

# Units & Conversions

## Metric Units

Milla = 1/1000  
 Centi = 1/100  
 Kilo = 1,000  
 Mega = 1,000,000

Used with meters, liters, grams, etc.

## English Units

12 inches = 1 foot  
 3 feet = 1 yard  
 5280 feet = 1 mile  
 144 in<sup>2</sup> = 1 ft<sup>2</sup>  
 9 ft<sup>2</sup> = 1 yd<sup>2</sup>  
 1728 in<sup>3</sup> = 1 ft<sup>3</sup>  
 27 ft<sup>3</sup> = 1 yd<sup>3</sup>  
 8 fl oz = 1 cup  
 2 cups = 1 pint  
 2 pints = 1 quart  
 4 quarts = 1 gallon  
 1 gallon = 231 in<sup>3</sup>  
 1 yd<sup>3</sup> = 202 gal  
 7.48 gal = 1 ft<sup>3</sup>

## Linear Conversions

• Conversion to Metric (approximate)

Known No.	Multiply By	To Determine
inches	25.4	millimeters
inches	2.5	centimeters
feet	30.5	centimeters
yards	0.91	meters
miles	1.61	kilometers

• Conversion from Metric (approximate)

Known No.	Multiply By	To Determine
millimeters	.039	inches
centimeters	0.39	inches
meters	3.28	feet
meters	1.09	yards
kilometers	0.62	miles

## Force Conversions

• Conversion to Metric (approximate)

Known No.	Multiply By	To Determine
dyne	.0001	newton
pound force	4.45	newtons
psi	703	kg/m
psi	6.89	kilopascal

• Conversion from Metric (approximate)

Known No.	Multiply By	To Determine
newton	100,000	dynes
newton	0.225	lb force

## Area Conversions

• Conversion to Metric (approximate)

Know No.	Multiply By	To Determine
square inches	6.5	sq centimeters
square feet	0.092	square meters
Square yards	0.84	square meters
square miles	2.6	sq kilometers

• Conversion from Metric (approximate)

Known No.	Multiply By	To Determine
sq centimeters	0.16	square inches
square meters	10.8	square feet
sq kilometers	0.38	square miles

## Volume Conversions

• Conversion **to** Metric (approximate)

Known No.	Multiply By	To Determine
cubic inches	16.0	milliliters
fluid ounces	29.6	milliliters
cups	0.24	liters
pints	0.47	liters
quarts	0.95	liters
gallons	3.79	liters
cubic feet	0.028	cubic meters
cubic yards	0.76	cubic meters
cubic feet	28.3	liters
cubic yard	764.5	liters

• Conversion **from** Metric (approximate)

Known No.	Multiply By	To Determine
milliliters	0.06	cubic inches
milliliters	0.03	fluid ounces
liters	0.036	cubic feet
liters	2.1	pints
liters	1.06	quarts
liters	0.26	gallons
cubic meters	35.3	cubic feet
cubic meters	1.31	cubic yards

## Weight Conversions

• Conversion **to** Metric (approximate)

Known No.	Multiply By	To Determine
ounces	28.3	grams
pounds	0.45	kilograms
short tons	0.91	metric ton

• Conversion **from** Metric (approximate)

Known No.	Multiply By	To Determine
grams	0.035	ounces
kilograms	2.2	pounds
Metric ton	1.1	short tons

## Dilution Chart for Hydrochloric (Muriatic) Acid to Achieve 10% Solution

Degrees Baume	% Acid	# Gal of Water to 1 Gal of Acid
16 Be'	24.5	1.5
18 Be'	28.0	2.0
20 Be'	31.5	2.25
22 Be'	35.0	2.5
24 Be'	39.5	3.0

## Coefficients of Thermal Expansion

Material	Coefficient of Thermal Expansion in/in°F x 10 <sup>-6</sup>
Aluminum	12.9
Brass, Red, 230	10.0
Bronze, Arch, 385	11.0
Copper, 110	9.4
Lead	15.9
Stainless Steel, 302	9.6
Stainless Steel, 430	5.8
Structural Steel	6.7
Zinc, Rolled	17.3
Acrylics	40–50
Glass Reinf Polyester	10–14
Phenolics	8.5–25
Vinyl Chlorides	24–40
Brick Masonry	3.1
Concrete	6.5
Limestone Masonry	3.5
Plate Glass	5.1
Wood, Parallel to Grain	2.1–3.6
Wood, Perpendicular to Grain	1.9–3.2

## Parts by Volume to % Volume Conversions

### • Mixing Ratio by Volume

Part A	Part B
1	1
1.5	1
2	1
2.5	1
3	1
4	1
5	1
10	1

### • Mixing Ratio by % Volume

Part A	Part B
50	50
60	40
67	33
71	29
75	25
80	20
83.3	16.7
91.0	9.09

## Viscosity Guidelines

Viscosity in Centipoise	Similar to Consistency of:
1	= Water
500	= #10 Motor Oil
2,500	= Pancake Syrup
10,000	= Honey
25,000	= Chocolate Syrup
50,000	= Catsup
250,000	= Peanut Butter
1,000,000	= Paste-Caulking Consistency