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U. S. DEPARTMENT OF COMMERCE
HENRY A. WALLACE, Secretary
NATIONAL BUREAU OF STANDARDS
E. U. CONDON, Director

WOVEN-WIRE NETTING

COMMERCIAL STANDARD CS133-46

Effective Date for New Production From June 1, 1946



**A RECORDED VOLUNTARY STANDARD
OF THE TRADE**

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1946

PROMULGATION

of

COMMERCIAL STANDARD CS133—46

for

WOVEN-WIRE NETTING

On June 27, 1945, at the instance of the Hardware Cloth and Poultry Netting Institute, a meeting of producers of woven-wire netting adopted the proposed commercial standard for this commodity. This was submitted on July 30, to leading manufacturers, interested Government agencies, and distributor and user organizations, for constructive comment. Following adjustment in the light of the comment received, the recommended commercial standard was circulated for written acceptance on February 26, 1946.

Those concerned have since accepted and approved the standard as shown herein for promulgation by the United States Department of Commerce, through the National Bureau of Standards.

The standard is effective for new production from June 1, 1946.

Promulgation recommended.

F. W. Reynolds,
Acting Chief, Division of Trade Standards.

Promulgated.

E. U. Condon,
Director, National Bureau of Standards.

Promulgation approved.

Henry A. Wallace,
Secretary of Commerce.

WOVEN-WIRE NETTING

COMMERCIAL STANDARD CS133—46

PURPOSE

1. The purpose of this commercial standard is to provide a nationally recognized minimum standard of quality of woven-wire netting. It will enable consumers and other interested parties to know what sizes and types of woven-wire netting are standard and are regularly produced in sufficient volume to reasonably assure their being readily obtainable through normal channels of trade.

SCOPE

2. This standard covers materials, workmanship, and dimensional requirements for various types and kinds of galvanized carbon-steel woven-wire netting ordinarily employed for poultry runs and pens, domestic animal pens, fur-bearing animal pens, crab traps, and stucco (exterior plaster) reinforcement. These commodities are sometimes colloquially known as chicken wire, fox pen netting, tennis court netting, stucco mesh, etc. This standard does not include welded mesh or fabric of any description, nor does it cover farm or field fencing. A recommended form for guaranteeing compliance with this standard is included.

DEFINITIONS

3. *Poultry netting*.—A carbon-steel woven-wire netting made in either hexagonal or straight line types of mesh, and in both galvanized-before-woven and galvanized-after-woven finishes.

4. *Fur farm netting*.—Hexagonal mesh only; identically the same in type as galvanized-after-woven, hexagonal-mesh poultry netting, the only difference being that the wire sizes employed are heavier than No. 20. (See par. 10.) Under normal conditions, the heavier the wire size, the longer will be the life of the netting. Wire diameters increase in inverse ratio to the gage numbers, i. e., No. 14 wire is heavier than No. 16. (See par. 13.)

5. *Heavy netting*.—Same as fur farm netting. (See par. 4.)

6. *Stucco netting*.—Identical in mesh with galvanized-after-woven, hexagonal-mesh fur farm netting, but specially rolled and otherwise manipulated to insure perfectly straight selvages and with a minimum of "curl" to promote ease and efficiency in its application. (See par. 10.)

7. *Animal pen netting*.—Same as fur farm netting. (See par. 4.)

8. *Crab trap netting*.—Three-fourths inch and 1 inch of No. 20, and 1½ inch of No. 18 hexagonal mesh, are usually considered as being crab trap netting, although other sizes of hexagonal netting may also be used for this purpose.

MATERIALS AND WORKMANSHIP

9. All standard woven-wire netting shall be made of high-grade materials and with good workmanship. It shall be free from any defects that might detract from its serviceability, or its appearance.

9a. All galvanized-after-woven poultry, crab trap, fur farm, and stucco netting shall be coated with zinc by the hot-dip process. The metal used for the coating shall be zinc of at least 98 percent purity.

GENERAL SPECIFICATIONS

10. Sizes and types of mesh, and wire sizes and finishes for standard poultry netting, fur farm, animal pen, crab trap netting and stucco reinforcement netting shall be as follows:

TABLE 1.—*Poultry netting*

[Hexagonal mesh. Galvanized-after-woven.]

Hexagonal mesh	Wire size (after galvanizing)	Widths and approximate weights per 150-foot roll							
1"-----	#20 0.0348"	{12"	18"	24"	36"	48"	--	--	wide.
		18	26	34	50	65	--	--	pounds.
2"-----	#20 .0348"	{--	--	24"	36"	48"	60"	72"	wide.
		--	--	19	27	35	43	51	pounds.

TABLE 2.—*Poultry netting*

[Straight-line mesh. Galvanized-after-woven.]

Straight-line mesh	Wire size (after galvanizing)	Widths and approximate weights per 150-foot roll							
1"-----	#20 0.0348"	{12"	18"	24"	36"	48"	--	--	wide.
		18	26	34	50	65	--	--	pounds.
2"-----	#20 .0348"	{--	--	24"	36"	48"	60"	72"	wide.
		--	--	19	27	35	43	51	pounds.

TABLE 3.—*Poultry netting*

[Hexagonal mesh. Galvanized-before-woven.]

Hexagonal mesh	Wire size (after galvanizing)	Widths and approximate weights per 150-foot roll							
1"-----	#20 0.0348"	{12"	18"	24"	36"	48"	--	--	wide.
		17	24	30	43	56	--	--	pounds.
2"-----	#20 .0348"	{--	--	24"	36"	48"	60"	72"	wide.
		--	--	17	24	31	37	44	pounds.

TABLE 4.—*Poultry netting*

[Straight-line mesh. Galvanized-before-woven.]

Straight-line mesh	Wire size (after galvanizing)	Widths and approximate weights per 150-foot roll							
1"-----	#20 0.0348"	{12"	18"	24"	36"	48"	--	--	wide.
		17	24	30	43	56	--	--	pounds.
2"-----	#20 .0348"	{--	--	24"	36"	48"	60"	72"	wide.
		--	--	17	24	31	37	44	pounds.

TABLE 5.—*Crab trap netting*
[Hexagonal mesh. Galvanized-after-woven.]

Hexagonal mesh	Wire size (after galvanizing)		Widths and approximate weights per 150-foot roll							
¾"-----	#20	0.0348"	{12"	18"	24"	36"	48"	--	--	wide.
			{25	36	46	67	89	--	--	pounds.
1"-----	#20	.0348"	{12"	18"	24"	36"	48"	--	--	wide.
			{18	26	34	50	65	--	--	pounds.
1½"-----	#18	.0475"	{--	--	24"	36"	48"	60"	72"	wide.
			{--	--	43	61	80	98	116	pounds.

TABLE 6.—*Fur farm and animal pen netting*
[Hexagonal mesh. Galvanized-after-woven. Heavy-purpose netting.]

Hexagonal mesh	Wire size (after galvanizing)		Widths and approximate weights per 150-foot roll							
¾"-----	#18	0.0475"	{18"	24"	36"	48"	60"	72"	wide.	
			{59	76	115	150	187	223	pounds.	
1"-----	#18	.0475"	{18"	24"	36"	48"	60"	72"	wide.	
			{45	59	86	112	139	167	pounds.	
1"-----	#16	.0625"	{18"	24"	36"	48"	60"	72"	wide.	
			{76	103	148	190	236	283	pounds.	
1½"-----	#18	.0475"	{--	24"	36"	48"	60"	72"	wide.	
			{--	43	61	80	98	116	pounds.	
1½"-----	#16	.0625"	{--	24"	36"	48"	60"	72"	wide.	
			{--	72	99	134	162	192	pounds.	
1½"-----	#14	.080"	{--	24"	36"	48"	60"	72"	wide.	
			{--	110	160	210	250	300	pounds.	
2"-----	#18	.0475"	{--	24"	36"	48"	60"	72"	wide.	
			{--	34	47	61	76	91	pounds.	
2"-----	#16	.0625"	{--	24"	36"	48"	60"	72"	wide.	
			{--	55	81	105	129	153	pounds.	
2"-----	#14	.080"	{--	24"	36"	48"	60"	72"	wide.	
			{--	87	124	160	200	230	pounds.	

TABLE 7.—*Stucco reinforcement netting*
[Hexagonal mesh. Galvanized-after-woven.]

Hexagonal mesh	Wire size (after galvanizing)		Widths and approximate weights per 150-foot roll
1"-----	#20	0.0348"	{36" wide. 50 pounds.
1"-----	#18	.0475"	{36" wide. 86 pounds.
1"-----	#16	.0625"	{36" wide. 148 pounds.
1½"-----	#17	.054"	{36" wide. 72 pounds.
2"-----	#16	.0625"	{36" wide. 81 pounds.

ROLL LENGTH

11. All standard rolls of poultry, fur farm, crab trap, and stucco netting shall be 150 linear feet long, in one continuous length. In trade parlance "rolls" of netting are frequently spoken of as "bales."

MEASUREMENT OF MESH SIZES

12. Absolute uniformity of mesh size in woven-wire netting is commercially impracticable of attainment owing to the extreme flexibility of this type of weave. However, there shall be but slight commercial

variations from true mesh sizes in any standard netting. The measure of the mesh size in hexagonal netting shall be taken between any two parallel twists. The measure of straight-line netting mesh size shall likewise be taken between any two parallel twists.

WIRE DIAMETER, OR GAGE

13. All gage numbers used for designating wire sizes for standard woven-wire netting shall be understood to mean the Steel Wire Gage (also known as the Washburn and Moen, "W and M," Gage) after galvanizing, of which the following comprise the decimal equivalents: No. 20, 0.0348 inch; No. 17, 0.0540 inch; No. 14, 0.0800 inch; No. 18, 0.0475 inch; No. 16, 0.0625 inch.

The designated gage (number) of wire for standard woven-wire netting shall mean the size after galvanizing; namely, the bare wire plus the zinc coating.

TOLERANCES

14. Permissible variations shall be:

- (a) for wire diameters: 0.0015 inch minus for Nos. 16 to 20; 0.002 inch minus for all wire diameters coarser than No. 16.¹
- (b) for mesh size (measurement): Hexagonal mesh, $\frac{1}{8}$ -inch plus or minus; Straight Line mesh, $\frac{1}{8}$ -inch plus or minus.
- (c) for width: 5 percent plus or minus
- (d) for roll (bale) weight: minus 10 percent.¹
- (e) for roll (bale) length: minus 1 percent.¹

LABELING

15. The mesh type and size, finish and size of wire, and the length and the width of netting, in each roll of standard woven-wire netting, shall be shown in a conspicuous place, preferably by means of a printed tag securely attached to the roll.

GUARANTEE

16. In order to assure the purchaser that he is receiving woven-wire netting that complies with the requirements of this standard, it is recommended that the label or tag on each roll carry the following guarantee:

We hereby guarantee that this woven-wire netting complies with all requirements of Commercial Standard CS133-46, as issued by the National Bureau of Standards of the United States Department of Commerce.

(Signed)

¹ No limitation specified for oversize wire diameter, overweight, or overlength.

EFFECTIVE DATE

17. The standard is effective for new production from June 1, 1946.

STANDING COMMITTEE

18. The following individuals comprise the membership of the standing committee, as appointed by the National Bureau of Standards. This committee is to review, prior to circulation for acceptance, revisions proposed to keep the standard abreast of progress. Each organization nominated its own representative. Comment concerning the standard and suggestions for revision may be addressed to any member of the committee or to the Division of Trade Standards, National Bureau of Standards, which acts as secretary for the committee.

GEORGE F. WRIGHT (chairman), G. F. Wright Steel & Wire Co., 243 Stafford St., Worcester 3, Mass.
RALPH W. BACON, Hardware Cloth & Poultry Netting Institute, 74 Trinity Pl., New York 6, N. Y.
L. B. JACKSON, Wickwire Brothers, Inc., Cortland, N. Y.
A. L. HAGLUND, Northwestern Steel & Wire Co., Sterling, Ill.
THOMAS A. FERNLEY, Jr., National Wholesale Hardware Association, 505 Arch St., Philadelphia 6, Pa.
RIVERS PETERSON, National Retail Hardware Association, 333 North Pennsylvania St., Indianapolis 4, Ind.
G. IRVING BAILY, American Retail Federation, 1627 K St. NW., Washington 6, D. C.
Northeastern Poultry Producers' Council (invited to name a representative).
National Board of Fur Farmers' Organizations (invited to name a representative).
T. W. McALLISTER, Southern Hardware Jobbers Association, Orlando, Fla.
L. V. JUDSON, National Bureau of Standards, Washington 25, D. C.

HISTORY OF PROJECT

19. On September 26, 1944, the Hardware Cloth & Poultry Netting Institute requested the cooperation of the National Bureau of Standards in the establishment of a commercial standard for woven-wire netting. A preliminary draft of the proposed commercial standard was submitted to manufacturers for their review and comment. All comment was carefully considered at a meeting held in New York City on June 27, 1945. An adjusted draft was then prepared and submitted on July 30, 1945, to technical organizations, Government agencies, testing laboratories, and manufacturers, and wholesale, retail, and user organizations for further review and comment. The standard was then modified in accordance with composite recommendations of those concerned and circulated on February 26, 1946, to the trade for written acceptance.

20. 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 May 1, 1946 as Commercial Standard CS133-46.

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_____

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

Gentlemen:

We believe that the Commercial Standard CS133-46 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 woven-wire netting.

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.

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 recognition 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 acceptance 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

21. The organizations listed below have individually accepted these grading rules for use as far as practicable in the production, distribution, testing, or purchase of woven-wire netting. In accepting the standard, they reserve the right to depart therefrom as they individually deem advisable. It is expected that articles which 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 Hot Dip Galvanizers Association, Pittsburgh, Pa.
 Brockton Coop. Egg Auction Association, Inc., Avon, Mass.
 Hardware Cloth & Poultry Netting Institute, New York, N. Y.
 Mink Breeders' Association of the United States, Elgin, Ill.
 National Retail Hardware Association, Indianapolis, Ind.
 Pacific States Butter, Egg, Cheese & Poultry Association, San Francisco, Calif.
 Pennsylvania Farm Bureau Cooperative Association, Harrisburg, Pa.
 Puget Sound Fur Farmers Association of Washington, Seattle, Wash.
 Wisconsin Fur Breeders Association, Green Bay, Wis.
 Z. C. M. I., Wholesale Hardware Division, Salt Lake City, Utah.

FIRMS

Abraham & Straus, Inc., Brooklyn, N. Y.
 Ace Hardware Corporation, Chicago, Ill.
 Agnew Hardware Co., Everett, Wash.
 Alabama, State of, Montgomery, Ala.
 Albany Hardware & Iron Co., Albany, N. Y.
 Allen Co., Inc., Walter H., Dallas, Tex.
 Amarillo Hardware Co., Amarillo, Tex.
 American Hardware & Equipment Co., Charlotte, N. C.
 American Steel & Wire Co., Cleveland, Ohio.
 American Wholesale Hardware Co., Long Beach, Calif.
 Anderson & Ireland Co., The, Baltimore, Md.
 Arizona Hardware Co., Phoenix, Ariz.
 Arrow Hardware & Supply Co., New York, N. Y.
 Austin Brothers, Stockton, Calif.
 Aves, Inc., Arthur A., Yakima, Wash.
 Badger Paint & Hardware Stores, Inc., Milwaukee, Wis.
 Baird Hardware Co., Gainesville, Fla.
 Baker & Hamilton, San Francisco, Calif.
 Baltimore, City of, Bureau of Plans and Surveys, Baltimore, Md.
 Bard Hardware Co., Reading, Pa.
 Barker, Rose & Kimball, Inc., Elmira, N. Y.
 Barnes Lumber Co., W. F. & J. F., Waco, Tex.
 Barr Lumber Co., Santa Ana, Calif.
 Barrett Hardware Co., Joliet, Ill.
 Bay Cities Wholesale Hardware Co., San Francisco, Calif.
 Beck & Gregg Hardware Co., Atlanta, Ga.
 Benson Lumber Co., Pawhuska, Okla.
 Best, Joseph L., Floral Park, L. I., N. Y.
 Bieger Iron & Wire Works, Inc., Pittsburgh, Pa.
 Bigelow & Dowse Co., Boston, Mass.

Biggs Kurtz Hardware Co., The, Grand Junction, Colo.
 Birmingham, City of, Birmingham, Ala.
 Black & Co., Decatur, Ill.
 Black Hardware Co., Galveston, Tex.
 Blish, Mize & Silliman Hardware Co., Atchison, Kans.
 Bluefield Hardware Co., Bluefield, W. Va.
 Bluefield Supply Co., Bluefield, W. Va.
 Blumberg Co., Inc., Wm. L., New York, N. Y.
 Bosman & Casson, Inc., Harrison, N. J.
 Bostwick-Braun Co., The, Toledo, Ohio.
 Breck & Sons, Joseph, Boston, Mass.
 Brown-Camp Hardware Co., Des Moines, Iowa.
 Brown Roberts Hardware & Supply Co., Alexandria, La.
 Buck & Sons, Peter E., Ashland, Pa.
 Budge Co., Frank T., Miami, Fla.
 Buell Lumber & Manufacturing Co., Dallas, Tex.
 Buffalo, City of, Department of Public Works, Division of Buildings—Architectural Service, Buffalo, N. Y.
 Buhl Sons Co., Detroit, Mich.
 Builders Supply Co., San Antonio, Tex.
 Building Service, Inc., Great Falls, Mont.
 Burhans & Black, Inc., Syracuse, N. Y.
 Burkholder Lumber Co., The E. R., McPherson, Kans.
 California Hardware Co., Los Angeles, Calif.
 Cameron & Co., Inc., Wm. (Wholesale), Waco, Tex.
 Cameron Lumber Co., Inc., Newburgh, N. Y.
 Canton Lumber Co., Inc., The, Canton, Kans.
 Carpenter Hardware Co., The, Athens, Ohio.
 Center Lumber Co., Center, Colo.
 Central Hardware Co., St. Louis, Mo.
 Centre Hardware Co., Roslindale, Mass.
 Charleston Hardware Co., Charleston, W. Va.
 Charlottesville Hardware Co., Charlottesville, Va.
 Chicago & Riverdale Lumber Co., Chicago, Ill.
 Clark Witbeck Co., Schnectady, N. Y.
 Cole Manufacturing Co., Memphis, Tenn.
 Cole & Sons, Wm. H., Baltimore, Md.
 Colladay Hardware Co., The Frank, Hutchinson, Kans.
 Collins & Son, J. S., Moorestown, N. J.
 Columbia Steel Co., San Francisco, Calif.
 Columbia Valley Lumber Co., Bellingham, Wash.
 Conde Hardware Co., W. W., Watertown, N. Y.
 Conn Hardware & Furniture Co., Stuttgart, Ark.
 Corpus Christi Hardware Co., Corpus Christi, Tex.
 Cosgrove, Inc., E., Silver City, N. Mex.
 Crown Iron Works Co., Minneapolis, Minn.
 Curtis Co's., Inc., Wausau Division, Wausau, Wis.
 Cutler Hardware Co., Waterloo, Iowa.
 Delaware Hardware Co., Wilmington, Del.
 Delta Hardware Co., Escanaba, Mich.
 Des Moines Steel Co., Des Moines, Iowa.
 Dinkins-Davidson Hardware Co., Atlanta, Ga.
 Donnan Hardware Co., The W. S., Richmond Va.
 Drake Hardware Co., Burlington, Iowa.
 Dreisbach's Sons, Inc., C., Lewisburg, Pa.
 DuQuoin Home Lumber Co., DuQuoin, Ill.

- Dutton-Lainson Co., Hastings, Nebr.
 Duval Hardware Co., Anaconda, Mont.
 Edwards & Walker Co., Portland, Maine.
 Elmer & Moody Co., Seattle, Wash.
 Emery Hardware Co., Bradford, Pa.
 Emery-Waterhouse Co., The, Portland, Maine.
 Erb Hardware Co., Ltd., Lewiston, Idaho.
 Farley & Loetscher Manufacturing Co., Dubuque, Iowa.
 Farwell Ozmun Kirk & Co., St. Paul, Minn.
 Federal Hardware Co., Inc., New York, N. Y.
 Finke Stores, Inc., Elizabeth, La.
 Fitchburg Hardware Co., Fitchburg, Mass.
 Fones Brothers Hardware Co., Little Rock, Ark.
 Foster Co., F. G., Hoquiam, Wash.
 Franke & Co., Inc., C. D., Charleston, S. C.
 Frankfurth Hardware Co., Milwaukee, Wis.
 Franklin Hardware Co., New York, N. Y.
 Franklin Hardware & Supply Co., Philadelphia, Pa.
 Frederick Trading Co., Frederick, Md.
 Fries, Beall & Sharp Co., Washington, D. C.
 Fromm Bros., Inc., Hamburg, Wis.
 Fuller & Co., W. P., Portland, Oreg.
 Gadsden Hardware Co., Gadsden, Ala.
 Galbraith Steel & Supply Co., Dallas, Tex.
 Galloway-James Co., The, Baltimore, Md.
 Gannaway & Co., Inc., John E., Lynchburg, Va.
 Garber Hardware & Paint Co., Inc., New York, N. Y.
 Garnich & Sons Hardware Co., E., Ashland, Wis.
 Gates Hardware & Supply Co., Tulsa, Okla.
 General Hardware & Supply Co., Inc., Philipsboro, Pa.
 General Millwork Corporation, Utica, N. Y.
 Gertz, Inc., B., Jamaica, N. Y.
 Gilbert & Bennett Manufacturing Co., The, Georgetown, Conn.
 Gloucester Hardware & Plumbing Supply Co., Gloucester, Mass.
 Goldenblum & Co., William, New York, N. Y.
 Graves-Humphreys Hardware Co., Roanoke, Va.
 Greer Hardware & Mach. Co., Salisbury, N. C.
 Greer & Laing, Wheeling, W. Va.
 Hall Hardware Co., Minneapolis, Minn.
 Harbor Sales Co., The, Inc., Baltimore, Md.
 Harco Hardware Co., Cleveland, Ohio.
 Harper & McIntire Co., Cedar Rapids, Iowa, and Ottumwa, Iowa.
 Harper & Reynolds Corporation, Los Angeles, Calif.
 Harris Hardware Co., Washington, N. C.
 Harris Hardware & Supply Co., Kingston, Pa.
 Hartford Wire Works Co., The, Hartford, Conn.
 Hassco, Inc., Denver, Colo.
 Hasson-Bryan Hardware Co., Morristown, Tenn.
 Hauser Lumber Co., Fairfax, Minn., Gibbon, Minn., and Sleepy Eye, Minn.
 Hayes Sammons Hardware Co., Mission, Tex.
 Haynes & Chalmers Co., The, Bangor, Maine.
 Heilig Brothers Co., York, Pa.
 Heitmann Co., F. W., Houston, Tex.
 Helena Hardware Co., Helena, Mont.
 Henderson & Baird Hardware Co., Greenwood, Miss.
 Hendrie & Bolthoff Manufacturing & Supply Co., Denver, Colo.
 Henkle & Joyce Hardware Co., Lincoln, Nebr.
 Herbert Hearn Hardware Co., Cambridge, Md.
 Herr & Co., Inc., Lancaster, Pa.
 Herzog Supply Co., Kingston, N. Y.
 Higginbotham-Pearlstone Hardware Co., Dallas, Tex.
 Hill-Behan Lumber Co., St. Louis, Mo.
 Hobbs Supply Co., W. H., Eau Claire, Wis.
 Hodges Bros., Olathe, Kans.
 Holmes Hardware Co., Pueblo, Colo.
 Holter Hardware Co., A. M., Helena, Mont.
 Houston-Doughty Lumber Co., The, Wichita, Kans.
 Hubbard Co., The S. B., Jacksonville, Fla.
 Huey & Philp Hardware Co., Dallas, Tex.
 Hulfish & Sons, Inc., Worth, Alexandria, Va.
 Hunt & Mottet Co., Tacoma, Wash.
 Igoe Brothers, Inc., Newark, N. J.
 Ifield Co., Charles, Las Vegas, N. Mex.
 Imperial Hardware Co., El Centro, Calif.
 Indiana Steel & Wire Co., Muncie, Ind.
 Industrial Wire Cloth Co., New York, N. Y.
 Interstate Hardware Co., Inc., Bristol, Tenn.
 Jackson Hardware Co., The, Aberdeen, S. Dak.
 Jacobi Hardware Co., Wilmington, N. C.
 Janesville Fence & Post Co., Janesville, Wis.
 Janney, Semple, Hill & Co., Minneapolis, Minn.
 Jellico Hardware Co., Jellico, Tenn.
 Jelliff Manufacturing Corporation, The C. O., Southport, Conn.
 Jennison Hardware Co., The, Bay City, Mich.
 Jensen-Byrd Co., Spokane, Wash.
 Johannes Mink Ranch, Inc., N. A., Port Washington, Wis.
 Johnson & Co., Langdale, Ala.
 Kaminski Hardware Co., Georgetown, S. C.
 Kane & Keyser Hardware Co., Belington, W. Va.
 Keith, Simmons Co., Inc., Nashville, Tenn.
 Kelley How Thomson Co., Duluth, Minn.
 Kemp Lumber Co., Roswell, N. Mex.
 Kencell Hardware-Mill Supply Co., Battle Creek, Mich.
 Keystone Steel & Wire Co., Peoria, Ill.
 Kleinhardt Hardware Co., New York, N. Y.
 Knapp & Spencer Co., Sioux City, Iowa.
 Knight & Wall Co., Tampa, Fla.
 Knox Stores Co., Tampa, Fla.
 Koehl & Son, Inc., John W., Los Angeles, Calif.
 Korb-Petit Wire Fabrics & Iron Works, Inc., Philadelphia, Pa.
 Korber & Co., J., Albuquerque, N. Mex.
 Krebs & Co., Arthur H., Springfield, Ill.
 Kretschmer-Tredway Co., Dubuque, Iowa.
 Kruse Hardware Co., The, Cincinnati, Ohio.
 Lake Erie Hardware Co., The, Cleveland, Ohio.
 Larson Hardware Co., Sioux Falls, S. Dak.
 Lawrence Lumber Co., Inc., The, Wichita, Kans.
 Lee Hardware Co., Ltd., The, Shreveport, La.
 Levy Bros., Burlingame, Calif.
 Lewiston Hardware & Plumbing Supply Co., Lewiston, Maine.
 Lilien Hardware & Supply Corporation, Long Island City, N. Y.
 Lingo-Leeper Co., The, Denison, Tex.
 Lipsecomb & Co., H. G., Nashville, Tenn.
 Logan-Gregg Hardware Co., Pittsburgh, Pa.
 Logan Hardware & Supply Co., Logan, W. Va.
 Lorenz Co., Klamath Falls, Oreg.
 Loriek & Lowrance, Inc., Columbia, S. C.
 Luthé Hardware Co., Des Moines, Iowa.
 Lyon-Gray Lumber Co., Dallas, Tex.
 Madison Hardware Co., Madison, Wis.
 Mahowald Cycle Co., Mankato, Minn.
 Marshall Co., Inc., A. H., Plattsburg, N. Y.
 Marshall Wells Co., Spokane, Wash., and Duluth, Minn.
 Martin Hardsocg Co., The, Pittsburgh, Pa.
 Masback, Inc., New York, N. Y.
 Mathews-Boucher, Rochester, N. Y.
 Maxwell Wholesale Hardware Co., Oakland, Calif.
 McAleer & Co., Inc., E. J., Philadelphia, Pa.
 McClung & Co., Inc., C. M. Knoxville, Tenn.
 McGowin-Lyons Hardware & Supply Co., Mobile, La.
 McGregor Hardware Co., Springfield, Mo.
 McKee, R. D., Hagerstown, Md.
 McPhillips Manufacturing Co., Mobile, Ala.
 Melton Hardware Co., The, Meridian, Miss.
 Metropolitan Millwork Co., Brooklyn, N. Y.
 Michigan State Purchasing Division, Lansing, Mich.
 Middlesex Supply Co., Lowell, Mass.
 Miller Bros. Hardware Co., Richmond, Ind.
 Miller's Wholesale Hardware, Cortland, N. Y.
 Minot Builders Supply Co., Minot, N. Dak.
 Mitchell-Powers Hardware Co., Bristol, Va.
 Montana Hardware Co., Butte, Mont.
 Montgomery & Crawford, Inc., Spartanburg, S. C.
 Morley Brothers, Saginaw, Mich.
 Monroe Hardware Co., Inc., Monroe, La.
 Montana Lumber & Hardware Co., Lewistown, Mont.
 Morley-Murphy Co., Green Bay, Wis.
 Morris Hardware & Paint Co., New York, N. Y.
 Morrison-Merrill & Co., Salt Lake City, Utah.
 Morrison-Skinner Co., Inc., Wakefield, Mass.
 Muntz & Lea Co., Elgin, Ill.
 Nash Hardware Co., Fort Worth, Tex.
 Nash Robinson & Co., Waco, Tex.
 Neal-Blun Co., Savannah, Ga.
 Nelson Hardware Co., Roanoke, Va.

New Hampshire Hardware & Plumbing Supply Co., Manchester, N. H.
 Newark Wire Cloth Co., Newark, N. J.
 Newberry's Hardware Co., Alliance, Nebr.
 Nichols Wire & Steel Co., Davenport, Iowa.
 Northern Commercial Co., Seattle, Wash.
 Northern Hardware & Supply Co., Menominee, Mich.
 Northern Wholesale Hardware Co., Portland, Oreg.
 Northwestern Steel & Wire Co., Sterling, Ill.
 Norton Hardware Co., Norton, Va.
 Ohio Valley Hardware & Roofing Co., Evansville, Ind.
 Oklahoma City Hardware Co., Oklahoma City, Okla.
 O'Neill-McNamara Hardware Co., Vicksburg, Miss.
 Oregon City Lumber Co., Oregon City, Oreg.
 Ornamental Iron Work Co., The, Akron, Ohio.
 Pacific Wire Works Co., Seattle, Wash.
 Page, Steele & Flaggs Co., The, New Haven, Conn.
 Paten-Blinn Lumber Co., Los Angeles, Calif.
 Paxton & Gallagher Co., Omaha, Nebr.
 Pearlstone & Sons, I. M., Charleston, S. C.
 Peden Iron & Steel Co., Houston, Tex.
 Peirson Hardware Co., Pittsfield, Mass.
 Peterson Lumber & Paint Co., El Paso, Tex.
 Pettee & Co., W. J., Oklahoma City, Okla.
 Phillips & Co., I. W., Tampa, Fla.
 Phoenix Hardware Co., Newark, N. J.
 Pierce Hardware Co., Inc., The, Taunton, Mass.
 Pittsfield Hardware, Pittsfield, Mass.
 Pomeroy, Inc., Reading, Pa.
 Pritzlaff Hardware Co., John, Milwaukee, Wis.
 Prutzman Co., Inc., The H. C., Altona, Pa.
 Purkey & Son, J. W., Berea, Ky.
 Queensborough Lumber Co., Inc., Bayside, N. Y.
 Quigley Co., J. R., Gloucester City, N. J.
 Reilly Bros. & Raub, Lancaster, Pa.
 Rice & Miller Co., Bangor, Maine.
 Richard Lumber Co., Miles City, Mont.
 Richmond Hardware Co., Richmond, Va.
 Rike Kumler Co., The, Dayton, Ohio.
 Roanoke Hardware Co., Roanoke, Va.
 Roark & Co., L. W., Brookneal, Va.
 Roberts, Sanford & Taylor Co., Sherman, Tex.
 Robinson Lumber Co., Fred J., Detroit, Mich.
 Rogers & Baldwin Hardware Co., Springfield, Mo.
 Rohrbach Hardware & Supply Co., Inc., Scranton, Pa.
 Rounds & Porter Co., Wichita, Kans.
 Saginaw Hardware Co., Saginaw, Mich.
 Salt Lake Hardware Co., The, Salt Lake City, Utah.
 San Jose Hardware Co., San Jose, Calif.
 Schaberg-Dietrich Hardware Co., Lansing, Mich.
 Schelly & Brother, Inc., C. Y., Allentown, Pa.
 Schindel, Rohrer & Co., Inc., Hagerstown, Md.
 Schlafer Supply Co., Appleton, Wis.
 Schoenberg Manufacturing Co., F. E., St. Louis, Mo.
 Schwabacher Hardware Co., Seattle, Wash.
 Seattle Hardware Co., Seattle, Wash.
 Sechtman Hardware Co., Inc., Hartford, Conn.
 Segelke & Kohlhaus Co., La Crosse, Wis.
 Semer Hardware Co., Inc., New York, N. Y.
 Semmes Hardware Co., Savannah, Ga.
 Sharp-Horsey Hardware Co., Atlanta, Ga.
 Sheffield Co., Americus, Ga.
 Shields & Brother, Philadelphia, Pa.
 Shillito Co., The John, Cincinnati, Ohio.
 Siler City Hardware, Siler City, N. C.
 Silvey Lumber Co., J. A., Inavale, Nebr.
 Sloss & Brittain, San Francisco, Calif.
 Small Co., Inc., P. A. & S., York, Pa.
 Smith & Co., Chas. J., Jersey City, N. J.
 Smith Co., Timothy, Boston, Mass.
 Smith Comstock Co., Inc., The, Bridgeport, Conn.
 Smith Hardware Co., The W. N., Parkersburg, W. Va.
 Smith Wire & Iron Works, F. P., Chicago, Ill.
 Southern Hardware Co., Ltd., The, Monroe, La.
 Southern Hardware Co., Charleston, W. Va.
 Southern States Cooperative, Inc., Richmond, Va.
 Speer Hardware Co., Fort Smith, Ark.
 Spetnagel Hardware Co., The, Chillicothe, Ohio.

Spicola Hardware Co., Tampa, Fla.
 Spotless Co., Inc., The, Richmond, Va.
 Spradley Hardware & Seed Store, Inc., Birmingham, Ala.
 Standard Lumber Co., Winona, Minn.
 Standard Supply & Hardware Co., Inc., New Orleans, La.
 Stapley Co., The O. S., Phoenix, Ariz.
 Stauffer, Eshleman & Co., Ltd., New Orleans, La.
 Steinman Hardware Co., Lancaster, Pa.
 Stichter Hardware Co., Inc., Reading, Pa.
 Stowe Hardware & Supply Co., Kansas City, Mo.
 Stratton Warren Hardware Co., Memphis, Tenn.
 Summers Hardware & Supply Co., Johnson City, Tenn.
 Superior-Sterling Co., Bluefield, W. Va.
 Supplee Biddle Co., Philadelphia, Pa.
 Swank Hardware Co., The, Johnstown, Pa.
 Tausche Hardware Co., V. La Crosse, Wis.
 Tenk Hardware Co., Quincy, Ill.
 Thomas & Sons, Inc., Boonsboro, Md.
 Thompson & Co., H. D., Malone, N. Y.
 Thompson Hardware Co., The, Lowell, Mass.
 Thompson Miller Hardware Corporation, Charleston, S. C.
 Thomson-Diggs Co., The, Sacramento, Calif.
 Throop-Martin Co., The, Columbus, Ohio.
 Towner Hardware Co., Muskegon, Mich.
 Tryon Co., Edw. K., Philadelphia, Pa.
 Turner Hardware Co., Stockton, Calif.
 Tyler Co., The W. S., Cleveland, Ohio.
 United Hardware & Supply Co., Titusville, Pa.
 United Lumber Co., St. Louis, Mo.
 Van Camp Hardware & Iron Co., Indianapolis, Ind.
 Varick Co., John B., Manchester, N. H.
 Vaughan & Sons, Geo. C., Houston, Tex.
 Wabash Screen Door Co., The, Chicago, Ill.
 Wagner Hardware Co., The, Mansfield, Ohio.
 Wainwright Co., A. B., Philadelphia, Pa.
 Walker Hardware Co., Isaac, Peoria, Ill.
 Wallace Hardware Co., Inc., Morristown, Tenn.
 Warren Lumber Co., The, Fort Morgan, Colo.
 Watkins-Cottrell Co., Richmond, Va.
 Wayne Hardware Co., Inc., Fort Wayne, Ind.
 Weakley-Watson-Miller Hardware Co., Brownwood, Tex.
 Weed & Co., Buffalo, N. Y.
 Western Metal Supply Co., San Diego, Calif.
 Whissel Lumber Co., Inc., L. N., Buffalo, N. Y.
 Whitney & Co., San Diego, Calif.
 Wickwire Brothers, Inc., Cortland, N. Y.
 Wickwire Spencer Steel Division of Colorado Fuel & Iron Corporation, New York, N. Y.
 Wilcox & Haslup, Baltimore, Md.
 Williams Co., J. A., Pittsburgh, Pa.
 Williams Hardware Co., Fort Smith, Ark.
 Williams & Hunting Co., Cedar Rapids, Iowa.
 Williams & Son, George A., New York, N. Y.
 Williamson & Co., Inc., Ben. Ashland, Ky.
 Wilson Lumber Co., J. G., Wichita, Kans.
 Wilson & Pugh Co., Cumberland, Md.
 Wilberly & Thomas Hardware Co., Birmingham, Ala.
 Wisco Hardware Co., Madison, Wis.
 Woodruff Hardware Co., W. W., Knoxville, Tenn.
 Woodward Hardware Co., Cairo, Ill.
 Woodwell Co., Joseph, Pittsburgh, Pa.
 Worthington Co., The George, Cleveland, Ohio.
 Wright Steel & Wire Co., G. F., Worcester, Mass.
 Wright & Wilhelmy Co., Omaha, Nebr.
 Wyeth Co., St. Joseph, Mo.
 Zero Weather Stripping Co., Inc., New York, N. Y.
 Zork Hardware Co., El Paso, Tex.
 Zullows', Brooklyn, N. Y.

U. S. GOVERNMENT

Agriculture, U. S. Department of, Washington, D. C.
 Justice, U. S. Department of, Construction Division, Bureau of Prisons, Washington, D. C.
 National Housing Agency, Washington, D. C. (General support).
 War Department, Washington, D. C.

COMMERCIAL STANDARDS

CS No.	Item	CS No.	Item
0-40.	Commercial standards and their value to business (third edition.)	51-35.	Marking articles made of silver in combination with gold.
1-42.	Clinical thermometers (third edition).	52-35.	Mohair pile fabrics (100-percent mohair plain velvet, 100-percent mohair plain frieze, and 50-percent mohair plain frieze).
2-30.	Mopsticks.	53-35.	Colors and finishes for cast stone.
3-40.	Stoddard solvent (third edition).	54-35.	Mattresses for hospitals.
4-29.	Staple porcelain (all-clay) plumbing fixtures.	55-35.	Mattresses for institutions.
5-46.	Pipe nipples, brass, copper, steel, and wrought-iron (second edition).	56-41.	Oak flooring (second edition).
6-31.	Wrought-iron pipe nipples (second edition). Superseded by CS5-46.	57-40.	Book cloths, buckrams, and impregnated fabrics for bookbinding purposes except library bindings (second edition).
7-29.	Standard weight malleable iron or steel screwed unions.	58-36.	Woven elastic fabrics for use in overalls (overall elastic webbing).
8-41.	Gage blanks (third edition).	59-44.	Textiles—testing and reporting (fourth edition).
9-33.	Builders' template hardware (second edition).	60-36.	Hardwood dimension lumber.
10-29.	Brass pipe nipples. Superseded by CS5-46.	61-37.	Wood-slat venetian blinds.
11-41.	Moisture regains of cotton yarns (second edition).	62-38.	Colors for kitchen accessories.
12-40.	Fuel oils (fifth edition).	63-38.	Colors for bathroom accessories.
13-44.	Dress patterns (fourth edition).	64-37.	Walnut veneers.
14-43.	Boys' button-on waists, shirts, junior and sport shirts (made from woven fabrics) (third edition).	65-43.	Methods of analysis and of reporting fiber composition of textile products (second edition).
(E) 15-43. ¹	Men's pajamas (made from woven fabrics) (second edition).	66-38.	Marking of articles made wholly or in part of platinum.
16-29.	Wall paper.	67-38.	Marking articles made of karat gold.
17-42.	Diamond core drill fittings (third edition).	68-38.	Liquid hypochlorite disinfectant, deodorant, and germicide.
18-29.	Hickory golf shafts.	69-38.	Pine oil disinfectant.
19-32.	Foundry patterns of wood (second edition).	70-41.	Phenolic disinfectant (emulsifying type) (second edition) (published with CS71-41).
20-42.	Staple vitreous china plumbing fixtures (third edition).	71-41.	Phenolic disinfectant (soluble type) (second edition) (published with CS70-41).
21-39.	Interchangeable ground-glass joints, stopcocks, and stoppers (fourth edition).	72-38.	Household insecticide (liquid spray type).
22-40.	Builders' hardware (nontemplate) (second edition).	73-45.	Old growth Douglas fir standard stock doors (third edition).
23-30.	Feldspar.	74-39.	Solid hardwood wall paneling.
24-43.	Screw threads and tap-drill sizes.	75-42.	Automatic mechanical draft oil burners designed for domestic installations (second edition).
25-30.	Special screw threads. Superseded by CS24-43.	76-39.	Hardwood interior trim and molding.
26-30.	Aromatic red cedar closet lining.	77-40.	Sanitary cast-iron enameled ware.
27-36.	Mirrors (second edition).	78-40.	Ground-and-polished lenses for sun glasses (second edition) (published with CS79-40).
28-46.	Cotton fabric tents, tarpaulins and covers (second edition).	79-40.	Blown, drawn, and dropped lenses for sun glasses (second edition) (published with CS78-40).
29-31.	Staple seats for water-croquet bowls.	80-41.	Electric direction signal systems other than semaphore type for commercial and other vehicles subject to special motor vehicle laws (after market).
30-31.	Colors for sanitary ware.	81-41.	Adverse-weather lamps for vehicles (after market).
31-38.	Wood shingles (fourth edition).	82-41.	Inner-controlled spotlamps for vehicles (after market).
32-31.	Cotton cloth for rubber and pyroxylin coating.	83-41.	Clearance, marker, and identification lamps for vehicles (after market).
33-43.	Knit underwear (exclusive of rayon) (second edition).	84-41.	Electric tail lamps for vehicles (after market).
34-31.	Bag, case, and strap leather.	85-41.	Electric license-plate lamps for vehicles (after market).
35-42.	Plywood (hardwood and eastern red cedar) (second edition).	86-41.	Electric stop lamps for vehicles (after market).
36-33.	Fourdrinier wire cloth (second edition).	87-41.	Red electric warning lanterns.
37-31.	Steel bone plates and screws.	88-41.	Liquid-burning flares.
38-32.	Hospital rubber sheeting.	89-40.	Hardwood stair treads and risers.
39-37.	Wool and part wool blankets (second edition). (Withdrawn as commercial standard, July 14, 1941).	90- .	(Reserved for power shovels and cranes).
40-32.	Surgeons' rubber gloves.	91-41.	Factory-fitted Douglas fir entrance doors.
41-32.	Surgeons' latex gloves.	92-41.	Cedar, cypress and redwood tank stock lumber.
42-43.	Structural fiber insulating board (third edition).	93-41.	Portable electric drills (exclusive of high frequency).
43-32.	Grading of sulphonated oils.	94-41.	Calking lead.
44-32.	Apple wraps.	95-41.	Lead pipe.
45-45.	Douglas fir plywood (sixth edition).		
46-40.	Hosiery lengths and sizes (third edition).		
47-45.	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.		

CS No.	Item	CS No.	Item
96-41.	Lead traps and bends.	113-44.	Oil-burning floor furnaces equipped with vaporizing pot-type burners.
97-42.	Electric supplementary driving and passing lamps for vehicles (after market).	114-43.	Hospital sheeting for mattress protection.
98-42.	Artists' oil paints.	115-44.	Porcelain-enameled tanks for domestic use.
99-42.	Gas floor furnaces—gravity circulating type.	116-44.	Bituminized-fibre drain and sewer pipe.
100-44.	Porcelain-enameled steel utensils (second edition).	117-44.	Mineral wool; blankets, blocks, insulating cement, and pipe insulation for heated industrial equipment.
101-43.	Flue-connected oil-burning space heaters equipped with vaporizing pot-type burners.	118-44.	Marking of jewelry and novelties of silver.
102- .	(Reserved for Diesel and fuel-oil engines).	(E) 119-45. ¹	Dial indicators (for linear measurements).
103-42.	Cotton and rayon velour (jacquard and plain).	120-44.	Standard stock ponderosa pine doors.
104-46.	Warm-air furnaces equipped with vaporizing pot-type oil burners (second edition).	121-45.	Women's slip sizes (woven fabrics).
105-43.	Mineral wool; loose granulated, or felted form, in low-temperature installations.	122-45.	Western hemlock plywood.
106-44.	Boys' pajama sizes (woven fabrics) (second edition).	123-45.	Grading of diamond powder.
107-45.	Commercial electric-refrigeration condensing units (second edition).	(E) 124-45. ¹	Master disks.
108-43.	Treading automobile and truck tires.	125-45.	Prefabricated homes.
109-44.	Solid-fuel-burning forced-air furnaces.	126-45.	Tank mounted air compressors.
110-43.	Tire repairs—vulcanized (passenger, truck, and bus tires).	127-45.	Self-contained mechanically refrigerated drinking water coolers.
111-43.	Earthenware (vitreous-glazed) plumbing fixtures.	128-45.	Men's sport shirt sizes—woven fabrics (other than those marked with regular neckband sizes).
112-43.	Homogeneous fiber wallboard.	129-46.	Materials for safety wearing apparel.
		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.

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

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

