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We reserve the right to change specifications or technical requirements without prior notice. All statements made in this catalog binder are subject to omissions or errors.



Formulas - Data - Measurements

Area - Electrical

AREA				
Square inches	x 645	equal	Square millimeters	mm ²
Square inches	x 6.452	equal	Square centimeters	cm ²
Square foot	x 0.0929	equal	Square meters	m ²
Square yards	x 0.836	equal	Square meters	m ²
Acres	x 43,560	equal	Square foot	sq.ft.
Acres	x 4047	equal	Square meters	m ²
Acres	x 0.4047	equal	hectares	ha
Square miles	x 2.590	equal	Square kilometers	km ²
Square millimeters	x 0.00155	equal	Square inches	sq.in.
Square centimeters	x 0.1550	equal	Square inches	sq.in.
Square meters	x 10.76	equal	Square foot	sq.ft.
Square meters	x 1.196	equal	Square yards	sq.yd.
Hectares	x 2.471	equal	Acres	a
Square kilometers	x 0.3861	equal	Square miles	sq.mi.
	1 square foot	equal	144 square inches	
	1 square yard	equal	9 square feet	
	1 acre	equal	4,840 square yards	
	1 square mile	equal	640 acres	
	1 square meter	equal	10,000 square centimeters	
	1 hectar	equal	10,000 square meters	
	1 square kilometer	equal	1,000,000 square meters	

ELECTRICAL		
1 mF per mile	equal	0.62 mF/km
1 uF per mile	equal	0.62 uF/km
1 megohm per mile	equal	1.61 megohm per km
1 decibel per mile	equal	71.5 mN per km
1 ohm per 1000 ft.	equal	3.28 ohm per km
1 ohm per 1000 yd.	equal	1.0936 ohm per km



Formulas - Data - Measurements

Energy - Work - Fluid volume

ENERGY - WORK				
Foot pounds	x 1.356	equal	Joule	J
Joule	x 0.7376	equal	Foot pounds	ft.lb.
1 foot-pound		equal	1.356 J	
1 foot-pound		equal	1.488 kg/m	
1 kilokalorie		equal	4.185 kJ	
1 Btu		equal	1.055 kJ	
1 Joule		equal	1 watt/second (Ws)	
1 Joule		equal	1 Newton meter (Nm)	

FLUID VOLUME				
Quarts	x 0.946	equal	Liters	l
Gallons	3.7854	equal	Liters	l
Liters	x 1.057	equal	Quarts	qt
Liters	x 0.2642	equal	Gallons	gal
1 fluid ounce		equal	29.57 milli-liters	
1 US pint		equal	0.473 liters	
1 US pint		equal	4 gills	
1 US quart		equal	0.9464 liters	
1 US quart		equal	2 pints (8gills)	
1 gallon		equal	3.785 liters	
1 gallon		equal	4 quarts - 8 pints	
1 liter		equal	1.057 quarts	
1 liter		equal	0.2642 gallons	
1 barrel oil		equal	42 gallons, 168 quarts	
1 barrel oil		equal	158.97 liters	
1 US barrel		equal	31.5 gallons - 126 quarts	
1 gallon water		equal	8.3453 pounds	
1 hecto liter		equal	100 liters, 211.34 pints	
1 liter		equal	2.1134 pints - 10 deciliter	
1 liter		equal	1.0568 quarts	

Formulas - Data - Measurements

Force - Length

FORCE

1 poundal (pdl)	equal	0.1383 Newton (N)
1 ounce of force (ozf)	equal	0.278 Newton (N)
1 pound of force (lbf)	equal	4.448 Newton (N)
1 pound of force (lbf)	equal	0.4536 kilogram (kg)
1 U.S. ton	equal	8.90 kilo Newton (kN)
1 kilogram force	equal	2.205 pounds (lbf)
1 kilogram force	equal	9.807 Newton (N)
1 Newton (N)	equal	0.2248 pounds (lbf)

LENGTH

1 mil	equal	0.0254 micrometer
1 inch	equal	25.4 millimeters
1 inch	equal	2.54 centimeters
1 inch	equal	1000 mil
1 foot	equal	0.3048 meter
1 foot	equal	30.48 centimeters
1 foot	equal	12 inches
1 yard	equal	0.914 meter
1 yard	equal	91.44 centimeters
1 yard	equal	914.4 millimeters
1 yard	equal	3 feet - 36 inches
1 chain	equal	20.1 meters
1 mile	equal	1.609 kilometers
1 mile	equal	1,760 yards - 5,280 feet
1 micrometer	equal	39.37 micro inches
1 millimeter	equal	0.03937 inches
1 centimeter	equal	0.3937 inches
1 decimeter	equal	3.937 inches
1 meter	equal	10 decimeters - 100 centimeters
1 meter	equal	1,000 millimeters
1 meter	equal	3.281 feet
1 meter	equal	1.094 yards
1 kilometer	equal	0.6214 mile
1 kilometer	equal	1,000 meters
1 kilometer	equal	100,000 centimeters



Formulas - Data - Measurements

Power - Pressure - Speed

POWER

1 U.S. horsepower	equal	0.7457 kilowatt (kW)
1 U.S. horsepower	equal	746 watt (W)
1 Kilowatt (kW)	equal	1.341 horsepower (hp)
1 Joule/second (J/s)	equal	1 Watt - Newton m/s (Nm/s)

PRESSURE

1 pound force per sq.in. (psi)	equal	6.895 Kilopascal (kPa)
1 pound force per sq.in. (psi)	equal	703 kilo pound per sq. m (kp/m ²)
1 pound force per sq.in. (psi)	equal	0.0703 bar
1 pound force per square ft.	equal	0.15 kp/m ²
1 pound force per square ft.	equal	0.478 mbar
1 pound force per square yd.	equal	0.543 kp/m ²
1 phys. atmosphere	equal	1.033 bar
1 phys. atmosphere	equal	14.7 lbs/square inc.
1 kp/mm ²	equal	1,422 psi
1 bar	equal	14.5 psi
1 N/mm ²	equal	145 psi

SPEED

1 mile per hour	equal	1.609 km per hour
1 mile per hour	equal	0.447 meter per second
1 centimeter per second	equal	0.03281 feet per second
1 meter per second	equal	196.8 feet per minute
1 meter per second	equal	3.281 feet per second
1 meter per second	equal	39.37 inches per second



Formulas - Data - Measurements

Volume - Weight - Velocity

VOLUME

1 cubic inch	equal	16,387 cubic millimeter (mm ³)
1 cubic inch	equal	16.387 cubic centimeters (cm ³)
1 cubic foot	equal	0.0283 cubic meter (m ³)
1 cubic yard	equal	0.7646 cubic meter (m ³)
1 cubic cm	equal	0.06102 cubic inch
1 cubic meter	equal	35.31 cubic foot
1 cubic foot	equal	1,728 cubic inches
1 cubic yard	equal	27 cubic feet
1 cubic meter	equal	1,000,000 cubic centimeters
1 cubic centimeter	equal	1,000 cubic millimeters

WEIGHT

1 grain	equal	0.059 gram
1 dram	equal	1.770 gram
1 ounce	equal	16 drams
1 ounce	equal	28.349 grams
1 pound	equal	0.454 kilogram
1 pound	equal	16 ounces
1 stone	equal	14 pounds
1 stone	equal	6.35 kilograms
1 quarter	equal	25 pounds
1 quarter	equal	400 ounces
1 quarter	equal	11.34 kilograms
1 U.S. Cwt	equal	100 pounds
1 U.S. Cwt	equal	1,600 ounces
1 U.S. ton	equal	0.907 ton
1 U.S. ton	equal	907.184 kilograms
1 U.S. ton	equal	2,000 lbs.
1 U.S. ton	equal	20 U.S. Cwt
1 gram	equal	0.03527 ounces
1 gram	equal	16 grains
1 kilogram	equal	2.205 ounces
1 ton	equal	1,000 kilograms

VELOCITY

1 in./sec.	equal	0.0254 meter/sec.
1 ft./sec.	equal	0.3048 meter/sec.
1 ft./minute	equal	0.00508 meter/sec.
1 mile/hr.	equal	0.4470 meter/sec.
1 kilometer/hr.	equal	0.2889 meter/sec.
1 meter/sec.	equal	3.281 ft./sec.
1 meter/sec.	equal	196.9 ft./min.
1 meter/sec.	equal	2.237 miles/hr.
1 meter/sec.	equal	3.6 km/hr.










Formulas - Data - Measurements
Temperature

DEGREES CELSIUS VERSUS DEGREES FAHRENHEIT							
° C	° F	° C	° F	° C	° F	° C	° F
-80.0	-112.0	-15.0	5.0	15.0	59.0	45.0	113.0
-70.0	-94.0	-14.0	6.8	16.0	60.8	46.0	114.8
-60.0	-65.0	-13.0	8.6	17.0	62.6	47.0	116.6
-50.0	-58.0	-12.0	10.4	18.0	64.4	48.0	118.4
-45.0	-49.1	-11.0	12.2	19.0	66.2	49.0	120.2
-40.0	-40.0	-10.0	14.0	20.0	68.0	50.0	122.0
-39.0	-38.2	-9.0	15.8	21.0	69.8	51.0	123.8
-38.0	-36.4	-8.0	17.6	22.0	71.6	52.0	125.6
-37.0	-34.6	-7.0	19.4	23.0	73.4	53.0	127.4
-36.0	-32.8	-6.0	21.2	24.0	75.2	54.0	129.2
-35.0	-31.0	-5.0	23.0	25.0	77.0	56.0	132.8
-34.0	-29.2	-4.0	24.8	26.0	78.8	58.0	136.4
-33.0	-27.4	-3.0	26.6	27.0	80.6	60.0	140.0
-32.0	-25.6	-2.0	28.4	28.0	82.4	62.0	143.6
-31.0	-23.8	-1.0	30.2	29.0	84.2	65.0	149.0
-30.0	-22.0	0.0	32.0	30.0	86.0	70.0	158.0
-29.0	-21.5	1.0	33.8	31.0	87.8	75.0	167.0
-28.0	-18.4	2.0	35.6	32.0	89.6	80.0	176.0
-27.0	-16.6	3.0	37.4	33.0	91.4	85.0	185.0
-26.0	-14.8	4.0	39.2	34.0	93.2	90.0	194.0
-25.0	-13.0	5.0	41.0	35.0	95.0	95.0	203.0
-24.0	-11.2	6.0	42.8	36.0	96.8	100.0	212.0
-23.0	-9.4	7.0	44.6	37.0	98.6	110.0	230.0
-22.0	-7.6	8.0	46.4	38.0	100.4	130.0	266.0
-21.0	-5.8	9.0	48.2	39.0	102.2	150.0	302.0
-20.0	-4.0	10.0	50.0	40.0	104.0	200.0	392.0
-19.0	-2.2	11.0	51.8	41.0	105.8	300.0	572.0
-18.0	-0.4	12.0	53.6	42.0	107.6	400.0	752.0
-17.0	1.4	13.0	55.4	43.0	109.4	500.0	932.0
-16.0	3.2	14.0	57.2	44.0	111.2	600.0	1112.0
Formula:	° F	=	(1.8 x Celsius) + 32				
	° C	=	0.5556 x (F-32)				

Formulas - Data - Measurements

AWG / METRIC COMPARISON

 Cross Section mm ²	 No. of Strands Class 2 VDE 0295	 No. of Strands	 No. of Strands Highflex Class 5 VDE 0295	 No. of Strands Superflex Class 6 VDE 0295	 Approx. AWG Size	 AWG Section mm ²
0.14				18 x 0.1	26	0.128
0.25			14 x 0.15	32 x 0.1	24	0.205
0.34		7 x 0.25	19 x 0.15	42 x 0.1	22	0.325
0.38		7 X 0.27	12 x 0.2	21 x 0.15	22	0.325
0.50		7 x 0.3	16 x 0.2	28 x 0.15	20	0.519
0.75		7 x 0.37	24 x 0.2	42x 0.15	18	0.823
1.00		7 x 0.43	32 x 0.2	56 x 0.15	17	1.04
1.50		7 x 0.52	30 x 0.25	84 x 0.15	16	1.31
2.50	7 x 0.67	19 x 0.41	50 x 0.2	140 x 0.15	14	2.08
4	7 x 0.85	19 x 0.52	56 x 0.3	224 x 0.15	12	3.31
6	7 x 1.05	19 x 0.64	84 x 0.3	192 x 0.2	10	5.27
10	7 x 1.35	49 x 0.51	80 x 0.4	320 x 0.2	8	8.35
16	7 x 1.7	49 x 0.65	128 x 0.4	512 x 0.2	6	13.3
25	7 x 2.13	84 x 0.62	200 x 0.4	800 x 0.2	4	21.2
35	7 x 2.52	133 x 0.58	280 x 0.4	1120 x 0.2	2	33.6
50	19 x 1.83	133 x 0.69	400 x 0.4	705 x 0.3	1	42.4
70	19 x 2.17	189 x 0.69	356 x 0.5	990 x 0.3	2/0	67.5
95	19 x 2.52	259 x 0.69	485 x 0.5	1340 x 0.3	3/0	85.0
120	37 x 2.03	336 x 0.67	614 x 0.5	1690 x 0.3	4/0	102.7
150	37 x 2.27	392 x 0.69	765 x 0.5	2132 x 0.3	300MCM	152