Weights and Measures

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Metric Conversion Chart

To change	to	Multiply by
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 (advp) = 1 dram (avdp) = 1.772 grams
16 drams (advp) = 1 oz (advp) = 437.5 grains (advp)
16 oz (advp) = 1 lb (advp) = 256 drams (advp) = 7,000 grains (advp)
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 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 l 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 l lb = 5 cups = 40 to 50 cups of brewed
Cornmeal l lb = 3 cups; 1 cup = 4 cups cooked
Cornstarch l 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 = l lb**
- **7 to 9 whites = 1 cup**
- **12 to 15 yolks = 1 cup**

Figs l lb = 3 cups chopped

Flour

- **All purpose 1 lb = 4 cups sifted**
- **Cake flour 1 lb = 4-1/2 cups sifted**
- **Graham flour l lb = 3-1/2 cups**
- **Whole wheat l 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 l 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 l lb = 3 to 4 medium = 2 cups cooked and mashed**
- **Sweet l 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 l 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' 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	234ºto 240º	Syrup forms a soft ball when dropped into cold water; ball flattens when removed	Fudge, Penuche
Firm ball	244ºto 248º	Syrup forms a ball when dropped into cold water; ball does not flatten when removed	Caramels
Hard ball	250ºto 266º	Syrup forms a ball when dropped into cold water; hard enough to hold its shape, yet still plastic	Popcorn balls, Divinity
Soft Crack	270ºto 290º	Syrup separates into threads when dropped into cold water; threads are hard but not brittle	Butterscotch, taffy
Hard crack	300ºto 310º	Syrup separates into threads which are hard and brittle when dropped into cold water	Peanut Brittle
Caramel	338º	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