

CS28-32  
Cotton Fabric Tents, Tarpaulins, and Covers

U. S. DEPARTMENT OF COMMERCE  
BUREAU OF STANDARDS

# COTTON FABRIC TENTS, TARPAULINS, AND COVERS

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COMMERCIAL STANDARD CS28-32



A RECORDED STANDARD  
OF THE INDUSTRY

Below are described some of the series of publications of the Department of Commerce which deal with various phases of waste elimination.

**Simplified Practice Recommendations.**

These present in detail the development of programs to eliminate unnecessary variety in sizes, dimensions, styles, and types of over 100 commodities. They also contain lists of associations and individuals who have indicated their intention to adhere to the recommendations. These simplified schedules, as formulated and approved by the industries, are indorsed by the Department of Commerce.

**American Marine Standards.**

These are promulgated by the American Marine Standards Committee, which is controlled by the marine industry and administered as a unit of the division of simplified practice. Their object is to promote economy in construction, equipment, maintenance, and operation of ships. In general, they provide for simplification and improvement of design, interchangeability of parts, and minimum requisites of quality for efficient and safe operation.

**Commercial Standards.**

These are developed by various industries under a procedure similar to that of simplified practice recommendations. They are, however, primarily concerned with considerations of grade, quality, and such other characteristics as are outside the scope of dimensional simplification.

Lists of the publications in each of the above series can be obtained by applying to the National Bureau of Standards, Washington, D. C.

**U. S. DEPARTMENT OF COMMERCE**

**R. P. LAMONT, Secretary**

**BUREAU OF STANDARDS**

**GEORGE K. BURGESS, Director**

# **COTTON FABRIC TENTS TARPAULINS, AND COVERS**

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**COMMERCIAL STANDARD CS28-32**

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**[Issued July 15, 1931]**

**Effective Date for New Production  
and Clearance of Existing Stocks  
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## ACCEPTORS

### ASSOCIATIONS

American National Red Cross, Washington, D. C.  
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Cotton-Textile Institute (Inc.), The, New York, N. Y. (in principle).  
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National Tent & Awning Manufacturers Association (Inc.), St. Paul, Minn.  
National Wholesale Grocers' Association, New York, N. Y.  
New England Awning & Tent Manufacturers Association (Inc.), Boston Mass.  
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Berg Co., F. O., Spokane, Wash.  
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Biermann, Henry, Taylorville, Ill.  
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- Buckeye Fabric Finishing Co., The, Coshocton, Ohio.  
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 Canvas Products Corporation, Fond du Lac, Wis.  
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 Central Tent & Awning Co. (Inc.), St. Louis, Mo.  
 Chamberlain, C. W., Englewood, N. J.  
 Chapman Manufacturing Co., Toledo, Ohio.  
 Citizens Awning Canvas Products Co., Dayton, Ohio.  
 Clare Manufacturing Co., Clare, Mich.  
 Clifton Manufacturing Co., Waco, Tex.  
 Colorado State Grange, Boulder, Colo.  
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 Columbus Manufacturing & Supply Co. (Inc.), New York, N. Y.  
 Columbus Tent & Awning Co., The, Columbus, Ohio.  
 Compac Tent Corporation, Indianapolis, Ind.  
 Consolidated Awning & Canvas Co., Seattle, Wash.  
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 Davis & Son, C. F., Toledo, Ohio.  
 Day & Niger (Inc.), Niagara Falls, N. Y.  
 Decatur Tent & Awning Co., Decatur, Ill.  
 Demore Awning Works (Inc.), Charleston, S. C.  
 Denver Tent & Awning Co., The, Denver, Colo.  
 Des Moines Tent & Awning Corporation, Des Moines, Iowa.  
 Detroit Canvas Co., Detroit, Mich.  
 Detroit Testing Laboratory, The, Cincinnati, Ohio.  
 Dial Tent & Awning Co., The, Columbus, Ohio.  
 Dickey Manufacturing Co., The, Toledo, Ohio.  
 Distinctive Awning Co., Los Angeles, Calif.  
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 Dougherty Bros. Tent & Awning Co., St. Louis, Mo.  
 Dreesen Co., William, Pittsburgh, Pa.  
 Eareckson & Co., Chas. F., Baltimore, Md.  
 East St. Louis Tent & Awning Co., East St. Louis, Ill.  
 Ehrick Co., Fred, Brooklyn, N. Y.  
 Equinox Mill, Anderson, S. C. (in principle).  
 Eshbach, Walter R., Atlantic City, N. J.  
 Eureka Tent & Awning Co., Binghanton, N. Y.  
 Farm Supply & Awning Co., Lake Charles, La.  
 Fishel's Columbia Awning & Supply Co., Portland, Ore.  
 Ford Manufacturing Co. (Inc.), Springfield, Mass.  
 Florida Tent & Awning Co. (Inc.), Jacksonville, Fla.  
 Fort Wayne Tent & Awning Co., Fort Wayne, Ind.  
 Fox Tent & Awning Co., Ypsilanti, Mich.  
 Freeport Awning & Shade Co., Freeport, L. I., N. Y.  
 Fribush Awning Co., Albany, N. Y.  
 Fries Awning & Tent Co., G. H., Toledo Ohio.  
 Fulton Bag & Cotton Mills, Atlanta, Ga.  
 Galetti & Shaler (Inc.), New York, N. Y.  
 Gerhab & Ludlam Co. (Inc.), Philadelphia, Pa.  
 Gilkey-Durant Co. (Inc.), New Bedford, Mass.  
 Goodall Rubber Co. (Inc.), Pittsburgh, Pa.  
 Goss Co., The J. C., Detroit, Mich.  
 Gotham Textile Manufacturing Co., New York, N. Y.  
 Grand Junction Tent & Awning Co., Grand Junction, Colo.

- Grantham's Canvas Goods Store, Leavenworth, Kans.  
 Green Bay Awning & Tent Co., Green Bay, Wis.  
 Guarantee Awning & Tent Co., Birmingham, Ala.  
 Halkett Co., Wm. G., Philadelphia, Pa. (in principle).  
 Harrington, King & Co., Boston, Mass.  
 Hauser Tent & Awning Co., Jackson, Tenn.  
 Havside Co., San Francisco, Calif.  
 Helena Saddlery & Tent Co., Helena, Mont.  
 Higrade Tent & Duck Co., Los Angeles, Calif.  
 Hirsch Mercantile Co., Los Angeles, Calif.  
 Hoegee Co., Wm. H., Los Angeles, Calif.  
 Hoosier Tarpaulin & Canvas Goods Co., Indianapolis, Ind.  
 Howe & Bainbridge, Boston, Mass.  
 Hoyt Co., Geo. T., Boston, Mass.  
 Hulme Co., J. W., St. Paul, Minn.  
 Humphrys' Sons (Inc.), R. A., Philadelphia, Pa.  
 Huntington Tent & Awning Co., Huntington, W. Va.  
 Hyde Park Awning Co. (Inc.), Chicago, Ill.  
 Illinois Valley Awning & Tent Co., Peoria, Ill.  
 Indianapolis Tent & Awning Co., Indianapolis, Ind.  
 Jackson & Co., Irvin, Mobile, Ala. (in principle).  
 Jensen, Charles, New York, N. Y.  
 Johnson & Co. (Inc.), C., Montclair, N. J.  
 Johnson Co., The John, Detroit, Mich.  
 Joys Bros. Co., Milwaukee, Wis.  
 Jurgensen Manufacturing Co. (Inc.), New York, N. Y.  
 Kalamazoo Awning & Tent Co., Kalamazoo, Mich.  
 Kansas Awning & Tent Co., Topeka, Kans.  
 Kansas Tent & Awning Co., Wichita, Kans.  
 Kattmann Tent & Awning Co., A. F., Houston, Tex.  
 Kaufman (Inc.), Harry, Washington, D. C.  
 Keane Bros. Tent & Awning Co., St. Louis, Mo.  
 Kemitex Products Co., The, Wadsworth, Ohio.  
 Kent Awning & Tent Co., Grand Rapids, Mich.  
 Kentucky Tent & Awning Co., Louisville, Ky.  
 Kermis & Co. (Inc.), Rochester, N. Y.  
 Kleiminger Manufacturing Co., Chicago, Ill.  
 Kloes (Inc.), F. J., New York, N. Y.  
 Knoxville Awning, Tent & Tarpaulin Co. (Inc.), Knoxville, Tenn.  
 Kokomo Tent & Awning Co., Kokomo, Ind.  
 Kountz, A. H., East Liverpool, Ohio.  
 Krauss & Sons, Eugene, Newport, Ky.  
 Kriz Tent & Awning Co., Cedar Rapids, Iowa.  
 Laacke Co., R., Milwaukee, Wis.  
 Langdon Tent & Awning Co., The, Wichita, Kans.  
 Lansing Tent & Awning Co., Lansing, Mich. (in principle).  
 Larsen & Sons, I. M., Tacoma, Wash.  
 Larsen, Louis J., New York, N. Y.  
 Leavitt & Parris, Portland, Me.  
 Leek Bros., Morristown, N. J.  
 Leslie, Evans & Co., New York, N. Y. (in principle).  
 Lincoln Tent & Awning Co., Lincoln, Nebr.  
 Lord & Co., Harry S., Boston, Mass.  
 Lukens & Igl (Inc.), Milwaukee, Wis.  
 Maas Bros., Tampa, Fla.  
 Madsen, M., Los Angeles, Calif.  
 Magner & Sons, Edward, Buffalo, N. Y.  
 Mamaux & Son, A., Pittsburgh, Pa.  
 Mammen Co., Wolmer L., Minneapolis, Minn. (in principle).  
 Manitowoc Awning & Tent Shop, Manitowoc, Wis.  
 Mansfield Tent & Awning Co., The, Mansfield, Ohio.  
 Martin & Son, Louis, New York, N. Y.  
 Martin Dyeing & Finishing Co., Bridgeton, N. J.  
 Matthews, John J., Philadelphia, Pa.  
 Mauritzon & Co., M., Chicago, Ill.  
 McClellan & Son, Charles P., Fall River, Mass.  
 McLellan Awning & Shade Co. (Inc.), Boston, Mass.  
 Mellus Bros. & Co., Los Angeles, Calif.  
 Meneley-Diederich Co. (Inc.), Los Angeles, Calif.  
 Meyer Co., The, Springfield, Mass.  
 Michigan Tent & Awning Co., Detroit, Mich.  
 Midwest Tent & Awning Manufacturing Co., Kansas City, Mo.  
 Mills & Co., W. J., Greenport, N. Y.  
 Monroe Tent & Awning Co., Monroe, La.  
 Montgomery-Washburn Co., Saugerties, N. Y.  
 Morrison Tent & Awning Co., St. Louis, Mo.  
 Mound City Duck & Rubber Co., St. Louis, Mo.  
 Mount Vernon-Woodberry Mills (Inc.), Baltimore, Md. (in principle).  
 Muncie Tent & Awning Co., Muncie, Ind.  
 Munden & Alexander, Elizabeth City, N. C.

- National Decorating Co., Providence, R. I.
- New Jersey Textile Waterproofing Corporation, Jersey City, N. J. (in principle).
- New Orleans Tent & Awning Co. (Ltd.) New Orleans, La.
- Newton Awning & Tent Co., Newton, Mass.
- New York Awning Co. (Inc.), New York, N. Y.
- New York Sailmaking Corporation, Brooklyn, N. Y.
- Niagara Co., The, Cedar Rapids, Iowa.
- Nicholson & Son (Inc.), James A., Baltimore, Md.
- Ohio Rubber Co., The, Cleveland, Ohio.
- Oklahoma City Tent & Awning Co., Oklahoma City, Okla.
- O. K. Tent & Awning Co., Louisville, Ky.
- Olson & French (Inc.), Philadelphia, Pa.
- Orange Awning Co. (Inc.), Orange, N. J.
- Oshkosh Tent & Awning Co., The, Oshkosh, Wis.
- Out West Tent & Awning Co., The, Colorado Springs, Colo.
- Pacific Auto Awning Co., Los Angeles, Calif.
- Pacific Awning Co., Long Beach, Calif.
- Palmer Co. (Inc.), W. E., Boston, Mass.
- Palmetto Cotton Mills, Palmetto, Ga. (in principle).
- Patton Co., The R. J., Cincinnati, Ohio.
- Penfield Co., A. H., New York, N. Y.
- Pennington Awning Co., The, Detroit, Mich.
- Peoria Tent & Awning Co., Peoria, Ill.
- Petersen & Co., Philadelphia, Pa.
- Philadelphia Waterproofing Co., Philadelphia, Pa.
- Phoenix Tent & Awning Co., Phoenix, Ariz.
- Piedmont Cotton Mills, Egan, Ga. (in principle).
- Pioneer Mills, Guthrie, Okla. (in principle).
- Pittsburgh Awning Co. (Inc.), Pittsburgh, Pa.
- Pontiac Tent & Awning Co., Pontiac, Mich.
- Price Fire & Water Proofing Co., Poughkeepsie, N. Y. (in principle).
- Pueblo Tent & Awning Co., The, Pueblo, Colo.
- Red Head Brand Co., Chicago, Ill.
- Richmond-Boro A. & T. Co., Grant City, Staten Island, N. Y.
- Rippe Tent & Duck Co., H., St. Louis, Mo.
- Robeson Preservo Co., Port Huron, Mich. (in principle).
- Roloson Awning & Tent Co., The, Lima, Ohio.
- Ryling & Son, John, Cincinnati, Ohio.
- Sabey Co. (Inc.), The Fred F., Rochester, N. Y.
- Sadler & Co., Detroit, Mich.
- St. Joseph Tent & Awning Co., St. Joseph, Mo.
- St. Louis Tent & Awning Co., St. Louis, Mo.
- St. Paul Tent & Awning Co. (Inc.), The, St. Paul, Minn.
- Saunders, H. J., Minneapolis, Minn. (in principle).
- Sawyer & Son, H. M., East Cambridge, Mass.
- Schaefer Tent & Awning Co., The, Denver, Colo.
- Scheuerlein-Guth Co., North Bergen, N. J.
- Schoonover Upholstering Shop, E. D., Canton, Ill.
- Schwahn-Seyberth Co., The, Eau Claire, Wis.
- Scott-Omaha Tent & Awning Co., Omaha, Nebr.
- Seattle Tent & Awning Co., Seattle, Wash.
- Seick Tent & Awning Co., Des Moines, Iowa.
- Sherman Manufacturing Co., Sherman, Tex. (in principle).
- Siegel Tent & Awning Co., Charles L., St. Louis, Mo.
- Simpson & Fisher (Inc.), San Francisco, Calif.
- Sioux City Tent & Awning Co. (Inc.), Sioux City, Iowa.
- Slauson Awning Co., Akron, Ohio.
- Smith Awning & Tent Co., Auburn, N. Y.
- Smith Bros., Chicago, Ill.
- Smith Co. (Inc.), Arthur F., New York, N. Y.
- Smith Manufacturing Co., Dalton, Ga.
- Smith-Olson Awning Co., Chicago, Ill.
- Smith Tent & Awning Co., M. D., Atlanta, Ga.
- South Akron Awning Co., Akron, Ohio.
- South Bend Awning Co., South Bend, Ind.
- Southern Tent & Awning Co., Lexington, Ky.
- South Side Awning Co., South Bend, Ind.
- South Texas Cotton Mills, Brenham, Tex.
- Spelman & Co., Vincent J., Philadelphia, Pa.
- Sperry Flour Co., San Francisco, Calif. (in principle).
- Springfield Tent & Awning Co., Springfield, Ohio.
- Standard Awning Co., Hartford, Conn.

- Standard Cotton Mills, Cedartown, Ga.  
(in principle).
- Standard Tent & Awning Co., The,  
Toledo, Ohio.
- Standard Tent & Awning Co., Omaha,  
Nebr.
- Stanley Co. (Inc.), William W., New  
York, N. Y.
- Stapler, Charles E., South Hanson,  
Mass.
- State Awning Co., The, Hartford,  
Conn.
- Stedenfeld Co. (Inc.), Henry, Newark,  
N. J.
- Steril Manufacturing Co., Omaha,  
Nebr.
- Sterling Sack Co., Chicago, Ill.
- Stevenson-McGee Co. (Inc.), Balti-  
more, Md.
- Stoll Manufacturing Co., The, Denver,  
Colo.
- Stone Awning Works, The, Niagara  
Falls, N. Y.
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Francisco, Calif.
- Sullivan Awnings (Inc.), Cleveland,  
Ohio.
- Sunshine City Awning & Tent Co., St.  
Petersburg, Fla.
- Superior Tent & Awning Co., Superior,  
Wis.
- Swan Tent & Awning Co., Ludington,  
Mich.
- Swenson Awning Co., San Antonio,  
Tex.
- Taulane's Sons, George, Philadelphia,  
Pa.
- Taylor Co., H. D., Buffalo, N. Y.
- Taylor Co. (Inc.), Nelson A., Glovers-  
ville, N. Y.
- Terre Haute Tent & Awning Co.,  
Terre Haute, Ind.
- Texas Tent & Awning Co., Houston,  
Tex.
- Textile Commission Co., Philadelphia,  
Pa.
- Thomas, G. E. A., Ventnor, N. J. (in  
principle).
- Thorp Awning Shoppe (Inc.), The,  
Indianapolis, Ind.
- Top & Awning Co., York, Nebr.
- Trevathan Awning & Tent Co., Colum-  
bia, S. C.
- Tri-State Awning Co., Memphis, Tenn.
- Tucker Duck & Rubber Co., Fort  
Smith, Ark.
- Tulsa Tent & Awning Co., Tulsa,  
Okla.
- Turner Halsey Co., New York, N. Y.  
(in principle).
- Ulmer & Wagner Manufacturing Co.,  
Bound Brook, N. J. (in principle).
- United States Finishing Co., The,  
Cedartown, Ga.
- United States Tent & Awning Co.,  
Chicago, Ill.
- Upson, F. F., New Haven, Conn.
- Upson-Walton Co., The, Cleveland,  
Ohio.
- Vanderherchen (Inc.), Wm. H., Phila-  
delphia, Pa.
- Vogt, A. M., New Haven, Conn.
- Wachter Tent & Awning Manufactur-  
ing Co., Joplin, Mo.
- Wagner Awning & Manufacturing Co.,  
The, Cleveland, Ohio.
- Walker Cotton Fabrics Co., Chicago,  
Ill. (in principle).
- Wall & Sons, H. B., Springfield, Mo.
- Washington State Grange, Seattle,  
Wash. (in principle).
- Waterstrat Awning Co., Tonawanda,  
N. Y.
- Wausau Tent & Awning Co., Wausau,  
Wis.
- Webb & Co., Chas. J., Philadelphia,  
Pa.
- Wellington, Sears & Co., New York,  
N. Y. (in principle).
- Werle & Fuller, Sault Ste. Marie, Mich.
- Western Awning & Manufacturing Co.,  
Oklahoma City, Okla.
- West Point Manufacturing Co., West  
Point, Ga. (in principle).
- Wheeler Co., Henry, A., Boston, Mass.
- Wheeling Tent & Awning Co., Wheel-  
ing, W. Va.
- Wichita-Ponca Tent & Awning Co.,  
The, Wichita, Kans.
- Wilcox Co., The M. I., Toledo, Ohio.
- Williams Awning & Tent Co. (Inc.),  
Buffalo, N. Y.
- Williams Improved Stretcher Co.,  
Wheeling, W. Va.
- Wing & Son Corporation, R. B.,  
Albany, N. Y.
- Wittman Tent & Awning Co., Hamil-  
ton, Ohio.
- Wolf Awning & Tent Co., G. T.,  
Greenville, Ohio.
- Wolf Tent & Awning Co., Fort Wayne,  
Ind. (in principle).

## GOVERNMENT

- District of Columbia Government,  
purchasing officer, Washington, D. C.
- Interior Department, Washington,  
D. C.
- Veterans' Bureau, Washington, D. C.

# COTTON FABRIC TENTS, TARPAULINS, AND COVERS

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## COMMERCIAL STANDARD, CS28-32

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On December 12, 1930, a general conference of representative manufacturers, distributors, and users of cotton fabric tents, tarpaulins, and covers adopted a commercial standard for these commodities. The industry has since accepted and approved for promulgation by the Department of Commerce the commercial standard as shown herein.

The standard will become effective for new production and clearance of existing stocks on January 1, 1932.

Promulgation recommended.

I. J. FAIRCHILD,  
*Chief, Division of Trade Standards.*

Promulgated.

GEORGE K. BURGESS,  
*Director, Bureau of Standards.*

APPROVED.

R. P. LAMONT,  
*Secretary of Commerce.*

## COMMERCIAL STANDARD, CS28-32

### SCOPE

This commercial standard covers the basis and method of marking cotton fabric tents, tarpaulins, and covers, either waterproof-treated or untreated.

### PURPOSE

*Waterproof-treated goods.*—Since the practice of indefinite and misleading markings and descriptions of “waterproof-treated” fabric tents, tarpaulins, and covers by their finished weight works an injustice and is misleading to the buying public, the industry desires to eliminate this practice and arrange in lieu thereof a definite standard method of marking which will be clear to both buyer and seller.

*Untreated goods.*—Further, since the practice of indefinite markings and descriptions of “untreated” fabric tents, tarpaulins, and covers is so often misleading to the tent or cover buyer, the industry desires to eliminate this practice and arrange in lieu thereof a definite standard method of marking which will be clear to both buyer and seller.

### MARKING

Waterproof-treated or untreated cotton fabric tents, tarpaulins, and covers shall be marked with a printed tag or stencil to show the original grey goods weight on a square yard basis. Such ounce weight designation on the fabric shall be carried to the nearest 1/100 ounce, see Table 1 and appendix.

TABLE 1.—Illustration of standard marking

Mill designation weight, grey goods 29 inch basis (29 by 36 inches) (in ounces)	Recommended marking standard weight, grey goods per square yard
7.....	Ounces 8.69
8.....	9.93
10.....	12.41
12.....	14.90

In addition to the grey goods weight, waterproof-treated or untreated cotton fabric tents, tarpaulins, and covers shall be marked to show the commercial type of fabric, as “single-filling duck,” “double-filling duck,” “army duck,” “numbered duck,” “sheeting,” “osnaburg,” “drill,” and any other fabric that may be used. (See appendix for definitions.)

It is recommended that no marking or sales descriptions be used referring to the finished or loaded weight of waterproof-treated cotton fabric tents, tarpaulins, and covers.

It is recommended that no marking or sales descriptions of untreated fabric covers and tents be used referring to any other than 36-inch width, regardless of the width actually used in the tent or cover.

### WEIGHT TOLERANCE

The weight tolerance shall be in accordance with approved commercial practice.

### APPENDIX

#### *Nomenclature and definitions*

**DRILL.**—A commercial term for a fabric with warp face twill. Usually constructed with single yarn in both warp and filling and woven in such a way as to produce in the face of the fabric a slight diagonal wale or rib. Generally woven two up, one down, 27 to 72 inches wide, 2 to 9 ounces per square yard.

**DUCK.**—A closely woven, firm, heavy, plain-weave fabric.

1. *Army duck.*—Warp and filling each consisting of two or more yarns twisted together, made principally in weights of 7, 8, 9, 10, 12, and 15 ounces to a width of 28½ inches.

2. *Double filling duck.*—Warp consisting of single yarns, sized, with two yarns woven as one (not twisted); filling consisting of two or more yarns twisted together; made principally in weights as follows:

	Inches wide
7, 8, 9, 10, and 12 ounces .....	29
10 and 12 ounces .....	36
10 and 11 ounces .....	40

2 (a) *Enameling duck.*—Double-filling duck in special weights, made principally in widths of 38, 46½, 51½, 61, 72, 84, and 90 inches.

2 (b) *Flat duck.*—A name often applied to both single and double-filling ducks due to the methods of weaving two warp yarns side by side as one.

2 (c) *Wagon cover duck.*—Double-filling duck, made principally in widths of 48, 54, 60, 66, 72, 84, and 90 inches, in weights based upon 8, 10, and 12 ounces to 29-inch width.

3. *Numbered duck (sail and wide duck).*—Warp and filling each consisting of two or more yarns twisted together. The number of numbered duck is based on the computation: Number of duck = 19 - weight in ounces per linear yard 22 inches wide. When the weight per linear yard exceeds 19 the number is indicated as follows: 19 ounces per linear yard is numbered 1/0, 20 ounces is 2/0, etc.

4. *Single-filling duck.*—Warp consisting of single yarns, sized, with two yarns woven as one (not twisted); with filling of single yarns; made principally in weights, as follows:

	Inches wide
6, 7, 8, 9, 10, and 12 ounces .....	29
8, 10, and 12 ounces .....	36
10 and 11 ounces .....	40

**JEAN.**—A commercial term for a fabric with warp face twill like a drill, but with higher count and finer yarns. When the fabric is examined face up with one selvage on the left and the other on the right, on a jean drill the direction of the diagonal wale or rib is upward to the left.

**OSNABURG.**—A coarse, open, plain-weave fabric of yarns from 3s to 12s, weight 6 to 10 ounces per square yard, threads per inch approximately 30 to 38 warp and 20 to 32 filling.

**SHEETING.**—A light or medium weight plain-weave fabric of single yarns from 12s to 30s.

### CONVERSION TABLES

TABLE 2.—*Numbered cotton duck*

Mill designation No. <sup>1</sup>	Recommended marking standard weight of gray goods
	<i>Ounces per square yard</i>
2/0.....	32.73
1/0.....	31.09
1.....	29.45
2.....	27.82
3.....	26.18
4.....	24.55
5.....	22.91
6.....	21.27
8.....	18.00
10.....	14.73
12.....	11.45

<sup>1</sup> These numbers conform to Simplified Practice Recommendation No. 27 (first division).

TABLE 3.—*Army duck*

Mill designation (ounces per linear yard of 28½-inch width (28½ by 36 inches))	Recommended marking standard weight of gray goods
	<i>Ounces per square yard</i>
6.....	7.58
7.....	8.84
8.....	10.11
9.....	11.37
10.....	12.63
11.....	13.89
12.....	15.16
15.....	18.95

TABLE 4.—*Single-filling and double-filling duck*

Mill designation (ounces per linear yard of 29-inch width (29 by 36 inches))	Recommended marking standard weight of gray goods
	<i>Ounces per square yard</i>
6.....	7.45
7.....	8.69
8.....	9.93
9.....	11.17
10.....	12.41
11.....	13.66
12.....	14.90
15.....	18.62

TABLE 5.—Drills

Mill designation		Recommended marking standard weight of gray goods
Width (inches)	Linear yards per pound	
		<i>Ounces per square yard</i>
30.....	4.00	4.80
30.....	3.25	5.91
30.....	3.00	6.40
30.....	2.85	6.74
30.....	2.50	7.68
34.....	4.75	3.57
37.....	3.95	3.94
37.....	3.50	4.45
37.....	3.25	4.80
37.....	3.00	5.19
37.....	2.75	5.66
37.....	2.35	6.63
37.....	2.00	7.79

TABLE 6.—Sheeting

Mill designation		Recommended marking standard weight of gray goods	Mill designation		Recommended marking standard weight of gray goods
Width (inches)	Linear yards per pound		Width (inches)	Linear yards per pound	
		<i>Ounces per square yard</i>			<i>Ounces per square yard</i>
31.....	5.00	3.72	36.....	2.85	5.61
31.....	4.50	4.13	37.....	4.00	2.89
32.....	6.25	2.88	37.....	3.50	4.45
36.....	6.50	2.46	40.....	5.50	2.62
			40.....	5.00	2.88
36.....	6.15	2.60	40.....	4.23	3.40
36.....	5.50	2.91	40.....	4.00	3.80
36.....	5.00	3.20	40.....	3.75	3.84
36.....	4.70	3.40	40.....	3.60	4.00
36.....	4.25	3.76	40.....	3.15	4.57
36.....	4.00	4.00	40.....	2.85	5.05
36.....	3.50	4.57	40.....	2.50	5.76
36.....	3.25	4.92			
36.....	3.00	5.33			

TABLE 7.—Osnaburg

Mill designation		Recommended marking standard weight of gray goods
Width (inches)	Linear yards per pound	
		<i>Ounces per square yard</i>
30.....	2.29 (7 oz.)	8.40
36.....	2.29 (7 oz.)	6.99
36.....	3.90	4.10
40.....	2.29 (7 oz.)	6.29
40.....	3.50	4.11

## HISTORY OF PROJECT

Pursuant to a suggestion from the Fulton Bag & Cotton Mills, a meeting of a few waterproofers was held at the Department of Commerce on June 7, 1929, at which time it was recommended that all waterproofed fabrics used in the industry be marked in ounces per square yard. Following some laboratory tests, a committee of waterproofers and tent manufacturers met in St. Louis, Mo., on March 21, 1930, at which time a more definite program was drafted and arrangements made for the treatment of a number of samples by various methods for submission to the National Bureau of Standards for test.

A well-attended conference of waterproofers, held at Memphis, Tenn., October 6, 1930, reviewed the informal report of the tests and adopted definite resolutions to the effect that all waterproofed fabric tents, tarpaulins, and covers be marked to show the original gray goods weight on the square yard basis, to the nearest 1/100 of an ounce. This conference felt that the methods of test were not sufficiently well established to be regarded as standard and that further experimental work should be done prior to the adoption of standard methods of test as a basis for rating the degree of waterproofness of waterproof-treated fabrics.

The resolutions of the Canvas Waterproofers Association were presented to the National Tent & Awning Manufacturers Association on October 7, 1930, and on the following day, October 8, 1930, the resolutions were modified to read substantially the same as given in the recommended commercial standard and were adopted unanimously by the National Tent & Awning Manufacturers Association. The latter association then presented the resolutions to the National Bureau of Standards with a request that a general conference be called for the purpose of obtaining comment from the entire industry.

## GENERAL CONFERENCE

Pursuant to a request from the National Tent & Awning Manufacturers Association, a general conference of producers, distributors, and users of cotton fabric tents, tarpaulins, and covers, was held at the National Bureau of Standards, Washington, D. C., on December 12, 1930, to consider the adoption of a standard basis for marking the weight of these goods. The following individuals were present:

ADAMS, HARRY C., National Tent & Awning Manufacturers Association and the Canvas Goods Manufacturers Association of New York City, New York, N. Y.  
BARNETT, JOHN, Barnett Canvas Goods & Bag Co. (Inc.), Philadelphia, Pa.  
CARVER, CHARLES C., Charles F. Eareckson & Co., Baltimore, Md.  
DILG, JOSEPH EDWARD, National Tent & Awning Manufacturers Association and Dougherty Bros. Tent & Awning Co., St. Louis, Mo.  
DURHAM, E. L., Bowman-Durham-Robbins (Inc.), Brooklyn, N. Y.  
HEMPLE, H. W., United States Coast and Geodetic Survey, Washington, D. C.  
INTEMANN, H. K., Halowax Division of Bakelite Corporation, New York, N. Y.  
JOHNSON, BENJAMIN G., Charles F. Eareckson & Co., Baltimore, Md.  
JOHNSON, H. S., Cotton-Textile Institute, New York, N. Y.  
MARBURY, H. B., Fulton Bag & Cotton Mills, Atlanta, Ga.  
MCCAIN, H. B., Canvas Waterproofers Association, New York, N. Y., Brunsene Co., Watertown, Mass. Philadelphia Waterproofing Co., Philadelphia, Pa.  
MCCRAY, WILLIAM V., War Department, Corps of Engineers, Washington, D. C.  
POWERS, FRANK M., Powers & Co., Philadelphia, Pa. Powers Waterproofing Co., Chicago, Ill. Powers Waterproofing Co., Philadelphia, Pa. Sears, Roebuck & Co., Chicago, Ill.

PROCTOR, J. W., Cotton Duck Association, New York, N. Y.  
 RODGERS, THOMAS B., Jr., Wm. L. Barrell Co., of N. Y. (Inc.), New York, N. Y.  
 RUSSELL, WILLIAM E., Capital Awning Co., Washington, D. C.  
 SAMPSON, Lieut. Col. O. H., Quartermaster Corps, United States Army, Washington, D. C.  
 SHAWN, Capt. F. D., Quartermaster Corps, United States Army, Washington, D. C.  
 SMITH, JOHN R., A. Smith & Son, Philadelphia, Pa. New England Tent & Awning Association, Boston, Mass.  
 STENNER, WILLIAM A., Buckeye Fabric Finishing Co., The, Coshocton, Ohio.  
 STEVENSON, JR., EDWIN D., Stevenson-McGee Co. (Inc.), Baltimore, Md.  
 STIND, C. J., Sears, Roebuck & Co., Chicago, Ill.  
 TIMMONS, W. D., Buckeye Fabric Finishing Co., Coshocton, Ohio.  
 WHITTIER, B. L., Mount Vernon Woodberry Mills (Inc.), Baltimore, Md.  
 American Society for Testing Materials, New York, N. Y.  
 WILEY, N. C., Bureau of Construction and Repair, Navy Department. Washington, D. C.

## DEPARTMENT OF COMMERCE:

BIGGINS, THOMAS J., Bureau of Foreign and Domestic Commerce.  
 EMLEY, W. E., National Bureau of Standards.  
 FAIRCHILD, I. J., National Bureau of Standards.  
 LOCKWOOD, J. B., Bureau of Foreign and Domestic Commerce.  
 PERLING J., Bureau of Foreign and Domestic Commerce.

The conference, held under the auspices of the division of trade standards, was called to order by I. J. Fairchild, who acted as chairman, and who introduced Dr. George K. Burgess, director of the National Bureau of Standards.

Dr. Burgess welcomed the members of the conference to the National Bureau of Standards and reviewed briefly the establishment of the divisions of simplified practice and trade standards. He stated that, according to the Bureau of the Census, the total value of tents, awnings, sails, and covers produced during 1929 was nearly \$50,000,000 (\$49,886,452). He touched upon the wide diversity of methods for marking weight of tents, tarpaulins, and covers and the confusion resulting from such practices, and expressed the hope that the conference would arrive at a mutually agreeable solution of the industry's most pressing problem.

Mr. Timmons and Mr. Dilg both reviewed, in some detail, the events leading to the suggestion of the proposed commercial standard, which are given in condensed form under "History of Project."

Mr. Dilg exhibited a number of samples illustrating the present confused markings and cited a number of examples of misleading markings and unfair methods used in the industry which had become more or less prevalent among manufacturers both within and without the association.

The chairman read a number of letters from companies which could not be represented, and requested that the conference bear these suggestions in mind during the detailed consideration of the proposed commercial standard. Mr. Timmons presented letters from more than 500 companies indorsing the proposed commercial standard.

As a result of the detailed discussion, a number of minor modifications were agreed upon, and the conference voted to include as an appendix the definitions originally prepared under the auspices of the Cotton Textile Institute and modified by the definitions more recently adopted by the American Society for Testing Materials as tentative standards. The conference made clear that these definitions were intended merely to clarify terms as used in connection with finished tents, tarpaulins, and covers and that they are subject to modification

following the establishment of more authoritative definitions by the A. S. T. M., or the Cotton Textile Institute.

The conference also voted to include as part of the appendix, conversion tables to show the weight per square yard of the various fabrics most frequently used in the industry.

Perhaps the most important discussion followed a statement by Mr. Powers that his company, as producers, felt that the elimination of the treated weights was rather a radical step and that he would like the privilege of marking the fabric to show both the grey goods weight and the treated weight. The consensus was that any mention of the treated weight tends to focus attention on this figure, which is always greater than the grey goods weight, with the result that the buyer is misled into thinking he is getting more for his money in the fabric which weighs most after treatment; that the service value of waterproofed fabric depends upon the character of the grey goods and not upon the weight added by treatment; that the continuance of any marking to show the weight after treatment would nullify the benefits of the new method of marking and would defeat the proposal as a whole; and that following the elimination of the treated weight there would be little or no incentive for either the waterproofer or the tent manufacturer to load the goods any more than is necessary to produce a satisfactory treatment.

Upon motion by Mr. Adams, seconded by Mr. Barnett, it was voted unanimously to adopt the recommended commercial standard as a whole, subject to the authorized correction of the conversion tables, nomenclature, and definitions.

### STANDING COMMITTEE

A standing committee was appointed to consider the necessity for revision and all suggestions pertinent thereto, in order that the standard might be kept abreast with progress.

The following were appointed on the standing committee:

J. E. DILG, National Tent & Awning Manufacturers Association (chairman).  
H. B. MARBURY, Fulton Bag & Cotton Mills.  
WILLIAM E. RUSSELL, Capital Awning Co.  
J. L. PROCTOR, Cotton Duck Association, and Wellington, Sears & Co.  
C. J. STIND, Sears, Roebuck & Co.  
CHARLES C. CARVER, C. F. Eareckson & Co.  
H. S. JOHNSON, Cotton-Textile Institute.  
H. B. McCAIN, Canvas Waterproofer's Association and The Brunzene Co.  
N. C. WILEY, Navy Department.

### EFFECTIVE DATE

After considering the various phases of production, distribution, and the clearance of existing stocks, upon motion by Mr. Barnett, seconded by Mr. Timmons, it was voted unanimously to set the effective date for both new production and clearance of existing stocks as of January 1, 1932.

### PROMOTION OF EXPORT TRADE

Mr. Lockwood explained that through the facilities of the Bureau of Foreign and Domestic Commerce, the commercial standard, when accepted, might be translated into foreign languages as a basis for promoting export trade and for circulation to prospective foreign customers through foreign trade representatives.

The conference voted to refer the matter of translation of the commercial standard, as a means of promoting export trade, to the National Tent & Awning Manufacturers Association for final action.

### CERTIFICATION PLAN

The conference voted its approval of the certification plan for application to cotton fabric tents, tarpaulins, and covers in accordance with the commercial standard.

The certification plan as applied by the National Bureau of Standards to commercial standards consists in the compilation and distribution of lists of manufacturers who are willing, when requested to do so, to certify to purchasers that products supplied by them comply with all the requirements and tests set forth in nationally recognized commercial standards. The plan is also applied to selected Federal specifications.

These lists are available on request to individual consumers, consumer groups, companies, and in fact to any prospective purchasers for their guidance.

The benefits now derived from the use of specifications by large consumers are thus made immediately available to the small consumer, with incidental advantage to the larger consumers of convenience in ordering and accepting material with fewer laboratory tests. The manufacturer also benefits from the well-known economies accompanying "mass production."

The lists of manufacturers "willing-to-certify" to the quality of certain commodities are made by corresponding with, as nearly as possible, all the manufacturers of that product and listing only those who signify their willingness to certify to the purchaser, when requested to do so, that the commodities delivered actually comply with the commercial standard.

Obviously, the purchaser making use of the lists of "willing-to-certify" manufacturers, will select therefrom such manufacturers as are known (or assumed) by him to be reliable.

The trend toward the purchase of materials of certified quality from sources shown on such willing-to-certify lists supplies added incentive to standardization on the part of other producers, and thus the benefits of the certification plan will be felt by purchasers either directly or indirectly, whether or not they make use of the plan themselves.

### COMMERCIAL STANDARDS SERVICE

Industry has long sensed the need for a wider application and use of specifications developed and approved by nationally recognized organizations. To assist these bodies and the producers and consumers in securing this result and as a natural outgrowth of the movement toward elimination of waste through simplified practice, the National Bureau of Standards has set up a procedure under which specifications, properly indorsed, may be printed as official publications of the Department of Commerce and promulgated as "Commercial Standards." This service parallels that of simplified practice in many respects, and is available only upon request.

Broadly speaking, the aim is to continue the same character of cooperative service in this field that is being rendered in simplification. The division of trade standards is not designed to act as a standardizing body, nor will it engage in the preparation of specifications. Its service is mainly promotional in character, since its chief mission is to invite attention to a standard or a specification which any branch of industry may want to promulgate on a nation-wide basis; to determine its eligibility for promulgation; to publish and broadcast it in the event the prerequisites of procedure have been met, including a satisfactory majority acceptance; to facilitate the application of the certification plan for the assurance and convenience of the purchaser; to provide means for periodic audits of adherence; and to cooperate with the Bureau of Foreign and Domestic Commerce in determining the desire of industry relative to translation and promulgation of such specifications as a basis for foreign commerce.

In general it may be said that a simplification covers types, sizes, and varieties of a commodity which are retained by industry on the basis of demand, whereas a commercial standard establishes definite requirements as to grade, quality, or dimensional tolerances in addition to any limitation of variety desired and accepted by the industry.

#### ORGANIZATION AND DUTIES OF STANDING COMMITTEE

In order to carry on the aims and desires of the industry in the standardization of their product, a standing committee is appointed at the general conference. This committee consists of members from each division of the industry, namely, producers, distributors, and consumers, and thus reflects the well-balanced viewpoint of all concerned.

The members of the committee receive all suggestions regarding the commercial standard and consider its revision in the event that such action is desirable and mutually beneficial.

If the commercial standard does not warrant revision, it is reaffirmed in its existing form, but if any important changes are found desirable, their adoption is recommended by the committee, whereupon the industry is again solicited for written acceptance of the standard in its revised form.

The committee is in effect a centralizing agency for criticisms and comments regarding the commercial standard and is charged with the responsibility of recommending revisions to keep the standard abreast with current industrial practice.

The proper functioning of the committee requires that, when necessary, its members be willing to attend meetings held at some central place, although in many cases it will be possible to conduct the work by correspondence.

When any deceptions in reference to the commercial standard are reported to the standing committee, it applies moral suasion or such other corrective measures as seem desirable. The Department of Commerce has no "police power" to compel adherence, therefore it is incumbent upon the standing committee to do all in its power to encourage all divisions of the industry to follow the provisions of the commercial standard and contribute in every way possible to its general adoption and usefulness.

## YOUR COOPERATION

As a producer, distributor, or consumer of some of the commodities for which commercial standards have already been established, you are in a position to avail yourself of the benefits arising from the use of quality standards and incidentally to add impetus to this method of eliminating waste.

The first step is a declaration in favor of the standard by recording your intention to adhere, as closely as circumstances will allow, to the standards for those products which you may buy or sell.

The receipt of your signed acceptance will permit the listing of your company in new editions of the commercial standards that you accept.

You will, of course, want to examine any commercial standards before signing a formal acceptance. The National Bureau of Standards will, therefore, furnish a copy of any standard under consideration for acceptance. To facilitate this procedure, a list appears on page 16 that may be checked and mailed to the Division of Trade Standards, National Bureau of Standards, Washington, D. C. The publications may also be secured singly or in quantities at a nominal price from the Government Printing Office. Prices will be furnished upon request.

The acceptance of a commercial standard is an entirely voluntary action and applies to the production, sale, and use of stock items. It is not meant to interfere with the introduction, manufacture, or sale of special sizes and types sometimes required.

Trade associations and individual companies often distribute large numbers of the printed standard for the information and guidance of their members or customers. In such cases it is possible to extend the scope and degree of adherence by urging each recipient to send in an acceptance, bearing in mind that the practical value of any standardization is measured by the observance it receives.

An acceptance form for the commercial standard herein covered is included on page 13.

### ACCEPTANCE OF COMMERCIAL STANDARD

[Please sign and return this sheet to Division of Trade Standards, National Bureau of Standards, Washington, D. C.]

Date.....

DIVISION OF TRADE STANDARDS,  
NATIONAL BUREAU OF STANDARDS,  
*Washington, D. C.*

GENTLEMEN: We, the undersigned, do hereby accept the original draft of the commercial standard, as our standard practice in the production,<sup>1</sup> distribution,<sup>1</sup> or use,<sup>1</sup> of cotton fabric tents, tarpaulins, and covers, beginning....., (Date)

and will use our best effort in securing its general adoption.

To permit intelligent review of the effectiveness of the commercial standard every year by an accredited committee of all interests, working in cooperation with the Department of Commerce, we plan to supply all data, upon request, which may be necessary for the development of constructive revisions. It is understood that any suggested modifications will be submitted as soon as formulated, and shall not be promulgated until accepted in form similar to this recommendation.

(Cut on this line)

Signature.....

(Kindly typewrite or print the following lines)

Title.....

Company.....

Street address.....

City and State.....

We are members of the following associations or other organizations interested in the production, sale, or use of cotton fabric tents, tarpaulins, and covers:

.....  
.....  
.....

<sup>1</sup> Please designate which group you represent by drawing lines through the other two. In the case of related interests, trade papers, colleges, etc., desiring to record their general approval, the words "in principle" should be added after the signature.

## TO THE ACCEPTOR

In signing the acceptance blank, please bear the following points clearly in mind:

1. *Adherence.*—The Department of Commerce has no regulatory powers to enforce adherence to the commercial standards. Instead, this waste-elimination program is based on voluntary cooperation and self-government in industry. To make this specific standardization operate as a satisfactory example of self-government, it is highly desirable that it be kept distinct from any plan or method of governmental regulation or control. It will be successful according to the degree to which manufacturers, distributors, and purchasers adhere to its terms and conditions.

2. *The industry's responsibility.*—The department cooperates only on the request of the industry, and assumes no responsibility for industrial acceptance or adherence. This program was developed by the industry on its own initiative. Its success depends wholly on the active cooperation of those concerned.

3. *The acceptor's responsibility.*—You are entering into an entirely voluntary arrangement, whereby the members of the industry—the distributors and consumers of the product, and others concerned—hope to secure the benefits inherent in commercial standardization. Those responsible for this standard realize that instances may occur in which it will be necessary to supply or purchase items not included therein. The purpose is, however, to secure wider support for nationally recognized standards covering grade, quality, and other characteristics of products. Consumers can make the program a success if, in their purchasing, they will make a definite and conscientious effort to specify in terms of this commercial standard.

4. *The department's responsibility.*—The function performed by the Department of Commerce is fourfold: First, to act as a referee to insure adequate consideration of the needs of all interests; second, to supply such assistance and advice in the development of this program as past experience with similar programs may suggest; third, to solicit and record the extent of adoption and adherence to the standard; and fourth, to add all possible prestige to this standardization movement by publication and promulgation if and when it is adopted and accepted by all elements directly concerned.

CS28-32

REQUEST FOR COMMERCIAL STANDARDS

Date.....

DIVISION OF TRADE STANDARDS,  
NATIONAL BUREAU OF STANDARDS,  
*Washington, D. C.*

GENTLEMEN: The undersigned wishes to examine the commercial standards checked on the reverse side of this page, with a view toward accepting them as our standard of practice in the production, distribution, or consumption of the standardized lines.

(Cut on this line)

Signed.....  
(Kindly typewrite or print the following lines)

Title.....

Company.....

Street address.....

City and State.....

## COMMERCIAL STANDARDS

CS. No.	Item	CS. No.	Item
0-30.	The commercial standards service and its value to business.	18-29.	Hickory golf shafts.
1-28.	Clinical thermometers.	19-30.	Foundry patterns of wood.
2-30.	Mop sticks.	20-30.	Staple vitreous china plumbing fixtures.
3-28.	Stoddard solvent.	21-30.	Interchangeable ground glass joints.
4-29.	Staple porcelain (all-clay) plumbing fixtures.	22-30.	Builders' hardware (nontemplate).
5-29.	Steel pipe nipples.	23-30.	Feldspar.
6-31.	Wrought-iron pipe nipples (first revision).	24-30.	Standard screw threads.
7-29.	Standard weight malleable-iron or steel screwed unions.	25-30.	Special screw threads.
8-30.	Plain and thread plug and ring gage blanks.	26-30.	Aromatic red cedar closet lining.
9-29.	Builders' template hardware.	27-30.	Plate glass mirrors.
10-29.	Brass pipe nipples.	28-32.	Cotton fabric tents, tarpaulins, and covers.
11-29.	Regain of mercerized cotton yarns.	29-31.	Staple seats for water-closet bowls (in preparation).
12-29.	Domestic and industrial fuel oils.	30-31.	Colors for sanitaryware (in preparation).
13-30.	Dress patterns.	31-31.	Red cedar shingles (in preparation).
14-31.	Boys' blouses, button-on waists, shirts, and junior shirts.	32-31.	Cotton goods, for rubber and pyroxylin coating (in preparation).
15-29.	Men's pajamas.	33-32.	Knit underwear (exclusive of rayon) (in preparation).
16-29.	Wall paper.	34-31.	Bag, case, and strap leather (in preparation).
17-30.	Diamond core drill fittings.	35-31.	Plywood (in preparation).