al Standard 122–49
Supersedes CS122–45

Western Softwood Plywood

U. S. DEPARTMENT OF COMMERCE

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NATIONAL BUREAU OF STANDARDS
E. U. Condon, Director

Western Softwood Plywood

A Recorded Voluntary Standard of the Trade

COMMODITY STANDARDS

Simplified Practice Recommendations and Commercial Standards are developed by manufacturers, distributors, and users in cooperation with the Commodity Standards Division of the National Bureau of Standards. The purpose of Simplified Practice Recommendations is to eliminate avoidable waste through the establishment of standards of practice for stock sizes and varieties of specific commodities that currently are in general production and demand. The purpose of Commercial Standards is to establish standard methods of test, rating, certification, and labeling of commodities, and to provide uniform bases for fair competition.

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COMMERCIAL STANDARD 122–49

for

WESTERN SOFTWOOD PLYWOOD

(SECOND EDITION)

[Effective, December 20, 1949]

1. PURPOSE

1.1 Because of the increasing economic importance of various western softwoods (other than Douglas fir, ponderosa pine, and sugar pine) in the manufacture of plywood, the following standard grading rules are offered as a universal basis of understanding in industry.[1] General adoption and use of this standard will facilitate procurement of the proper grade of material for its varied uses and provide a better understanding between buyer and seller. Architects, engineers, contractors, industrial users, and home owners will thus be able to specify their needs from nationally accepted grading standards.

2. SCOPE

2.1 These grading rules cover eight grades each of *Interior type* and *Exterior type* western softwood plywood, which is a laminated board for paneling, sheathing, cabinet work, and many structural and industrial uses. In addition, there are included tests, standard sizes, size tolerances, inspection rules, and nomenclature and definitions.

3. DEFINITION

3.1 Western softwood plywood is a built-up board of laminated veneers in which the grain of each piece is at right angles to the one adjacent to it. The kiln-dried veneer is united under high pressure with a bonding agent, making the joints as strong as or stronger than the wood itself. The alternating direction of the grain with each contiguous layer of wood equalizes the strains and in this way minimizes shrinkage and warping of the product and prevents splitting.

[1] Grading rules for Douglas fir plywood are given in Commercial Standard 45–48, and for ponderosa pine and sugar pine plywood in Commercial Standard 157–49.

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4. SPECIES

4.1 Western softwood plywoods, for the purposes of this standard, include cedar (Alaska, Port Orford, and Western red), California redwood, Western (Idaho) white pine, Sitka spruce, Western larch, Western hemlock, Noble fir, and the commercial white firs. Douglas fir may be used for cores and crossbands in all panels unless otherwise specified.

5. PANEL DESIGNATION

5.1 In every panel, the species of wood used for the face shall also be used for the back, or opposite face, and *this species* shall serve to designate the *kind* of plywood for that panel.

6. INTERMIXING OF SPECIES

6.1 All inner plies, except the core or center ply, shall occur in pairs, and the two plies of each pair shall be of the same species, thickness, and direction of grain, but placed on opposite sides of the core. In general, panels shall admit veneer from any western softwood for inner plies, except that *Exterior type* CEDAR or REDWOOD panels shall have all inner plies of these species or of Douglas fir.

7. GENERAL REQUIREMENTS

7.1 All western softwood plywood sold as of commercial standard quality shall meet the following general requirements:

7.1.1 *Workmanship.*—Unless otherwise specified, western softwood plywood shall be sanded on two sides to meet veneer requirements as set forth in paragraphs 9.1 and 9.2. When specified rough or unsanded, plywood may have paper tape on either face or back, or both. It shall be well manufactured and free from blisters, laps, and defects, except as permitted in the specific rules for the various grades.

7.1.2 *Bonding.*—The entire area of each contacting surface of the plywood shall be bonded in an approved manner with an adhesive conforming to the performance standards for its type, as set forth in paragraphs 12.2 and 12.3. No tape shall be permitted in the glue line.

7.1.3 *Loading or packing.*—The plywood shall be securely loaded or packed to insure delivery in a clean and serviceable condition.

8. DETAIL REQUIREMENTS

8.1 Western softwood plywood is made in two types, *Interior* (*Int.*) and *Exterior* (*Ext.*), the type referring to the moisture resistance of adhesives bonding the plies together. Within each type there are several grades, which are established by the quality of the veneer on both sides of the panel as hereinafter defined. The grade descriptions set forth the minimum requirements, and, therefore, the majority of panels in any shipment will exceed the specifications given.

9. VENEERS

9.1 *Thickness.*—Veneers shall be 1/12 inch or more in thickness before sanding in panels 1/4 inch and thicker.

9.2 *Qualities.*—Veneer qualities used in the different plywood grades shall be one of the following, except in center veneer of *Interior type* panels with five or more plies:

9.2.1 *Quality A1.*—Quality *A1* veneer shall be of one or more pieces of firm, smoothly cut veneer. When of more than one piece, it shall be well joined and reasonably matched for grain and color at the joints. It shall be free from knots, splits, checks, pitch pockets, and other open defects. Slight discoloration, and heart and sap streaks shall be admitted but no blue stain. Tightly closed end-checks, shims not more than 3/16 inch wide that occur at ends of panels, and inconspicuous well-matched small patches not more than 2 inches long shall be admitted. This grade shall present a suitable surface for natural, light stain, or enamel finish.

9.2.2 *Quality A.*—Quality *A* veneer shall be of one or more pieces of firm, smoothly cut veneer. When of more than one piece, it shall be well joined and reasonably matched for grain and color at the joints. It shall be free from knots, splits, pitch pockets, and other open defects. Streaks, discolorations, sapwood, shims, and neatly made patches shall be admitted, as shall black streaks in Western hemlock. This grade shall present a smooth surface suitable for painting.

9.2.3 *Quality B.*—Quality *B* veneer shall present a solid surface, free from open defects, but in addition to characteristics admitted in quality *A* veneer, shall admit also neatly made circular plugs, as well as synthetic plugs that present tight, smooth, hard surfaces, knots up to 1 inch if both sound and tight, tight splits, slightly rough but not torn grain, and other minor sanding and patching defects. Clusters of knots accompanied by pitch are prohibited. The grade shall be paintable.

9.2.4 *Quality C.*—Quality *C* veneer may contain knotholes not larger than 1 inch in least dimension, open pitch pockets not wider than 1 inch, splits not wider than 3/16 inch that taper to a point, worm or borer holes not more than 5/8 inch wide or 1½ inches long, knots if tight and not more than 1½ inches in least dimension, and plugs, patches, shims, sanding defects, and other characteristics in number and size that will not impair the serviceability of the panel.

9.2.5 *Quality D.*—Quality *D* veneer (may be used only in *Interior type* grades) shall contain no knotholes greater than 2½ inches in maximum dimension, no pitch pockets more than 2 inches wide by 4 inches long, or equivalent area if of lesser width, and no splits wider than ½ inch. Splits ½ inch wide at widest point may be one-fourth panel length; those not more than 1/4 inch wide at widest point may be half-panel length; and those not more than 3/16 inch wide may be full-panel length, but all splits shall taper to a point at one end. Any number of plugs, patches, shims, worm or borer holes, sanding defects, and other characteristics are permitted provided they do not seriously impair the strength or serviceability of the panel.

10. INTERIOR TYPE

10.1 *Interior type* consists of plywood with a high degree of moisture resistance where its application requires that it shall retain its original form and practically all its strength when occasionally subjected to a thorough wetting and subsequent normal drying. This type of plywood is suitable for construction where subjected to occasional deposits of moisture by condensation through walls or leakage or from other sources. *Interior type* shall meet the test requirements set forth in paragraphs 12.2 and 12.4.1. This type is available in the grades given in table 1.

TABLE 1. *Interior type grades—construction and minimum quality of veneers*

Interior grades [1]	Face	Back	Inner plies	Additional limitations (see also paragraphs 3.1 to 9.2.5.)
A1–A1 Int	A1	A1	D	Sanded 2 sides.
A1–D Int	A1	D	D	Do.
A–A Int	A	A	D	Do.
A–B Int	A	B	D	Do.
A–D Int	A	D	D	Do.
B–C Int	B	C	D	Do.
C–D Int. (sheathing)	C	D	D	Unsanded grade.
B–B Int. (concrete form)	B	B	C	Sanded 2 sides. (Made only in spruce and pine.) Edge-sealed and, unless otherwise specified, mill-oiled.

[1] Grades A1–A, A1–B, and A1–C available on special order only.

11. EXTERIOR TYPE

11.1 *Exterior type* represents the ultimate in moisture resistance—a plywood that will retain its original form and strength when repeatedly wet and dried and otherwise subjected to the elements, and which is suitable for permanent exterior use. It shall be free from both core gaps and core voids that impair the strength or serviceability of the panel. All veneer used in *Exterior type* panels shall be of *C* quality or better. All *Exterior* panels shall be so designated by a distinctive symbol, "*Ext*," branded or stamped on the edge of each panel. Plywood of this type shall meet the test requirements set forth in paragraphs 12.3.1, 12.3.2, 12.3.3, 12.4.2, and 12.4.2.1. This type is available in the grades given in table 2.

TABLE 2. *Exterior type grades—construction and minimum quality of veneers*

Exterior grades [1]	Face	Back	Inner plies [2]	Additional limitations (see also paragraphs 3.1 to 9.2.5.)
A1–A1 Ext	A1	A1	C	Sanded 2 sides.
A1–C Ext	A1	C	C	Do.
A–A Ext	A	A	C	Do.
A–B Ext	A	B	C	Do.
A–C Ext	A	C	C	Do.
B–C Ext	B	C	C	Do.
C–C Ext	C	C	C	Unsanded grade—no belt sanding.
B–B Ext (concrete form)	B	B	C	Sanded 2 sides. (Made only in spruce and pine.) Edge-sealed and, unless otherwise specified, mill-oiled.

[1] Grades A1–A and A1–B available on special order only.
[2] *Exterior type* cedar and redwood panels shall have all inner plies of cedar, redwood, or Douglas fir only.

12. TESTS

12.1 *Sampling.*—Ten test panels shall be taken at random from any shipment. Test panels shall be selected to represent as many variations in grades and thicknesses as possible. Test panels shall also be selected from locations distributed as widely as is practicable throughout the shipment. From each *Exterior* panel selected, 3 test pieces shall be cut at random, and from each test piece, 10 test specimens shall be cut. From each *Interior* panel selected, a 6- by 6-inch test piece shall be cut from each end approximately at midwidth of the panel, and from each edge approximately at midlength of the panel; while a fifth piece shall be cut from somewhere near the middle or center of the panel.

12.2 *Test for Interior type.*—The test pieces shall be submerged in water at room temperature for a period of 4 hours, and then dried at a temperature not to exceed 100° F. for a period of 20 hours. This cycle shall be repeated until all samples have failed, or have completed 15 cycles.

12.3 *Test for Exterior type.*

12.3.1 *Cold-soaking test.*—Five shear specimens shall be cut from each test piece as indicated in figure 1.

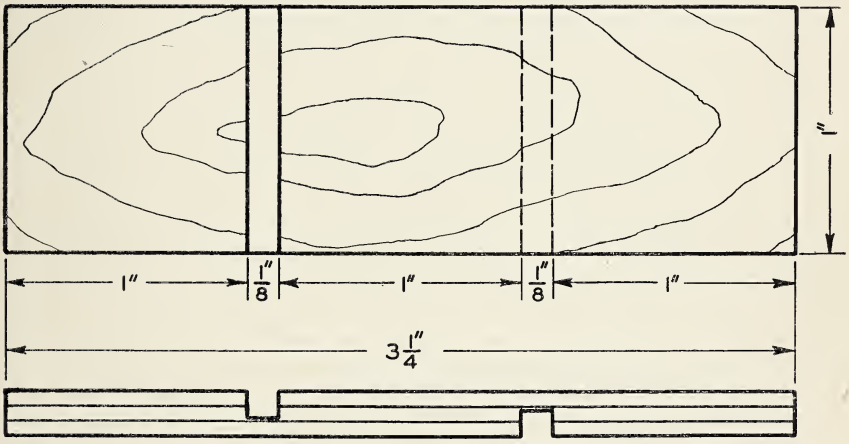

FIGURE 1. *Shear specimen.*

If the number of plies exceeds three, the cuts shall be made so as to test any two of the joints, but the additional plies need not be stripped, except as demanded by the limitations of the width of the retaining jaws on the testing device. When desired, special jaws may be constructed to accommodate the thicker plywood. If the number of plies exceeds three, the choice of joints to be tested shall be left to the discretion of the inspector, but at lease one-half of the tests shall include the innermost joints. The specimens shall be submerged in water at room temperature for a period of 48 hours and then dried for 8 hours at a temperature of 145° F. (±5° F.); this is followed by two cycles of soaking for 16 hours and drying for 8 hours under the condi-

tions described above. The shear specimens shall be soaked again for a period of 16 hours and tested while wet in a shear testing device, as illustrated in figure 2, by placing them in the jaws of the device to which a load shall be applied at the rate of 600 to 1,000 pounds a minute until failure. The percentage of wood failure of the specimens shall be estimated.

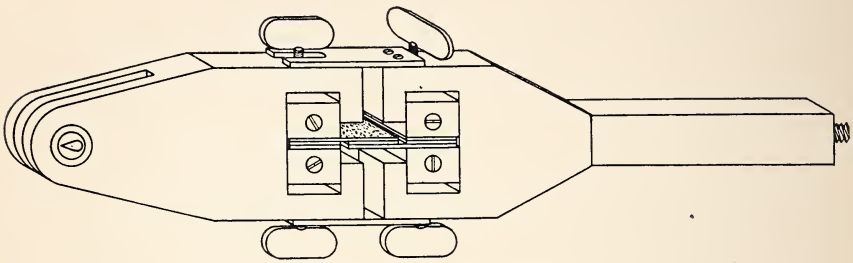

FIGURE 2. *Jaws for shear test.*

12.3.2 *Boiling test.*—Shear specimens, as described in paragraph 12.3.1, shall be boiled in water for 4 hours, and then dried for 20 hours at a temperature of 145° F. (±5° F.). The specimens shall be boiled again for a period of 4 hours and tested while wet, as described in paragraph 12.3.1. The percentage of wood failure of the specimens shall be estimated.

12.3.3 *Fire test.*—A 5½- by 8-inch piece shall be taken from each of five selected test panels and placed on the stand, as illustrated in figure 3, and subjected to a 800° to 900° C. flame from a Bunsen-type burner for a period of 10 minutes or, in the case of a thin specimen, until a brown char area appears on the back side. The burner shall be equipped with a wing top to envelop the entire width of the specimen in flame. The top of the burner shall be 1 inch from the specimen face and the flame 1½ inches high. The flame shall impinge on the face of the specimen 2 inches from the bottom end. After the test the sample shall be removed from the stand and the glue lines examined for delamination by separating the charred plies with a sharp chisel-like instrument. Any delamination due to combustion shall be considered as failure, except when occurring at a localized defect permitted in the grade.

12.4 *Interpretation of tests.*

12.4.1 *Interior type.*—Total visible delamination of ¼ inch or more in depth and over 2 inches in length along the edge of a 6- by 6-inch test piece shall be considered as failure. When delamination occurs at a localized defect permitted within the grade, that test piece shall be discarded. The average number of cycles that the test pieces shall withstand is 10 or more. If the test pieces fail to meet this requirement, an additional series of 10 panels shall be selected and tested as described in paragraphs 12.1 and 12.2. Then the test pieces from both groups of 10, considered together, shall meet the above test requirement.

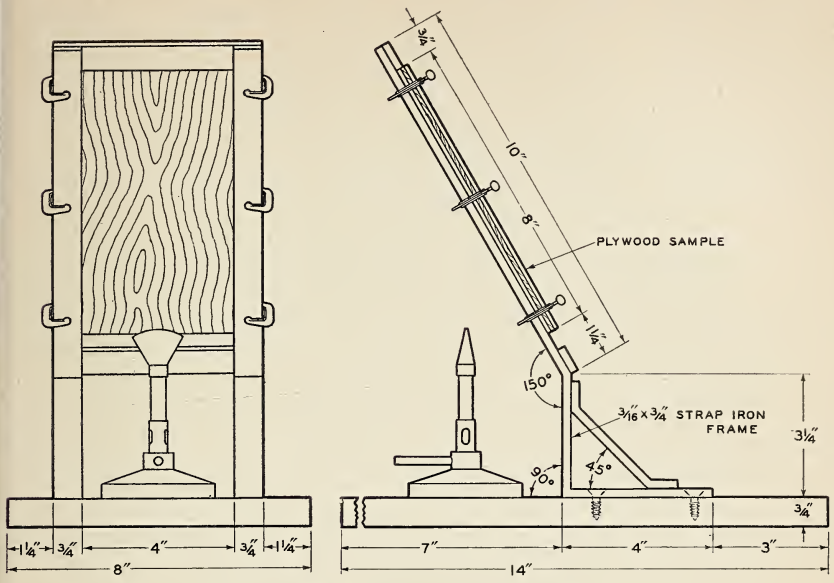

FIGURE 3. *Apparatus for fire test.*

12.4.2 *Exterior type.*—Specimens cut through localized defects permitted within the grade shall be discarded. A test piece shall be rated by the combined results of both the cold-soaking test and the boiling test—generally 10 specimens in all. If the average wood failure of the 10 specimens is below 60 percent, or if more than one of the specimens is below 30 percent, the test piece fails. If more than one test piece fails, that panel fails. If one or none of the 10 panels fails, the shipment is accepted; if more than two fail, the shipment is rejected. If two fail, another series of 10 panels is tested. If one or none of the panels fails in this series, the shipment is accepted; otherwise it is rejected. If the average wood failure of the first 10 panels is less than 80 percent, a second series of 10 is tested, regardless of the number of failures. If the average wood failure of the 20 panels combined is less than 80 percent, the shipment is rejected.

12.4.2.1 If more than one panel fails the fire test, the shipment may be rejected; if one panel fails, a second series of five shall be tested, all of which must pass.

13. STANDARD SIZES

13.1 Western softwood plywood is made in the standard sizes given in table 3.

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TABLE 3. *Standard western softwood plywood sizes*

Grade	Width	Length	Thickness and minimum number of plies
		INTERIOR TYPE	
	Inches	*Inches*	*Inch*
A1–A1 Int A1–D Int A–A Int A–B Int A–D Int	24 30 36 42 48	60 72 84 96	¼, 3-ply. ⅜, 3-ply. ½, 5-ply. ⅝, 5-ply. ¾, 5-ply.
		108 120	¼, 3-ply. ⅜, 3-ply.
B–D Int	24 30 36 42 48	60 72 84 96 108 120	¼, 3-ply. ⅜, 3-ply. ½, 5-ply. ⅝, 5-ply. ¾, 5-ply.
C–D Int	24 30 36 42 48	96	5/16, 3-ply. ⅜, 3-ply. ½, 5-ply. ⅝, 5-ply.
B–B Int. (concrete form)	24 30 36 42 48	96	½, 5-ply. ⅝, 5-ply. ¾, 5-ply.
		EXTERIOR TYPE	
A1–A1 Ext A1–C Ext A–A Ext A–B Ext A–C Ext	24 30 36 42 48	60 72 84 96	¼, 3-ply. ⅜, 3-ply. ½, 5-ply. ⅝, 5-ply. ¾, 5-ply.
		108 120	¼, 3-ply. ⅜, 3-ply. ½, 5-ply.
B–C Ext	24 30 36 42 48	60 72 84 96 108 120	¼, 3-ply. ⅜, 3-ply. ½, 5-ply. ⅝, 5-ply. ¾, 5-ply.
C–C Ext	24 30 36 42 48	96	5/16, 3-ply. ⅜, 3-ply. ½, 5-ply. ⅝, 5-ply.
B–B Ext. (concrete form)	24 30 36 42 48	96	½, 5-ply. ⅝, 5-ply. ¾, 5-ply.

14. SIZE TOLERANCES

14.1 A tolerance of 1/64 (0.0156) inch over or under the specified thickness shall be allowed on sanded panels and a tolerance of 1/32 (0.0312) inch on unsanded panels.

14.2 A tolerance of 1/32 (0.0312) inch over or under the specified length and/or width shall be allowed but all panels shall be square within 1/8 (0.1250) inch.

15. INSPECTION

15.1 All plywood guaranteed to conform to the commercial standard grading rules is sold subject to inspection in the white only, except concrete-form material, which may have a priming of oil or other preparation before shipment. All complaints regarding the quality of any shipment must be made within 15 days from receipt thereof.

15.2 If the grade of any plywood shipment is in dispute and a reinspection is demanded, the cost of such reinspection shall be borne by the seller, and the shipment settled for on the basis of the reinspection report if the shipment is more than 5 percent below grade, or if it contains more than 1 percent of mismanufactured panels containing defects, such as short core, lapped core, blisters, delamination, etc., which render the panel unfit for normal use. The buyer need not accept such defective panels shipped as any standard grade listed in this commercial standard.

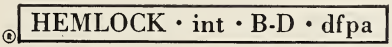
15.3 If reinspection establishes the shipment to be 5 percent or less below grade, and to contain 1 percent or less of mismanufactured panels, the buyer pays the cost of reinspection and pays for the shipment as invoiced.

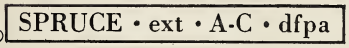
16. GRADE MARKING AND CERTIFICATION

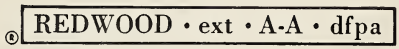
16.1 In order to assure the purchaser that he is getting western softwood plywood of the grade specified, producers may individually, or in concert with their trade association or inspection bureau, issue certificates with each shipment or grade-mark each panel as conforming to this standard.

16.2 The following sets forth the grade-marking and certification symbols for western softwood plywood adopted by the Douglas Fir Plywood Association to preserve the high standards of quality herein recorded and to insure that distributors and ultimate consumers receive the proper kind of plywood for their specific needs.

16.2.1 All standard-size panels are stamped or branded to identify the various species of wood, as well as the type and grade of western softwood plywood. The following three facsimiles of grade-marks are given as examples:







In each grade-mark, the kind of wood used on faces and backs is shown first; then "int" or "ext" to designate type of bond; then two letters to indicate quality of veneer in face and back; and finally the letters "dfpa," abbreviation for Douglas Fir Plywood Association.

16.2.2 The Douglas Fir Plywood Association maintains an inspection service for the careful grading of its members' products. By the use of certificates on carload lots, the first unloading buyer of a carload is assured of receiving plywood of the type and grade specified. A facsimile of the face of the Association's certificate of inspection is shown in figure 4.

WESTERN SOFTWOOD PLYWOOD

CERTIFICATE OF INSPECTION

ISSUED BY DOUGLAS FIR PLYWOOD ASSOCIATION

It is hereby Certified:

that the plywood identified below and marked with a grade-trademark of the Douglas Fir Plywood Association (dfpa), was manufactured in accordance with the grade specifications established by the U. S. Department of Commerce as Commercial Standard CS 122-49, by the

JOHN DOE PLYWOOD COMPANY

whose production bearing any of the Association grade-trademarks (see reverse side) is under the supervision of the Inspection Department of the Douglas Fir Plywood Association.

Signed for Douglas Fir Plywood Association

O. Harry Schrader Jr.
Managing Director

Order No. _____

Car No. _____

Date _____

Authorized Signatory

DOUGLAS FIR PLYWOOD ASSOCIATION CORPORATE SEAL TACOMA, WASH.

Subscribed and declared to before me, the undersigned, a Notary Public in and for the state of _____ by the above named authorized signatory personally known to me as the person signing the above certificate.

_____ Notary Public

Dated _____ 19 ____

SEE REVERSE SIDE OF THIS CERTIFICATE FOR MINIATURE FACSIMILES OF GRADE-TRADEMARKS BELONGING TO SAID ASSOCIATION

COPYRIGHT 1949 Douglas Fir Plywood Association—Printed in U. S. A.

FIGURE 4. *Inspection certificate of the Douglas Fir Plywood Association.*

17. METHOD OF ORDERING

17.1 The established procedure in specifying kind, size, and grade of plywood is to name the species, the number of plies, width, length, type, grade, whether sanded or unsanded, and finished thickness.

17.2 Width always refers to distance across the grain of the face plies; length refers to the distance along the grain. Width should always be specified first.

17.3 If, for example, 100 pieces of spruce plywood ¼ inch thick, 48 inches wide, and 96 inches long are required for interior or semi-exposed conditions, one side of which is to be nailed against a wall where it will not show, but the other side to be exposed to view and painted, this material should be ordered as follows:

Spruce plywood: 100 pcs., 3-ply, 48 in. by 96 in., Interior Type, Grade A–D; sanded 2 sides to ¼ inch thickness.

17.4 For most uses, sanded panels are desirable, but there are occasional uses where unsanded panels, of an A–D or other grade, are satisfactory. Such panels should be specified unsanded.

17.5 For special types of service, special features may be desirable in plywood panels, such as omission of oiling for concrete-form panels, extra-thick faces for certain architectural treatments, etc. In such cases, the special treatment or feature should be stated after the standard specification. For example, if special features are desired in redwood *Exterior type,* grade A–A panel of ⅜-inch thickness, the order should read:

Redwood plywood: 100 pcs., 3-ply, 48 in. by 96 in., Exterior Type, Grade A–A; sanded 2 sides to ⅜ inch thickness. (Add further special requirements.)

18. NOMENCLATURE AND DEFINITIONS

18.1 The various terms referred to herein are defined as follows:

Back.—The side reverse to the face of the panel.

Borer holes.—Voids made by wood-boring insects or worms.

Centers.—See Cores.

Checks.—Small splits running parallel to the grain of the wood caused chiefly by strains produced in seasoning.

Cores.—The core or center is the center ply in a plywood panel having an odd number of plies.

Crossbanding.—A crossband in a plywood panel containing five or more plies is a ply of veneer in which the grain is at right angles to the grain of the face plies. The crossbands are the even-numbered veneers in such construction.

Defects, open.—Checks, splits, open joints, cracks, loose knots, and other defects interrupting the smooth continuity of the panel surface.

Exterior.—Refers to the type of plywood intended for outdoor or marine uses. This type is bonded with adhesives, affording the ultimate in water and moisture resistance. (See pars. 8.1 and 11.1.) (There are several grades within this type.)

Face.—The better side of a panel in any grade calling for a face and a back; also, either side of a panel where the grading rules draw no distinction between faces. The quality of the face and back determines the grade of panel within either the *Exterior* or *Interior type.*

Heartwood.—The darker-colored wood occurring in the inner portion of the tree, sometimes referred to as "heart."

Interior.—Refers to the type of plywood intended for inside uses and for construction applications where subjected to occasional wetting or deposits of moisture. (See pars. 8.1 and 10.1.) (There are several grades within this type.)

Knot.—Cross section of a branch or limb whose grain usually runs at right angles to that of the piece in which it is found.

Knotholes.—Voids produced by the dropping of knots from the wood in which they were originally embedded.

Lap.—A condition where the veneers used are so misplaced that one piece overlaps the other rather than making a smooth butt joint.

Patches.—Insertions of boat-shaped sound wood glued and placed into panels from which defective portions have been removed.

Pitch pocket.—A pitch pocket is a well-defined opening between rings of annual growth, usually containing, or which has contained, more or less pitch, either solid or liquid.

Pitch streak.—A pitch streak is a well-defined accumulation of pitch in a more or less regular streak.

Plugs.—Sound wood, usually circular, for replacing defective portions that have been removed. Plugs usually are held in veneer by friction only until veneers are bonded into plywood. Synthetic plugs are of fiber and resin aggregate; they are used to fill openings and provide a smooth, durable surface.

Sapwood.—The lighter-colored wood occurring in the outer portion of the tree, sometimes referred to as "sap."

Shim.—A long, narrow patch not more than $\frac{3}{16}$ inch wide.

Streak.—See Pitch streak.

Torn grain.—A marked leafing or separation on veneer surface between spring and summer wood.

Veneer.—Thin sheets of wood.

19. EFFECTIVE DATE

19.1 Having been passed through the regular procedure of the Commodity Standards Division, and approved by the acceptors hereinafter listed, this commercial standard was issued by the United States Department of Commerce, effective from December 20, 1949.

EDWIN W. ELY,
Chief, Commodity Standards Division.

20. HISTORY OF PROJECT

20.1 On March 17, 1944, the Douglas Fir Plywood Association requested the cooperation of the National Bureau of Standards in the establishment of a commercial standard for Western hemlock plywood. A draft of the proposed standard was submitted on August 26, 1944, to producers, interested testing laboratories, and distributor and user organizations for their review and comment. After the requirements were harmonized and adjusted so that the draft represented the composite views of all interested groups, the recommended standard was circulated on November 18, 1944, to the trade for written acceptance.

20.2 Upon receipt of official acceptances estimated to represent a satisfactory majority of the production volume, and in the absence

of active valid opposition, the standard was promulgated as Commercial Standard 122–45, effective for new production from March 5, 1945.

20.3 *First revision.* –On April 6, 1949, the Douglas Fir Plywood Association submitted a proposed revision in which the major changes were the inclusion of plywood made from cedar (Alaska, Port Orford and Western red), California redwood, Western (Idaho) white pine, Sitka spruce, Western larch, Western hemlock, Noble fir, and the commercial white firs; the addition of eight *Exterior type* grades; and changing the "moisture-resistant type" to *Interior type.* These changes were approved by the standing committee, and the recommended revision was circulated on August 11, 1949, to the trade for consideration. Following acceptance by a satisfactory majority, the success of the revision was announced on November 21, 1949, as Commercial Standard 122–49, Western Softwood Plywood.

Project Manager: J. W. Medley, Commodity Standards Division, National Bureau of Standards.

Technical Adviser: V. B. Phelan, Building Technology Division, National Bureau of Standards.

21. STANDING COMMITTEE

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

Norman O. Cruver (Chairman), The Wheeler, Osgood Co., 1216 St. Paul Ave., Tacoma 1, Wash.

W. C. Bailey, United States Plywood Corp., 4025 13th Ave. W., Seattle 99, Wash.

A. R. Wuest, West Coast Plywood Co., P. O. Box 1180, Aberdeen, Wash.

N. S. Perkins, Douglas Fir Plywood Association, Tacoma Bldg., Tacoma 2, Wash.

Joseph Kramer, Greater New York Lumber Industries, Inc., 182 W. 42d St., New York 18, N. Y.

Hollis J. Nunneley, Pacific Mutual Door Co., Tacoma Bldg., Tacoma, Wash. (representing National-American Wholesale Lumber Association).

James M. Alexander, Cavalier Corp., Chattanooga 2, Tenn. (representing National Association of Purchasing Agents).

Harry H. Steidle, Prefabricated Home Manufacturers' Institute, 908 20th St. NW., Washington 6, D. C.

Welton A. Snow, Building Division, The Associated General Contractors of America, Inc., Munsey Bldg., Washington 4, D. C.

C. O. Christenson, Property Requirements Section, Federal Housing Administration, Housing and Home Finance Agency, Washington 25, D. C.

ACCEPTANCE OF COMMERCIAL STANDARD

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

Date _____

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

Gentlemen:

We believe that the Commercial Standard 122–49 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 western softwood plywood.

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 of the Department of Commerce, the support of any standard is inadequate, the right is reserved to withhold promulgation and publication.

ACCEPTORS

The organizations listed below have individually accepted this standard for use as far as practicable in the production, distribution, testing, or purchase of western softwood plywood. In accepting the standard, they reserved the right to depart from it 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 Specification Institute, Chicago, Ill.
American Veneer Package Association, Inc., Washington, D. C.
Carolina Lumber & Building Supply Association, Charlotte, N. C.
Douglas Fir Plywood Association, Tacoma, Wash.
Greater New York Lumber Industries, Inc., New York, N. Y.
Michigan Association of the Traveling Lumber & Sash & Door Salesmen, The, Detroit, Mich.
National Association of Commission Lumber Salesmen, St. Louis, Mo.
National Association of Home Builders, Washington, D. C.
National Council, Boy Scouts of America, New York, N. Y.
National Hardwood Lumber Association, Chicago, Ill.
Prefabricated Home Manufacturers' Institute, Washington, D. C.
Southern Hardwood Producers, Inc., Memphis, Tenn.
Southern Plywood Manufacturers Association, Atlanta, Ga.
Southwestern Lumbermen's Association, Kansas City, Mo.
Wood-Ply Research Foundation, Inc., Chicago, Ill.

FIRMS AND OTHER INTERESTS

Aberdeen Plywood Corp., Aberdeen, Wash.
Accepted Materials Co., Los Angeles, Calif.
Acme Door Co., Hoquiam, Wash.
Adams, Franklin O., Tampa, Fla.
Aladdin Co., The, Bay City, Mich.
Albany Plywood Co., Inc., Albany, N. Y.
Algoma Plywood & Veneer Co., Algoma, Wis.
Allen Millwork Manufacturing Corp., Shreveport, La.
Allison & Rible, Los Angeles, Calif.
Altfillisch, Charles, Decorah, Iowa.
American Car & Foundry Co., New York, N. Y.
American-Marietta Co., Seattle, Wash.
American-Plywood Corp., New London, Conn.
American Sash & Door Co., Kansas City, Mo.
Andrews, Jones, Biscoe & Goodell, Boston, Mass.
Andrews, C. E., Lumber Co., New Bethlehem, Pa
Armstrong-Walker Lumber Co., Terre Haute, Ind.
Arrington Lumber Co., Norfolk, Va.
Arthur, B. M., Lumber Co., Lansford, Pa.
Ashby, T. W., Lumber Co., Inc., Billings, Mont.
Ashton, C. J., Co., Royal Oak, Mich.
Associated Plywood Mills, Inc., Eugene, Oreg.
Atlanta Oak Flooring Co., Atlanta, Ga.
Atlantic Plywood Co., Inc., New York, N. Y.
Austin Lumber Co., Pittsburgh, Pa.
Bain, W. J., Greensboro, N. C.
Barger Millwork Co., Statesville, N. C.
Baris, J. C , Lumber Co., New York, N. Y.
Barnes, W. F. & J. F., Lumber Co., Waco, Tex.
Barthmaier, Eugene V., Philadelphia, Pa.
Baxter, C. B., & Co., Kansas City, Mo.
Bay City Cabinet Co., Oakland. Calif.
Beasley & Sons Co., Nashville, Tenn.
Belli Co., Inc., Trenton, N. J.
Bellingham Plywood Co., Division of Washington Veneer Co., Bellingham, Wash.
Bellman, Gillett & Richards, Toledo, Ohio.
Bennison, Harvey C., Co., Kansas City, Mo.
Berger & Kelley, Champaign, Ill.
Besch, Carl, Co., Inc., The, New York, N. Y.
Beuttler, William, Sioux City, Iowa.
Binswanger & Co., Inc., Richmond, Va.
Birmingham Sash & Door Co., Birmingham, Ala.
Bishop, Horatio W., La Mesa, Calif. (General support.)
Blackburn, Robert, Inc., Milwaukee, Wis.
Blick, T. C., Plywood Co., Inc., East Hartford, Conn.
Boehm, George A., New York, N. Y.
Borcherding, W. C., Co., Indianapolis, Ind.
Borden Co., Chemical Division, Seattle, Wash.
Bosman & Casson, Inc., Harrison, N. J.
Brooks-Borg, Des Moines, Iowa.
Brown, Clay, & Co., Portland, Oreg.
Bruett, T. A., Lumber, Inc., Milwaukee, Wis.
Brust & Brust, Milwaukee, Wis.
Buck, Daniel, Inc., Philadelphia, Pa.
Buckman Laboratories, Inc., Memphis, Tenn.
Bucky, Fred W., Jr., Jacksonville, Fla.
Buell & Co., Dallas, Tex.
Buffalo, City of, Department of Public Works, Division of Buildings, Architectural Service, Buffalo, N. Y.
Buffalo Plywood Corp., Buffalo, N. Y.
Buffelen Manufacturing Co., Fort Worth, Tex.
Burnet-Binford Lumber Co., Inc., Indianapolis, Ind.
Burrow Lumber Co., Canyon, Tex., and Happy, Tex.
California Door Co., The, Los Angeles, Calif.
California Panel & Veneer Co., Los Angeles, Calif.
Camlet, J. Thomas, Passaic, N. J.
Camp, E. W., Plywood Co., Inc., The, Indianapolis, Ind.
Canadian Western Lumber Co., Ltd., Fraser Mills, British Columbia, Canada.
Cascades Plywood Corp., Portland, Oreg.
Central Building Supply, Inc., Baltimore, Md.
Central of Georgia Railway Co., Savannah, Ga.
Central Glazing Co., Fort Worth, Tex.
Chapin Lumber Co, The, Aurora, Colo.
Chicago & Riverdale Lumber Co., Chicago, Ill.
Chicago, Rock Island & Pacific Railroad Co., Chicago, Ill.
Chrysler Corp., Detroit, Mich.
Cincinnati Butchers Supply Co., The, Cincinnati, Ohio.
Coffin, Ralph V., Seattle, Wash.
Conrad & Cummings, Binghamton, N. Y.
Coolerator Co., The, Duluth, Minn.
Coos Bay Lumber Co., Coquille, Oreg.
Cram & Ferguson, Boston, Mass.
Crane, Arthur D., Co., The, Sparta, N. J.
Crompton & Knowles Loom Works, Worcester, Mass.
Crowell & Lancaster, Bangor, Maine.

Curran Bros., Pomona, Calif.
Curtis Cos., Inc., Clinton, Iowa.
Dakota Sash & Door Co., Aberdeen, S. Dak.
Darby, Bogner & Associates, Milwaukee, Wis.
Davidson Sash & Door Co., Inc., Lakes Charles, La.
De Jarnette, Charles W., Des Moines, Iowa. (General support.)
De Luxe Metal Furniture Co., Warren, Pa.
Delmarva Sash & Door Co., Philadelphia, Pa.
Dix Lumber Co., Cambridge, Mass.
Donlin Co., The, St. Cloud, Minn.
Dougherty Lumber Co., The, Cleveland, Ohio.
Downes Lumber Co., Boston, Mass.
Durez Plastics & Chemicals, Inc., North Tonawanda, N. Y.
Eastern Plywood & Door Co., Inc., Jamestown, N. Y.
Eiler, Edward, Lumber Co., Pittsburgh, Pa.
Elizabeth Lumber Co., Elizabeth, N. J.
Elliott Bay Mill Co., Seattle, Wash.
Elmer & Moody Co., Seattle, Wash.
Emery Industries Inc., Cincinnati, Ohio.
Evans, H. C., & Co., Chicago, Ill.
Evans Products Co., Coos Bay, Oreg.
Exchange Lumber & Manufacturing Co., Spokane, Wash.
Finley Lumber Co., Norristown, Pa.
Fir Manufacturing Co., Myrtle Creek, Oreg.
Fischer, Charles F., & Co., Inc., New York, N. Y.
Fitzpatrick, J. J., Lumber Co., Inc., Madison, Wis.
Flannagan, Eric G., Henderson, N. C.
Flint Lumber Co., Flint, Mich.
Florida, University of, School of Forestry, Gainesville, Fla. (General support.)
Forest Products Laboratories of Canada (Vancouver Laboratory), Vancouver, British Columbia, Canada.
Ft. Wayne Builders' Supply Co., Fort Wayne, Ind.
Franklin Design Service, Division of Safeway Stores, Oakland, Calif.
Frost Hardwood Lumber Co., San Diego, Calif.
Fry-Fulton Lumber Co., St. Louis, Mo.
Fuller, W. P., & Co., Spokane, Wash.
Fuller Goodman Co., Oshkosh, Wis.
Gaines Hardwood Lumber Co., St. Louis, Mo.
Garratt & Co., Wayne, Pa.
General Millwork Corp., Utica, N. Y.
Georgia Show Case Co., Montgomery, Ala.
Godfrey Lumber Co., Boston, Mass.
Goshen Sash & Door Co., Goshen, Ind.
Grand Rapids Store Equipment Co., Grand Rapids, Mich.
Great Lakes Sash & Door Co., The, Cleveland, Ohio.
Green Gable Builders, Inc., Cedar Rapids, Iowa.
Greene & Wood, Inc., New Bedford, Mass.
Grogan Robinson Lumber Co., Great Falls, Mont.
Guernsey-Westbrook Co., The, Hartford, Conn.
Gulf States Plywood Co., New Orleans, La.
Hagemeyer Lumber Co., Cincinnati, Ohio.
Hager & Cove Lumber Co., Lansing, Mich.
Hallack & Howard Lumber Co., Denver, Colo.
Hansen, Frank C., Co., Seattle, Wash.
Hansen Lumber Co., Ltd., The, Quebec City, Canada.
Haralson & Mott, Fort Smith, Ark.
Harbor Plywood Corp., Hoquiam, Wash.
Harbor Sales Co., Inc., The, Baltimore, Md., and Washington, D. C.
Hartung, F. L., Co., Seattle, Wash.
Hastings, A. W., & Co., Inc., Somerville, Mass.
Hawkins Lumber & Warehouse Co., Boston, Mass.
Heidritter Lumber Corp., Elizabeth, N. J.
Henrich Plywood Co., Inc., Buffalo, N. Y.
Henshaw & Ellwanger, Inc., Denver, Colo.
Henshaw Refrigeration & Fixture Co., San Francisco, Calif.
Higgins, J. E., Lumber Co., San Francisco, Calif.
Hinckley, Dwight, Lumber Co., The, Cincinnati, Ohio.
Hirsch Lumber Co., New York, N. Y.
Hodgdon, Charles, San Gabriel, Calif.
Hoffman Lumber Co., Pittsburgh, Pa.
Hogan Lumber Co., Oakland, Calif.
Holsman, Holsman, Klekamp & Taylor, Chicago, Ill.
Honerkamp, F. W., Co., Inc., New York, N. Y.
Hope, Frank L., San Diego, Calif.
Humboldt Plywood Corp., Arcata, Calif.
Hunter Lumber Co., Chillicothe, Ill.
Hunting, R. D., Lumber Co., Cedar Rapids, Iowa.
Huttig Sash & Door Co., Charlotte, N. C.
Huttig Sash & Door Co., Columbus, Ohio.
Huttig Sash & Door Co., Dallas, Tex.
Huttig Sash & Door Co., Jacksonville, Fla.
Huttig Sash & Door Co., Knoxville, Tenn.
Huttig Sash & Door Co., Louisville, Ky.
Huttig Sash & Door Co., Miami, Fla.
Huttig Sash & Door Co., Roanoke, Va.
Huttig Sash & Door Co., St. Louis, Mo.
Hyde Valley Lumber Co., St. Joseph, Mo.
Immel Construction Co., Fond du Lac, Wis.
Indiana Lumber & Manufacturing Co., Inc., South Bend, Ind.
Indianapolis Plywood Corp., Indianapolis, Ind.
Interstate Sash & Door Co., The, Canton, Ohio.
Jamme, Bernard E., Summit, N. J.
Johnson Lumber Co., Moultrie, Ga.
Johnson, Walter T., Lumber Co., Omaha, Nebr.
Jones, John Paul, & Leonard Bindon, Seattle, Wash.
Jones Hardwood & Plywood Co., San Francisco, Calif.
Kawneer Co., Niles, Mich.
Keich & O'Brien, Warren, Ohio.
Kellogg, Charles C., & Sons Co., Utica, N. Y.
Kennedy Lumber Co., Trenton, N. J.
Kneeland-Bigelow Distributing Co., Bay City, Mich.
Kullberg Manufacturing Co., Minneapolis, Minn.
Lander Lumber Co., El Paso, Tex.
Law, Law, Potter & Nystrom, Madison, Wis.
Levy, Will, St. Louis, Mo.
Loeb, Laurence M., White Plains, N. Y.
Loftus, Peter F., Corp., Pittsburgh, Pa.
Logan Lumber Co., Miami, Fla., and Tampa, Fla.
Loizeaux, J. D., Lumber Co., Plainfield, N. J.
Long-Bell Lumber Co., The, Longview, Wash.
Lord & Bushnell Lumber Co., Chicago, Ill.
Los Angeles, City of, Los Angeles, Calif.
Lovatt, George I., Philadelphia, Pa.
Lumber Dealers Materials Co., Sacramento, Calif.
Lumber & Millwork Co. of Philadelphia, The, Philadelphia, Pa.
Lyman-Hawkins Lumber Co., Akron, Ohio.
Lyon Gray Lumber Co., Dallas, Tex.
Lyon Metal Products, Inc., Aurora, Ill.
Lyons Lumber & Supply Corp., Jamestown, N. Y.
M & M Wood Working Co., The, Portland, Oreg.
MacDonald & Harrington, Ltd., San Francisco, Calif.
MacLea Lumber Co., The, Baltimore, Md.
Maguire, Charles A., & Associates, Providence, R. I.
Mahoney Sash & Door Co., Canton, Ohio.
Mann & Co., Hutchinson, Kans.
Markland, M. B., Contracting Co., Atlantic City, N. J.
Marsh & Truman Lumber Co., Chicago, Ill.
Marshall Wright Lumber Co., Ionia, Mich.
Martin, Edgar, Chicago, Ill.
Maryland Engineering Co., Pikesville, Md.
Mason, George D., & Co., Detroit, Mich.
McCray Refrigerator Co., Kendallville, Ind.
McGowin-Lyons Hardware & Supply Co., Mobile, Ala.
McGuinn, N. J., Lumber Co., Charlotte, N. C.
McPhillips Manufacturing Co., Inc., Mobile, Ala.
Memphis Sash & Door Co., Memphis, Tenn.
Menacha-Coos Head Plywood Corp., North Bend, Oreg.
Merritt Lumber Yards, Inc., Reading, Pa.
Metropolitan Millwork Co., Brooklyn, N. Y.
Michigan Wholesalers, Inc., Jackson, Mich.
Midland Building Industries, Inc., Indianapolis, Ind.
Mid-West Lumber Co., Mankato, Kans.
Miller & Vrydagh, Terre Haute, Ind.
Mills Industries, Inc., Chicago, Ill.
Milwaukee Plywood Co., Milwaukee, Wis.
Minot Builders Supply Co., Inc., Minot, N. Dak.
Modecraft Co., Inc., Brooklyn, N. Y.
Modern Refrigerator Works, Glendale, Calif.
Monahan Meikle & Johnson, Pawtucket, R. I.
Monsanto Chemical Co., Western Division, Seattle, Wash.
Montgomery, J. B., Co., Pittsburgh, Pa.

Moore & Co., Le Mars, Iowa.
Moore Dry Dock Co., Oakland, Calif.
Moore, L. A., Lumber Co., Mason City, Iowa.
Mooser, William, San Francisco, Calif.
Morrison-Merrill & Co., Salt Lake City, Utah.
Muhlenberg Bros., Reading, Pa.
Nachtegall Manufacturing Co., Grand Rapids, Mich.
National Plywood Co., Inc., New York, N. Y.
National Woodworks, Inc., Birmingham, Ala.
Neal-Blun Co., Savannah, Ga.
New York Wood Working Corp., Flushing, N. Y.
Niagara Plywood Co., Inc., Buffalo, N. Y.
North Pacific Plywood, Inc., Tacoma, Wash.
Northern Plywood & Door Co., Minneapolis, Minn.
Northwest Door Co., Tacoma, Wash.
Nurenburg, W. S., Fort Worth, Tex.
Oakland Public Schools, Oakland, Calif.
Ohio Dealers Wallboard Co., Cleveland, Ohio.
Oklahoma Sash & Door Co., The, Oklahoma City, Okla.
Oregon-Washington Plywood Co., Tacoma, Wash.
Ostlund & Johnson, San Francisco, Calif.
Owens-Parks Lumber Co., Los Angeles, Calif.
Pacific Mutual Door Co., Chicago, Ill.
Pacific Mutual Door Co., Tacoma, Wash.
Pacific Veneer & Plywood Corp., Bellingham, Wash.
Palisades Park Lumber & Supply Co., Palisades Park, N. J.
Parshelsky Bros., Inc., Brooklyn, N. Y.
Patten-Blinn Lumber Co., Los Angeles, Calif.
Pease Woodwork Co., Inc., Cincinnati, Ohio.
Peninsula Plywood Corp., Port Angeles, Wash.
Pepper, George W., Jr., Philadelphia, Pa.
Plywood Distributing Co., Chicago, Ill.
Plywoods-Plastics Corp., Hampton, S. C.
Porete Manufacturing Co., North Arlington, N. J.
Portsmouth Lumber Corp., Portsmouth, Va.
Proctor & Bowie Co., Waterville, Maine.
Puget Sound Plywood, Inc., Tacoma, Wash.
Queensborough Lumber Co., Inc., Bayside, N. Y.
Quigley, J. R., Co., Gloucester City, N. J.
Radford & Sanders, Inc., Baltimore, Md.
Rainier Plywood Co., Tacoma, Wash.
Ramsey, A. H., & Sons, Inc., Miami, Fla.
Ranney Refrigerator Co., Greenville, Mich.
Ream, Goerge E., Co., Los Angeles, Calif.
Reinking, A. C., Lumber Co., North Kansas City, Mo.
Reliable Box & Lumber Co., Port Newark, N. J.
Rhodes, Harry A., Rensselaer, N. Y. (General support.)
Richardson-Phelps Lumber Co., Grinnell, Iowa.
Rinn-Scott Lumber Co., Chicago, Ill.
Ripley-Hopping, Inc., Newark, N. J.
Risser, Art, Lumber & Manufacturing Co., Paris, Ill.
Roddis Plywood Corp., Marshfield, Wis.
Roddis Plywood & Door Co., Inc., Cambridge, Mass.
Rohm & Haas Co., The Resinous Products Division, Philadelphia, Pa.
Rounds & Porter Co., Wichita, Kans.
Rudinger, C. R., Inc., South Kearny, N. J.
Ruggles, Carlos, Lumber Co., Springfield, Mass.
Ruple, C. E., Lumber Sales, Seattle, Wash.
Russell, Crowell, Mullgardt & Schwarz, St. Louis, Mo.
Rust Sash & Door Co., Kansas City, Mo.
St. Paul & Tacoma Lumber Co., Plywood Division, Olympia, Wash.
Schmidt, Garden & Erikson, Chicago, Ill.
Schuette, William, Co., Pittsburgh, Pa.
Scott Lumber Co., The, Wheeling, W. Va.
Scranton Plywood Co., Forty Fort, Pa.
Segelke & Kohlhaus Co., La Crosse, Wis.
Shenk, Henry, Co., Erie, Pa.
Shepard & Morse Lumber Co., New York, N. Y.
Shreiner, E. H., Lumber Co., Pittsburgh, Pa.
Simpson Logging Co., Seattle, Wash.
Sirrine, J. E., Co., Greenville, S. C.
Sleeper, Harold R., New York, N. Y.
Sloan Lumber Co., Fort Worth, Tex.
Snook-Veith Lumber Co., The, Cincinnati, Ohio.
Snyder Chemical Corp., Bethel, Conn.
Sothman Co., The, Grand Island, Nebr.
Southern Oregon Plywoods, Inc., Grants Pass, Oreg.
Southern Pacific Co., San Francisco, Calif.
Southland Building Products Co., Little Rock, Ark.
Southwestern Sash & Door Co., Joplin, Mo.
Spokane Woodworking Co., Spokane, Wash.
Standard Cabinet Works, Inc., Los Angeles, Calif.
Standard Lumber Co., Pine Bluff, Ark.
Standard Lumber Co., Spokane, Wash.
Standard Lumber & Supply Co., Fort Wayne, Ind.
Stanley, F. W., Fort Worth, Tex.
Stanton, E. J., & Son, Inc., Los Angeles, Calif.
Staub & Rather, Houston, Tex.
Steele & Hibbard Lumber Co., St. Louis, Mo.
Stewart, A. P., Lumber Co., Thermopolis, Wyo.
Stiles Lumber & Veneer Co., Inc., Grand Rapids, Mich. (General support.)
Stoetzel, Ralph, Chicago, Ill.
Store Kraft Manufacturing Co., The, Beatrice, Nebr.
Strable Hardwood Co., Oakland, Calif.
Streeter, Daniel D., Brooklyn, N. Y.
Sutliff, Milan R., Co., La Crosse, Wis.
Swan Lake Moulding Co., Klamath Falls, Oreg.
Sweets Catalog Service, New York, N. Y. (General support.)
Sweetwater Sash & Door Co., Sweetwater, Tex.
Synvar Corp., Wilmington, Del.
Syracuse University, Syracuse, N. Y.
Taylor, Ellery Kirke, Haddonfield, N. J.
Taylor, Ellis Wing, Los Angeles, Calif.
Teachout Sash, Door & Glass Co., The, Detroit, Mich.
Texas Technological College, Department of Architecture, Lubbock, Tex. (General support.)
Thompson & Lichtner Co., Inc., The, Brookline, Mass.
Thorne, Henry Calder, Ithaca, N. Y.
Throop-Martin Co., The, Columbus, Ohio.
Timberline, Inc., Kansas City, Mo.
Trojan Cupboard Co., Burbank, Calif.
Tulane Hardwood Lumber Co., Inc., New Orleans, La.
Turgeon Bros., Lewiston, Maine.
Twin City Hardwood Lumber Co., St. Paul, Minn.
Umpqua Plywood Corp., Roseburg, Oreg.
Underwood Coal & Supply Co., Mobile, Ala.
Unity Lumber Co., Inc., Brooklyn, N. Y.
Vancouver Plywood & Vencer Co., Vancouver, Wash.
Vaughan, Geo. C., & Sons, Houston, Tex.
Virginia Polytechnic Institute, Blacksburg, Va. (General support.)
Vogel, Willis A., Toledo, Ohio.
Walton Plywood Co., Everett, Wash.
Wanke Panel Co., Portland, Oreg.
Waples-Painter Co., Gainesville, Tex.
Washington Veneer Co., Olympia, Wash.
Watertown Sash & Door Co., Watertown, S. Dak.
Webster, H. E., Lumber Co., Kansas City, Mo.
Weiler-Wilhelm Lumber Co., Cleveland, Ohio.
Weinel, Aug. F., Lumber Co., Columbia, Ill.
Welch, Carroll E., Huntington, N. Y.
Welch Sash & Door Co., Port Huron, Mich.
West, Albert E., Boston, Mass.
West Coast Plywood Co., Aberdeen, Wash.
Western Door & Sash Co., Oakland, Calif.
Western Hardwood Lumber Co., Los Angeles, Calif.
Western Union Telegraph Co., The, New York, N.Y.
Western Veneer Co., Lebanon, Oreg.
Weston Basket & Barrel Plant, San Francisco, Calif.
Weyerhaeuser Sales Co., The, Tacoma, Wash.
Weyerhaeuser Timber Co., Longview, Wash.
Wheeler, Osgood Co., The, Tacoma, Wash.
Whissel, L. N., Lumber Co., Inc., The, Buffalo, N. Y.
White Bros., San Francisco, Calif., and Oakland, Calif.
Wholesale Building Supply, Inc., Oakland, Calif.
Wiegand Machinery Corp., New York, N. Y. (General support).
Wilbur Lumber Co., West Allis, Wis.
Willatsen, Andrew, Seattle, Wash.
Winner Homes, Division of Winner Manufacturing Co., Inc., Trenton, N. J.
Wisconsin's Transfer Yard, Oshkosh, Wis.
Wood, Edward J., & Son, Clarksburg, W. Va.
Woodcraft Corp., The, Bay City, Mich.

Woodward Lumber Co., Seattle, Wash.
Youngblood Lumber Co., Minneapolis, Minn.
Zeesman Plywood Corp., Los Angeles, Calif.
Zimmerman, A. C., Los Angeles, Calif.

UNITED STATES GOVERNMENT

Army, Department of the, Quartermaster Corps, Washington, D. C.
Boston Naval Shipyard, Public Works Department, Boston, Mass.
General Services Administration, Public Buildings Administration, Washington, D. C.
Housing and Home Finance Agency, Washington, D. C.
Interior, United States Department of the, Bureau of Indian Affairs, Washington, D. C.
Justice, United States Department of, Bureau of Prisons, Washington, D. C.
Naval Sub Base, Public Works Department, New London, Conn.
Puget Sound Naval Shipyard, Public Works Design Section, Bremerton, Wash.
United States Naval Supply Depot, Clearfield, Ogden, Utah.
Veterans' Administration, Washington, D. C.

COMMERCIAL STANDARDS

CS No.

0-40. Commercial standards and their value to business (third edition).
1-42. Clinical thermometers (third edition).
2-30. Mopsticks.
3-40. Stoddard solvent (third edition).
4-29. Staple porcelain (all-clay) plumbing fixtures.
5-46. Pipe nipples; brass, copper, steel and wrought-iron (second edition).
6-31. Wrought-iron pipe nipples (second edition). Superseded by CS5-46.
7-29. Standard weight malleable iron or steel screwed unions.
8-41. Gage blanks (third edition).
9-33. Builders' template hardware (second edition).
10-29. Brass pipe nipples. Superseded by CS5-46.
11-41. Moisture regains of cotton yarns (second edition).
12-48. Fuel oils (sixth edition).
13-44. Dress patterns (fourth edition).
14-43. Boys' button-on waists, shirts, junior and sport shirts (made from woven fabrics) (third edition).
15-46. Men's pajama sizes (made from woven fabrics) (third edition).
16-29. Wall paper.
17-47. Diamond core drill fittings (fourth edition).
18-29. Hickory golf shafts.
19-32. Foundry patterns of wood (second edition).
20-49. Vitreous china plumbing fixtures (fifth edition).
21-39. Interchangeable ground-glass joints, stopcocks, and stoppers (fourth edition).
22-40. Builders' hardware (nontemplate) (second edition).
23-30. Feldspar.
24-43. Screw threads and tap-drill sizes.
25-30. Special screw threads. Superseded by CS24-43.
26-30. Aromatic red cedar closet lining.
27-36. Mirrors (second edition).
28-46. Cotton fabric tents, tarpaulins and covers (second edition).
29-31. Staple seats for water-closet bowls.
30-31. Colors for sanitary ware. (Withdrawn as commercial standard March 15, 1948).
31-38. Wood shingles (fourth edition).
32-31. Cotton cloth for rubber and pyroxylin coating.
33-43. Knit underwear (exclusive of rayon) (second edition).
34-31. Bag, case, and strap leather.
35-49. Hardwood plywood (fourth edition).
36-33. Fourdrinier wire cloth (second edition).
37-31. Steel bone plates and screws.
38-32. Hospital rubber sheeting.
39-37. Wool and part wool blankets (second edition). (Withdrawn as commercial standard, July 14, 1941).
40-32. Surgeons' rubber gloves.
41-32. Surgeons' latex gloves.
42-49 Structural fiber insulating board (fourth edition).
43-32. Grading of sulphonated oils.
44-32. Apple wraps.
45-48. Douglas fir plywood (eighth edition).
46-49. Hosiery lengths and sizes (fourth edition).
47-34. Marking of gold-filled and rolled-gold-plate articles other than watchcases.
48-40. Domestic burners for Pennsylvania anthracite (underfeed type) (second edition).
49-34. Chip board, laminated chip board, and miscellaneous boards for bookbinding purposes.
50-34. Binders board for bookbinding and other purposes.

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51-35. Marking articles made of silver in combination with gold.
52-35. Mohair pile fabrics (100-percent mohair plain velvet, 100-percent mohair plain frieze, and 50-percent mohair plain frieze).
53-35. Colors and finishes for cast stone.
54-35. Mattresses for hospitals.
55-35. Mattresses for institutions.
56-49. Oak flooring (third edition).
57-40. Book cloths, buckrams, and impregnated fabrics for bookbinding purposes except library bindings (second edition).
58-36. Woven elastic fabrics for use in overalls (over-all elastic webbing).
59-44. Textiles—testing and reporting (fourth edition).
60-48. Hardwood dimension lumber (second edition).
61-37. Wood-slat venetian blinds.
62-38. Colors for kitchen accessories.
63-38. Colors for bathroom accessories.
64-37. Walnut veneers.
65-43. Methods of analysis and of reporting fiber composition of textile products (second edition).
66-38. Marking of articles made wholly or in part of platinum.
67-38. Marking articles made of karat gold.
68-38. Liquid hypochlorite disinfectant, deodorant, and germicide.
69-38. Pine oil disinfectant.
70-41. Phenolic disinfectant (emulsifying type) (second edition) (published with CS71-41).
71-41. Phenolic disinfectant (soluble type) (second edition) (published with CS70-41).
72-38. Household insecticide (liquid spray type).
73-48. Old growth Douglas fir, Sitka spruce, and Western hemlock standard stock doors (fourth edition).
74-39. Solid hardwood wall paneling.
75-42. Automatic mechanical draft oil burners designed for domestic installations (second edition).
76-39. Hardwood interior trim and molding.
77-48. Enameled cast-iron plumbing fixtures (second edition).
78-40. Ground-and-polished lenses for sun glasses (second edition) (published with CS79-40).
79-40. Blown, drawn, and dropped lenses for sun glasses (second edition) (published with CS78-40).
80-41. Electric direction signal systems other than semaphore type for commercial and other vehicles subject to special motor vehicle laws (after market).
81-41. Adverse-weather lamps for vehicles (after market).
82-41. Inner-controlled spotlamps for vehicles (after market).
83-41. Clearance, marker, and identification lamps for vehicles (after market).
84-41. Electric tail lamps for vehicles (after market).
85-41. Electric license-plate lamps for vehicles (after market).
86-41. Electric stop lamps for vehicles (after market).
87-41. Red electric warning lanterns.
88-41. Liquid burning flares.
89-40. Hardwood stair treads and risers.
90-49. Power cranes and shovels.
91-41. Factory-fitted Douglas fir entrance doors.
92-41. Cedar, cypress and redwood tank stock lumber.
93-41. Portable electric drills (exclusive of high frequency).
94-41. Calking lead.

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95–41. Lead pipe.
96–41. Lead traps and bends.
97–42. Electric supplementary driving and passing lamps for vehicles (after market).
98–42. Artists' oil paints.
99–42. Gas floor furnaces—gravity circulating type.
100–47. Porcelain-enameled steel utensils (third edition).
101–43. Flue-connected oil-burning space heaters equipped with vaporizing pot-type burners.
102– . (Reserved for Diesel and fuel-oil engines.)
103–48. Rayon jacquard velour (with or without other decorative yarn) (second edition).
104–49. Warm-air furnaces equipped with vaporizing-type oil burners (third edition).
105–48. Mineral wool insulation for low temperatures (second edition).
106–44. Boys' pajama sizes (woven fabrics) (second edition).
107–45. Commercial electric-refrigeration condensing units (second edition). (Withdrawn as commercial standard September 4, 1947.)
108–43. Treading automobile and truck tires.
109–44. Solid-fuel-burning forced-air furnaces.
110–43. Tire repairs—vulcanized (passenger, truck, and bus tires).
111–43. Earthenware (vitreous-glazed) plumbing fixtures.
112–43. Homogeneous fiber wallboard.
113–44. Oil-burning floor furnaces equipped with vaporizing pot-type burners.
114–43. Hospital sheeting for mattress protection.
115–44. Porcelain-enameled tanks for domestic use.
116–44. Bituminized-fibre drain and sewer pipe.
117–49. Mineral wool insulation for heated industrial equipment (second edition).
118–44. Marking of jewelry and novelties of silver.
(E) 119–45 [1]. Dial indicators (for linear measurements).
120–48. Standard stock ponderosa pine doors (third edition).
121–45. Women's slip sizes (woven fabrics).
122–49. Western softwood plywood (second edition).
123–49. Grading of diamond powder (second edition).
(E) 124–45 [1]. Master disks.
125–47. Prefabricated homes (second edition).
126–45. Tank mounted air compressors.
127–45. Self-contained mechanically refrigerated drinking water coolers.
128–49. Men's sport shirt sizes—woven fabrics (other than those marked with regular neckband sizes) (second edition).
129–47. Materials for safety wearing apparel (second edition).

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130–46. Color materials for art education in schools.
131–46. Industrial mineral wool products, all types—testing and reporting.
132–46. Hardware cloth.
133–46. Woven wire netting.
134–46. Cast aluminum cooking utensils (metal composition).
135–46. Men's shirt sizes (exclusive of work shirts).
136–46. Blankets for hospitals (wool, and wool and cotton).
137–46. Size measurements for men's and boys' shorts (woven fabrics).
138–49. Insect wire screening (second edition).
139–47. Work gloves.
140–47. Testing and rating convectors.
141–47. Sine bars, blocks, plates, and fixtures.
142–47. Automotive lifts.
143–47. Standard strength and extra strength perforated clay pipe.
144–47. Formed metal porcelain enameled sanitary ware.
145–47. Testing and rating hand-fired hot water supply boilers.
146–47. Gowns for hospital patients.
147–47. Colors for molded urea plastics.
148–48. Men's circular flat and rib knit rayon underwear.
149–48. Utility type house dress sizes.
150–48. Hot-rolled rail steel bars (produced from Tee-section rails).
151–48. Body measurements for the sizing of apparel for infants, babies, toddlers, and children (for the knit underwear industry).
152–48. Copper naphthenate wood-preservative.
153–48. Body measurements for the sizing of apparel for girls (for the knit underwear industry).
154– . (Reserved for wire rope.)
155–49. Body measurements for the sizing of apparel for boys (for the knit underwear industry).
156–49. Colors for polystyrene plastics.
157–49. Ponderosa pine and sugar pine plywood.
158–49. Model forms for girls' apparel.
159–49. Sun glass lenses made of ground and polished plate glass, thereafter thermally curved.
160–49. Wood-fiber blanket insulation (for building construction).
161–49. "Standard grade" hot-dipped galvanized ware.
162–49. Tufted bedspreads.
163–49. Standard stock ponderosa pine windows, sash and screens.
164– . (Reserved for concrete mixers.)
165–50. Zinc naphthenate wood-preservative (spray, brush, dip application).

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 Commodity Standards Division, 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.

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