

Withdrawn NIST Technical Series Publication

Warning Notice

The attached publication has been withdrawn (archived), and is provided solely for historical purposes. It may have been superseded by another publication (indicated below).

Withdrawn Publication

| | |
|----------------------------|----------------------------------|
| Series/Number | NBS Special Publication (SP) 430 |
| Title | Household Weights and Measures |
| Publication Date(s) | March 1978 |
| Withdrawal Date | May 15, 2004 |
| Withdrawal Note | Superceded by 2004 Edition |

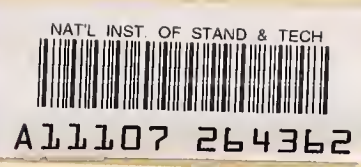
Superseding Publication(s) *(if applicable)*

The attached publication has been **superseded** by the following publication(s):

| | |
|----------------------------|-------------------------------------------------------------------------------------------------|
| Series/Number | NIST Special Publication (SP) 430 |
| Title | Household Weights and Measures |
| Author(s) | Kenneth S. Butcher |
| Publication Date(s) | May 15, 2004 |
| URL/DOI | https://doi.org/10.6028/NIST.SP.430e2004 |

Additional Information *(if applicable)*

| | |
|----------------------------------------------------|--------------------------------------------------|
| Contact | Elizabeth Benham, Office of Weights and Measures |
| Latest revision of the attached publication | |
| Related Information | |
| Withdrawal Announcement Link | |



NBS
RESEARCH
INFORMATION
CENTER
QC100
.057
#430
1978

Household Weights And Measures

The purpose of this card is to present in convenient form the weights and measures tables most useful for household purposes, together with associated weights and measures information of general household interest. It also introduces basic metric information for consumer use.

Advice to the Consumer

- Buy solid commodities by weight, rather than by count, whenever possible.
- Learn the unit price (price per pound, per quart, etc.) of what you buy.
- Learn to read scale and meter indications, and observe the weighing and measuring of your purchases.
- On unit priced items, check your purchases to make sure that you are paying the correct price for the quantity received.
- Mere package size may be deceptive. Read and compare labeled quantities in relation to price.
- Demand accurate weight and measure in your purchases just as you demand accurate change from the cashier.
- Some stores provide scales on which you can check the weights of your purchases. Use them!
- Become acquainted with your local or State weights and measures official, and consult him if in doubt on any weights and measures matters.
- Report suspected inaccuracies or violations of the weights and measures laws and regulations to your weights and measures official.



Equivalents of the Common Capacity Units Used In the Kitchen

| Units | Tea- spoon- fuls | Table- spoon- fuls | Fluid ounces | Cup- fuls | Liquid pints | Liquid quarts | Milli- liters | Liters | Units |
|------------------------|------------------------|--------------------------|-----------------|--------------|-----------------|------------------|------------------|--------|------------------------|
| 1 teaspoonful equals | 1 | 1/3 | 1/6 | * | * | * | 5 | * | Equals 1 teaspoonful |
| 1 tablespoonful equals | 3 | 1 | 1/2 | 1/16 | 1/32 | * | 15 | * | Equals 1 tablespoonful |
| 1 fluid ounce equals | 6 | 2 | 1 | 1/8 | 1/16 | 1/32 | 30 | * | Equals 1 fluid ounce |
| 1 cupful equals | 48 | 16 | 8 | 1 | 1/2 | 1/4 | 240** | 0.24** | Equals 1 cupful |
| 1 liquid pint equals | * | * | 16 | 2 | 1 | 1/2 | 470** | 0.47** | Equals 1 liquid pint |
| 1 liquid quart equals | * | * | 32 | 4 | 2 | 1 | 950** | 0.95** | Equals 1 liquid quart |
| 1 milliliter equals | 1/5 | * | * | * | * | * | 1 | 1/1000 | Equals 1 milliliter |
| 1 liter equals | * | * | 34 | 4.2 | 2.1 | 1.06 | 1000 | 1 | Equals 1 liter |

* Equivalent not commonly used. ** Approximate.

Approximate Weights of Some Commodities in Avoirdupois Ounces Per Cup

| | | | | | |
|------------------------------------------|-------|----------------------------|-------|-------------------------------------------|-------|
| Beans (dry) | 6 1/2 | Flour (cake, sifted) | 3 1/2 | Raisins (seedless) | 5 |
| Butter, margarine, cooking oils | 8 | Milk (whole, fluid) | 8 1/2 | Rice | 7 |
| Citrus fruit juice (fresh) | 8 1/2 | Milk (dry) | 4 1/2 | Shortening (vegetable) | 7 |
| Cornflakes | 1 | Nutmeats (pecan) | 4 | Sugar (brown, moist, firmly packed) | 7 1/2 |
| Corn meal | 5 | Oatmeal | 3 | Sugar (granulated) | 7 |
| Eggs (whole) | 8 1/2 | Pancake mix | 5 | Water | 8 1/3 |
| Flour (wheat, all-purpose, sifted) | 4 | Prunes (dried) | 5 1/2 | | |

Metric System

The metric system is simple to learn. For use in your everyday life you will need to learn about ten new units. You will also need to get used to a few new temperatures. There are even some metric units with which you are already familiar: the meter for length, the gram for weight, and the liter for capacity. The units for time and electricity are the same as you use now.

The basic units of the metric system are the meter, which is a unit of length, the gram, which is a unit of weight, and the liter, which is a unit of capacity or volume.

Other units in the metric system are the decimal subdivisions and multiples of the basic units, named by combining proper prefix with the name of the basic unit to form defining terms. The prefixes commonly used are "milli-,"

meaning the one-thousandth part; "centi-," meaning the one-hundredth part; and "kilo-," meaning one thousand times. For example, "milliliter" means the one-thousand part of a liter, "centimeter" means the one-hundredth part of a meter, and "kilogram" means 1000 grams.

This feature makes the metric system a "decimal" system—like our monetary and numeration systems—and thus a much easier system to learn and use. You can even make comparisons with our monetary system that will help you to remember the metric prefixes. There are 10 mills in a cent, 10 millimeters in a centimeter. There are 100 cents in a dollar, 100 centimeters in a meter.

C
00
57
0. 430
978

The Metric System in the Kitchen

Although there may be concern about the effect of metric on cooking, you really will have little to worry about provided we change to metric in a sensible way.

There will be no need for much change in our recipes if the new metric recipes remain volumetric and if, as anticipated, the measuring utensils retain approximately the same ratio as the customary cup (237 mL), teaspoon (4.9 mL), and tablespoon (14.8 mL). This is easily achieved by adopting a "metric cup" of 250 mL ($\frac{1}{4}$ of a liter); a "metric teaspoon" of 5 mL and a "metric tablespoon" of 15 mL. Of course, amounts such as "a pinch" and "2 eggs" will remain the

same, although weights such as the amount of meat will be expressed in kilograms (1 kg equals 2.2 pounds).

Under this type of changeover to metric in recipes, either customary or metric measuring utensils can be used for any recipe with the same results being obtained, except for slight variations in quantity, as long as the same system is used for the entire recipe. For example, a "customary" recipe made by using a "metric cup" would yield only about 5 percent more quantity. And your favorite cookbooks will continue to be useful forever!

Everyday Metric Units

BASIC UNITS

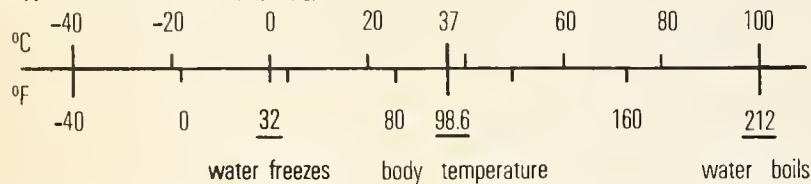
METER: a little longer than a yard (about 1.1 yards)

LITER: a little larger than a quart (about 1.06 quarts)

GRAM: about the weight of a dollar bill

TEMPERATURE

degrees Celsius are used



OTHER COMMONLY USED UNITS

millimeter: 0.001 meter diameter of paper clip wire
 centimeter: 0.01 meter a little more than the width of a paper clip (about 0.4 inch)
 kilometer: 1000 meters somewhat further than $\frac{1}{2}$ mile (about 0.6 mile)
 kilogram: 1000 grams a little more than 2 pounds (about 2.2 pounds)
 milliliter: 0.001 liter five of them make a teaspoon

Symbols: meter m millimeter mm kilogram kg
 liter L centimeter cm milliliter mL
 gram g kilometer km

What Will the Metric System Mean in the Marketplace?

When metric measures become commonplace, one of the first things you will notice as you shop will be the new words for weight, volume and length on packaged goods.

Currently, in packaged foods the number of different types of measurement you encounter in one day's shopping is bewildering. Some weights are expressed in avoirdupois ounces and pounds; fluid measures are expressed in gallons, liquid quarts, pints, and fluid ounces; and dry measures are expressed in bushels, pecks, dry quarts, and pints. A dry quart is 16 percent larger in volume than a liquid quart. By contrast, the metric system has one unit for liquid volume: the liter, or some decimal fraction or multiple thereof (e.g., the milliliter sometimes called cubic centimeter). Only our

long familiarity with the customary system has made it useable.

In the marketplace, you will buy meat by the kilogram instead of the pound; candy or cheese by the gram instead of the ounce. Rugs and fabrics will be sold by the meter rather than the yard: a 9-x 12-foot carpet will be replaced by a 3-x 4-meter carpet. For smaller dimensions, the centimeter will replace the inch and the foot; a 21-inch lawnmower will become a 53-centimeter lawnmower. Milk will be sold by the liter rather than the quart. Gasoline will be sold by the liter, although you will still be able to order it by the tankful!

Useful Measurement Equivalents

Customary

Length:

1 foot = 12 inches
 1 yard = 3 feet = 36 inches
 1 (statute) mile = 5280 feet = 1760 yards

Area:

1 square foot = 144 square inches
 1 square yard = 9 square feet
 1 acre = 43 560 square feet
 1 square mile = 640 acres

Volume:

1 cubic foot = 1728 cubic inches
 1 cubic yard = 27 cubic feet
 1 quart (liquid) = 2 pints = 32 fluid ounces
 1 peck = 8 quarts
 1 bushel = 4 pecks = 32 quarts
 1 quart (liquid) = 0.86 quart (dry)
 1 quart (liquid, U.S.) = 0.83 Imperial Quart

Weight (Mass):

1 pound = 16 ounces
 1 ton = 2000 pounds
 1 long ton = 2240 pounds

Metric

100 centimeters = 1 meter
 1000 meters = 1 kilometer
 10 000 square centimeters = 1 square meter
 10 000 square meters = 1 hectare
 1 000 000 cubic centimeters = 1 cubic meter
 1000 milliliters = 1 liter
 1 milliliter = 1 cubic centimeter
 1000 grams = 1 kilogram
 1000 kilograms = 1 metric ton

For more information on weights and measures matters, contact your local or state weights and measures office, or write to:

Office of Weights and Measures
 National Bureau of Standards
 Washington, D.C. 20234

For more information about the metric system, write to:

Metric Information
 National Bureau of Standards
 Washington, D.C. 20234

For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 (Order by SD Catalog No. C 13.10:430). Price 50 cents. Stock Number 003-003-01542-3.