

U.S. DEPARTMENT OF COMMERCE

DANIEL C. ROPER, Secretary

BUREAU OF STANDARDS

LYMAN J. BRIGGS, Director

# FOURDRINIER WIRE CLOTH

(SECOND EDITION)

COMMERCIAL STANDARD CS36-33

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Effective Date, March 15, 1933



A RECORDED STANDARD OF THE INDUSTRY

UNITED STATES  
GOVERNMENT PRINTING OFFICE  
WASHINGTON : 1933

## PROMULGATION STATEMENT

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On June 2, 1931, a general conference of representative manufacturers and users of fourdrinier wire cloth adopted a commercial standard for this commodity which was accepted in writing by the industry and published as Commercial Standard CS36-31.

Upon recommendation of the industry's standing committee, the revised Commercial Standard CS36-33 was circulated to the industry for acceptance. The industry accepted and approved for promulgation by the Department of Commerce through the Bureau of Standards, the revised standard as shown herein.

The revised standard became effective on March 15, 1933.

Promulgation recommended.

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

Promulgated.

Lyman J. Briggs,  
*Director, Bureau of Standards.*

Promulgation approved.

Daniel C. Roper,  
*Secretary of Commerce.*

# FOURDRINIER WIRE CLOTH

(Second edition)

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## COMMERCIAL STANDARD CS36-33

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### GENERAL

It is the desire of manufacturers of fourdrinier wire cloth for paper-making machines that their product shall be of high-grade workmanship and material and thereby provide maximum service and satisfaction in use. Adherence to this policy requires but one high-grade product described below that shall be known as the commercial standard grade. Other grades and meshes are to be considered as special.

### PURPOSE

This commercial standard is a basis for clearer understanding between the manufacturers and users of fourdrinier wire cloth. Its adoption and general use should result in a closer understanding between manufacturer and user through the establishment of standard mesh classifications, nomenclature, wire sizes, methods of inspection, labeling, handling, storage, and installation.

### SCOPE

The standard applies to one grade only of fourdrinier wire cloth—a flexible endless woven wire cloth used on paper-making machines. It establishes the number of wires in both directions for the several mesh classifications and the thickness of the wire. It further provides for inspection, labeling, and method of handling. An appendix includes recommendations of the manufacturers on the installation and use of the product.

### GENERAL REQUIREMENTS

Commercial standard fourdrinier wire cloth shall contain no imperfections that will shorten its period of usefulness or cause a mark or defect in the finished paper.

### DETAIL REQUIREMENTS

1. *Kinds of wire.*—Wire used in the manufacture of fourdrinier wire cloth may be of any metal or alloy with the necessary tensile strength, toughness, and elasticity to stand the physical strain and of sufficient resistance to the action of chemicals used in the preparation of pulp. Brass, bronze, phosphor bronze, Monel, nickel, and

stainless steel are in common usage. One or more kinds of material may be used for the warp and shoot wires.

2. *Mesh of wire cloth and size of wire.*—The number of warp wires per inch (number of dents per inch in the reed) and the number of shoot wires (number of beats per inch) determines the mesh of the cloth. The diameter of the single wire is varied according to the mesh of the wire cloth. The mesh, the corresponding number of warp and shoot wires per inch, and the corresponding diameter of wire listed in table 1 are standard.

3. *Seam.*—The seam, which is one of the most important features of this commodity, shall suit the machine on which it is to be used and shall be flat and straight.

TABLE 1.—*Details of standard mesh fourdrinier wire cloth*

Standard mesh designation	Warp wires per inch		Shoot wires per inch		Diameter of wire before weaving			
	Dents	Tolerance	Beats	Tolerance	Warp wire		Shoot wire	
					Minimum	Maximum	Minimum	Maximum
	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Inch</i>	<i>Inch</i>	<i>Inch</i>	<i>Inch</i>
40	40	—2	34	±2	0.0105	0.0115	0.0105	0.0115
50	50	—2	36	±2	.0095	.0105	.0095	.0105
60	60	—2	40	±2	.0090	.0095	.0090	.0105
65	65	(±1)	46	±2	.0080	.0085	.0080	.0093
70	70	—2	50	±2	.0075	.0080	.0075	.0085
75	75	(±1)	54	±2	.0070	.0075	.0070	.0083
80	80	—2	58	±2	.0065	.0070	.0065	.0078
85	85	(±1)	64	±2	.0057	.0063	.0057	.0065
90	90	—2	74	±2	.0055	.0060	.0055	.0060
100	100	—2	86	±4	.0045	.0050	.0045	.0055

#### METHOD OF INSPECTION

The wire cloth shall be given a very rigid inspection while on the stretching table. It shall run true on the rolls. Particular attention shall be given to the seam. The entire area shall be examined for defects.

In measuring the diameter of a strand of wire a micrometer caliper, or v gage, shall be used and the diameters recorded to the nearest ten-thousandth of an inch.

#### PACKING

The wire cloth shall be wound on three spars, each not less than 2½ inches in diameter, two at the center of the roll and the third inside the loose end as shown in figure 1. In order to prevent damage to the wire cloth, all three spars shall be firmly bound in position at the ends. The wire cloth shall be securely wrapped in heavy moisture-resistant paper, tied, and carefully supported in the packing case by jamming both ends of the spars with pieces of wood securely fastened to them. Each fourdrinier wire shall be packed in a case made for that particular wire and every precaution shall be taken to guard against the possibility of damage in transit.

## LABELING

The wrapper on all commercial standard fourdrinier wire cloth shall be labeled according to mesh classification, kind of wire (both warp and shoot), and width and length of the cloth, and, in addition, shall contain the following statement:

"The ----- certifies that this fourdrinier wire  
(Name of company)

cloth conforms to the requirements of the U.S. Commercial Standard CS36-33 as issued by the United States Department of Commerce."

The shipping case shall also be stenciled on side and end according to mesh classification, kind, size, and date of shipment.

## STORAGE, UNPACKING, AND INSTALLATION

1. *Storage.*—The fourdrinier wires shall be stored in a clean, dry place in their original packing cases until required, and shall be used

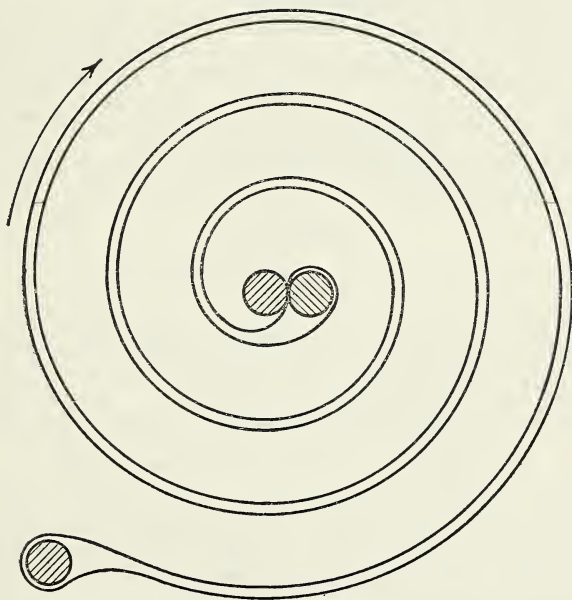


FIGURE 1.—Method of winding fourdrinier wire on spars for packing

in the order received at the paper mill. No complaints will be recognized by wire-cloth manufacturers unless made within 6 months of delivery date.

2. *Unpacking.*—The packing case shall be opened with care. The covering of the wire cloth shall be carefully removed with the fingers only, never with a knife or other sharp instrument. The wire cloth shall then be placed on a clean, flat surface covered with heavy wrapping paper, the first turn unwound and the spar under the loose end slowly and evenly withdrawn, carefully followed by insertion of the porter bar.



3. *Installation.*—Proper installation and care of the wire cloth in use are important factors influencing its period of usefulness. To put the wire cloth on the machine it shall be lifted by the two remaining spars while the loose end swings free and clear of all obstructions. The wire cloth shall be held in line with the couch roll, unwound far enough to form a sufficiently large loop (both edges of the wire must be opened at the same time to prevent buckling), then slowly and carefully carried over the roll.

The wire cloth, supported by the center spars, is permitted to rest on the couch roll just ahead of top center. The roll for stringing or carrying is then inserted. The wire cloth is unwound on top of the couch roll as the wire cloth is carried slowly along the machine by the stringing or carrying roll. The table rolls are put in place. The breast roll follows and the stretch roll is put in place last. The distance between the center of the couch roll and the center of the breast roll should be exactly the same on both sides of the machine. The suction boxes shall be leveled and the machine inspected to see that all parts are in their proper places.

The paper machine shall be started slowly, never with a jerk. Run the wire cloth for a few turns to permit it to straighten itself out, and to allow the machine tender to examine it for any defect or damage. The stretch roll shall then be properly tensioned (see p. 5) so that its weight can be evenly applied over the entire width of wire cloth. Unless attempting to eliminate slackness from a damaged local spot, stretch roll tension shall never be applied with the fourdrinier wire stopped.

#### APPENDIX <sup>1</sup>

##### MANUFACTURERS' RECOMMENDATIONS

The following recommendations are not to be considered a part of the commercial standard for fourdrinier wire cloth and although they come more nearly within the realm of the paper maker, they are offered by the manufacturers of fourdrinier wire cloth as a guide to better service and extended usefulness of their product.

##### PROPER CARE OF FOURDRINIER WIRE IN USE

The proper care of fourdrinier wire cloth in use is extremely important. The life <sup>2</sup> of the wire cloth is largely dependent upon the attention given by the machine tender, and if given proper care, weeks of service may be obtained, while under careless handling, it may last only a few days.

Perhaps the most important items in the care of the wire cloth in use are (a) to keep it clean and in good repair, (b) to use proper tension, (c) to have the proper amount of vacuum on suction boxes, and rolls, (d) to take paper off the wire cloth properly, and (e) to carefully remove kinks, ridges, and bulges that may develop.

(a) *Cleaning.*—Wash the wire cloth plentifully with soft water whenever a chance is offered; this keeps the meshes open, washes off the acid, prolongs the life of the wire, improves the appearance of the paper, and reduces the work of the suction boxes.

<sup>1</sup> Many definitions and methods pertaining to paper-mill machinery or practice given herein are taken from *The Manufacture of Pulp and Paper*, vol. 4, an official work prepared under the direction of the Joint Executive Committee of the Vocational Educational Committee of the Pulp and Paper Industry of the United States and Canada.

<sup>2</sup> See life of fourdrinier wire, p. 8.

The use of hard water to clean a fourdrinier wire should be avoided, because deposits of calcium carbonate are formed. The clogging of mesh by loading, size, etc., is preventable by keeping the wire cloth clean. It should not be cleaned with acid unless this appears to be the only effective method.

The process of cleaning the wire cloth with acid is called "souring the wire." The acid should be diluted with water—5 parts of water to 1 part of sulphuric acid, specific gravity 1.84. (*Important.*—The acid should always be poured into the water, as it is dangerous to pour water into acid.) The solution can be applied to the wire cloth through the shower pipes on the paper machine.

A good way to clean a fourdrinier wire with an acid solution (or a caustic solution which is sometimes used for this purpose) is to make a water-tight box, in which the lowest outside wire roll can run. The roll turning in the solution will "sour the wire" evenly all over and the wire cloth will carry around enough solution to sour and clean the whole fourdrinier wire. The suction boxes should not be in action during the cleaning process. The wire cloth is clean when it stops frothing and should then be rinsed immediately with water.

The use of a hydrochloric acid solution for cleaning a wire cloth is not recommended.

Pitch or grease apparently from resinous matter carried in the pulp will sometimes accumulate in the meshes of the wire cloth. To remove spots of this kind a strip of felt about 36 inches wide, extending across the machine, is put on the inside of the fourdrinier wire, and a small steam jet or hose about one fourth inch in diameter can be used to blow the pitch or grease onto the felt.

Alcohol and ether are solvents for pitch and may be used to dissolve the spots.

*Brown scale.*—Clogging of the mesh of wire cloth is sometimes caused by a transparent amber scale which has been designated as "brown scale." The "brown scale" itself does not clog the openings, but acts as a cementing agent for particles of sand, pulp, and other material which has become temporarily lodged in the meshes of the wire cloth. When this occurs the wire cloth should be periodically cleaned with concentrated sulphuric acid (specific gravity 1.84) to which at least one half percent of formalin has been added. The wire cloth should be subjected to the acid treatment for a very short period of time and thoroughly washed while the paper machine is in operation. This procedure will prevent the "brown scale" and consequently the clogging due to it.

(b) *Tension.*—Proper tension of the wire cloth should not be judged by hand. The strands of wire are capable of a certain amount of extension, but they are not elastic. Once stretched they cannot shrink again to their original length. Every square inch of the wire area should have equal tension. A mechanical tension indicator should be used at the stretch rolls. It is not necessary that a fourdrinier wire be very tight, but the surface on which the paper is formed should be taut and even. The pull of the couch roll on the wire cloth, which drives all the table rolls and the breast roll, will keep the forming part of the fourdrinier wire tight even though the return of the wire is loose. A fourdrinier wire can be pulled apart by the stretch roll. A tension of not more than 3 pounds per inch

of face of wire cloth should be maintained. Altering the tension of a fourdrinier wire causes the mesh to loosen and begin to work, and the wire cloth will shear itself into cracks much more quickly. Wire cloth lengthens slightly in use, which may be taken care of by proper use of the stretch roll without increasing the tension. The tension from the boxes to the couch rolls should be equal on both sides.

(c) *Amount of vacuum on suction boxes.*—Increasing the vacuum to above 10 inches (mercury) puts too much strain on the wire cloth; 14 inches of vacuum is bad practice and soon wears the wire cloth. The suction tends to pull the wire cloth down onto the top of the boxes and makes the cloth drag, causing undue wear. The “suck in” and release as the wire cloth passes the suction boxes causes the mesh to be strained. On free stock, however, such as news, cheap tablet, catalog, wrapping, etc., it is practically impossible to get too much suction, because air penetrates the sheet easily.

(d) *Taking the paper off the fourdrinier wire.*—The wire cloth must not be struck hard when picking up the paper, nor the sheet picked off the suction area. Fourdrinier wires may be ruined in this way.

(e) *Removal of kinks, ridges, and bulges.*—Kinks form very quickly and easily, and when not removed they invariably develop into cracks, frequently ruining a fourdrinier wire. Extreme care should be used to prevent the formation of kinks. If they are formed, they may be removed by one of the following methods:

1. Grease the kink or buckle; bring the kink over the stretch roll, washing the wire cloth with acid (4 parts of sulphuric acid to 1 part of water). (*Important.*—Pour the acid into the water; it is dangerous to pour water into the acid.) The acid weakens the surrounding wire so that it can easily assimilate the slack from the kinked area. Wash off the acid solution with fresh water, clean the grease off with kerosene, use wire brush to brush from center of slack area into the acid-treated area. Tighten down the stretch roll.

2. Bring the kink over the stretch roll and heat the kink red hot with a torch made of a handful of waste that has been dipped in kerosene and fastened to a broomstick. This softens the wire and removes the kink. If done with extreme care, this method does not impair the strength of the wire, while the acid method may weaken the wire.

3. Convex and concave ridges should be removed during a shut-down. They may be rubbed down by using a rounded smooth surface (a darning ball or light bulb, but never a metal object) to press gently and steadily over the ridged portion so as to disperse it over a larger area. After the rubbing is completed the tension should be equalized.

4. Bulges are best removed by cutting a slit in the wire and sewing up the slit. Bulges are difficult to repair, as the remedy is drastic, and prevention is better than cure. Small bulges may be removed as described under kinks.

(f) *Miscellaneous.*—Anything that the machine tender can do to reduce the amount of pull on the wire cloth by the couch roll, without interfering with the paper-making function, will increase the life of the fourdrinier wire. Men should not be permitted, under any circumstances, to walk across the fourdrinier wire.

All rolls on the paper machine should be kept clean, and corroded rolls should be replaced.

All rolls should be kept square with the machine. Periodic checking of the squareness of the rolls will often prevent undue strains on the



wire cloth. Rolls should be level and in line. Table rolls should be as light as possible, should be in contact with the wire cloth, and should be kept turning freely to avoid wear on the wire cloth.

Breast rolls should be amply large in diameter, light as possible, ground straight (without crown), turn easily, be in balance, and the journals well lubricated. The breast roll should have a doctor to keep it clean and to keep pulp from getting under the wire cloth and so stretching it and making bulges in it. The doctor should be true all across the roll.

Couch rolls should not be crowned, because any increase in the diameter at the middle of the roll would tend to stretch the wire cloth or to make it travel faster at the center, which would cause strains and partially close the mesh. The lower couch roll drives the fourdrinier wire. Very careful attention should be given to the bearings, lubrication, and the proper setting and pressure between the upper and lower couch rolls. Suction couch rolls eliminate the need of a top couch roll with its felt jacket and guard boards which cause many accidents to fourdrinier wires. Guard boards should scrape off lumps of pulp that might go around and dent the wire cloth. Since the guard board acts like a brake, any reduction of pressure on it reduces the power required to drive the machine and lengthens the life of the fourdrinier wire.

Deckle straps make the wire cloth dirty and cause more or less ridging, as do the movable ends of the suction boxes owing to a pull over their inner edges. Deckle-strap pulleys should never be allowed to stand still while the machine is running, but should run as freely as possible and be of ample diameter to avoid drag on the wire cloth from the straps. Otherwise the wire is strained on the edges, hardened, and quickly develops cracks. Fourdrinier wires operating under such conditions wear out much faster than they would under better operating conditions.

The shake has a twisting action on the wire cloth just before it is held by the suction boxes, and the shake should be stopped just as soon as the paper is off the wire. The shake should not be applied to an unloaded fourdrinier wire.

The fourdrinier wire after being placed on the paper machine should be kept wet when not in use.

In removing stringy fibers from the wire cloth no hard-pointed instrument should be used.

Dandy rolls that are too short and have prominent disks on their ends are a source of trouble.

A guide roll stick often causes cracks on the edges of the wire cloth if the wire is not kept in proper alinement.

Suction box covers should be planed often and formation of scoring avoided. Scoring may cause the wire cloth to travel to one side.

Stock should never be allowed to pile up high enough in the save-all to touch the fourdrinier wire.

## GLOSSARY OF TERMS

*Annealing.*—Relieving internal strains in the wire by means of heat.

*Beaming on the wire.*—The process of putting the warp wire on the loom preparatory to weaving by means of a creel which temporarily holds the spools. The warp wires are run onto the back beam

1 or 2 inches at a time. Each course of wire shall lie flat and even and the tension shall be uniform.

*Beat*.—Stroke of reed in weaving process to bring shoot wire into place.

*Break or crack*.—Broken wires.

*Breast roll*.—First roll at "wet" end of paper machine.

*Bobbins or pirns*.—Spindle carrying the shoot wire in the shuttle during weaving.

*Bulge*.—Local slack area of unequal tension in wire cloth.

*Couch* (pronounced "cooch") *roll*.—Paper machine roll which drives the fourdrinier wire.

*Crash*.—Wires broken in weaving.

(NOTE.—Warp wires are sometimes stretched by broken wires or foreign material, causing an area of slackness running across the cloth. When repaired, this leaves a strained-appearing streak in the finished cloth.)

*Crow's feet*.—Marks, usually V-shaped or diagonal buckles, in woven wire caused by bending or springing of rolls on which wire cloth is wound.

*Dandy roll*.—A skeleton roll used to improve formation of top side paper sheet and may be used to make watermark in paper.

*Deckle straps*.—Large rubber or rubber-coated belts, nearly square in cross section, used to retain paper stock on fourdrinier wire.

*Deckle pulleys*.—Pulleys which carry deckle straps.

*Dent*.—Blade of the reed.

*Doctor*.—Scraper for cleaning dandy and other rolls.

*Double*.—Loops or extra pieces of wire woven in with the shoot wire.

*Guard board*.—Board used to squeeze water out of felt on upper couch roll and to scrape off lumps of pulp from the couch roll.

*Guide rolls*.—Rolls on paper machine which guide the wire cloth to make it run straight.

*Harness*.—Mechanism for raising and lowering warp wires during weaving.

*Heddle*.—The heddle is a blade of steel approximately 0.010 inch thick by three eighths inch wide and about 10 inches long with an eyelet in the center, or a twisted wire of about the same length with an eyelet through the center, through which the warp wires pass and by means of which the warp wires are raised and lowered during the weaving process.

*Kink*.—A snick in a single strand of wire, or a short, sharp wrinkle or buckle in wire cloth.

*Life of the fourdrinier wire*.—Is computed from the weight and kind of paper made in conjunction with the time the wire is on the machine.

*Mesh*.—The standard mesh number is determined by the number of warp wires per linear inch measured from center of one warp wire to point 1 inch distant parallel to said warp wire. (The wire cloth used for coarse papers, as news or wrapping paper, is ordinarily 60 or 65 mesh; for writing or book papers, it is generally 70 to 75 or 80 mesh. To obtain certain surface characteristics or for lightweight papers, finer mesh is sometimes used.) Special mesh is indicated by two numbers as 73/58, with the first number indicating the number of warp wires, and the second indicating the number of shoot wires per inch.

*Palms.*—Fenders on wire cloth guides on paper machine.

*Pirn.*—See Bobbin.

*Pole.*—See Spar.

*Porter bar.*—Lifting lever used to put new fourdrinier wire on paper machine.

*Pucker.*—Small crease or wrinkle in wire cloth.

*Reed.*—Mechanism on loom used to space warp wires and beat shoot wires into place.

*Ridge.*—Slack place of approximately constant width, either convex or concave, lengthwise or crosswise of the wire cloth.

*Scoring.*—Fine grooves worn in the wire cloth by suction box covers, or vice versa.

*Seam.*—Joint where ends of the wire cloth are fastened together to make the piece endless.

*Selvage.*—Extra warp wire, or silk or linen threads or any other arrangement at edge of wire cloth for reinforcing or finishing the edge.

*Shake.*—A horizontal vibrating motion of “wet” end of paper machine which assists the fibers to interweave in all directions.

*Sheepshank.*—A slacked warp wire that doubles in a V and is woven in with the shoot wire.

*Shoot or “shute” wire.*—Wire carried by shuttle which runs perpendicular to warp wires in the finished cloth.

*Single.*—A single piece of extra wire woven in with the shoot wire.

*Snick.*—Sharp kink in single strand of wire caused by a loop pulled tight. These catch and bend warp wire in weaving.

*Souring.*—The process of cleaning wire cloth with acid.

*Spar.*—Wooden, iron, or steel rollers or poles used in packing the wire cloth.

*Stretch roll.*—Roll on paper machine to maintain tension on the wire cloth.

*Suction.*—Vacuum applied to suction box.

*Suction boxes.*—Narrow hollow boxes with perforated top bearing against underside of wire cloth and connected to vacuum so as to draw water out of the paper stock through wire cloth.

*Table rolls.*—Rotating rolls supporting fourdrinier wire, which constitute forming table for sheet of paper, and assist in the removal of water from the paper stock.

*Threading in the wire.*—Operation of threading each warp wire separately, first through the eye of the heddle and then between dents in reed.

*Warp wire.*—Longitudinal wire running parallel to edge.

*Winding.*—Operation of winding wire onto the warp spools and the shuttle bobbins. Wire shall be free from kinks and other imperfections.

*Wrinkle.*—A ridge or prominence in the wire cloth.

## HISTORY OF THE PROJECT

Pursuant to a request of the Wire Cloth Manufacturers Association, a general conference of manufacturers, users, and others interested in fourdrinier wire cloth for paper machines was held in Washington, D.C., on June 2, 1931, to consider the establishment of standards of quality for this commodity. The conference voted to approve the



proposed standard and to recommend it to the industry for acceptance as the standard of quality for the industry. The standard was accepted and published as Fourdrinier Wire Cloth, Commercial Standard CS36-31.

An adherence survey conducted in October 1932 indicated an unweighted average of 85 percent adherence to the requirements of the standard. Suggestions for improvement of the standard made by one of the members of the standing committee and endorsed by the Wire Cloth Manufacturers Association were referred to the other members of the standing committee composed of manufacturers and users of wire cloth. The standing committee recommended that the suggested changes be circulated to the industry for written acceptance.

The revised standard was endorsed and officially accepted by practically all of the wire-cloth manufacturers and a large majority of users. Accordingly, the successful acceptance of the revision was announced on March 15, 1933, and the revised standard became effective immediately.

The general conference approved application of the certification plan which provides for the listing of those companies who are willing to certify, upon request, that their wire cloth conforms to the requirements of this commercial standard.

### STANDING COMMITTEE

- G. W. WRAY (chairman), Bureau of Standards, Washington, D.C.  
C. ZIMMERMAN, vice president, the W. S. Tyler Co., 3615 Superior Avenue, Cleveland, Ohio.  
JOHN D. WATSON, secretary, Wisconsin Wire Works, 1002 North Meade Street, Appleton, Wis.  
A. M. FERRY, secretary, Wire Cloth Manufacturers Association, Chandler Building, 1427 Eye Street N.W., Washington, D.C.  
A. FRED CROSSMAN, president, the Lindsay Wire Weaving Co., 14025 Aspinwall Avenue N.E., Cleveland, Ohio.  
CARL MAGNUS, the American Pulp and Paper Mill Superintendents Association, Richmond, Va.  
A. D. COFFIN, vice president and treasurer, C. H. Dexter & Sons, Inc., Windsor Locks, Conn.  
R. G. MACDONALD, technical secretary, Technical Association of the Pulp and Paper Industry, 370 Lexington Avenue, New York, N.Y.  
GEORGE W. BROWNE, the A. P. W. Paper Co., Albany, N.Y. (representing buyers group for Pulp and Paper Manufacturers, National Association of Purchasing Agents).

Suggestions for revision or other comment for consideration of the committee may be addressed to the chairman, Division of Trade Standards, Bureau of Standards, Washington, D.C.

### EFFECTIVE DATE

The revised Commercial Standard became effective on March 15, 1933.



## ACCEPTANCE OF COMMERCIAL STANDARD

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,  
BUREAU OF STANDARDS,  
*Washington, D.C.*

GENTLEMEN: Having considered the statements on the reverse side of this sheet, we accept the Commercial Standard

CS36-33 as our standard of practice in the  $\left\{ \begin{array}{l} \text{production}^3 \\ \text{distribution}^3 \\ \text{use}^3 \end{array} \right\}$  of

Fourdrinier wire cloth.

We will assist in securing its general recognition and use, and will cooperate with the standing committee to effect revisions of the standard when necessary.

Signature\_\_\_\_\_

(Kindly typewrite or print the following lines)

Title\_\_\_\_\_

Company\_\_\_\_\_

Street address\_\_\_\_\_

City and State\_\_\_\_\_

<sup>3</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

The following points are given in answer to the usual questions arising in connection with the acceptance form:

1. Commercial standards are commodity specifications voluntarily established by mutual consent of the industry. 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 Department of Commerce has no regulatory power in the enforcement of their provisions, but since they represent the will of the industry as a whole, their provisions through usage soon become established as trade customs.

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 standards where practicable, in the production, distribution, or consumption of the article in question.

3. *The Department's responsibility.*—The function performed by the Department of Commerce in the establishment of a commercial standard is fourfold; first, to act as an unbiased coordinator to bring all branches of the industry 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; and fourth, to add all possible prestige to the enterprise by publication and promulgation when accepted by the industry.

When the standard has been endorsed by companies representing a satisfactory majority of production, the success of the project is announced. If, however, in the opinion of the standing committee of the industry or the Department of Commerce, the support of any standard is inadequate, the right is reserved to withhold promulgation and publication.

## ACCEPTORS

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(Individuals and organizations listed below have indicated in writing acceptance of this specification as their standard of practice, but such endorsement does not signify that they may not find it necessary to deviate from the standard, or that they guarantee their products to conform to the requirements of this standard.)

### ASSOCIATIONS

American Pulp and Paper Mill Superintendents' Association, Inc., The, Miamisburg, Ohio (in principle).  
International Brotherhood of Paper Makers, Albany, N.Y. (in principle).  
Wire Cloth Manufacturers Association, Washington, D.C.

### FIRMS

Allied Paper Mills, Kalamazoo, Mich.  
American Box Board Co., Grand Rapids, Mich.  
American Giese Wire Corporation, New York, N.Y. (in principle).  
American Tissue Mills, Holyoke, Mass.  
American Writing Paper Co., Inc., Holyoke, Mass.  
Amoskeag Paper Mills, Manchester, N.H.  
Appleton Wire Works, Inc., Appleton, Wis.  
A.P.W. Paper Co., Albany, N.Y.  
Armstrong Cork Co., Fulton, N.Y.  
Beckett Paper Co., The, Hamilton, Ohio.  
Bedford Pulp & Paper Co., Inc., Big Island, Va.  
Bird & Son, Inc., East Walpole, Mass.  
Bogalusa Paper Co., Inc., Bogalusa, La.  
Brownville Paper Co., Brownville, N.Y.  
Buchanan & Bolt Wire Co., Holyoke, Mass.  
Buckeye Cotton Oil Co., The, Memphis, Tenn.  
Burgess Cellulose Co., Freeport, Ill.  
Cable Excelsior Wire Manufacturing Co., The Wm., Brooklyn, N.Y.  
Central Paper Co., Muskegon, Mich.  
Champion Coated Paper Co., The, Hamilton, Ohio.  
Chapin & Gould Paper Co., Springfield, Mass.  
Cheney Bigelow Wire Works, Springfield, Mass.  
Cherry River Paper Co., Richwood, W.Va.  
Chesapeake Paperboard Co., The, Baltimore, Md.

Claremont Paper Co., Inc., Claremont, N.H.  
Combined Locks Paper Co., Appleton, Wis.  
Cosgrove Wire Cloth Co., Inc., Belleville, N.J.  
Cottrell Paper Co., Inc., Rock City Falls, N.Y. (in principle).  
Crane & Co., Inc., Dalton, Mass.  
Crystal Tissue Co., The, Middletown, Ohio.  
Cushnoc Paper Corporation, Augusta, Maine.  
Davis Paper Co., West Hopkinton, N.H.  
Deerfield Glassine Co., Monroe Bridge, Mass.  
Defiance Paper Co., Niagara Falls, N.Y.  
Dexter & Sons, Inc., C. H., Windsor Locks, Conn.  
Diamond Mills Paper Co., New York, N.Y.  
Dill & Collins, Inc., Philadelphia, Pa.  
Eastman Kodak Co., Rochester, N.Y.  
Eastwood Corporation, Belleville, N.J.  
Erving Paper Mills, Erving, Mass.  
Falulah Paper Co., Fitchburg, Mass.  
Ferguson & Co., Hardy S., New York, N.Y. (in principle).  
Fox River Paper Co., Appleton, Wis.  
Glatfelter Co., P. H., Spring Grove, Pa.  
Gleeson Wire Works, East Newark, N.J.  
Green Bay Wire Works, Green Bay, Wis.  
Gulf States Paper Corporation, Tuscaloosa, Ala.  
Hammermill Paper Co., Erie, Pa.  
Harding-Jones Paper Co., The, Middletown, Ohio.  
Hawley Pulp & Paper Co., Oregon City, Ore.  
Herkimer Fibre Co., Herkimer, N.Y.  
Hinde & Dauch Paper Co., The, Sandusky, Ohio.  
Holed-Tite Packing Corporation, Herkimer, N.Y.  
Jaite Co., The, Jaite, Ohio.  
Kimberly-Clark Corporation, Neenah, Wis.

- Liberty Paper Board Co., Inc., Steubenville, Ohio, and Bogota, N.J.  
 Lindsay Wire Weaving Co., The, Cleveland, Ohio.  
 Maine Seaboard Paper Co., Augusta, Maine.  
 Malone Paper Co., C. E. Kilburn, C. H. Clark, L. Bittner, receivers, Malone, N.Y.  
 Manning Paper Co., Inc., John A., Troy, N.Y.  
 Marshall Bros., Inc., Yorklyn and Newark, Del.  
 Mazer Paper Mills, Inc., Lansdowne, Pa.  
 McCluskey & Sons, Inc., H. & T., New Haven, Conn.  
 McDowell Paper Mills, Philadelphia, Pa.  
 Miamisburg Paper Co., Miamisburg, Ohio.  
 Michigan Paper Co., The, Plainwell, Mich.  
 Minerva Wax Paper Co., Minerva, Ohio.  
 Minnesota & Ontario Paper Co., Minneapolis, Minn.  
 Munising Paper Co., The, Munising, Mich.  
 National Vulcanized Fibre Co., Wilmington, Del.  
 O'Neill Wire Works of Ohio, Newark, Ohio.  
 O'Neill Wire Works, Joseph, Port Chester, N.Y.  
 Newton Falls Paper Co., Newton Falls, N.Y.  
 New York State College of Forestry, Syracuse, N.Y.  
 Ontonagon Fibre Corporation, Ontonagon, Mich.  
 Oxford Miami Paper Co., West Carrollton, Ohio.  
 Oxford Paper Co., New York, N.Y.  
 Patten Paper Co., Ltd., Appleton, Wis.  
 Pejepscot Paper Co., Brunswick, Maine.  
 Phoenix Paper Mills, Inc., Greenwich, N.Y.  
 Phoenix Wire Works, Inc., The, Detroit, Mich.  
 Prairie State Paper Mills, Joliet, Ill.  
 Rhinelander Paper Co., Rhinelander, Wis.  
 Rogers Paper Manufacturing Co., The, South Manchester, Conn.  
 Rolock, Inc., Southport, Conn. (in principle).  
 Ryegate Paper Co., East Ryegate, Vt.  
 St. Croix Paper Co., Woodland, Maine.  
 St. Regis Paper Co., Deferiet, N.Y.  
 Shaffer Box Co., Tacoma, Wash.  
 Shenandoah Pulp Co., Harpers Ferry, W.Va.  
 Smith Wire & Iron Works, F.P., Chicago, Ill.  
 Sprout, Waldron & Co., Inc., Muncy, Pa.  
 Standard Paper Manufacturing Co., Richmond, Va.  
 Stevens Paper Mills, Inc., The, Windsor, Conn.  
 Stevens Paper Mills, Inc., The, Westfield, Mass.  
 Stevens & Thompson Paper Co., Greenwich, N.Y.  
 Strathmore Paper Co., West Springfield, Mass.  
 Taggart Oswego Paper & Bag Corporation, Oswego, N.Y.  
 Taylor & Dean, Pittsburgh, Pa.  
 Tomahawk Kraft Paper Co., Tomahawk, Wis.  
 Toronto Paper Manufacturing Co., The, Toronto, Ohio.  
 Tyler Co., The W. S., Cleveland, Ohio.  
 United States Gypsum Co., Chicago, Ill.  
 University of Maine, Orono, Maine (in principle).  
 Utah Soap Co., Salt Lake City, Utah (in principle).  
 Wardlow-Thomas Paper Co., The, Middletown, Ohio (in principle).  
 Washington Pulp & Paper Corporation, Port Angeles, Wash.  
 Watab Paper Co., Sartell, Minn.  
 Westfield River Paper Co., Russell, Mass.  
 West Virginia Pulp & Paper Co., Tyrone, Pa.  
 Weyerhaeuser Timber Co., Longview, Wash.  
 Whiting-Plover Paper Co., Stevens Point, Wis.  
 Willapa Pulp & Paper Mills, South Bend, Wash.  
 Wilson Wire Works, Inc., Kearny, N.J.  
 Wisconsin Tissue Mills, Menasha, Wis.  
 Wisconsin Wire Works, Appleton, Wis.  
 Wolf Co., The, Chambersburg, Pa.  
 Wolf River Paper & Fiber Co., Shawano, Wis.  
 Woodhead Co., E. F., Norristown, Pa.

## GOVERNMENT

- Post Office Department, Washington, D.C. (in principle).  
 U.S. Treasury Department, Washington, D.C.  
 War Department, Washington, D.C.



## COMMERCIAL STANDARDS

OS no.	Item	CS no.	Item
0-30	The commercial standards service and its value to business.	23-30	Feldspar.
1-32	Clinical thermometers (second edition).	24-30	Standard screw threads.
2-30	Mopsticks.	25-30	Special screw threads.
3-28	Stoddard solvent.	26-30	Aromatic red-cedar closet lining.
4-29	Staple porcelain (all-clay) plumbing fixtures.	27-30	Plate-glass mirrors.
5-29	Steel pipe nipples.	28-32	Cotton-fabric tents, tarpaulins, and covers.
6-31	Wrought-iron pipe nipples (second edition).	29-31	Staple seats for water-closet bowls.
7-29	Standard-weight malleable iron or steel screwed unions.	30-31	Colors for sanitary ware.
8-33	Gage blanks (second edition).	31-31	Red-cedar shingles.
9-33	Builders' template hardware (second edition).	32-31	Cotton cloth for rubber and pyroxylin coating.
10-29	Brass pipe nipples.	33-32	Knit underwear (exclusive of rayon).
11-29	Regain of mercerized cotton yarns.	34-31	Bag, case, and strap leather.
12-33	Fuel oils (second edition).	35-31	Plywood.
13-30	Dress patterns.	36-33	Fourdrinier wire cloth (second edition).
14-31	Boys' blouses, button-on waists, shirts, and junior shirts.	37-31	Steel bone plates and screws.
15-29	Men's pajamas.	38-32	Hospital rubber sheeting.
16-29	Wall paper.	39-32	Wool and part-wool blankets.
17-32	Diamond-core drill fittings (second edition).	40-32	Surgeons' rubber gloves.
18-29	Hickory golf shafts.	41-32	Surgeon's latex gloves.
19-32	Foundry patterns of wood (second edition).	42-32	Fiber insulating board.
20-30	Staple vitreous-china plumbing fixtures.	43-32	Grading of sulphonated (sulphated) oils, saponifiable types.
21-30	Interchangeable ground-glass joints.	44-32	Apple wraps.
22-30	Builders' hardware (nontemplate).	45-33	Douglas fir plywood.
		46-33	Hosiery lengths.

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



