

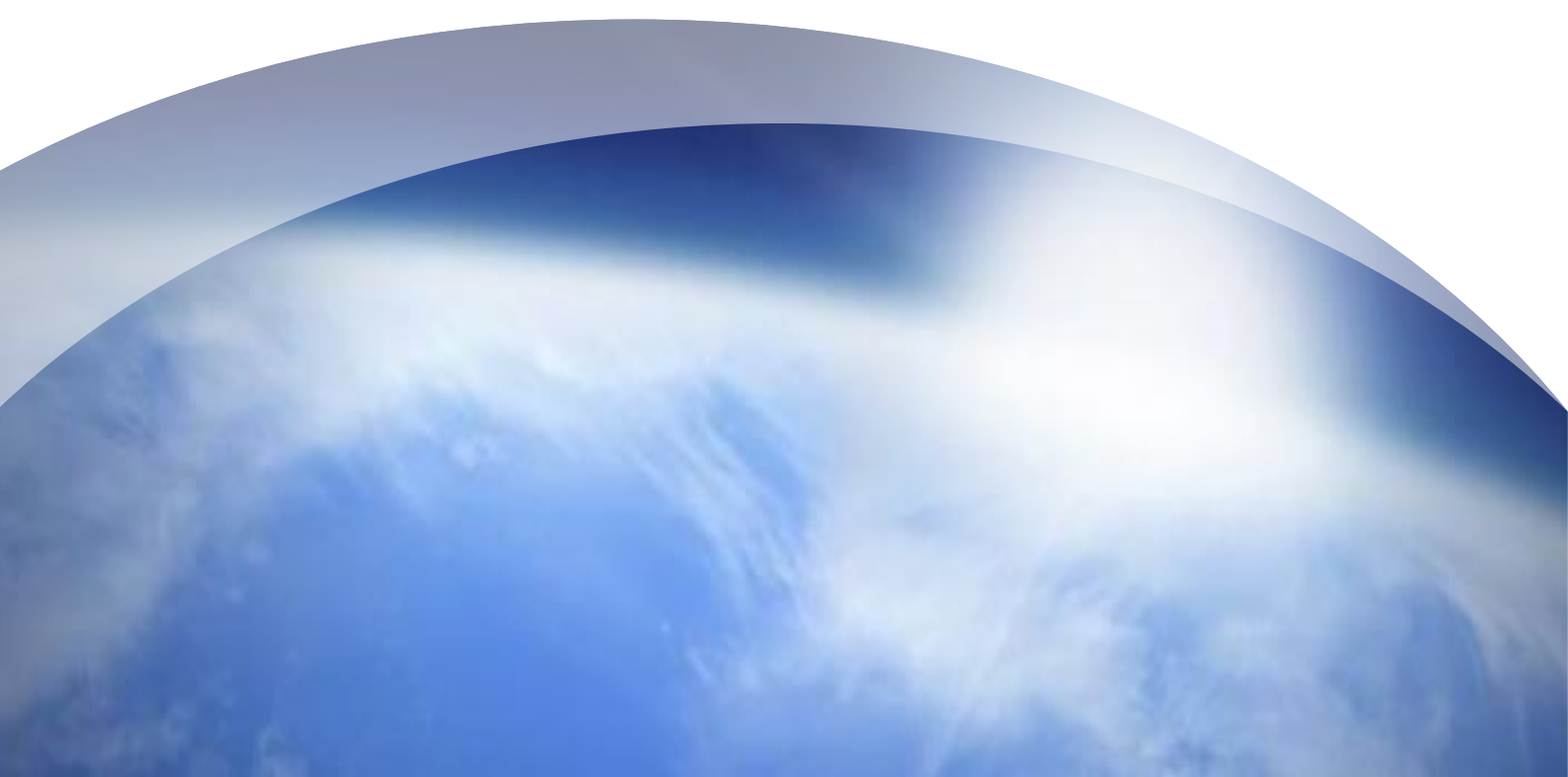
Unit conversion factors

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PREPARED FOR

Department of the Environment and Energy

PREPARED IN ASSOCIATION WITH



This document contains default unit conversion factors for converting Australian hazardous waste data from cubic metres or numbers of items into tonnes. Factors are provided for waste categories as set out in the *National Environment Protection (Movement of Controlled Waste between States and Territories) Measure*.

The factors were first used in *Hazardous Waste in Australia 2017* and have been incorporated into the *Australian Hazardous Waste Data and Reporting Standard 2017* (the standard). The standard is designed to diminish the differences between regulatory systems, reduce costs and provide more certainty for regulators and businesses, and help compile national data in a consistent manner.

The method used to develop the factors was:

- Compiled tracking system data for 2010-11 were partitioned into waste form: liquid, sludge, solid and occasionally mixtures for each waste.
- For each waste (and the most predominant waste form), a density figure was estimated based on:
 - EPA Victoria’s ‘Waste Materials – Density Data’
 - NSW’s ‘Online waste tracking system - conversion factors’ (not published)
 - Merck Index chemical/ physical properties (where there is some confidence in the chemistry and concentration of the waste)
 - MSDS information
 - Ascend’s *The Health and Environmental Impacts of Hazardous Wastes* report (prepared for the Department) and
 - logic relating to knowledge of the wastes and their sources.
- For those wastes that may be reported in units, such as tyres and drums, the supplied figure was a unit-to-mass conversion, as well as a volume-to-mass conversion.
- Where no reliable information was found for density estimation a default density of 1 t/m³ was assumed.

To comply with the standard, states and territories and the Australian Government should use the densities and unit conversion factors provided below to convert hazardous waste data to a consistent tonnage basis.

Unit conversion factors

Waste description (NEPM Schedule A, List 1)			Waste density (t/m ³)	Conversion factor (t/unit)
A	Plating and heat treatment	A100	Waste resulting from surface treatment of metals & plastics	1.5
		A110	Waste from heat treatment & tempering operations containing cyanides	2.0
		A130	Cyanides (inorganic)	1.2
B	Acids	B100	Acidic solutions or acids in solid form	1.2
C	Alkalis	C100	Basic solutions or bases in solid form	1.3
D	Inorganic chemicals	D100	Metal carbonyls	1.0
		D110	Inorganic fluorine compounds excluding calcium fluoride	1.4
		D120	Mercury; mercury compounds	0.3
		D130	Arsenic; arsenic compounds	1.7
		D140	Chromium compounds (hexavalent & trivalent)	1.9
		D150	Cadmium; cadmium compounds	1.0
		D160	Beryllium; beryllium compounds	4.1
		D170	Antimony; antimony compounds	1.0
		D180	Thallium; thallium compounds	1.0
		D190	Copper compounds	1.8
		D200	Cobalt compounds	1.0
		D210	Nickel compounds	1.0
		D220	Lead; lead compounds	7.5
		D230	Zinc compounds	1.8
		D240	Selenium; selenium compounds	1.0
		D250	Tellurium; tellurium compounds	1.0
		D270	Vanadium compounds	1.0
		D290	Barium compounds (excluding barium sulphate)	1.0
		D300	Non-toxic salts	1.2
		D310	Boron compounds	1.0
		D330	Inorganic sulfides	0.8
D340	Perchlorates	1.0		
D350	Chlorates	1.0		
D360	Phosphorus compounds excluding mineral phosphates	1.0		
E	Reactive chemicals	E100	Waste containing peroxides other than hydrogen peroxide	1.0
F	Paints, resins, inks, organic sludges	F100	Waste from production, formulation & use of inks, dyes, pigments, paints, lacquers & varnish	1.3
		F110	Waste from the production, formulation & use of resins, latex, plasticisers, glues & adhesives	1.3
G	Organic solvents	G100	Ethers	0.7
		G110	Organic solvents excluding halogenated solvents	0.9
		G150	Halogenated organic solvents	1.5
		G160	Waste from the production, formulation & use of organic solvents	1.0

Waste description (NEPM Schedule A, List 1)			Waste density (t/m ³)	Conversion factor (t/unit)	
H	Pesticides	H100	Waste from the production, formulation & use of biocides & phytopharmaceuticals	1.0	
		H110	Organic phosphorous compounds	1.0	
		H170	Waste from manufacture, formulation & use of wood-preserving chemicals	1.2	
J	Oils	J100	Waste mineral oils unfit for their original intended use	0.9	
		J120	Waste oil/water, hydrocarbons/water mixtures or emulsions	1.0	
		J160	Waste tarry residues arising from refining, distillation, & any pyrolytic treatment	1.2	
K	Putrescible/ organic waste	K100	Animal effluent & residues (abattoir effluent, poultry & fish processing wastes)	0.9	
		K110	Grease trap waste	0.9	
		K140	Tannery wastes (incl. leather dust, ash, sludges & flours)	1.0	
		K190	Wool scouring wastes	1.0	
M	Organic chemicals	M100	Waste substances & articles containing or contaminated with polychlorinated biphenyls, polychlorinated naphthalenes, polychlorinated terphenyls and/or polybrominated biphenyls	1.0	
		M150	Phenols, phenol compounds including chlorophenols	1.2	
		M160	Organohalogen compounds—other than substances referred to in this Table	1.0	
		M170	Polychlorinated dibenzo-furan (any congener)	1.0	
		M180	Polychlorinated dibenzo-p-dioxin (any congener)	1.0	
		M210	Cyanides (organic)	1.0	
		M220	Isocyanate compounds	1.0	
		M230	Triethylamine catalysts for setting foundry sands	1.0	
		M250	Surface active agents (surfactants), containing principally organic constituents & which may contain metals & inorganic materials	1.0	
		M260	Highly odorous organic chemicals (including mercaptans & acrylates)	1.0	
		N	Soil/ sludge	N100	Containers & drums that are contaminated with residues of substances referred to in this list
N120	Soils contaminated with a controlled waste			0.9	
N140	Fire debris & fire wash waters			1.0	
N150	Fly ash, excluding fly ash generated from Australian coal fired power stations			1.7	
N160	Encapsulated, chemically-fixed, solidified or polymerised wastes referred to in this list			0.8	
N190	Filter cake contaminated with residues of substances referred to in this list			1.0	
N205	Residues from industrial waste treatment/disposal operations			0.7	
N220	Asbestos			0.8	
N230	Ceramic-based fibres with physico-chemical characteristics similar to those of asbestos			0.8	
R	Clinical and pharmaceutical			R100	Clinical & related wastes
		R120	Waste pharmaceuticals, drugs & medicines	0.3	
		R140	Waste from the production & preparation of pharmaceutical products	1.0	
T	Miscellaneous	T100	Waste chemical substances arising from research & development or teaching activities, including those which are not identified and/or are new & whose effects on human health and/or the environment are not known	1.0	
		T120	Waste from the production, formulation & use of photographic chemicals & processing materials	1.0	
		T140	Tyres	0.3	0.008
		T200	Waste of an explosive nature not subject to other legislation	1.0	
Other		Other	1.0		