

FEB 8 1933

U. S. DEPARTMENT OF COMMERCE

ROY D. CHAPIN, Secretary

BUREAU OF STANDARDS

LYMAN J. BRIGGS, Acting Director

APPLE WRAPS

COMMERCIAL STANDARD CS44-32

[Issued January 11, 1933]

Effective Date for Production, December 1, 1932



A RECORDED STANDARD OF THE INDUSTRY

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1933

PROMULGATION STATEMENT

Pursuant to a request of the principal users of apple wraps a conference of manufacturers and users was held at Seattle, Wash., on May 19, 1932, to consider the development of a quality standard for dry and oiled paper apple wraps. The industry has since accepted and approved for promulgation by the Department of Commerce, through the Bureau of Standards, the standard as shown herein.

This recommendation became effective for production on December 1, 1932.

Promulgation recommended.

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

Promulgated.

LYMAN J. BRIGGS,
Acting Director, Bureau of Standards.

Promulgation approved.

ROY D. CHAPIN,
Secretary of Commerce.

APPLE WRAPS

COMMERCIAL STANDARD CS44-32

PURPOSE

1. The following specification comprises a minimum standard for dry and oiled apple wraps as a basis of quality for the guidance of the producer, distributor, and user. Its general adoption and use will provide a medium by which manufacturers can guarantee the quality of their product and on which the apple packer may depend without resort to expensive laboratory tests.

SCOPE

2. This standard is for dry and oiled paper apple wraps.

DETAIL REQUIREMENTS

3. All commercial standard apple wraps shall meet the following requirements when tested within a period of 10 days after date of delivery and according to the methods hereinafter given:

DRY WRAPS

SIZE

4. The commercial standard sizes are: 9 by 9 inches; 10 by 10 inches; 11 by 11 inches; and 12 by 12 inches. Any variations therefrom shall be a matter of contract between buyer and seller.

5. *Size tolerance*.—A plus or minus tolerance of one-fourth inch on either or both dimensions will be allowed except that the minus tolerance shall not apply to more than 5 per cent of the shipment.

WEIGHT

6. The commercial standard weight shall be 12 pounds per ream of 480 sheets 24 by 36 inches (14½ pounds per ream of 500 sheets 25 by 40 inches). When heavier papers are furnished they may be so designated by the manufacturer in units of 2 pounds.

7. *Weight tolerance*.—A tolerance of plus or minus 5 per cent will be allowed from any designated weight.

BURSTING STRENGTH

8. The minimum average bursting strength shall be 5¾ points with no sample testing less than 5 points.

TENSILE BREAKING STRENGTH

9. The minimum average tensile breaking strength shall be $1\frac{1}{2}$ pounds per half inch of width, with no sample testing less than $1\frac{1}{4}$ pounds.

OILED WRAPS

10. Oiled wraps shall meet all of the foregoing requirements and, in addition, shall be impregnated with a colorless, odorless, and tasteless mineral oil of United States Pharmacopœia standard or a satisfactory technical oil that can be guaranteed not to affect the flavor of the fruit on which the wraps are used. The oil shall be incorporated into the sheet in such manner as to prevent the sheets from sticking together.

11. The oil content, calculated on the basis of the bone dry paper weight shall be: 15 per cent on 14-pound paper; and $17\frac{1}{2}$ per cent on 12-pound paper. (This is equivalent to 2.1 pounds of oil per ream.)

12. *Oil content tolerance.*—A minus tolerance of one-half per cent will be allowed.

PACKING

13. Commercial standard apple wraps shall be furnished in shipping packages of 15,000 sheets of either 3, 4, or 6 tiers. They shall be contained in bundles or cartons of sufficient strength to prevent damage in handling.

14. Oiled wraps shall be further protected to prevent evaporation of the oil by a wrapping of heavy waxed or oiled paper or by a suitable carton.

MARKING

15. It is recommended that the following guaranty be stamped on invoices, or if desired, on packages of apple wraps that comply with the commercial standard:

These Apple Wraps Are Guaranteed
By _____ Co.
To Conform to Industry's Commercial Standard CS44-32
As Issued by the U. S. Department of Commerce.

METHODS OF TEST

TEST SAMPLE

16. The test sample shall be the full-size wrapper. The samples shall be taken from the center of the bundle and kept flat, free from wrinkles and folds, and protected from exposure to liquids, direct sunlight, and other harmful influences by being carefully wrapped in heavy oiled or waxed paper.

METHOD OF SAMPLING

17. Not less than 2 per cent of the total number of packages composing a lot shall be sampled if the lot consists of less than 100 packages. If the lot consists of more than 100 packages, not less than 1 per cent of the total number shall be sampled.

RELATIVE HUMIDITY AND TEMPERATURE

18. The paper sample shall be conditioned and tested in an atmosphere maintained at 65 per cent relative humidity and 21° C. (70° F.) temperature. A tolerance of plus or minus 2 per cent in relative humidity (63 to 67 per cent) and of plus 5° C. (9° F.) in temperature is permissible.

CONDITIONING

19. Each specimen of the paper sample, after preparation for application of the test as specified in the test method, shall be so suspended that the conditioning atmosphere will have free access to all surfaces. Means shall be provided for so circulating the air of the conditioning and testing chamber that its humidity and temperature will be uniformly maintained. The conditioning time shall be sufficient for the moisture content of the specimen to attain equilibrium with the conditioning atmosphere, this to be determined by conditioning to constant weight, weighing at intervals of not less than one-half hour.

WEIGHING

20. The following formula shall be used to ascertain the weight of paper before oiling:

$$\frac{\text{Sheets per ream}}{\text{Number of sheets in sample}} \times \frac{\text{basic size}}{\text{area of sample}} \times \text{weight of sample} = \text{weight per ream}$$

For example 36 sheets, each 10 by 10 inches weighing 1¾ ounces or seven sixty-fourths pound.

$$\frac{480}{36} \times \frac{24 \times 36}{100} \times \frac{7}{64} = \text{weight per ream}$$

$$\frac{480}{36} \times \frac{864}{100} \times \frac{7}{64} = 12.6 \text{ pounds per ream}$$

QUANTITATIVE DETERMINATION OF OIL CONTENT

21. A 5 to 10 g sample of the air-dried paper, weighed to 1 cg, is cut into strips, folded into numerous crosswise folds, and placed in the siphon cup of the extractor. Extract completely with carbon tetrachloride or ether at least five times, or more if necessary. Transfer the extract to a weighed container and dry in an oven at 105° C. The extracted paper is dried in a tared weighing bottle in an oven at the same temperature and both are cooled in desiccators and weighed. The oil content is expressed as percentage, based on the bone-dry weight of the extracted paper.

BURSTING STRENGTH

APPARATUS

22. The testing instrument shall consist of: (1) A circular aperture 31.5 mm (1.24 inches) in diameter in a plane surface, the aperture registering exactly with a similar aperture in a second plane surface. One aperture shall communicate with a hydraulic chamber and the other shall be movable along the axis passing through

the centers of the two apertures. (2) Means of firmly clamping the two plane surfaces together. The clamping pressure and the extent of the contacting plane surfaces shall be such that there shall occur no slipping or creeping during the test of a specimen clamped between the plane surfaces and no injury to the specimen so clamped. (3) A rubber diaphragm firmly secured to the inner side of the aperture in the hydraulic chamber so as to close it off and expand through it when hydraulic pressure is applied. (4) Means of applying hydraulic pressure through a noncompressible fluid to the rubber diaphragm. (5) Means of accurately and continuously registering the pressure maintained in the hydraulic chamber, the Bourdon tube pressure gage being preferred.

SPECIMEN

23. Specimens for test shall be so selected from a sample secured by the official sampling method as to be representative of the sample. They shall be tested in duplicate and the sum of the values divided by 2.

METHOD

24. The specimen shall be firmly clamped in position and pressure applied within the hydraulic chamber at a uniform rate such that the noncompressible fluid shall be displaced against the rubber diaphragm and through the aperture at a rate of 75 ml per minute (this rate is equivalent to turning the handwheel of the ordinary type of bursting strength paper tester at a rate of 120 r. p. m.) until the paper bursts. The gage used must be such that the bursting strength of the paper tested will not be greater than three-fourths of its capacity nor less than one-fourth of its capacity. The gage reading shall be recorded to the nearest 2 per cent of the total reading. At least 10 bursts shall be made, each of a different specimen of the sample and an equal number from each side of the specimen. Bursting strength tests shall be made on specimens conditioned according to the official method for conditioning and in the atmospheric conditions therein specified.

CALIBRATION

25. The gage shall be calibrated at intervals of not more than 30 days. The calibration shall be performed as follows: The gage shall be removed and calibrated in a horizontal position with a dead-weight gage tester of the piston type. A record shall be kept of any deviations from the indicated readings and corresponding corrections made in test results secured with the gage. The gage shall be replaced and the pressure chamber refilled with sufficient glycerin to leave the rubber diaphragm, when placed in position, slightly depressed, taking care to eliminate all air bubbles. The rubber diaphragm shall be renewed at least every 30 days.

TENSILE STRENGTH

APPARATUS

26. The instrument shall consist of (1) two clamps whose centers shall be in the same plane parallel with the direction of motion of

the stressing clamp and so aligned that they will hold the test specimens wholly in one plane; (2) a pendulum so attached to one clamp as to accurately balance the load applied to the test specimen; (3) a device attached to the pendulum to indicate on a graduated scale the breaking load of the test specimen; (4) a scale graduated in weight units (preferably metric) which may be read to an accuracy of not less than 0.2 per cent of the total reading; and (5) a means of moving the stressing clamp at a uniform rate. The machine shall preferably be power driven.

SPECIMENS

27. Specimens for test shall be cut accurately in each principal direction of the paper not less than 12.7 mm (0.5 inch) nor more than 25.4 mm (1 inch) wide, and not less than 140 mm (5.5 inches) in length. The edges of the specimens must be clean cut and parallel to the opposite edges. The specimens must be accurately cut to the predetermined width. They shall be so selected from the sample secured by the official sampling method as to be representative of the sample.

METHOD

28. The ratio of the clearance distance between jaws to the width of the specimen shall be not less than 5.1 nor more than 12.1. The test specimen shall be firmly clamped squarely in the jaws of the clamps and the stressing jaw then operated at a speed of 30.5 cm (12 inches) per minute until the specimen breaks. The breaking load shall be recorded to the nearest 2 per cent of the total indicated reading. The tester shall be of such capacity that the tensile strength of the paper tested will be not greater than 90 per cent, nor less than 10 per cent of the capacity of the tester. Not less than 10 strips cut in each principal direction of the paper shall be tested. All the readings obtained when the paper breaks at or in the jaws shall be rejected. Tensile strength tests shall be made on paper conditioned according to the official method and in the atmospheric conditions therein specified.

CALIBRATION

29. The machine shall be accurately leveled in both of the principal directions. The stressing clamp shall be displaced or removed, and accurate weights corresponding to various divisions of the scale markings shall be suspended from the pendulum-actuating clamp. The weights shall be held at the start and released slowly, so that the pendulum is actuated at a rate similar to that specified above, and other conditions must stimulate the paper-testing conditions as closely as possible. A record shall be made of deviations from the scale readings, and corresponding corrections shall be made in the test results. The machine shall be calibrated at intervals of not more than 30 days.

REPORT

30. The result shall be reported in pounds per one-half inch of width to the nearest 2 per cent of the total reading.

GENERAL CONFERENCE

Pursuant to a request of the principal users of apple wraps a conference of manufacturers and users was held at Seattle, Wash., on May 19, 1932, to consider the development of a quality standard for dry and oiled paper apple wraps.

The following were present:

BAKKE, NOEL, manager, Wenatchee-Okanogan Cooperative Federation.
BARBER, WILLIAM R., research chemist, Crown Willamette Paper Co.
BLALOCK, SHIRL H., district manager, Bureau of Foreign and Domestic Commerce, Seattle office.
BRACKET, R. L., sales manager, Northwest division, Crown Willamette Paper Co.
CONANT, O. K., president and manager, Yakima County Horticultural Union.
CRAWFORD, PHILIP M., assistant manager, Bureau of Foreign and Domestic Commerce, Seattle office.
DICKEY, R. D., district manager, Crown Willamette Paper Co.
DIEHL, H. C., senior physiologist, Bureau of Plant Industry, U. S. Department of Agriculture.
GALLOWAY, A. B., general sales manager, Columbia River Paper Mills.
GRAVES, W. E., Hawley Pulp & Paper Co.
HORSLEY, W. H., secretary, Washington Boxed Apple Bureau.
MILLER, HARRY L., manager, Skookum Packers Association (also Skookum Fruit Growers Supply Co.).
PAINE, F. C., manager, Cashmere Fruit Growers Union.
PHELPS, M. W., chief chemist, Crown Willamette Paper Co.
RAMEY, C. F., chief chemist, Richmond refinery, Standard Oil Co. of California.
REID, RALPH, chemist, St. Helens Pulp & Paper Co.
SCHADT, R. J., chemical engineer, Hawley Pulp & Paper Co.
STATHAM, FRED G., district manager, Hawley Pulp & Paper Co.
STEIDLE, HARRY H., division of trade standards, Bureau of Standards.
TEREN, NILS G., manager, Columbia River Paper Mills.

The conference was opened by Noel Bakke, of the Wenatchee-Okanogan Cooperative Federation, who told of the difficulties encountered and the losses sustained by apple packers through apple scald. This condition, a serious physiological disease, is exhibited by a brown discoloration of the skin and occurs in storage but may be prevented to a large measure by the proper type of oiled paper wrapper which the conference later defined.

Harry H. Steidle, of the Bureau of Standards, outlined the cooperative services of the division of trade standards in assisting industry to develop and promulgate their quality standards on a national basis. Opinion of the group was solicited regarding their desire to establish a quality standard for apple wraps, and those present indicated that it would be a great help to both producers and users of the product.

The commercial standard specification follows the recommendations made by the Bureau of Plant Industry of the Department of Agriculture, and D. F. Fisher, of that bureau, in writing about the enterprise said:

Standard specifications are unquestionably badly needed not only for the protection of the fruit industry, but also for the guidance of paper manufacturers. * * * I would like to indorse as strongly as possible the establishment of adequate specifications for fruit wraps.

The conference unanimously voted to approve for recommendation to the entire industry the commercial standard specification for apple wraps as corrected.

STANDING COMMITTEE

A representative standing committee of the industry was appointed to receive comments and make recommendations for revision of the standard to keep it in line with current developments.

No definite interval was fixed for revision of the standard but the committee may convene at the call of the chairman when revision appears necessary.

The standing committee approved by the conference consists of the following:

NOEL BAKKE, chairman, Wenatchee-Okanogan Cooperative Federation.
HARRY L. MILLER, Skookum Packers Association, Wenatchee, Wash.
A. G. LEWIS, Apple Growers Association, Hood River, Oreg.
MARTIN STONE, Sellers & Stone, Yakima, Wash.
O. K. CONANT, Yakima County Horticultural Union, Yakima, Wash.
R. J. SCHATZ, Hawley Pulp & Paper Co., Oregon City, Oreg.
M. W. PHELPS, Crown Willamette Paper Co., Camas, Wash., WILLIAM R. BARBER, Crown Willamette Paper Co., Camas, Wash. (alternate).
RALPH REID, St. Helens Pulp & Paper Co., St. Helens, Oreg.
NILS G. TEREN, Columbia River Paper Mills, Portland, Oreg.
ERIK FERNSTROM, California Fruit Wrapping Mills, Pomona, Calif.
FRED C. STRYPE, New York, N. Y.
D. F. FISHER, Bureau of Plant Industry, U. S. Department of Agriculture, Washington, D. C.
HARRY H. STEIDLE, ex officio secretary, Bureau of Standards, Department of Commerce, Washington, D. C.

EFFECTIVE DATE

The effective date for production and sale of apple wraps under the commercial standard was set at December 1, 1932.

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 CS44-32 as our standard of practice in the production,¹ distribution,¹ use,¹ of apple wraps.

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-----

¹ 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 standard 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 indorsed 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

ASSOCIATIONS

Apple Growers Association, Hood River, Oreg.
 Skookum Packers Association, Wenatchee, Wash.
 Wenatchee District Cooperative Association, Wenatchee, Wash.
 Wenatchee-Okanogan Federation, Wenatchee, Wash.
 Yakima Fruit Growers Association, Yakima, Wash.

FIRMS

Big 7 Fruit Warehouses (Inc.), Yakima, Wash.
 Bolinger Orchards, The, Methow, Wash.
 Cain & Johnson (Inc.), Wenatchee, Wash.
 California Fruit Wrapping Mills (Inc.), Pomona, Calif. (in principle).
 Cleveland, Ira, Yakima, Wash.
 Columbia River Paper Mills, Portland, Oreg.
 Crown Willamette Paper Co., Camas, Wash.
 Crown Willamette Paper Co., San Francisco, Calif.

GOVERNMENT

Dells Paper & Pulp Co., Eau Claire, Wis.
 Gwin, White & Prince (Inc.), Wenatchee, Wash.
 Hawley Pulp & Paper Co., Oregon City, Oreg.
 Newbry & Sons, Talent, Oreg.
 Pacific Fruit & Produce Co., Wenatchee, Wash.
 Pinnacle Packing Co., Medford, Oreg.
 Prentice Packing & Storage Co., Yakima, Wash.
 Pyramid Orchards, Yakima, Wash.
 Rainier Fruit Co., Yakima, Wash.
 St. Helens Pulp & Paper Co., St. Helens, Oreg.
 Schaefer Co., C. F., Yakima, Wash.
 Smith Fruit Co., C. C., Yakima, Wash.
 Strype, Fred C., New York, N. Y.
 Union Waxed & Tissue Paper Co., New York, N. Y.
 United Paper Co., Tampa, Fla.
 Wells & Wade Fruit Co., Wenatchee, Wash.
 Yakima County Horticultural Union, Yakima, Wash.
 District of Columbia, Government of the, Washington, D. C.
 War Department, Washington, D. C.

COMMERCIAL STANDARDS

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

NOTICE.—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.