

IS Materials Calculator Update – related to new EPD Standard

The Infrastructure Sustainability Materials Calculator (IS Materials Calculator) provides a level playing field assessment tool for materials lifecycle impacts across different infrastructure projects.

The IS Materials Calculator is based on data from the Australian Life Cycle Inventory databases and recognises Environmental Product Declarations (EPDs) as the best available data source.

- EPDs are registered documents that provide relevant, verified and comparable information about the environmental impact of goods and services. They are based on LCA methodology, and in Australia and New Zealand EPDs of construction products registered with EPD Australasia comply with the (European) EN15804 standard.

This EPD standard (EN15804) has been broadly adopted internationally. In October 2019, a major amendment (EN15804+A2) was published to align the standard with the EU's Product Environmental Footprint (PEF) methodology. This update (from EN15804+A1), amongst minor other changes, resulted in a changed set of environmental indicators to be reported in EPDs. The implementation of EN 15804+A2 became mandatory in Australia and New Zealand for any EPD published after February 2022. See Table 1 below for an overview of the different environmental indicators.

Several environmental impact indicators used in the updated standard (EN15804+A2) are different to those used in the previous version (EN15804+A1), and therefore the two standards are not compatible or comparable. It is not mathematically possible to convert EPD results from the +A1 method into +A2 results, and vice versa.

- The ISC is not aware of any LCA calculator (internationally) that is able to include both types of EPDs (i.e. EN15804+A1 & EN15804+A2) within a combined calculation methodology and produce a single consolidated result output. i.e., it is not comparing apples with apples.

The current IS Materials Calculator only includes results from EPDs published to the earlier standard (EN15804+A1).

- We note that many of our members have existing EPDs published to EN15804+A1, which are well within their 5-year validity period (with the final ones to expire in February 2027).
- The ISC needs to continue supporting these existing EPDs, and any change in the current methodology or process must take this into consideration.

Table 1: Environmental impact indicators in EN15804+A1 and EN15804+A2

EN15804+A1 Indicators			EN15804+A2 Indicators		
Indicator	Acronym	Unit	Core indicators		
Global warming potential	GWP	kg CO ₂ equivalent	Climate change – total	GWP-total	kg CO ₂ equivalent
Ozone layer depletion potential	ODP	kg CFC-11 equivalent	Climate change – fossil	GWP-fossil	kg CO ₂ equivalent
Acidification potential	AP	kg SO ₂ equivalent	Climate change – biogenic	GWP-biogenic	kg CO ₂ equivalent
Eutrophication potential	EP	kg PO ₄ ³⁻ equivalent	Climate change – land use and land use change	GWP-luluc	kg CO ₂ equivalent
Photochemical oxidation (Photochemical ozone creation) potential	POCP	kg ethylene equivalent	Ozone layer depletion	ODP	kg CFC-11 equivalent
Abiotic depletion potential - elements	ADPE	kg Sb equivalent	Acidification	AP	mol H ⁺ equivalent
Abiotic depletion potential – fossil fuels	ADPF	MJNCV	Eutrophication aquatic freshwater	EP-freshwater	kg PO ₄ ³⁻ equivalent
			Eutrophication aquatic marine	EP-marine	kg N equivalent
			Eutrophication terrestrial	EP-terrestrial	mol N equivalent
			Photochemical ozone formation	POCP	kg NMVOC equivalent
			Abiotic depletion potential – Minerals & metals	ADP minerals & metals	kg Sb equivalent
			Abiotic depletion potential – fossil fuels ¹¹	ADP fossil	MJ, net calorific value
			Water use ¹¹	WDP	m ³ world equivalent deprived
			Additional indicators		
			Particulate matter emissions	PM	disease incidence
			Ionising radiation, human health	IRP	kBq U235 equivalent
			Ecotoxicity (freshwater) ¹¹	ETP-fw	CTUe
			Human toxicity, cancer effects ¹¹	HTP-c	CTUh
			Human toxicity, non-cancer effects ¹¹	HTP-nc	CTUh
			Land use related impacts / soil quality ¹¹	SQP	- (dimensionless)

ISC Sustainable Materials Technical Working Group (TWG) work

The ISC Sustainable Materials TWG* has been tasked with investigating how to resolve if and how to update the IS Materials Calculator to enable it to accept EPDs published to either both EN15804+A1 and EN15804+A2 or how to update the IS Materials Calculator and the market to accept only EPDs published to EN15804+A2 after a certain cut-off period. Our initial assessment is that this is a complex piece of work, and it is envisaged that it could take circa 1-2 years to complete.

* The ISC Sustainable Materials TWG includes leading LCA practitioners and representatives from Materials and Embodied Carbon Leaders' Alliance (MECLA), Australian Life Cycle Assessment Society (ALCAS), EPD Australasia as well as representatives (and association leads) from the major material groups associated with infrastructure projects including steel, concrete, asphalt and plastic.

Current Workaround

Due to the significant scope and timeframe associated with the above piece of work, the ISC recommends material manufacturers continue to use the below workaround (as per the IS Material Calculator Guideline):

- To be added to the IS Materials Calculator, the product needs a valid EPD that includes the EN15804+A1 set of results (i.e., EPDs published to EN15804+A2 will need to also contain the EN15804+A1 results).
- Note, there is no change to other requirements, i.e., the EPD Programme Operator needs to be categorised as an Established Programme Operator by ECO Platform. (<https://www.eco-platform.org/the-eco-epd-programs.html>). EPD Australasia is an Established Programme Operator through its affiliation with the International EPD System.