

# Life Cycle Assessment (LCA)

## Catlylen® D 1000

Our Catlylen® 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 Catlylen® D 1000

**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	$8.9 \cdot 10^{-07}$	kg Sb eq.
Abiotic Depletion Fossil	54.3	MJ
Eutrophication Potential	$1.5 \cdot 10^{-03}$	kg PO <sub>4</sub> <sup>3-</sup> eq.
Global Warming Potential excl. bio. C incl. LUC	2.6	kg CO <sub>2</sub> eq.
Global Warming Potential incl. bio. C incl. LUC	1.9	kg CO <sub>2</sub> eq.
Ozone Layer Depletion Potential	$6.1 \cdot 10^{-10}$	kg R11 eq.
Photochem. Ozone Creation Potential	$6.7 \cdot 10^{-4}$	kg Ethene eq.
Primary Energy Demand	90.3	MJ

LUC = Land Use Change

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..... **Evonik Operations GmbH**  
..... Rodenbacher Chaussee 4  
..... 63457 Hanau  
..... Germany

..... catalysts@evonik.com  
..... <http://www.evonik.com/catalysts>