

of a precision grade, standardization temperature 60 °/60 °F., and provided in the following ranges and subdivisions:

Range	Subdivision
1.0000 to 1.0500 .....	0.0005
1.0500 to 1.1000 .....	0.0005
1.1000 to 1.1500 .....	0.0005
1.1500 to 1.2000 .....	0.0005
1.2000 to 1.2500 .....	0.0005

No instrument shall be in error by more than 0.0005 specific gravity.

(b) A certificate of accuracy prepared by the instrument manufacturer for the instrument shall be furnished to the appropriate TTB officer.

(c) *Incorporation by reference.* The “Standard Specification for ASTM Hydrometers,” (E 100-72 (1978)), published in the “1980 Annual Book of ASTM Standards” (STP 25 1062 (1980)), is incorporated by reference in this part. This incorporation by reference was approved by the Director of the Federal Register on March 23, 1981. This publication may be inspected at the National Archives and Records Administration (NARA), and is available from the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103. For information on the availability of this material at NARA, call 202-741-6030, or go to: [http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html).

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended (26 U.S.C. 5204); 80 Stat. 383, as amended (5 U.S.C. 552(a)))

[T.D. ATF-198, 50 FR 8535, Mar. 1, 1985, as amended by T.D. ATF-381, 61 FR 37004, July 16, 1996; 69 FR 18803, Apr. 9, 2004]

**§ 30.25 Use of precision specific gravity hydrometers.**

The provisions of § 30.23 respecting the care, handling, and use of precision instruments shall be followed with respect to the care, handling, and use of precision grade specific gravity hydrometers. Specific gravity hydrometers shall be read to the nearest subdivision. Because of temperature density relationships and the selection of the standardization temperature of 60 °/60 °F., the specific gravity readings will be greater at temperatures below 60 de-

grees Fahrenheit and less at temperatures above 60 degrees Fahrenheit. Hence, correction of the specific gravity readings will be made for temperature other than 60 degrees Fahrenheit. Such correction may be ascertained by dividing the specific gravity hydrometer reading by the applicable correction factor in Table 7.

*Example:* The specific gravity hydrometer reading is 1.1525, the thermometer reading is 68 degrees Fahrenheit, and the true proof of the spirits is 115 degrees. The correct specific gravity reading will be ascertained as follows:

(a) From Table 7, the correction factor for 115° proof at 68 °F. is 0.996.

(b) 1.1525 divided by 0.996=1.1571, the corrected specific gravity.

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended (26 U.S.C. 5204))

**Subpart D—Gauging Procedures**

**§ 30.31 Determination of proof.**

(a) *General.* The proof of spirits shall be determined to the nearest tenth degree which shall be the proof used in determining the proof gallons.

(b) *Solids content not more than 600 milligrams.* Except as otherwise authorized by the appropriate TTB officer, the proof of spirits containing not more than 600 milligrams of solids per 100 milliliters of spirits shall be determined by the use of a hydrometer and thermometer in accordance with the provisions of § 30.23 except that if such spirits contain solids in excess of 400 milligrams but not in excess of 600 milligrams per 100 milliliters at gauge proof, there shall be added to the proof so determined the obscuration determined as prescribed in § 30.32.

(c) *Solids content over 600 milligrams.* If such spirits contain solids in excess of 600 milligrams per 100 milliliters at gauge proof, the proof shall be determined on the basis of true proof determined as follows:

(1) By the use of a hydrometer and a thermometer after the spirits have been distilled in a small laboratory still and restored to the original volume and temperature by the addition of pure water to the distillate; or

(2) By a recognized laboratory method which is equal or superior in accuracy to the distillation method.

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(d) *Initial proof.* Except when the proof of spirits is used in making the gauge prescribed in 27 CFR 19.383 or in making a gauge for determination of tax, the initial determination of proof made on the bonded premises of a distilled spirits plant for such spirits may be used whenever a subsequent gauge is required to be made at that same plant provided that no material has been added to change the proof of the spirits.

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended, 1362, as amended (26 U.S.C. 5204, 5211))

[T.D. ATF-198, 50 FR 8535, Mar. 1, 1985]

EFFECTIVE DATE NOTE: By T.D. TTB-92, 76 FR 9171, Feb. 16, 2011, §30.31, paragraph (d) was amended by removing the reference to “§19.383” and adding, in its place, a reference to “§19.353 of this chapter”, effective April 18, 2011.

#### § 30.32 Determination of proof obscuration.

(a) *General.* Proof obscuration of spirits containing more than 400 but not more than 600 milligrams of solids per 100 milliliters shall be determined by one of the following methods. The evaporation method may be used only for spirits in the range of 80–100 degrees at gauge proof.

(b) *Evaporation method.* Evaporate the water and alcohol from a carefully measured 25 milliliter sample of spirits, dry the residue at 100 degrees centigrade for 30 minutes and then weigh the residue precisely. Multiply the weight of the residue by 4 to determine the weight of solids in 100 milliliters. The resulting weight per 100 milliliters multiplied by 4 will give the obscuration. Experience has shown that 0.1 gram (100 milligrams) of solids per 100 milliliters of spirits in the range of 80–100 degrees proof will obscure the true proof by 0.4 of one degree of proof. For example, if the weight of solids remaining after evaporation of 25 milliliters 0.125 gram, the amount of solids present in 100 milliliters of the spirits is 0.50 gram (4 times 0.125). The obscuration is 4 times 0.50, which is two degrees of proof. This value added to the temperature corrected hydrometer reading will give the true proof.

(c) *Distillation method.* Determine the apparent proof and temperature of the

sample of spirits and then distill a carefully measured sample in a small laboratory still, and collect a quantity of the distillate, 1 or 2 milliliters less than the original sample. The distillate is adjusted to the original temperature and restored to the original volume by addition of distilled water. The proof of the restored distillate is then determined by use of a precision hydrometer and thermometer in accordance with the provisions of §30.23 to the nearest 0.1 degree of proof. The difference between the proof so determined and the apparent proof of the undistilled sample is the obscuration; or

(d) *Pycnometer method.* Determine the specific gravity of the undistilled sample, distill and restore the samples as provided in paragraph (c) of this section and determine the specific gravity of the restored distillate by means of a pycnometer. The specific gravities so obtained will be converted to degrees of proof by interpolation of Table 6 to the nearest 0.1 degree of proof. The difference in proof so obtained is the obscuration.

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended (26 U.S.C. 5204))

[T.D. ATF-198, 50 FR 8535, Mar. 1, 1985, as amended by T.D. ATF-381, 61 FR 37004, July 16, 1996; T.D. TTB-91, 76 FR 5479, Feb. 1, 2011]

#### DETERMINATION OF QUANTITY

#### § 30.36 General requirements.

The quantity determination of distilled spirits that are withdrawn from bond in bulk upon tax determination or payment shall be by weight. The quantity of other distilled spirits or denatured spirits may be determined by weight or by volume. When the quantity of distilled spirits or denatured distilled spirits is determined by volume, such determination may be by meter as provided in 27 CFR Part 19, or when approved by the appropriate TTB officer, another method or device.

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended (26 U.S.C. 5204))

[T.D. ATF-198, 50 FR 8535, Mar. 1, 1985]

DETERMINATION OF QUANTITY BY  
WEIGHT**§ 30.41 Bulk spirits.**

When spirits (including denatured spirits) are to be gauged by weight in bulk quantities, the weight shall be determined by means of weighing tanks, mounted on accurate scales. Before each use, the scales shall be balanced at zero load; thereupon the spirits shall be run into the weighing tank and proofed as prescribed in §30.31. However, if the spirits are to be reduced in proof, the spirits shall be so reduced before final determination of the proof. The scales shall then be brought to a balanced condition and the weight of the spirits determined by reading the beam to the nearest graduation mark. From the weight and the proof thus ascertained, the quantity of the spirits in proof gallons shall be determined by reference to Table 4. However, in the case of spirits which contain solids in excess of 600 milligrams per 100 milliliters, the quantity in proof gallons shall be determined by first ascertaining the wine gallons per pound of the spirits and multiplying the wine gallons per pound by the weight, in pounds, of the spirits being gauged and by the true proof (determined as prescribed in §30.31) and dividing the result by 100. The wine gallons per pound of spirits containing solids in excess of 600 milligrams per 100 milliliters shall be ascertained by:

(a) Use of a precision hydrometer and thermometer, in accordance with the provisions of §30.23, to determine the apparent proof of the spirits (if specific gravity at the temperature of the spirits is not more than 1.0) and reference to Table 4 for the wine gallons per pound, or

(b) Use of a specific gravity hydrometer, in accordance with the provisions of §30.25, to determine the specific gravity of the spirits (if the specific gravity at the temperature of the spirits is more than 1.0) and dividing that specific gravity (corrected to 60 degrees Fahrenheit) into the factor 0.120074 (the wine gallons per pound for water at 60 degrees Fahrenheit). When withdrawing a portion of the contents of a weighing tank, the difference between the quantity (ascertained by proofing

and weighing) in the tank immediately before the removal of the spirits and the quantity (ascertained by proofing and weighing) in the tank immediately after the removal of the spirits shall be the quantity considered to be withdrawn.

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended (26 U.S.C. 5204))

**§ 30.42 Denatured spirits.**

The quantity, in gallons, of any lot or package of specially denatured spirits may be determined by weighing it and then dividing its weight by the weight per gallon of the formula concerned, as given in the appropriate tables in subpart H of 27 CFR Part 21. In the case of completely denatured spirits, the gallonage of any lot or package may be ascertained by determining its weight and apparent proof (hydrometer indication, corrected to 60 degrees Fahrenheit) and then multiplying the weight of the wine gallons per pound factor shown in Table 4 for the (apparent) proof.

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended (26 U.S.C. 5204))

**§ 30.43 Packaged spirits.**

When the quantity of spirits (including denatured spirits when gauged by weight) in packages, such as barrels, drums, and similar portable containers, is to be determined by gauge of the individual packages, such quantity shall, except as provided in paragraph (b) of this section, be determined by weighing each package on an accurate weighing beam or platform scale having a beam or dial showing weight in pounds and half pounds, where packages having a capacity in excess of 10 wine gallons are to be gauged, or in pounds and ounces, or pounds and hundredths of a pound, where packages designed to hold 10 wine gallons or less are to be gauged. In either case the tare must be determined and subtracted from the gross weight to obtain the net weight. From the proof and weight ascertained, the quantity of the spirits in proof gallons shall be determined by reference to Table 2, 3, or 4. However, if the spirits contain solids in excess of 600 milligrams per 100 milliliters, the proof gallons shall be determined as prescribed

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for such spirits in § 30.41. Notwithstanding the provisions of this section or of § 30.44, (a) gross weights and tares of packages being filled need not be taken in any case where the gauge of the spirits is not derived from such weights under the gauging procedure being utilized, and (b) meters, other devices, or other methods may be used for determining the quantity of spirits in individual packages, when such meter is used as provided in 27 CFR Part 19, or, when such other device or method has been approved by the appropriate TTB officer.

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended, 1362, as amended (26 U.S.C. 5204, 5211))

[T.D. ATF-198, 50 FR 8535, Mar. 1, 1985, as amended by T.D. ATF-381, 61 FR 37004, July 16, 1996]

§ 30.44 Weighing containers.

(a) *Weighing containers of more than 10 wine gallons.* The weight of containers having a capacity in excess of 10 wine gallons shall be determined and recorded in pounds and half pounds.

(b) *Weighing containers of 10 wine gallons or less.* The weight for containers of a capacity of 10 wine gallons or less shall be determined in pounds and ounces, or pounds and hundredths of a pound, and shall be recorded in pounds and hundredths of a pound. The equivalent pounds and hundredths of pounds and the corresponding wine gallons and proof gallons shall be expressed as shown in the following table for the respective weights in pounds and ounces and proofs shown therein or, as applicable, computed in accordance with rules in this section.

WEIGHT OF CONTENTS

Size of container, wine gallons	Pounds	Ozs.	Weight in pounds and hundredths of a pound	Contents in wine gallons	Proof gallons
190 proof spirits:					
1 .....	6	13	6.81	1	1.9
2 .....	13	10	13.63	2	3.8
5 .....	34	00	34.00	5	9.5
10 .....	68	00	68.00	10	19.0
192 proof spirits:					
1 .....	6	13	6.81	1	1.9
2 .....	13	9	13.56	2	3.8
5 .....	33	13	33.81	5	9.6

WEIGHT OF CONTENTS—Continued

Size of container, wine gallons	Pounds	Ozs.	Weight in pounds and hundredths of a pound	Contents in wine gallons	Proof gallons
10 .....	67	10	67.63	10	19.2
200 proof spirits:					
1 .....	6	10	6.63	1	2.0
2 .....	13	4	13.25	2	4.0
5 .....	33	1	33.06	5	10.0
10 .....	66	2	66.12	10	20.0

(c) *Containers of other proofs or sizes.*

Where containers of proofs or sizes not shown above are to be filled, the following rule may be used for ascertaining the weight of the spirits to be placed in the container: Divide the number of gallons representing the quantity of spirits to be placed in the container by the fractional part of a gallon equivalent to 1 pound, to obtain the weight of the spirits in pounds and fractions of a pound to two decimal places. Reduce the decimal fraction of a pound to ounces by multiplying by 16, calling any fraction of an ounce a whole ounce. The pounds and ounces thus obtained will determine the point to which the spirits must be weighed to produce the results desired. If the weight must be marked on the container in pounds and decimal fractions of a pound, it will be necessary to convert the ounces to hundredths of a pound. The fraction of a gallon equivalent to 1 pound at any given proof shall be ascertained by reference to Table 4. However, if the spirits contain solids in excess of 600 milligrams per 100 milliliters, the fraction of a gallon equivalent to 1 pound shall be determined as prescribed for such spirits in § 30.41.

*Example.* It is desired to fill a 1-gallon can with precisely 1 wine gallon of 194 proof spirits:

1.00 divided by 0.14866=6.73 pounds.  
 0.73 multiplied by 16=11.68 ounces, rounded to 12 ounces.  
 Weight of spirits—6 pounds, 12 ounces.  
 Weight, if required, to be marked on can—6.75 pounds.

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended, 1362, as amended (26 U.S.C. 5204, 5211))

**§ 30.45 Withdrawal gauge for packages.**

When wooden packages are to be individually gauged for withdrawal, actual tare of the packages shall be determined. The actual tare of a package shall be determined by weighing it after its contents (including rinse water, if any) have been temporarily removed to a separate container or vessel. Where the contents of packages have been temporarily removed for determination of tare, the proof, if any rinse water is added to the spirits, shall be determined after a thorough mixing of the rinse water and the spirits and before return of the spirits to the rinsed packages, and the gross weight shall be determined after the spirits and any added rinse water have been returned to the packages. In the case of metal packages the tare established at the time of filling may be used unless it appears to be incorrect. From the proofs and the net weights of the packages, the wine gallons (if desired) and the proof gallons of spirits shall be determined by the use of Table 2. However, if the spirits contain solids in excess of 600 milligrams per 100 milliliters, the wine gallon and proof gallon contents shall be determined as prescribed for such spirits in § 30.41. If either the weight or the proof is beyond the limitations of table 2, either table 3 or table 4 may be used.

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended (26 U.S.C. 5204))

DETERMINATION OF QUANTITY BY  
VOLUME

**§ 30.51 Procedures for measurement of bulk spirits.**

Where the quantity of spirits (including denatured spirits) in bulk is to be determined by volume as authorized by this chapter, the measurement shall be made in tanks, by meters as provided in 27 CFR part 19, or by other devices or methods authorized by the appropriate TTB officer, or as otherwise provided in this chapter, or such measurement may be made in tank cars or tank trucks if calibration charts for such conveyances are provided and such charts have been accurately prepared, and certified as accurate, by engineers or other persons qualified to

calibrate such conveyances. Volumetric measurements in tanks shall be made only in accurately calibrated tanks equipped with suitable measuring devices, whereby the actual contents can be correctly ascertained. If the temperature of spirits (including denatured spirits) is other than the standard of 60 degrees Fahrenheit, gallonage determined by volumetric measurements shall be corrected to the standard temperature by means of table 7. In the case of denatured spirits, the temperature-correction factor for the proof of the spirits used in denaturation will give sufficiently accurate results, except that the temperature-correction factor used for specially denatured spirits, Formula No. 18, should be that given in table 7 for 100 proof spirits. When the quantity of spirits, in wine gallons, has been determined by volumetric measurement, the number of proof gallons shall be obtained by multiplying the wine gallons by the proof of the spirits as determined under § 30.31.

*Example.* Gauge glass reading inches—88.  
Wine gallons per inch—48.96.  
Temperature °F—72.  
Proof of spirits—86.8.  
Temperature correction factor (Table 7)—0.995.  
48.96 W.G.×88=4308.48 wine gallons.  
4308.48 W.G.×0.995=4286.94 wine gallons.  
4286.94 W.G.×0.868=3721.06392=3721.1 proof gallons.

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended (26 U.S.C. 5204))

[T.D. ATF-198, 50 FR 8535, Mar. 1, 1985, as amended by T.D. ATF-381, 61 FR 37004, July 16, 1996]

**§ 30.52 Procedure for measurement of cased spirits.**

Where the quantity of spirits in a case is to be determined by volume, such determination shall be made by ascertaining the contents of one bottle in the case and multiplying that figure by the number of bottles in the case. For cases containing bottles filled according to the metric system of measure, the quantity determined shall be converted to wine gallons, as provided in § 19.722 of this chapter. The wine gallons of spirits thus determined for one case may then be multiplied by the number of cases containing spirits at the same proof when determining the

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quantity of spirits for more than one case. The proof gallons of spirits in cases shall be determined by multiplying the wine gallons by the proof (divided by 100).

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended (26 U.S.C. 5204))

EFFECTIVE DATE NOTE: By T.D. TTB-92, 76 FR 9171, Feb. 16, 2011, § 30.52 was amended by removing the reference to “§19.722” and adding, in its place, a reference to “§19.582”, effective April 18, 2011.

**Subpart E—Prescribed Tables**

NOTE. The tables referred to in this subpart appear in their entirety in the “Gauging Manual Embracing Instructions and Tables for Determining Quantity of Distilled Spirits by Proof and Weight” which is incorporated by reference in this part (see § 30.1).

**§ 30.61 Table 1, showing the true percent of proof spirit for any indication of the hydrometer at temperatures between zero and 100 degrees Fahrenheit.**

This table shows the true percent of proof of distilled spirits for indications of the hydrometer likely to occur in practice at temperatures between zero and 100 degrees Fahrenheit and shall be used in determining the proof of spirits. The left-hand column contains the reading of the hydrometer and on the same horizontal line, in the body of the table, in the “Temperature” column corresponding to the reading of the thermometer is the corrected reading or “true percent of proof.” The table is computed for tenths of a percent.

*Example.*

Temperature, °F .....	75
Hydrometer reading .....	193
True percent of proof .....	189.5

Where fractional readings are ascertained, the proper interpolations will be made (see § 30.23). If the distilled spirits contain dissolved solids, temperature-correction of the hydrometer reading by the use of this table would result in apparent proof rather than true proof.

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended (26 U.S.C. 5204))

**§ 30.62 Table 2, showing wine gallons and proof gallons by weight.**

The wine and proof gallon content by weight and proof of packages of distilled spirits usually found in actual

practice will be ascertained from this table. The left-hand column contains the weights. The true percent of proof is shown on the heading of each page in a range from 90 degrees to 200 degrees. Under the true percent of proof and on the same horizontal line with the weight will be found the wine gallons (at 60 degrees Fahrenheit) and the proof gallons respectively. Where either the weight or the proof of a quantity of spirits is beyond the limitations of this table, the number of proof gallons may be ascertained by reference to Table 3. This table may also be used to ascertain the wine gallons (at 60 degrees Fahrenheit) and proof gallons of spirituous liquor containing dissolved solids where the weight, apparent proof (hydrometer indication corrected to 60 degrees Fahrenheit), and obscuration factor have been determined.

*Example.* 334 lbs. of distilled spirits.

Apparent proof—96.0°.

Obscuration—0.8°.

True Proof 96.0°+0.8°=96.8°.

334 lbs. at 96.0° apparent proof=42.8 wine gallons.

42.8 wine gallons×96.8°=41.4 proof gallons.

In addition this table may be used to obtain the wine gallons, at the prevailing temperature, of most liquids within the range of the table, from the weight of the liquid and the uncorrected reading of the hydrometer stem. An application of this would be in determining the capacity of a package.

*Example.* It is desired to determine, or to check the rated capacity of a package having a net weight of 395 pounds when completely filled with spirits having an uncorrected hydrometer reading of 113.0°. The full capacity of the package, 51.5 wine gallons, would be found by referring to the table at 395 pounds and 113° proof (hydrometer reading).

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended, 1362, as amended (26 U.S.C. 5204, 5211))

**§ 30.63 Table 3, for determining the number of proof gallons from the weight and proof of spirituous liquor.**

When the weight or proof of a quantity of distilled spirits is not found in Table 2, the proof gallons may be ascertained from Table 3. The wine gallons (at 60 degrees Fahrenheit) may be ascertained by dividing the proof gallons by the proof.