

APPENDIX E—UNITS

CONVERSION FACTORS

Unit	multiplied by	Conversion Factor	Equals	Unit
British Thermal Units (BTU)	×	778.0	=	foot-pounds (ft-lb)
British Thermal Units (BTU)	×	1,054.8	=	joules (j)
British Thermal Units (BTU)	×	252	=	Calories (cal)
British Thermal Units (BTU)	×	0.293	=	watt-hours
calories (cal)	×	4.1868	=	joules (j)
foot-pounds (ft-lb)	×	0.001285	=	BTU
foot-pounds (ft-lb)	×	1.356	=	joules
foot-pounds (ft-lb)	×	0.1383	=	kilogram-meters
horsepower (hp)	×	33,000	=	foot-pounds/minute (ft-lb/min)
horsepower (hp)	×	550	=	foot-pounds/second (ft-lb/sec)
horsepower (hp)	×	745.7	=	watts
joules (j)	×	0.000948	=	British Thermal Units (BTU)
joules (j)	×	107	=	ergs
kilowatt-hours (kwh)	×	3413	=	British Thermal Units (BTU)
kilowatt-hours (kwh)	×	3.6	=	Megajoules (MJ)
watts	×	44.25	=	foot-pounds/minute (ft-lb/min)
watts	×	0.737562	=	foot-pounds/second (ft-lb/sec)
watt-hours	×	3.41266	=	British Thermal Units (BTU)
barrels of oil (bbl)	×	0.1590	=	cubic meters (m ³)
barrels of oil (bbl)	×	42	=	U.S. gallons (gal)
U.S. gallons (gal)	×	3.7854	=	liters (L)
cubic feet (ft ³)	×	0.0283	=	cubic meters (m ³)
short tons	×	2,000	=	Pounds (lb)
short tons	×	0.9072	=	metric tons (t)
long tons	×	2,240	=	Pounds (lb)
long tons	×	1.0160	=	metric tons (t)
metric tons (t)	×	1,000	=	Kilograms (kg)
degrees Fahrenheit (°F)		subtract 32 then multiply by 5/9	=	Degrees Celsius (°C)
degrees Celsius (°C)		multiply by 9/5 then add 32	=	Degrees Fahrenheit (°F)

NUMERIC PREFIXES

Numerical Unit	Power of Ten	Prefix	Symbol
million trillion	10^{18}	exa	E
quadrillion	10^{15}	peta	P
trillion	10^{12}	tera	T
billion	10^9	giga	G
million	10^6	mega	M
Thousand	10^3	kilo	K
Hundredth	10^{-2}	centi	C
Thousandth	10^{-3}	milli	M
Millionth	10^{-6}	micro	M

HEAT CONTENTS

Material	Heat Content (BTU)
1 gallon of gasoline	126,000
1 cubic foot of natural gas	1,030
1 pound of bituminous coal	13,100
1 42-gallon barrel of oil:	
Distillate	5,800,000
Residual	6,300,000
1 42-gallon barrel of NGL (Natural Gas Liquids)	3,777,000