

LIFE CYCLE ASSESSMENT DATA FOR ECONYL® POLYMER



Results from ISO 14040/44 compliant and Third Party verified LCA study.

Data collection: 2023 and 2024.

LEVEL 2 document

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Material: Nylon 6

Product: polymer

- a. ECONYL® polymers 2,4 viscosity; produced in Slovenia Ljubljana plant;
- b. ECONYL® polymers 2,7 viscosity; produced in Italy Arco and Slovenia Ljubljana plants.

Declared Unit: 1 kg polymer (granules)

Boundaries: cradle to gate

Material Safety

ECONYL® polymers do not contain any materials / substances hazardous to health and the environment (carcinogenic, mutagenic or toxic to reproduction, PBT, vPvB) or substances of very high concern (SVHC), according to Regulation (EC) No 1907/2006 and Regulation (EC) No 1272/2008.

Background data and method:

All the background data relevant for modelling were taken from LCA FE database – content version 2025.1, software version LCA FE 10.9.1.17. LCA FE EN15804 +A2 assessment method based on EF 3.1 is used.

Processes included:

- Polymer production, including recycling operations;
- End-of-Life treatment of manufacturing waste, even if carried out by third parties, including transportation;
- Generation of electricity and production of fuels, steam and other energy carriers used in core processes;
- All relevant transportation (transport of raw materials, fuels and products at all stages);
- Secondary and recycled raw materials production. This includes plastics waste and scraps recovery/recycling processes, collection and selection of post-consumer and post-industrial waste, washing of post-consumer waste, grinding of scraps and/or post-industrial feedstock, mechanical pre-treatment and chemical recycling process.

Downstream processes are outside of scope of the LCA study since polymers are the “building blocks” for a production chain of countless items in very different markets, making their end use and end-of-life treatment often unpredictable.

Production sites included in the LCA study:

AquafileSLO - Ajdovščina, Slovenia

AquafileSLO - Ljubljana, Slovenia

Aquafile S.p.A. - Arco, Italy

Aquafile Carpet Recycling – Phoenix, USA

Cut off criteria

In general, Life Cycle Inventory data for a minimum of 99% of total inflows (mass and energy) to the upstream and core module is included.

Environmental performance

ECONYL® polymer is polymerized in two production locations (AquafilSLO - Ljubljana and Aquafil Arco). Environmental performance indicators of ECONYL® polymer are based on weighted average of production ratio in year 2024.

Potential environmental impacts

IMPACT CATEGORIES	UNIT	TOTAL
EN15804+A2 (EF 3.1) Climate Change - total	kg CO2 eq.	1,69E+00
EN15804+A2 (EF 3.1) Ozone depletion	kg CFC-11 eq.	9,28E-10
EN15804+A2 (EF 3.1) Acidification	Mole of H+ eq.	2,75E-03
EN15804+A2 (EF 3.1) Eutrophication, freshwater	kg P eq.	1,01E-05
EN15804+A2 (EF 3.1) Eutrophication, marine	kg N eq.	1,94E-03
EN15804+A2 (EF 3.1) Eutrophication, terrestrial	Mole of N eq.	9,83E-03
EN15804+A2 (EF 3.1) Photochemical ozone formation, human health	kg NMVOC eq.	2,72E-03
EN15804+A2 (EF 3.1) Resource use, mineral and metals*	kg Sb eq.	1,55E-07
EN15804+A2 (EF 3.1) Resource use, fossils*	MJ	2,50E+01
EN15804+A2 (EF 3.1) Water use*	m ³ world equiv.	8,09E-01
EN15804+A2 (EF 3.1) Particulate matter	Disease incidences	3,53E-08
EN15804+A2 (EF 3.1) Ionising radiation, human health	kBq U235 eq.	1,57E-02
EN15804+A2 (EF 3.1) Ecotoxicity, freshwater	CTUe	5,66E+00
EN15804+A2 (EF 3.1) Human toxicity, cancer	CTUh	2,61E-10
EN15804+A2 (EF 3.1) Human toxicity, non-cancer	CTUh	2,70E-09
EN15804+A2 (EF 3.1) Land Use	Pt	4,47E-01

Downstream processes are outside of scope of this LCA study

**"The results of this environmental impact indicator shall be used with care as the uncertainties of the results are high and as there is limited experience with the indicator."*

Use of resources

USE OF RESOURCES		UNIT	TOTAL
Primary energy resources – renewable	Use as energy carrier	MJ	2,37E+00
	Used as raw materials	MJ	0,00E+00
	Total	MJ	2,37E+00
Primary energy resources – non renewable	Use as energy carrier	MJ	2,06E+01
	Used as raw materials	MJ	4,45E+00
	Total	MJ	2,50E+01
Use of net fresh water		m ³	1,94E-02

Downstream processes are outside of scope of this LCA study

Waste production and output flows

OUTPUT FLOW	UNIT	TOTAL
Hazardous waste disposed	kg	2,97E-03
Non-Hazardous waste disposed	kg	1,54E-01
Radioactive waste disposed	kg	5,17E-05

Downstream processes are outside of scope of this LCA study

OUTPUT FLOW	UNIT	TOTAL
Components for re-use	kg	0,00E+00
Materials for recycling	kg	6,39E-02
Exported energy, electricity	MJ	2,96E-01
Exported energy, thermal	MJ	5,28E-01

Downstream processes are outside of scope of this LCA study

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