				43	.671875	17.07
		11	22	44	.6875	17.46
				45	.703125	17.86
			23	46	.71875	18.26
				47	.734375	18.65
3	6	12	24	48	.750	19.05
				49	.765625	19.45
			25	50	.78125	19.84
				51	.796875	20.24
		13	26	52	.8125	20.64
				53	.828125	21.03
			27	54	.84375	21.43
				55	.859375	21.83
	7	14	28	56	.875	22.23
				57	.890625	22.62
			29	58	.90625	23.02
				59	.921875	23.42
		15	30	60	.9375	23.81
				61	.953125	24.21
			31	62	.96875	24.61
				63	.984375	25.00
4	8	16	32	64	1	25.40

ACCEPTANCE OF COMMERCIAL STANDARD

If acceptance has not previously been filed, this sheet properly filled in, signed, and returned will provide for the recording of your organization as an acceptor of this commercial standard.

Date_____

Commodity Standards Division,
National Bureau of Standards,
Washington 25, D. C.

Gentlemen:

We believe that the Commercial Standard CS150–48 constitutes a useful standard of practice, and we individually plan to utilize it as far as practicable in the

production [1] distribution [1] purchase [1] testing [1]

of hot-rolled rail steel bars (produced from tee-section rails). We reserve the right to depart from it as we deem advisable.

We understand, of course, that only those articles which actually comply with the standard in all respects can be identified or labeled as conforming thereto.

(Cut on this line)

Signature of authorized officer_____
(In ink)

(Kindly typewrite or print the following lines)

Name and title of above officer_____

Organization_____
(Fill in exactly as it should be listed)

Street address_____

City, zone, and State_____

[1] Underscore which one. Please see that separate acceptances are filed for all subsidiary companies and affiliates which should be listed separately as acceptors. In the case of related interests, trade associations, trade papers, etc., desiring to record their general support, the words "General Support" should be added after the signature.

TO THE ACCEPTOR

The following statements answer the usual questions arising in connection with the acceptance and its significance:

1. *Enforcement.*—Commercial standards are commodity specifications voluntarily established by mutual consent of those concerned. They present a common basis of understanding between the producer, distributor, and consumer and should not be confused with any plan of governmental regulation or control. The United States Department of Commerce has no regulatory power in the enforcement of their provisions, but since they represent the will of the interested groups as a whole, their provisions through usage soon become established as trade customs, and are made effective through incorporation into sales contracts by means of labels, invoices, and the like.

2. *The acceptor's responsibility.*—The purpose of commercial standards is to establish for specific commodities, nationally recognized grades or consumer criteria and the benefits therefrom will be measurable in direct proportion to their general recogniztion and actual use. Instances will occur when it may be necessary to deviate from the standard and the signing of an acceptance does not preclude such departures; however, such signature indicates an intention to follow the commercial standard where practicable, in the production, distribution, or consumption of the article in question.

3. *The Department's responsibility.*—The major function performed by the Department of Commerce in the voluntary establishment of commercial standards on a Nation-wide basis is fourfold; first, to act as an unbiased coordinator to bring all interested parties together for the mutually satisfactory adjustment of trade standards; second, to supply such assistance and advice as past experience with similar programs may suggest; third, to canvass and record the extent of acceptances and adherence to the standard on the part of producers, distributors, and users, and fourth, after acceptance, to publish and promulgate the standard for the information and guidance of buyers and sellers of the commodity.

4. *Announcement and promulgation.*—When the standard has been endorsed by a satisfactory majority of production or consumption in the absence of active valid opposition, the success of the project is announced. If, however, in the opinion of the standing committee or the Department of Commerce, the support of any standard is inadequate, the right is reserved to withhold promulgation and publication.

ACCEPTORS

25. The organizations listed below have individually accepted this standard for use as far as practicable in the production, distribution, testing, or purchase of hot-rolled rail steel bars produced from standard T-section rails. In accepting the standard, they reserved the right to depart therefrom as they individually deem advisable. It is expected that articles that actually comply with the requirements of this standard in all respects will be regularly identified or labeled as conforming thereto, and that purchasers will require such specific evidence of conformity.

ASSOCIATIONS

(General Support)

American Association of Engineers, Chicago, Ill.
American Short Line Railroad Association, The, Washington, D. C.
American Specification Institute, Chicago, Ill.
Barn Equipment Association, Cedar Falls, Iowa.
Building Officials Conference of America, Washington, D. C.
Dairymen's League, New York, N. Y.
Pneumatic Automotive Equipment Association, Pittsburgh, Pa.
Rail Steel Bar Association, Chicago, Ill.
Salt River Valley Water Users' Association, Phoenix, Ariz.

FIRMS AND OTHER INTERESTS

A. B. C. Steel Equipment Co., Inc., New York, N. Y.
A. B. C. Traffic Signal Co., Scranton, Pa.
Adams, S. G., Co., St. Louis, Mo.
Alamo Iron Works, San Antonio, Tex.
American Car & Foundry Co., New York, N. Y. (General support).
American Hard Wall Plaster Co., The, Utica, N. Y.
American Wholesale Hardware Co., Long Beach, Calif.
Ames, W., & Co., Jersey City, N. J.
Andrews, A. B., Lewiston, Maine.
Anglo-American Metal & Ferro-Alloy Corp., New York, N. Y.
Arkansas Foundry Co., Little Rock, Ark.
Baker, H. D., & Co., Indianapolis, Ind.
Baker Manufacturing Co., Evansville, Wis.
Baltimore, City of, Bureau of Building Construction, Baltimore, Md.
Baltimore & Ohio Railroad Co., The, Baltimore, Md.
Bar-Ray Products, Inc., Brooklyn, N. Y.
Bates Expanded Steel Corp., East Chicago, Ind.
Bayley, William, Co., The, Springfield, Ohio.
Beatty Safway Steel Scaffold, Inc., San Francisco, Calif.
Bennett Manufacturing Co., Alden, N. Y.
Berlin Construction Co., Inc., The, Berlin, Conn.
Bilco Co., The, New Haven, Conn.
Birmingham, City of, Birmingham, Ala.
Bliss Steel Products Corp., East Syracuse, N. Y.
Borroughs Manufacturing Co., Kalamazoo, Mich.
Bowser-Morner Testing Laboratories, Dayton, Ohio.
Brazer, Clarence W., New York, N. Y.
Briggs & Turivas, Inc., Blue Island, Ill.
Brown Fintube Co., The Elyria, Ohio.
Brown-Wales Co., Boston, Mass.
Buffalo Steel Co., Tonawanda, N. Y.
California Institute of Technology, Pasadena, Calif.
California Steel Products Co., Richmond, Calif.
California Testing Laboratories, Inc., Los Angeles, Calif.
Calumet Steel Division, Borg-Warner Corp., Chicago, Ill.
Camlet, J. Thomas, Passaic, N. J.
Carroll-McCreary Co., Inc., Brooklyn, N. Y.
Central Inspection Bureau, Portland, Oreg.
Central Railroad Co. of New Jersey, The, Elizabeth, N. J.
Clarkson College of Technology, Potsdam, N. Y.
Chiaverini, Francis, Providence, R. I.
Chicago, Rock Island & Pacific Railroad Co., Chicago, Ill.
Coleman, W. B., & Co., Philadelphia, Pa.
Colorado Builders Supply Co., The, Denver, Colo.
Commercial Metals Co., Dallas, Tex.
Connors Steel Co., Birmingham, Ala.
Conrad & Cummings, Binghamton, N. Y.
Cooper Union, The, New York, N. Y.
Copperweld Steel Co., Warren, Ohio. (General support.)
Cox Fence Co. of Houston, The, Houston, Tex.
Daystrom Corp., Olean, N. Y.
De Luxe Metal Furniture Co., Warren, Pa.
Dean, Olney J., Steel Co., Chicago, Ill.
District of Columbia, Government of, Engineering Dept., Washington, D. C.
Drake-Williams-Mount Co., Omaha, Nebr.
Durabilt Manufacturing Co., Aurora, Ill.
Edwards Manufacturing Co., The, Cincinnati, Ohio.
Emco Corp., St. Marys, Ohio.
Emery Industries, Inc., St. Bernard, Ohio.
Expanded Metal Engineering Co., New York, N. Y.
Federal Engineering Co., Davenport, Iowa.
Fischer Bed Spring Co., Pittsburgh, Pa.
Flour City Ornamental Iron Co., The, Minneapolis Minn.
Fluor Corp., Ltd., The, Los Angeles, Calif.
Fogarty Manufacturing Co., Dayton, Ohio.
Formed Tubes, Inc., Sturgis, Mich. (General support.)
Foster Bros. Manufacturing Co., Utica, N. Y.
Franklin Steel Division, Borg-Warner Corp., Franklin, Pa.
Fretz Construction Co., Houston, Tex.
Frick-Gallagher Manufacturing Co., The, Wellston, Ohio.
Froehling & Robertson, Inc., Richmond, Va.
Gassner, Thomas S., Co., Inc., Philadelphia, Pa.
General Electric Co., Schenectady, N. Y.
Gerhardt, George T., Co., Inc., San Francisco, Calif.
Gilbert & Bennett Manufacturing Co., The, Georgetown, Conn.
Gilkison Manufacturing Co., The, Elyria, Ohio.
Haggard & Marcusson Co., Chicago, Ill.
Hardwicke Etter Co., Sherman, Tex.
Heller Aller Co., The, Napoleon, Ohio.
Herron, James H., Co., The, Cleveland, Ohio.
Hettrick Manufacturing Co., The, Toledo, Ohio.
Hodge Boiler Works, The, East Boston, Mass.
Hope Metal Products Co., Ltd., Cleveland, Ohio.
Houston Laboratories, Houston, Tex.
Hyman-Michaels Co., Chicago, Ill.
Inland Steel Co., Chicago, Ill.
Interior Steel Equipment Co., The, Cleveland, Ohio.
Iowa, State University of, Iowa City, Iowa. (General support.)
Jackson & Church Co., Saginaw, Mich.
Jersey Shore Steel Co., Jersey Shore, Pa.
Karp Metal Products Co., Inc., Brooklyn, N. Y.
Kay Manufacturing Corp., Brooklyn, N. Y.
Kennedy Tank & Manufacturing Co., Inc., Indianapolis, Ind.
Kennedy Van Saun Manufacturing & Engineering Corp., Danville, Pa.
Kerlow Steel Flooring Co., Jersey City, N. J.

Kidd Drawn Steel Co., Aliquippa, Pa.
Kilroy Structural Steel Co., Cleveland, Ohio.
Korb-Pettit Wire Fabrics & Iron Works, Inc., Philadelphia, Pa.
Laclede Steel Co., St. Louis, Mo.
Lane-Stewart Co., The, Chicago, Ill.
Lehigh & New England Railroad Co., Pen Argyl, Pa.
Lima-Hamilton Corp., Hamilton, Ohio.
Lincoln Steel Works, Lincoln, Nebr.
Lichfield Precision Products, Litchfield, Ill.
Logan, A. J. Co., Pittsburgh, Pa.
Los Angeles, City of, Los Angeles, Calif.
Los Angeles Iron & Steel Co., Los Angeles, Calif.
Los Angeles Spring Bed Co., Los Angeles, Calif.
Louisville Public Schools, Louisville, Ky.
Lucas, A., & Sons, Peoria, Ill.
Lyon Metal Products, Inc., Aurora, Ill.
Markle Steel Co., Houston, Tex.
Marr, Charles J., New Philadelphia, Ohio.
Marsh, Clem, Municipal Equipment Co., Scranton, Pa.
Marshall Elevator Co., Pittsburgh, Pa.
Mason Fence Co., The, Leesburg, Ohio.
McKee Door Co., Aurora, Ill.
Medart Co., The, Fred Medart Division, St. Louis, Mo.
Mersick, C. S., & Co., The, New Haven, Conn.
Mesker, Geo. L., Steel Corp., Evansville, Ind.
Michelmann Steel Construction Co., Quincy, Ill.
Michigan State College, Engineering Experiment Station, East Lansing, Mich.
Miller & Vrydagh, Terre Haute, Ind.
Minneapolis-Moline Power Implement Co., Moline, Ill.
Minnesota Testing Laboratories, Inc., Duluth, Minn.
Missouri Rolling Mill Corp., St. Louis, Mo.
Montana State College, Bozeman, Mont.
Moore Dry Dock Co., Oakland, Calif.
Morgan Engineering Co., The, Alliance, Ohio.
Moulton, Webster C., Syracuse, N. Y.
Muskegon Boiler Works, Muskegon, Mich.
McCracken-Ripley Co., Portland, Oreg.
New York Bed Spring Co., Detroit, Mich.
New York, College of the City of, New York, N. Y.
New York Central Railroad Co., New York, N. Y.
New York, Susquehanna & Western Railroad Co., Ridgefield Park, N. J.
New York Testing Laboratories, Inc., New York, N. Y.
Newark College of Engineering, Newark, N. J.
Nooter, John, Boiler Works Co., St. Louis, Mo.
North Dakota Agricultural College, Fargo, N. Dak. (General support).
Northern Steel, Inc., Boston, Mass.
Norwich University, Northfield, Vt.
Nutting, H. C., Co., The, Cincinnati, Ohio.
Oakley Steel Products Co., Chicago, Ill.
Ohio Northern University, Ada, Ohio. (General support.)
Oklahoma Agricultural & Mechanical College, Stillwater, Okla.
Olsen, Ole K., Co., New Orleans, La.
Oregon State College, Corvallis, Oreg.
Ornamental Iron Works Co., The, Akron, Ohio.
Patterson Steel Co., Tulsa, Okla.
Peck, Stow & Wilcox Co., The, Southington, Conn.
Peden Iron & Steel Co., Houston, Tex.
Penn Metal Corp. of Pennsylvania, Philadelphia, Pa.
Penniman & Browne, Inc., Baltimore, Md.
Perfection Mattress & Spring Co., Birmingham, Ala.
Philadelphia Tramrail Co., Philadelphia, Pa.
Philadelphia Transportation Co., Philadelphia, Pa.
Pitkin, Lucius, Inc., New York, N. Y.
Pittsburgh Testing Laboratory, Pittsburgh, Pa.
Pollak Steel Co., The, Cincinnati, Ohio.
Pollock, William B., Co., The, Youngstown, Ohio.
Potts Manufacturing Co., Mechanicsburg, Pa.
Republic Steel Corp., Cleveland, Ohio.
Revolvator Co., North Bergen, N. J.
Safway Steel Products, Inc., Milwaukee, Wis.
St. Louis, City of, Board of Education, St. Louis, Mo. (General support.)
St. Louis Testing Laboratories, St. Louis, Mo.
St. Paul Foundry & Manufacturing Co., St. Paul, Minn.
Sherman-Manson Corp., St. Marys, Ohio.
Shilstone Testing Laboratory, Inc., New Orleans, La.
Shunk Manufacturing Co., Bucyrus, Ohio.
Simmons Co., New York, N. Y.
Smith & Caffrey Co., Syracuse, N. Y.
Southern California Edison Co., Los Angeles, Calif.
Southern Engineering Co., Charlotte, N. C.
Southern Ornamental Iron Works, Arlington, Tex.
Southern Spring Bed Co., Atlanta, Ga.
Southern Testing Laboratories, Inc., Birmingham, Ala.
Southwest Steel Rolling Mills, Los Angeles, Calif.
Southwest Pump Co., Bonham, Tex.
Southwestern Laboratories, Ft. Worth, Tex.
Southwestern University, Georgetown, Tex.
Spivey Co., The, Philadelphia, Pa.
Starline, Inc., Harvard, Ill.
Steadley Co., The, Carthage, Mo.
Steel Products Co., Inc., Savannah, Ga.
Steelcraft Manufacturing Co., The, Rossmoyne, Ohio.
Stoetzel, Ralph, Chicago, Ill.
Stover Steel Tank & Manufacturing Co., Freeport, Ill.
Sturm, Meyer J., Evanston, Ill.
Summer & Co., Columbus, Ohio.
Superior Steel Corp., Carnegie, Pa. (General support.)
Sutton, Frank W., Los Angeles, Calif.
Swarthmore College, Swarthmore, Pa.
Sweet's Catalog Service, New York, N. Y. (General support.)
Sweet's Steel Co., Williamsport, Pa.
Texas Steel Co., Ft. Worth, Tex.
Thompson & Lichtner Co., Inc., The, Brookline, Mass.
Tube Reducing Corp., Wallington, N. J.
Turner Construction Co., New York, N. Y.
Turner Devices, Inc., St. Louis, Mo.
Twin City Testing & Engineering Laboratory, St. Paul, Minn.
United States Pipe & Foundry Co., Burlington, N. J.
United States Pipe & Manufacturing Co., San Francisco, Calif.
Universal Fittings & Scaffolding Co., Zelienople, Pa.
Utica Steam Engine & Boiler Works, The, Utica, N. Y.
Vulcan Rail & Construction Co., Maspeth, N. Y.
Wagner, A. F., Iron Works, Milwaukee, Wis.
Waltham Precision Tool Co., Waltham, Mass.
Warren Steel Specialties Corp., Warren, Ohio.
Water Cooling Corp., New York, N. Y.
Weber Iron & Wire Co., Houston, Tex.
West, Albert E., Boston, Mass.
West Bend Equipment Corp., West Bend, Wis.
West Side Structural Co., Inc., Watervliet, N. Y.
West Virginia Steel & Manufacturing Co., Huntington, W. Va.
Westinghouse Electric Corp., East Pittsburgh, Pa.
Wheeler, C. H., Manufacturing Co., Philadelphia, Pa.
Wheeling Steel Corp., Wheeling, W. Va.
Whitcomb Locomotive Co., The, Rochelle, Ill.
Williams, A. W., Inspection Co., Mobile, Ala.
Williams, Bruce, Laboratories, The, Joplin, Mo.
Wilson, Andrew, Co., Lawrence, Mass.
Wilson-Weesner-Wilkinson Co., Nashville, Tenn.
Worcester Polytechnic Institute, Worcester, Mass.

UNITED STATES GOVERNMENT

Agriculture, Department of, Division of Purchase, Sales & Traffic, Washington, D. C.
Federal Works Agency, Public Buildings Administration, Washington, D. C. (General support.)
Housing & Home Finance Agency, Washington, D. C.
Interior, Department of the, Bureau of Mines, Washington, D. C.
Interior, Department of the, Office of Indian Affairs, Washington, D. C.
Justice, Department of, Federal Prison Industries, Inc., Washington, D. C.
Justice, Department of, Bureau of Prisons, Construction Division, Washington, D. C.

COMMERCIAL STANDARDS

CS No. Item

0-40 Commercial standards and their value to business (third edition).
1-42 Clinical thermometers (third edition).
2-30 Mopsticks.
3-40 Stoddard solvent (third edition).
4-29 Staple porcelain (all-clay) plumbing fixtures.
5-46 Pipe nipples, brass, copper, steel, and wrought iron (second edition).
6-31 Wrought-iron pipe nipples (second edition). Superseded by CS5-46.
7-29 Standard weight malleable iron or steel screwed unions.
8-41 Gage blanks (third edition).
9-33 Builders' template hardware (second edition).
10-29 Brass pipe nipples. Superseded by CS5-46.
11-41 Moisture regains of cotton yarns (second edition).
12-48 Fuel oils (sixth edition).
13-44 Dress patterns (fourth edition).
14-43 Boys' button-on waists, shirts, junior and sport shirts (made from woven fabrics) (third edition).
15-46 Men's pajama sizes (made from woven fabrics) (third edition).
16-29 Wall paper.
17-47 Diamond core drill fittings (fourth edition).
18-29 Hickory golf shafts.
19-32 Foundry patterns of wood (second edition).
20-47 Staple vitreous china plumbing fixtures (fourth edition).
21-39 Interchangeable ground-glass joints, stopcocks, and stoppers (fourth edition).
22-40 Builders' hardware (nontemplate) (second edition).
23-30 Feldspar.
24-43 Screw theads and tap-drill sizes.
25-30 Special screw threads. Superseded by CS24-43.
26-30 Aromatic red cedar closet lining.
27-36 Mirrors (second edition).
28-46 Cotton fabric tents, tarpaulins and covers (second edition).
29-31 Staple seats for water-closet bowls.
30-31 Colors for sanitary ware. (Withdrawn as commercial standard, March 15, 1948.)
31-38 Wood shingles (fourth edition).
32-31 Cotton cloth for rubber and pyroxylin coating.
33-43 Knit underwear (exclusive of rayon) (second edition).
34-31 Bag, case, and strap leather.
35-47 Hardwood plywood (third edition).
36-33 Fourdrinier wire cloth (second edition).
37-31 Steel bone plates and screws.
38-32 Hospital rubber sheeting.
39-37 Wool and part wool blankets (second edition). (Withdrawn as commercial standard, July 14, 1941.)
40-32 Surgeons' rubber gloves.
41-32 Surgeons' latex gloves.
42-43 Structural fiber insulating board (third edition).
43-32 Grading of sulphonated oils.
44-32 Apple wraps.
45-47 Douglas fir plywood (seventh edition).
46-40 Hosiery lengths and sizes (third edition).
47-34 Marking of gold-filled and rolled-gold-plate articles other than watchcases.
48-40 Domestic burners for Pennsylvania anthracite (underfeed type) (second edition).
49-34 Chip board, laminated chip board, and miscellaneous boards for bookbinding purposes.
50-34 Binders board for bookbinding and other purposes.
51-35 Marking articles made of silver in combination with gold.
52-35 Mohair pile fabrics (100-percent mohair plain velvet, 100-percent mohair plain frieze, and 50-percent mohair plain frieze).
53-35 Colors and finishes for cast stone.
54-35 Mattresses for hospitals.
55-35 Mattresses for institutions.
56-41 Oak flooring (second edition).
57-40 Book cloths, buckrams, and impregnated fabrics for bookbinding purposes except library bindings (second edition).
58-36 Woven elastic fabrics for use in overalls (overall elastic webbing).
59-44 Textiles—testing and reporting (fourth edition).
60-48 Hardwood dimension lumber (second edition).
61-37 Wood-slat venetian blinds.
62-38 Colors for kitchen accessories.
63-38 Colors for bathroom accessories.
64-37 Walnut veneers.
65-43 Methods of analysis and of reporting fiber composition of textile products (second edition).
66-38 Marking of articles made wholly or in part of platinum.
67-38 Marking articles made of karat gold.
68-38 Liquid hypochlorite disinfectant, deodorant, and germicide.
69-38 Pine oil disinfectant.
70-41 Phenolic disinfectant (emulsifying type) (second edition) (published with CS71-41).
71-41 Phenolic disinfectant (soluble type) (second edition) (published with CS70-41).
72-38 Household insecticide (liquid spray type).
73-48 Old growth Douglas fir, Sitka spruce, and Western hemlock standard stock doors (fourth edition).
74-39 Solid hardwood wall paneling.
75-42 Automatic mechanical draft oil burners designed for domestic installations (second edition).
76-39 Hardwood interior trim and molding.
77-48 Enameled cast-iron plumbing fixtures (second edition).
78-40 Ground-and-polished lenses for sun glasses (second edition) (published with CS79-40).
79-40 Blown, drawn, and dropped lenses for sun glasses (second edition) (published with CS78-40).
80-41 Electric direction signal systems other than semaphore type for commercial and other vehicles subject to special motor vehicle laws (after market).
81-41 Adverse-weather lamps for vehicles (after market).
82-41 Inner-controlled spotlamps for vehicles (after market).
83-41 Clearance, marker, and identification lamps for vehicles (after market).
84-41 Electric tail lamps for vehicles (after market).
85-41 Electric license-plate lamps for vehicles (after market).
86-41 Electric stop lamps for vehicles (after market)
87-41 Red electric warning lanterns.
88-41 Liquid burning flares.
89-40 Hardwood stair treads and risers.
90- (Reserved for power shovels and cranes).
91-41 Factory-fitted Douglas fir entrance doors.
92-41 Cedar, cypress and redwood tank stock lumber.
93-41 Portable electric drills (exclusive of high frequency).
94-41 Calking lead.
95-41 Lead pipe.
96-41 Lead traps and bends.
97-42 Electric supplementary driving and passing lamps for vehicles (after market).
98-42 Artists' oil paints.
99-42 Gas floor furnaces—gravity circulating type.
100-47 Porcelain-enameled steel utensils (third edition).
101-43 Flue-connected oil-burning space heaters equipped with vaporizing pot-type burners.
102- (Reserved for Diesel and fuel-oil engines).
103-48 Rayon jacquard velour (with or without other decorative yarn) (second edition).
104-46 Warm-air furnaces equipped with vaporizing pot-type oil burners (second edition).
105-43 Mineral wool; loose granulated, or felted form, in low-temperature installations.
106-44 Boys' pajama sizes (woven fabrics) (second edition).
107-45 Commercial electric-refrigeration condensing units (second edition). (Withdrawn as commercial standard September 4, 1947).
108-43 Treading automobile and truck tires.
109-44 Solid-fuel-burning forced-air furnaces.

CS No.	Item
110–43	Tire repairs—vulcanized (passenger, truck, and bus tires).
111–43	Earthenware (vitreous-glazed) plumbing fixtures.
112–43	Homogeneous fiber wallboard.
113–44	Oil-burning floor furnaces equipped with vaporizing pot-type burners.
114–43	Hospital sheeting for mattress protection.
115–44	Porcelain-enameled tanks for domestic use.
116–44	Bituminized-fiber drain and sewer pipe.
117–44	Mineral wool; blankets, blocks, insulating cement, and pipe insulation for heated industrial equipment.
118–44	Marking of jewelry and novelties of silver.
(E) 119–45 [1]	Dial indicators (for linear measurements).
120–46	Standard stock ponderosa pine doors (second edition).
121–45	Women's slip sizes (woven fabrics).
122–45	Western hemlock plywood.
123–45	Grading of diamond powder.
(E) 124–45 [1]	Master disks.
125–47	Prefabricated homes (second edition).
126–45	Tank mounted air compressors.
127–45	Self-contained mechanically refrigerated drinking water coolers.
128–45	Men's sport shirt sizes—woven fabrics (other than those marked with regular neckband sizes).
129–47	Materials for safety wearing apparel (second edition).
130–46	Color materials for art education in schools.
131–46	Industrial mineral wool products, all types—testing and reporting.
132–46	Hardware cloth.
133–46	Woven wire netting.
134–46	Cast aluminum cooking utensils (metal composition).
135–46	Men s shirt sizes (exclusive of work shirts).
136–46	Blankets for hospitals (wool, and wool and cotton).
137–46	Size measurements for men's and boy's shorts (woven fabrics).
138–47	Insect wire screening.
139–47	Work gloves.
140–47	Convectors: testing and rating.
141–47	Sine bars, blocks, plates, and fixtures.
142–47	Automotive Lifts.
143–47	Standard strength and extra strength perforated clay pipe.
144–47	Formed metal porcelain enameled sanitary ware.
145–47	Testing and rating hand-fired hot water supply boilers.
146–47	Gowns for hospital patients.
147–47	Colors for Molded Urea Plastics.
148–48	Men's Circular Flat and Rib Knit Rayon Underwear
149–48	Utility Type House Dress Sizes
150–48	Hot Rolled Rail Steel Bars (Produced from T-Section Rails).

[1] Where "(E)" precedes the CS number, it indicates an emergency commercial standard, drafted under war conditions with a view toward early revision.

NOTICE.—Those interested in commercial standards with a view toward accepting them as a basis of everyday practice may secure copies of the above standards, while the supply lasts, by addressing the National Bureau of Standards, Washington 25, D. C.

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