

3.2 UNITS OF MEASUREMENT AND CONVERSION FACTORS

3.2.1 Units of measurement

The units of measurement to be used in the transport of dangerous goods by air are those specified by the International System (SI) as modified for international civil aviation by Annex 5 to the Chicago Convention. The primary units of mass and volume will be the kilogram (kg) and the litre (L) and the unit of pressure will be the kilopascal (kPa). Except as specifically provided for in these Instructions, only those abbreviations for units of measurement that are indicated in this paragraph, or in Annex 5 to the Chicago Convention, may be used in the transport of dangerous goods by air.

Note.— Where measurements relating to radioactivity occur in these Instructions, the value is given in SI units followed, in parentheses, by the non-SI equivalent.

3.2.2 Non-SI equivalents

It is recognized that there are in existence many packagings which were designed and constructed for use with non-SI quantity limitations and that such packagings will continue to be used for some time to come. Table 1-1 therefore contains a list of authorized non-SI equivalents for quantity limitations expressed in SI units. It is stressed that these are not precise equivalents but are nevertheless acceptable based upon the likely availability of packaging.

3.2.3 Conversion factors

Precise conversion factors for commonly used SI units are given in Annex 5 to the Chicago Convention. Tables 1-2 and 1-3 show conversion factors, to four significant figures, for some units widely used in dangerous goods transport.

Table 1-1. Authorized equivalents

Volume		
Litres	Imperial	U.S.
0.5	1 pt	1 pt
1	1 qt	1 qt
2	2 qt	2 qt
2.5	5 pt	5 pt
5	1 gal	1.25 gal
10	2 gal	2.5 gal
15	3 gal	3.75 gal
20	4.25 gal	5 gal
25	5.5 gal	6.25 gal
30	6.5 gal	7.5 gal
42	9 gal	11 gal
50	11 gal	13 gal
60	13 gal	15 gal
100	22 gal	25 gal
120	26 gal	30 gal
220	48 gal	55 gal
250	55 gal	62.5 gal

Note.— Where quantities are specified in SI units of mass, for 500 kg or less, quantities expressed in pounds may be substituted on the basis of one pound per 500 grams.

Table 1-2. Conversion to SI units*

To convert	to	Multiply by
bar	kilopascals (kPa)	100.0
curie (Ci)	gigabecquerel (GBq)	37.00
degrees Fahrenheit	degrees Celsius (°C)	subtract 32°F and multiply by 5/9
feet	metres (m)	0.304 8
gallons (Imperial)	litres (L)	4.546
gallons (U.S. liquid)	litres (L)	3.785
inches	millimetres (mm)	25.40
kilogram-force (kgf)	newton (N)	9.807
kilograms per square centimetre	kilopascals (kPa)	98.07
oersted	amperes per metre (A/m)	79.58
ounces, fluid (Imperial)	millilitres (mL)	28.41
ounces, fluid (U.S.)	millilitres (mL)	29.57
pints (Imperial)	litres (L)	0.568 3
pints (U.S.)	litres (L)	0.473 2
pounds (avoirdupois)	kilograms (kg)	0.453 6
pounds per square inch	kilopascals (kPa)	6.895
quarts (Imperial)	litres (L)	1.137
quarts (U.S.)	litres (L)	0.946 4
rad	gray (Gy)	0.010 00
rem	sievert (Sv)	0.010 00

Table 1-3. Conversion from SI units*

To convert	to	Multiply by
amperes per metre (A/m)	oersted	0.012 57
degrees Celsius (°C)	degrees Fahrenheit (°F)	multiply by 9/5 and add 32°F
gray (Gy)	rad	100.0
kilograms (kg)	pounds	2.205
kilopascals (kPa)	bar	0.010 00
kilopascals (kPa)	kilograms per square centimetre	0.010 20
kilopascals (kPa)	pounds per square inch	0.145 0
litres (L)	gallons (Imperial)	0.220 0
litres (L)	gallons (U.S. liquid)	0.264 2
litres (L)	pints (Imperial)	1.760
litres (L)	pints (U.S.)	2.113
litres (L)	quarts (Imperial)	0.879 9
litres (L)	quarts (U.S.)	1.057
metres (m)	feet	3.281
millilitres (mL)	ounces, fluid (Imperial)	0.035 20
millilitres (mL)	ounces, fluid (U.S.)	0.033 81
millimetres (mm)	inches	0.039 37
newton (N)	kilogram-force (kgf)	0.1020
sievert (Sv)	rem	100.0
terabecquerel (TBq)	curie (Ci)	27.03

* Where a prefix is used, it indicates a multiplying factor as follows:

tera (T)	× 10 ¹²
giga (G)	× 10 ⁹
mega (M)	× 10 ⁶
kilo (k)	× 10 ³
milli (m)	× 10 ⁻³
micro (μ)	× 10 ⁻⁶
nano (n)	× 10 ⁻⁹