Life Cycle Assessment (LCA)

Catylen® D 1200

Our Catylen® family of products are key components of the Ziegler and ZN catalysts; although they are used in very small amounts, they have a profound influence on the ultimate properties of the polymers. This document provides the required Life Cycle Assessment data to give our customers the opportunity to calculate the environmental performance of their products.

Framework of the LCA

Goal: Calculation of the environmental performance of products manufactured and sold by Evonik Catalysts

System Boundary: Cradle-to-Gate

Functional Unit (FU): 1 kg Catylen® D 1200

Methodology: All our Life Cycle Assessments are following the principles of ISO 14040/44 and ISO 14067 standards. The established method of the Institute of Environmental Sciences (CML) with characterization factors from August 2016 was used for all impact categories, this excludes blue water consumption and primary energy demand.

Data Sources: The LCA was created in 2021 by an internal Life Cycle Management team. The LCA is based on primary data from the year 2021 by Evonik for the production process, while secondary data from databases (such as GaBi and ecoinvent), suppliers or literature is utilized for external processes and raw materials. The software GaBi 10 was used for the LCA modeling.

Cut-off rules for the inventory: In general, 1% for single inputs and below 5% for the sum. No environmentally relevant flows were neglected. Some utilities of production processes have been modeled analog to known processes. Transports have been considered but distances have mainly been estimated.

Further Information:
For more information about LCAs, visit Evonik's LCA website.
For more information about Impact Categories, visit Evonik's LCA Impact Categories website

Results (Cradle-to-Gate, estimation)

Evaluation variables	Value	Unit per FU
Abiotic Depletion Elements	$1.7 \cdot 10^{-05}$	kg Sb eq.
Abiotic Depletion Fossil	73.3	MJ
Eutrophication Potential	$1.4 \cdot 10^{-03}$	kg PO_4^{3-} eq.
Global Warming Potential excl. bio. C incl. LUC	3.4	kg CO_2 eq.
Global Warming Potential incl. bio. C incl. LUC	2.9	kg CO_2 eq.
Ozone Layer Depletion Potential	$1.2 \cdot 10^{-09}$	kg R11 eq.
Photochem. Ozone Creation Potential	$1.3 \cdot 10^{-3}$	kg Ethene eq.
Primary Energy Demand	105.6	MJ

LUC = Land Use Change

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