

Weights and Measures

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Metric Conversion Chart

<u>To change</u>	<u>to</u>	<u>Multiply by</u>
grains	grams	.0648
grams	grains	15.4324
grams	ounces (avdp)	.0353
grams	pounds	.002205
liters	pints (dry)	1.8162
liters	pints (liq)	2.1134
liters	quarts (dry)	.9081
liters	quarts (liq)	1.0567

Liquids

*ap = apothecary measure

Tip: a paperclip weights approximately 1 gram.

1 drop = 1 minim (ap) = 1/60th fluid dram
1 dram (liq - US) = 1/8 fl oz = 0.226 cubic inch = 3.697 ml = 1 tsp
60 drops (minims) = 1 fluid dram (ap) = 1 tsp
(1 measuring tsp = 1/3 tbsp = 1-1/3 fl drams = 5 ml)
(1 measuring tbsp = 3 tsp = 4 fl drams = 1/2 fl oz = 15 ml)
2 tbsp = 1 liq ounce
4 tbsp = 1/4 cup
5 tbsp = 1/3 cup
1-1/2 oz = 1 jigger
1/2 jigger = 1 pony
8 tsp (fl. drams) = 1 fluid ounce (ap)
8 fl oz = 1 cup = 1/2 pint
2 cups = 1 pint
16 fl oz (ap) = 1 pint (ap) = 128 fl drams (ap)
2 pints = 1 quart = 32 fl oz = 256 fl drams = 4 cups
4 quarts = 1 gal = 128 fl oz = 1,024 fl drams
1 milliliter = 0.271 fl dram = 16.231 minims = 1/5 tsp
1 liq oz = 29.574 ml
1 gill = 4 fl oz = 0.118 liter
4 gills (liq) = 1 pint
2 pints = 1 quart
4 quarts = 1 gallon = 8 pints = 32 gills
1 liter = 1.057 liq quarts = 61.024 cubic inches
1 gallon (US) = 231 cubic inches = 3.785 liters = 128 fl oz (US)
1 barrel liquid = 31 to 42 gallons

(law allows for a variety of sizes: petroleum products are usually found in the larger sized barrels, while fermented/alcoholic beverages are to be found in the smaller sized barrels although federal law recognizes a 40 gallon barrel for proof spirits)

Dry Weights & Measures

***avdp = avoirdupois (common measurement in US)**

1 ml = 0.015 grain

1 grain = 64.79891 ml

1 gram = 15.432 grains = 0.035 oz (avdp)

27.344 grains (avdp) = 1 dram (avdp) = 1.772 grams

16 drams (avdp) = 1 oz (avdp) = 437.5 grains (avdp)

16 oz (avdp) = 1 lb (avdp) = 256 drams (avdp) = 7,000 grains (avdp)

1 kilogram = 2.205 lb

2 pints = 1 quart = 67.2006 cubic inches

8 quarts = 1 peck = 16 pints = 537.605 cubic inches

4 pecks = 1 bushel = 32 quarts = 2,150.42 cubic inches

1 bushel (US struck measure) = 2,150.42 cubic inches = 35.238 liters

1 bushel (heaped) = 2,747.715 cubic inches = 1.278 bushels (struck measure) (note: this is frequently recognized as 1-1/4 bushel, struck measure)

1 barrel (standard for fruits, vegetables and other dry good except cranberries) = 105 dry quarts = 3.281 bu (struck measure) = 7,056 cubic inches

1 barrel (stand. cranberry) = 5,286 cubic inches = 86-45/64 dry quarts = 2.709 bu (struck measure)

1 cord fire wood = 128 cubic feet (a 4 ft x 4 ft x 8 ft stack of wood)

More Metrics

1 ml = 1/5 tsp

5 ml = 1 tsp

15 ml = 1 tbsp

34 ml = 1 fl oz

100 ml = 3.4 fl oz

240 ml = 1 cup

1 liter = 34 fl oz = 4.2 cups = 2.1 pints = 1.06 quarts = 0.26 gallon

1 gram = .035 oz

100 grams = 3.5 oz

500 grams = 1.10 lbs

1 kg - 2.205 lbs = 35 oz

1 cubic centimeter = 0.061 cubic inch

1 cubic foot - 7.481 gallons - 28.316 cubic decimeters

1 cubic inch - 0.554 fl oz - 4.433 fluid drams = 16.387 cubic centimeters

Kitchen Equivalents

1 dash = less than 1/8 tsp

a few grains = less than 1/8 tsp (a few "grains" in a kitchen measurement is not to be confused with the formal apothecary or avoirdupois "grain" measurement)

1 minim = 1 drop

1/5 tsp = 20 drops = 1 milliliter

1 tsp = 5 ml = 60 drops (or minims) = 1 dram = 4.2 grams

2 tsp = 10 ml

3 tsp = 1 tbsp = 15 ml = 14 grams

1 fl oz = 30 ml (by weight but 34 ml by capacity) = 28 grams

1/16 cup = 1 tbsp

1/8 cup = 2 tbsp

1/6 cup = 2 tbsp + 2 tsp

1/5 cup = 50 ml

1/4 cup = 4 tbsp

1/3 cup = 5 tbsp + 1 tsp

3/8 cup = 6 tbsp

1/2 cup = 8 tbsp

3/4 cup = 12 tbsp

2/3 cup = 10 tbsp + 2 tsp

1 cup = 240 ml = 8 fl oz = 1/2 pint (liq) = 16 tbsp = 48 tsp

2 cups = 1 pint = 470 ml

2 pints = 1 quart = .95 liter = 4 cups

1 liter = 34 fl oz = 4.2 cups = 2.1 pints = 1.06 quarts = 0.26 gallon

4 quarts = 1 gallon = 3.8 liters

8 quarts = 1 peck

4 pecks = 1 bushel

1 pound = 454 grams = 16 oz

1 gram = .035 oz

100 grams = 3.5 oz

500 grams = 1.20 lbs

1 kg = 2.205 lbs or 35 oz

1000 grams = 1 kilogram

1 glassful = 8 fl oz = 16 tbsp = 60 fl drams - 240 ml

1 teacupful = 4 fl oz = 8 tbsp = 30 drams = 120 ml

1 wineglassful = 2 fl oz = 4 tbsp = 15 fl drams = 60 ml

1 tbsp = 1/2 fl oz = 4 fl drams = 15 ml

1 dessertspoonful = 2 fl drams = 8 ml

Ingredients & Equivalents

Beans

- Kidney 1 lb = 2-1/2 cups dry = 7 cups cooked
- Navy 1 lb = 2-1/2 cups dry = 7 cups cooked
- Split Peas 1 lb = 2 cups dried = 5 cups cooked

Baking powder 1 cup = 5-1/2 oz

Bread 1 slice = 1/4 to 1/3 cup dry crumbs

Butter 1 lb = 2 cups; 1/2 lb = 2 sticks; 1 stick = 1/2 cup or 8 tbsp

Cabbage 1 med. head = 3 lbs; 1 lb = 4 cups shredded

Cheese

- 1/4 lb grated = 1 cup
 - 1 lb = 2-2/3 cup
- Cheddar 1 lb = 4 cups grated
- Cottage cheese 1 lb = 2 cups
- Cream cheese 3-oz pkg = 6 tbsp; 6-oz pkg = 1 cup

Chocolate 1 square = 1 oz = 3 tbsp grated = 3 tbsp melted

Chocolate chips 6-oz pkg = 1 scant cup; 12-oz pkg = 1-7/8 cup

Cocoa 1 lb = 4 cups

Coconut 1 lb = 5 cups shredded and lightly packed

Coffee 1 lb = 5 cups = 40 to 50 cups of brewed

Cornmeal 1 lb = 3 cups; 1 cup = 4 cups cooked

Cornstarch 1 lb = 3 cups

Crab meat 1 lb = 2 cups

Crackers

- Graham crackers 1 cup crumbs = 12 to 15 crackers
- Soda crackers 1 cup crumbs = 20 to 23 crackers

Cream 1/2 pint heavy = 2 cups whipped

Dates 1 lb pitted = 2 cups = 2-1/2 cups chopped

Eggs (large)

- 1 = 1/4 cup
- 4 to 5 = 1 cup
 - 9 = 1 lb
- 7 to 9 whites = 1 cup
- 12 to 15 yolks = 1 cup

Figs 1 lb = 3 cups chopped

Flour

- All purpose 1 lb = 4 cups sifted
- Cake flour 1 lb = 4-1/2 cups sifted
- Graham flour 1 lb = 3-1/2 cups
- Whole wheat 1 lb = 3-1/2 cups

Fruit

- Apples 1 lb (3 medium) = 2 to 2-1/2 cups pared and sliced; 2 quarts = 3 lbs
 - Apricots 1 lb = 3 cups dried = 6 cups cooked
 - Bananas 1 lb = 3 large with skins off = 2 to 2-1/2 cups sliced
 - Fruit peels 1/2 lb = 1-1/2 cups cut up
- Lemon or lime 1 med = 3 tbsp juice; 5 to 8 = 1 cup juice; 1 rind = 1 tbsp grated
- Oranges 1 med. = 2 to 3 tbsp juice; 3 to 4 = 1 cup juice; 1 rind = 2 tbsp grated

Fruit, candied 1/2 lb = 1-1/2 cups cut up

Gelatin, plain 1 envelope = 1 tbsp dry

Herbs 1 tsp dry = 1 tbsp fresh

Marshmallows

- 1 large = 10 miniatures
- 10 large = 1 cup miniature (lightly packed)
 - 100 mini = 1 cup (lightly packed)
 - 1/2 lb = 16 regular
- 1 lb = 8 cups miniature = 75 to 80 regular
 - 10 oz bag = 6 cups miniatures

Milk, canned

- Evaporated 5 oz can = 2/3 cup; 14-1/2 oz can = 1-2/3 cups
 - Sweetened Condensed 14 oz can = 1-1/4 cup

Mustard, prepared 1 tbsp = 1 tsp dry

Nuts

- 1 lb nutmeats, chopped = 4 cups
- Almonds 1 lb (in shell) = 1-3/4 cups nutmeats
- Almonds 1 lb blanched and whole = 3-1/2 cups
- Pecans 1 lb (in shell) = 2-1/4 cups shelled; 1 lb already shelled = 4 cups
- Peanuts 1 lb (in shell) = 2-1/4 cups shelled; 1 lb already shelled = 3 cups
- Walnuts 1 lb (in shell) = 1-2/3 cups shelled; 1 lb already shelled = 4 cups
 - Walnuts, raw 1 lb = 5 cups raw = 8 cups cooked

Oatmeal 1 lb raw = 5 cups = 9 cups cooked
Onion 1 med. = 1/2 cup chopped

Pasta

- Macaroni 1 lb = 4 cups raw = 8 cups cooked
- Noodles 1 lb = 6 cups raw = 9 cups cooked; 1 cup = 1-1/2 cups cooked
 - Spaghetti 1 lb = 4 cups raw = 6 to 8 cups cooked
 - Peas 1 lb (in pod) = 1 cup shelled
 - Pepper, green 1 large = 1 cup diced
 - Popcorn 1 cup raw = 5 quarts popped

Potato

- White 1 lb = 3 to 4 medium = 2 cups cooked and mashed
- Sweet 1 lb = 3 medium - 2 cups cooked and mashed

Raisins 1 lb seeded = 2-1/2 cups; 1 lb seedless = 3 cups

Rice 1 lb = 2 cups dried = 4 cups cooked

Rice, instant 1 cup = 2 cups cooked

Shortening 1 lb = 2 cups

Stuffing

Herb-seasoned 8 oz bag = 4-1/2 cups seasoned dry bread cubes

Croutons 11 oz bag = 10 cups (if large sized cubes)

Sugar

- Granulated 1 lb = 2 cups
- Brown 1 lb = 2-1/4 cups
- Confectioners' 1 lb = 3-1/2 cups sifted
- Cubes 1 lb = 96 to 160 cubes

Tomato 1 lb = 3 to 4 medium

Wafers, Vanilla 24 wafers = 1 cup crumbs

Whipped toppings, frozen 9 oz container = 3 cups; 12 oz container = 4 cups

Yeast 2 oz cake = 3 pkgs dry yeast

Yeast dry 1 envelope = 1 tbsp

Pans & Holding Volumes

4 cups =

- 9" pie plate
- 8 x 1-1/4" layer cake pan
- 7-3/8 x 3-5/8 x 2-1/4" loaf pan

4-1/4 cups = 8 x 2-1/4" ring mold

6 cups =

- 8(or 9) x 11-1/2" layer cake pan
 - 10" pie plate
- 8-1/2 x 35 or 8 x 25" baking pan
 - 8" loaf pan
 - 7-1/2 x 3" bundt tube
 - 7 x 5-1/2 x 4" melon mold

7-1/2 cups = 6 x 4-1/4" charlotte mold

8 cups =

- 8 x 8 x 2" square pan
- 11 x 7 x 1-1/2" baking pan
 - 9 x 5 x 3" loaf pan
 - 9-1/4 x 2-3/4" ring mold
 - 9-1/2 x 3-1/4" brioche pan

9 cups = 9 x 3-1/2" fancy tube or Bundt pan

10 cups =

- 9 x 9 x 2" square pan
- 11-3/4 x 7-1/2 x 1-3/4" baking pan
 - 15 x 10 x 1" jelly roll pan

12 cups =

- 13-1/2 x 8-1/2 x 2" glass baking pan
 - 9 x 3-1/2" angel cake pan

- **10 x 3-3/4" Bundt or crown burst pan**
 - **9 x 3-1/2" fancy tube**
 - **8 x 8" spring form pan**

15 cups = 13 x 9 x 2" metal baking pan

16 cups =

- **10 x 4" fancy tube mold (kugelhupf)**
 - **9 x 3" spring form pan**

18 cups = 10 x 4" angel cake pan

19 cups = 14 x 10-1/2 x 2-1/2" roasting pan

Candy Tests

I must admit to always using a candy thermometer, but when reading a recipe the temperature isn't always given, so I find the chart useful as a reference.

Consistency	Temperature (F)	Test	Uses
Soft ball	234°to 240°	Syrup forms a soft ball when dropped into cold water; ball flattens when removed	Fudge, Penuche
Firm ball	244°to 248°	Syrup forms a ball when dropped into cold water; ball does not flatten when removed	Caramels
Hard ball	250°to 266°	Syrup forms a ball when dropped into cold water; hard enough to hold its shape, yet still plastic	Popcorn balls, Divinity
Soft Crack	270°to 290°	Syrup separates into threads when dropped into cold water; threads are hard but not brittle	Butterscotch, taffy
Hard crack	300°to 310°	Syrup separates into threads which are hard and brittle when dropped into cold water	Peanut Brittle
Caramel	338°	Barley sugar becomes brown	Flavor and color

Grains

Grain - 1 C. dry	Water	Cooking Time	Yield
Barley (whole)	3 cups	1-1/4 hours	3-1/2 cups
Black Beans	4 cups	1-1/2 hours	2 cups
Black-eyed Peas	3 cups	1 hour	2 cups
Buckwheat (kasha)	2 cups	15 min	2-1/2 cups
Cornmeal, coarse (polenta)	4 cups	25 min	3 cups
Garbanzos (chickpeas)	4 cups	3 hours	2 cups
Great Northern Beans	3-1/2 cups	2 hours	2 cups
Kidney Beans	3 cups	1-1/2 hours	2 cups
Lentils	3 cups	1 hour	2-1/4 cups
Limas	2 cups	1-1/2 hours	1-1-4 cups
Limas, baby	2 cups	1-1/2 hours	1-3/4 cups
Millet	3 cups	45 min	3-1/2 cups
Peas, split	3 cups	1 hour	2-1/4 cups
Pinto Beans	3 cups	2-1/2 hours	2 cups
Red beans	3 cups	3 hours	2 cups
Rice, brown	2 cups	1 hour	3 cups
Rice, wild	3 cups	1 hr or more	4 cups
Small white beans (navy, etc)	2 cups	1-1/2 hours	2 cups
Soybeans	3 cups	3 hrs or more	2 cups
Soy grits	4 cups	15 min	2 cups
Wheat berries, whole	3 cups	2 hours	2-2/3 cups
Wheat, bulgur	2 cups	15 to 20 min	2-1/2 cups
Wheat, cracked	2 cups	25 min	2-1/3 cups