

XVIII. APPENDIX

CONTENTS

- A. Conversion Factors for Units of Length
- B. Conversion Factors for Units of Area
- C. Conversion Factors for Units of Volume
- D. Conversion Factors for Units of Mass
- E. Conversion Factors for Units of Pressure
- F. Conversion Factors for Units of Energy

APPENDIX

Conversion Factors  
for  
Units of Length and Area

CONVERSION FACTORS FOR UNITS OF LENGTH

Multiply by appropriate entry to obtain → ↓	cm	mm	$\mu$	m $\mu$	$\text{Å}$
	1 Centimeter (cm)	1	10	$10^4$	$10^7$
1 Millimeter (mm)	$10^{-1}$	1	$10^3$	$10^6$	$10^7$
1 Micron ( $\mu$ )	$10^{-4}$	$10^{-3}$	1	$10^3$	$10^4$
1 Millimicron (m $\mu$ )	$10^{-7}$	$10^{-6}$	$10^{-3}$	1	10
1 Angstrom Unit ( $\text{Å}$ )	$10^{-8}$	$10^{-7}$	$10^{-4}$	$10^{-1}$	1

CONVERSION FACTORS FOR UNITS OF LENGTH - Cont.

Multiply by appropriate entry to obtain → ↓	cm	m	in	ft	yd
	1 cm	1	0.01	0.3937	0.032808333
1 m	100.	1	39.37	3.2808333	1.0936111
1 in	2.5400051	0.025400051	1	0.083333333	0.027777778
1 ft	30.480061	0.30480061	12.	1	0.33333333
1 yd	91.440183	0.91440183	36.	3.	1

CONVERSION FACTORS FOR UNITS OF AREA

Multiply by appropriate entry to obtain → ↓	cm <sup>2</sup>	m <sup>2</sup>	sq in	sq ft	sq yd
	1 cm <sup>2</sup>	1	$10^{-4}$	0.15499969	$1.0763867 \times 10^{-3}$
1 m <sup>2</sup>	$10^4$	1	1549.9969	10.763867	1.1959853
1 sq in	6.4516258	$6.4516258 \times 10^{-4}$	1	$6.9444444 \times 10^{-3}$	$7.7160494 \times 10^{-4}$
1 sq ft	929.03412	0.092903412	144.	1	0.11111111
1 sq yd	8361.3070	0.83613070	1296.	9.	1

Reprinted from WADD TECH. REPORT 60-56

APPENDIX

Conversion Factors

CONVERSION FACTORS FOR UNITS OF VOLUME

Multiply by appropriate entry to obtain → ↓ 1 cm <sup>3</sup>	ml	liter	gal
		0.9999720	0.9999720 x 10 <sup>-3</sup>
1 cu in	16.38670	1.638670 x 10 <sup>-2</sup>	4.3290043 x 10 <sup>-3</sup>
1 cu ft	28316.22	28.31622	7.4805195
1 ml	1	0.001	2.641779 x 10 <sup>-4</sup>
1 liter	1000.	1	0.2641779
1 gal	3785.329	3.785329	1

CONVERSION FACTORS FOR UNITS OF VOLUME - Cont.

Multiply by appropriate entry to obtain → ↓ 1 cm <sup>3</sup>	cm <sup>3</sup>	cu in	cu ft
		1	0.061023378
1 cu in	16.387162	1	5.7870370 x 10 <sup>-4</sup>
1 cu ft	28317.017	1728.	1
1 ml	1.000028	0.06102509	3.531544 x 10 <sup>-5</sup>
1 liter	1000.028	61.02509	0.03531544
1 gal	3785.4345	231.	0.13368056

Reprinted from WADD TECH. REPORT 60-56

APPENDIX  
Conversion Factors

CONVERSION FACTORS FOR UNITS OF MASS

Multiply by appropriate entry to obtain →  ↓ 1 g	g	kg	lb	metric ton	ton
	1	$10^{-3}$	$2.2046223 \times 10^{-3}$	$10^{-6}$	$1.1023112 \times 10^{-6}$
1 kg	$10^3$	1	$2.2046223$	$10^{-3}$	$1.1023112 \times 10^{-3}$
1 lb	453.59243	0.45359243	1	$4.5359243 \times 10^{-4}$	0.0005
1 metric ton	$10^6$	$10^3$	2204.6223	1	1.1023112
1 ton	907184.86	907.18486	2000.	0.90718486	1

Reprinted from WADD TECH.REPORT 60-56

CONVERSION FACTORS FOR UNITS OF PRESSURE

Multiply by appropriate entry to obtain →	dyne/cm <sup>2</sup>	bar	atm	kg(wt)/cm <sup>2</sup>	mm Hg	in Hg	lb(wt)/sq in
1 dyne/cm <sup>2</sup>	1	10 <sup>-6</sup>	0.9869233 x 10 <sup>-6</sup>	1.0197162 x 10 <sup>-6</sup>	7.500617 x 10 <sup>-4</sup>	2.952993 x 10 <sup>-5</sup>	1.4503830 x 10 <sup>-5</sup>
1 bar	10 <sup>6</sup>	1	0.9869233	1.0197162	750.0617	29.52993	14.503830
1 atm	1013250.	1.013250	1	1.0332275	760.	29.92120	14.696006
1 kg(wt)/cm <sup>2</sup>	980665.	0.980665	0.9678411	1	735.5592	28.95897	14.223398
1 mm Hg	1333.2237	1.3332237 x 10 <sup>-3</sup>	1.3157895 x 10 <sup>-3</sup>	1.3595098 x 10 <sup>-3</sup>	1	0.03937	0.019336850
1 in Hg	33863.95	0.03386395	0.03342112	0.03453162	25.40005	1	0.4911570
1 lb(wt)/sq in	68947.31	0.06894731	0.06804570	0.07030669	51.71473	2.036009	1

APPENDIX  
 Conversion Factors  
 for  
 Units of Pressure

XVIII-E

Reprinted from WADD TECH. REPORT 60-56

CONVERSION FACTORS FOR UNITS OF ENERGY

Multiply by appropriate entry to obtain →  ↓ 1 g mass (energy equiv)	g mass (energy equiv)	abs. joule	int. joule	cal	I. T. cal	BTU	int. kilowatt -hr
	1	8.98656 $\times 10^{13}$	8.98508 $\times 10^{13}$	2.14784 $\times 10^{13}$	2.14644 $\times 10^{13}$	8.51775 $\times 10^{10}$	2.49586 $\times 10^7$
1 abs. joule	$1.112772 \times 10^{-14}$	1	0.999835	0.239006	0.238849	0.947831 $\times 10^{-3}$	2.77732 $\times 10^{-7}$
1 int. joule	$1.112956 \times 10^{-14}$	1.000165	1	0.239045	0.238889	0.947988 $\times 10^{-3}$	2.777778 $\times 10^{-7}$
1 cal	$4.65584 \times 10^{-14}$	4.1840	4.1833	1	0.999346	3.96573 $\times 10^{-3}$	1.162030 $\times 10^{-6}$
1 I. T. cal	$4.65888 \times 10^{-14}$	4.18674	4.18605	1.000654	1	3.96832 $\times 10^{-3}$	1.162791 $\times 10^{-6}$
1 BTU	$1.174019 \times 10^{-11}$	1055.040	1054.866	252.161	251.996	1	2.93018 $\times 10^{-4}$
1 int. kilowatt-hr	$4.00664 \times 10^{-8}$	3,600,594.	3,600,000.	860,563.	860,000.	3412.76	1
1 horsepower-hr	$2.98727 \times 10^{-8}$	2,684,525.	2,684,082.	641,617.	641,197.	2544.48	0.745578
1 ft-lb(wt)	$1.508720 \times 10^{-14}$	1.355821	1.355597	0.324049	0.323837	1.285089 $\times 10^{-3}$	3.76555 $\times 10^{-7}$
1 cu ft - lb(wt)/sq in	$2.17256 \times 10^{-12}$	195.2382	195.2060	46.6630	46.6325	0.1850529	5.42239 $\times 10^{-5}$
1 liter-atm	$1.127548 \times 10^{-12}$	101.3278	101.3111	24.2179	24.2021	0.0960417	2.81420 $\times 10^{-5}$

APPENDIX  
 Conversion Factors  
 for  
 Units of Energy

XVIII-F-1

APPENDIX

Conversion Factors

CONVERSION FACTORS FOR UNITS OF ENERGY - Cont.

Multiply by appropriate entry to obtain → ↓ 1 g mass(energy equiv)	ft-lb(wt)	cu ft- lb(wt)/sq in.	liter-atm	horsepower -hr
	6.62814 $\times 10^{13}$	4.60287 $\times 10^{11}$	8.86880 $\times 10^{11}$	3.34754 $\times 10^7$
1 abs. joule	0.737561	5.12195 $\times 10^{-3}$	9.86896 $\times 10^{-3}$	3.72505 $\times 10^{-7}$
1 int. joule	0.737682	5.12279 $\times 10^{-3}$	9.87058 $\times 10^{-3}$	3.72567 $\times 10^{-7}$
1 cal	3.08595	2.14302 $\times 10^{-2}$	4.12917 $\times 10^{-2}$	1.558562 $\times 10^{-6}$
1 I. T. cal	3.08797	2.14443 $\times 10^{-2}$	4.13187 $\times 10^{-2}$	1.559582 $\times 10^{-6}$
1 BTU	778.156	5.40386	10.41215	3.93008 $\times 10^{-4}$
1 int. kilowatt-hr	2,655,656	18442.06	35534.1	1.341241
1 horsepower-hr	1,980,000	13750	26493.5	1
1 ft-lb(wt)	1	6.94444 $\times 10^{-3}$	1.338054 $\times 10^{-2}$	5.05051 $\times 10^{-7}$
1 cu ft - lb(wt)/sq in	144	1	1.926797	7.27273 $\times 10^{-5}$
1 liter-atm	74.7354	5.18996	1	3.77452 $\times 10^{-5}$

Reprinted from WADD TECH.REPORT 60-56