

Conversion base rates

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Introduction

S&P Global Platts publishes its assessments and indices reflecting the currencies and units of measurement in which the products typically trade.

Commodities are generally internationally traded in US dollars, and Platts assessments are typically published in that currency as a result. Certain markets, such as regional markets, trade using local currency. Platts assesses the value of such markets as appropriate in local currency.

Commodities typically trade in volumetric or energy units, and Platts assessments for these markets reflect common practice in each market. The units and unit range considered for each individual Platts assessment of a physical market is described in the specification guide for each commodity.

Measurement systems

Platts employs units of measure from two systems: the International System of Units (the modern form of the metric system); and the US Imperial System. For the SI system, the General Conference on Weights and Measures (CGPM) is the governing body, and Platts uses the definitions provided by the CGPM where possible. For the US Imperial system, the US National Institute of Standards and Technology (NIST) is the governing body, and Platts uses definitions provided by NIST, including conversions from SI units as provided in its publication "Uniform Laws and Regulations in the areas of legal metrology and engine fuel quality".

Within both of these systems, base units are defined for key quantities including mass, length and time. Further units are derived from these bases, including energy and temperature.

Temperature and atmospheric standards

Measurement of volume of substances is typically associated with a defined temperature and atmospheric standard. However, this standard varies globally. Unless otherwise stated, Platts assessments reflect temperature and atmospheric standards as standard market practice in the location being assessed.

Similarly, units of measure for energy vary according to base units that are defined according to temperature and atmospheric standards. Platts assessments employ units of measure defined

as per standard practice in the market being assessed. For example, in North American natural gas a British Thermal Unit is typically defined as the amount of heat required to raise the temperature of one pound of avoirdupois pure water from 58.5 Fahrenheit to 59.5 Fahrenheit at a constant pressure of 14.73 pounds per square inch.

Energy-mass-volume conversion factors

For units of measure, individual conversion factors are stated in the specifications guide for each commodity alongside individual assessment codes. Conversions between mass, volume and energy are dependent on the physical qualities of the substance in question, particularly the density and/or energy density. For many commodities, Platts specifies the density of material reflected in its assessments, and seeks to employ that specification in associated energy-mass conversion factors.

However, for some commodities, conversion factors may be based on market convention, rather than an exact representation of the physical properties of the commodity in question.

Currency conversions

In certain cases Platts converts its assessments to other currencies to allow for ease of comparison or analysis in regional markets. For currencies, such conversions are done using exchange rates published here: <https://www.spglobal.com/platts/en/our-methodology/conversion-tables>.

Decimal places and significant figures

Platts typically publishes its assessments to three decimal places. However, conversion factors may require greater degrees of accuracy to ensure non-zero outcomes.

General conversion tables

Based on the above principles and sources, Platts publishes below a list of conversion factors between US Imperial and SI units for given quantities. In addition to the set of base quantity conversions, Platts also includes a set of conversion calculations between commonly employed factors and units. These conversions should not be taken as applying universally across Platts assessments. Where appropriate, Platts states the conversion factor for assessments published in the relevant specification guide.

Conversion base rates

		Base		Inversions	
Distance					
Inch	1 =	25.4	Millimeter	1 =	0.03937 Inch
Foot	1 =	30.48	Centimeter	1 =	0.032808399 Foot
Yard	1 =	0.9144	Meter	1 =	1.093613298 Yard
Mile	1 =	1.60934	Kilometer	1 =	0.6213712 Mile
Area					
Sq inch	1 =	645.16	Sq mm	1 =	0.001550003 Sq inch
Sq foot	1 =	929.0304	Sq cm	1 =	0.001076391 Sq foot
Sq yard	1 =	0.83612736	Sq m	1 =	1.1960 Sq yard
Acre	1 =	0.00404	Sq km	1 =	247.525 Acre
Sq mile	1 =	2.58998811	Sq km	1 =	0.386 Sq mile
Volume					
Cu inch	1 =	16387.1	Cu mm	1 =	0.000061024 Cu inch
Pint (UK)	1 =	568.26	Cu cm	1 =	0.00176 Pint (UK)
Pint (US)	1 =	473.176	Cu cm	1 =	0.00211 Pint (US)
Gallon	1 =	3.78541	Liter	1 =	0.264172177 Gallon
Cu foot	1 =	28.3168	Cu decimeter	1 =	0.03531 Cu foot
Barrel	1 =	0.15898722	Cu m	1 =	6.289813735 Barrel
Kiloliter	1 =	6.289813735	Barrel	1 =	0.15898722 kiloliter
Mass					
Ounce	1 =	28.3495	Gram	1 =	0.035273991 Ounce
Pound	1 =	0.453592	Kilogram	1 =	2.20462442 Pound
Short ton	1 =	0.907185	Metric ton	1 =	1.102310995 Short ton
Long ton	1 =	1.01605	Metric ton	1 =	0.984203533 Long ton
Long ton hundredweight	1 =	0.0508023	Metric ton	1 =	19.68414816 Hundredweight
Ounce	1 =	0.911458	Troy ounce	1 =	1.097143258 Ounce
Speed					
Mph	1 =	1.60934	Kph	1 =	0.621371 Mph
Pressure					
Psi	1 =	0.070307	Kg/sq cm	1 =	14.2233348 Psi
Psi	1 =	0.0689476	Bar	1 =	14.50376808 Psi
Psi	1 =	6.89476	Kilopascal	1 =	0.145037681 Psi
Psi	1 =	0.070307	Atmosphere (technical)	1 =	14.2233348 Psi
Psi	1 =	0.06805	Atmosphere (standard)	1 =	14.69507715 Psi
Power					
Horsepower	1 =	745.7	Watt	1 =	0.00134102 Horsepower
Horsepower	1 =	0.7457	Kilowatt	1 =	1.341021859 Horsepower
Energy					
Btu (59 deg)	1 =	1054.8	Joule	1 =	0.000948047 Btu (59 deg)
MMBtu	1 =	293.1	Kwh	1 =	0.003412 MMBtu
Therm	1 =	105.48	Megajoule	1 =	0.00948047 Therm
Btu	1 =	252.16444	Calorie	1 =	0.003965666 Btu
Boe	1 =	0.136	Toe	1 =	7.352941176 Boe
scf gas	1 =	0.0283168	Scm gas	1 =	35.31472483 Scf gas
MMBtu	1 =	0.019230769	mt LNG	1 =	52 MMBtu
MMBtu	1 =	28.317	Cu m LNG	1 =	0.035 MMBtu
Density					
API	1 =	141.50/(API grav + 131.50)	Specific gravity	1 =	(141.50/SQ)-131.50 API
Lb/cu ft	1 =	16.0184634	Kg/cu m	1 =	0.06242796 Lb/cu ft
Temperature					
Fahrenheit	1 =	-17.222	Celsius	1 =	33.8 Fahrenheit

See reference page for full numbers used in calculations.

References

Source for SI

Bureau International des Poids et Mesures

<https://www.bipm.org/en/measurement-units/base-units.html>

Source for Imperial

The National Institute of Standards and Technology

<https://www.nist.gov/publications/uniform-laws-and-regulations-areas-legal-metrology-and-engine-fuel-quality>

The National Institute of Standards and Technology

<https://www.nist.gov/pml/nist-guide-si-appendix-b9-factors-units-listed-kind-quantity-or-field-science>

Btu definition

CME Group

<https://www.cmegroup.com/content/dam/cmegroup/rulebook/NYMEX/2/220.pdf>

Scf/lb-mole definition

American Petroleum Institute traces

http://www.api.org/%7E/media/files/ehs/climate-change/2009_ghg_compendium.pdf

API

U.S. Energy Information Administration

https://www.eia.gov/dnav/pet/tbldefs/pet_pri_wco_tbldef2.asp

Sources for boe

Internal Revenue Service

<https://www.irs.gov/pub/irs-drop/n-99-18.pdf>

U.S. Energy Information Administration

<https://www.eia.gov/outlooks/archive/aoe01/pdf/apph.pdf>

BP

<https://www.bp.com/content/dam/bp/en/corporate/pdf/energy-economics/statistical-review-2017/bp-statistical-review-of%20world%20energy-2017-approximate-conversion-factors.pdf>

Sources for toe

BP

<https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/statistical-review/bp-stats-review-2019-approximate-conversion-factors.pdf>

International Energy Agency

<https://www.eia.gov/energyexplained/units-and-calculators/energy-conversion-calculators.php>

Source for scf gas

U.S. Energy Information Administration

<https://www.eia.gov/tools/faqs/faq.php?id=45&t=8>

Source for scm gas

Derived from scf gas

Source for LNG

U.S. Energy Information Administration

<https://www.eia.gov/outlooks/archive/aoe01/pdf/apph.pdf>

Revision history

July 2024: Changes Kwh/MMBtu conversion factor.

April 2021: Platts amended the values of Gallon-Liter, Barrel-Cubic meter and Barrel-Kiloliter conversion pairs, replacing Imperial gallon with the US gallon values.

July 2019: Platts consolidated key base conversion rates in a single document.