

# HOW TO:

## ACHIEVE YOUR DECARBONIZATION GOALS WITH LIFE CYCLE ASSESSMENT AND PRODUCT CARBON FOOTPRINT



### DEFINITIONS OF KEY TERMS:

#### AP – Acidification Potential:

Acidification is a result of processes that contribute to increased acidity of water and soil systems, frequently through air emission that contribute to acid rain. The largest contributors are sulfur dioxide and nitrogen oxide.

#### CEN – European Committee for Standardization:

Committee which develops European technical standards such as EN 15804, EN 15804 +A2.

#### Cradle-to-Gate with Options:

Scope of an LCA study covering all unit processes from raw material extraction and processing to the manufacturing gate plus other optional life cycle stages such as distribution or end-of-life.

#### Cradle-to-Gate:

Scope of an LCA study covering all unit processes from raw material extraction and processing to the manufacturing gate.

#### Cradle-to-Grave:

Scope of an LCA study covering all life cycle stages from raw material extraction and processing, manufacturing, distribution, use, and end of life.

#### Embodied Carbon:

The greenhouse gas emissions resulting from the raw materials, manufacturing, and transportation of a material or a product.

#### EPD – Environmental Product Declaration:

An independently verified document that discloses the environmental life cycle impacts of a product.

#### EP – Eutrophication Potential:

Eutrophication is the fertilization of surface waters by nutrients that were previously scarce.



## FFD – Fossil Fuel Depletion:

Measures the depletion of fossil fuel resources in terms of megajoules.

## GHG – Greenhouse Gas:

Gases which trap heat in the atmosphere. Examples include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O).

## GWP – Global Warming Potential:

A life cycle assessment indicator which measures the warming potential of a gas. Measured in carbon dioxide equivalents (CO<sub>2</sub> eq.), this value allows comparison of the global warming impacts of different gases.

## ISO – International Organization for Standardization:

Nongovernmental organization which develops and publishes international standards. Core standards for LCA include ISO 14040 and ISO 14044. Core standards for EPDs can include ISO 14025; ISO 21930 (not 20); and EN 15804.

### ISO 14040:

Environmental management – Life cycle assessment – Principles and framework. This is a standard for Life Cycle Assessments (LCA).

### ISO 14044:

Environmental management – Life cycle assessment – Requirements and guidelines. This is a standard for Life Cycle Assessments (LCA).

### ISO 14025:

Environmental labels and declarations – Type III environmental declaration. This is the standard for Product Category Rules (PCR) and Environmental Product Declarations (EPD).

### ISO 14067:

Greenhouse gases – Carbon footprint of products – Requirements and guidelines for quantification. This is the standard for Product Carbon Footprints (PCF).

## LCA – Life Cycle Assessment:

A holistic analysis of the potential environmental impacts and emissions from the entire life cycle of a product or material.

## LCI – Life Cycle Inventory:

Phase of an LCA involving the development and quantification of the inputs and outputs for a product throughout its life cycle.

## LCIA – Life Cycle Impact Assessment:

Phase of an LCA which provides the potential environmental impacts for a product throughout its life cycle.

## ODP – Ozone Layer Depletion Potential:

Certain chemicals, when released into the atmosphere, can cause depletion of the stratospheric ozone layer. This impact measures the potential of the chemicals to deplete the ozone.

## PCF – Product Carbon Footprint:

Measures the total greenhouse gas emissions generated by a product. Can be cradle-to-gate for suppliers or cradle-to-grave for final products.

## PCR – Product Category Rule:

A standard set of rules, requirements, and guidelines for developing Environmental Product Declarations (EPDs). PCRs provide a specific framework for producing EPDs for each product category. PCRs are developed by Program Operators such as UL, ASTM, NSF, IBU, etc.

## SDS – Safety Data Sheet:

Includes information such as the properties of each chemical; the physical, health, and environmental health hazards; protective measures; and safety precautions for handling, storing, and transporting the chemical.

## SP – Smog Formation:

Under certain climatic conditions, air emissions from industry and transportation can be trapped at ground level where, in the presence of sunlight, they produce photochemical smog.

## SPI – Sustainable Product Innovation:

Using lifecycle thinking and sustainability analysis to design more sustainable products. Typically integrated into the stage-gate process for new product development.

