

Life-Cycle Assessment Summary Report

In accordance with ISO 14040:2006/ISO 14044:2006

WORK 3 SERIES DESK FRAME

ROL AB

LCA author:
Lucas Andersson, ROL AB

Geographical scope:
Europe

An LCA should provide current information and may therefore be updated if conditions change.



GENERAL INFORMATION

MANUFACTURER INFORMATION

Manufacturer	ROL AB
Address	Flygplatsvägen 1, SE-555 93 Jönköping, Sweden
Contact details	info@rolgroup.com
Website	https://www.rolgroup.com/

PRODUCT IDENTIFICATION

Product name	Work 3 (Product specific LCA)
Product number/ reference	6800691001-5 & 68005305122-1
Place(s) of production	Jönköping, Sweden Šiauliai, Lithuania
Reference service life	15 years

Comparability of LCAs

This is an unverified LCA report. The LCA owner, ROL AB, has the sole ownership, liability, and responsibility for the LCA. For the LCA result to be comparable, they must be based on equivalent system boundaries, functional units, data quality requirements, methods of data collection (including reference period), and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors). The compared product must also have equivalent content declarations.

LCA INFORMATION

LCA standards	ISO 14040:2006/ISO14044:2006
LCA author	Lucas Andersson, ROL AB
LCA software	OneClickLCA Pre-verified EPD generator tool, www.oneclicklca.com
Generic data	Ecoinvent 3.8
Geographical scope	Use stage: Europe End of life stage: Europe
LCA version:	1.0* (2025-01-02)

The LCA will be updated when noticeable changes to the product have been made, assuring credible and up-to-date presentation of the product's environmental performance.

** LCA version 1.0 is the original Design 1 LCA summary report.*

PRODUCT INFORMATION

PRODUCT DESCRIPTION

Work 3 is a part of the ergonomic portfolio series by ROL. This LCA summary report represents the production of a desk frame at Jönköping, Sweden and Šiauliai, Lithuania. The frame is used as a support for a tabletop that is supplied separately by another provider. The desk frame, made mostly of powder coated steel, is a fixed solution provided in a sitting or standing position.

PRODUCT APPLICATION

Work 3 is a fixed desk frame, offered in sitting or standing position, intended for use in office spaces and homes.

TECHNICAL SPECIFICATIONS

Width: 800-2800 mm

Depth: 400-1000 mm

Height Sit: 667 (excluding foot: 31-41 mm)

Height Stand: 1050 (excluding foot: 31-41 mm)

PRODUCT STANDARDS

EN 527 Office furniture - Work tables and desks

ANSI/BIFMA X5.5-2021 Desk and table products

PHYSICAL PROPERTIES OF THE PRODUCT

The weight of the product is 22,64 kg (excl. packaging). The desk is offered in three colour schemes: white, silver and black. Tube dimensions are 80x60 mm and tabletops with various dimensions can be installed on the frame: width 800-2800 mm and depth 400-1000 mm.

PRODUCT RAW MATERIAL COMPOSITION

Product material	Weight, kg	Post-consumer recycled material, %	Renewable material, %	Biogenic carbon, kgC	Biogenic carbon, CO2e/kg	Country/Region of origin
Steel	22,354	20%	-	-	-	EU, SE
Paint	0,236	-	-	-	-	EU, SE
Plastic	0,050	-	-	-	-	EU
Packaging material	Weight, kg	Weight, % (versus product)	Renewable material, %	Biogenic carbon, kgC	Biogenic carbon, kg CO2e/kg	Country/Region of origin
Cardboard	0,704	3,10%	100%	0,281kg	1,031kg	EU
Paper	0,199	0,87%	100%	0,0814kg	0,298kg	EU
Wood	0,250	1,10%	100%	0,098kg	0,360kg	EU
Plastic	0,015	<0,1%	-	-	-	EU

The burdens from scrap input in steel are included in the calculations and their contribution is less than 10% to the GWP-GHG results of modules A1-A3.

SUBSTANCES, REACH - VERY HIGH CONCERN

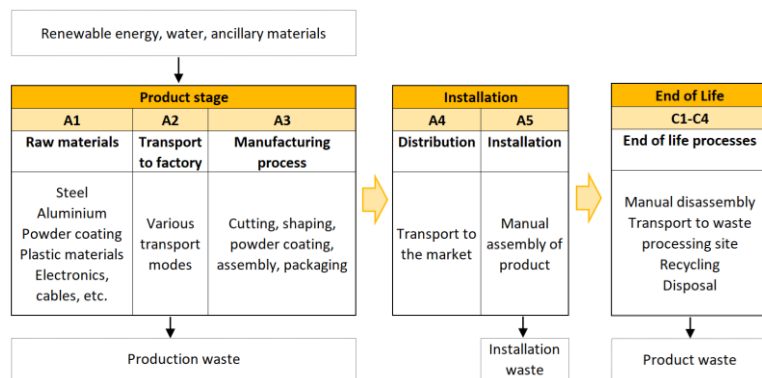
The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

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PRODUCT LIFE-CYCLE

MANUFACTURING STAGE (A1-A3)

The environmental impacts considered for the manufacturing stage cover the acquisition and processing of raw materials used in the desk frame.



The manufacturing process includes production and supply of raw materials as well as their processing at the factory. The steel tubes that make up most of the desk weight are cut and shaped to the desired dimensions to form the legs and the feet.

The steel elements are then transferred to a painting line where they are washed and covered with powder coating on the surface. When the processing is finished, the legs, feet and supporting elements are packed together.

The frames are prepared for delivery by placing them on pallets (10 frames on one pallet). The waste steel, wastewater from the painting line and other waste materials are submitted for recycling.

INSTALLATION STAGE (A4-A5)

The installation stage includes transport of raw materials to dedicated warehouse, installation resources and waste treatment.

USE STAGE (B1-B7)

Work 3 is a fixed desk frame without any noticeable maintenance or other operational impacts within its reference service life (15 years).

END OF LIFE STAGE (C1-C4)

The end-of-life stage accounts for the waste treatment of the discarded desk frame. The scenario is based on statistical information about the current waste management practices for the dedicated markets.

MODULE D (BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY)

Module D presents the potential benefits/loads from recovery of materials from the desk frame.

LIFE-CYCLE ASSESSMENT

LIFE-CYCLE ASSESSMENT INFORMATION

Period for data 2024

DECLARED AND FUNCTIONAL UNIT

Declared unit 1 unit of desk frame

Mass per declared unit 22,64 kg

Functional unit The functional unit is considered based on an average use regime of the desk: 5 days a week, 46 weeks per year, for 15 years.

Reference service life 15 years

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C 0

Biogenic carbon content in packaging, kg C 0,4605

SYSTEM BOUNDARY

This LCA covers the scope “cradle to gate with options” with the following modules:

X – modules included in the LCA, ND – modules not declared

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw materials supply	Transport	Manufacturing	Transport	Construction installation/assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction /demolition		Transport	Waste processing	Disposal
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	EU	EU	EU	EU	EU	-	-	-	-	-	-	-	EU	EU	EU	EU	EU
Share of specific data	5%			>90%		-	-	-	-	-	-	-	-	-	-	-	-
Variation products	0%			0%		-	-	-	-	-	-	-	-	-	-	-	-
Variation sites	0%			0%		-	-	-	-	-	-	-	-	-	-	-	-

The time period over which inputs to and outputs from the product system are accounted for is 100 years from the year that the LCA model represents (2023).

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CUT-OFF CRITERIA

The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. The total neglected input and output flows also do not exceed 1% of energy usage or mass. The study does not exclude any hazardous materials or substances.

All industrial processes from raw material acquisition and pre-processing, production, product distribution, installation, use of the product and end-of-life management are included. Some substances which are present in the product only in very small amounts (< 0,1%) are omitted as they have no significant impact on the impact results.

The production of capital equipment, construction activities, and infrastructure, personnel-related activities, energy and water use related to company management and sales activities are excluded.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is done for some packaging materials, ancillary material, energy consumption and waste production. The inputs are allocated to the studied product by mass allocation. This LCA study is conducted in accordance with all methodological considerations, such as performance, system boundaries, data quality, allocation procedures, and decision rules to evaluate inputs and outputs.

Allocation used in Ecoinvent 3.8 environmental data sources follow the methodology 'allocation, cut-off by classification'. This methodology is in line with the requirements of ISO 14044.

AVERAGES AND VARIABILITY

The same product is delivered to different markets. Weighted average impacts are calculated for the transport to retailer, use phase electricity emission factor and end-of-life scenario.

ENVIRONMENTAL IMPACT DATA

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks Note: additional environmental impact data, e.g. TRACI-indicators, are presented in annexes.

CORE ENVIRONMENTAL IMPACT INDICATORS

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	Total
GWP – total ¹⁾	kg CO ₂ e	7,13E+01	5,38E+00	1,76E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,65E-01	4,30E-01	5,95E-01	-1,20E+01	8,00E+01
GWP – fossil	kg CO ₂ e	7,29E+01	5,38E+00	5,93E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,65E-01	4,28E-01	5,95E-01	-1,20E+01	7,99E+01
GWP – biogenic	kg CO ₂ e	-1,70E+00	0,00E+00	1,70E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,15E-03
GWP – LULUC	kg CO ₂ e	5,67E-02	2,21E-03	2,50E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,22E-04	4,84E-04	3,03E-05	9,29E-03	5,96E-02
Ozone depletion pot,	kg CFC-11e	5,04E-06	1,18E-06	3,57E-09	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,31E-07	4,56E-08	1,23E-08	-3,33E-07	6,42E-06
Acidification potential	mol H ⁺ e	3,28E-01	2,42E-02	1,99E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,29E-03	4,68E-03	3,28E-04	-4,63E-02	3,59E-01
EP-freshwater ²⁾	kg Pe	2,88E-03	4,50E-05	8,41E-07	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,96E-06	1,97E-05	3,79E-07	-8,29E-05	2,95E-03
EP-marine	kg Ne	7,16E-02	6,97E-03	6,68E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	6,84E-04	9,93E-04	1,19E-04	-3,61E-04	8,04E-02
EP-terrestrial	mol Ne	7,48E-01	7,69E-02	6,81E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,54E-03	1,15E-02	1,30E-03	-1,28E-01	8,46E-01
POCP (“smog”) ³⁾	kg NMVOCe	3,12E-01	2,31E-02	1,89E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,31E-03	3,15E-03	3,69E-04	-6,98E-02	3,41E-01
ADP-minerals & metals ^{4), 5)}	kg Sbe	7,78E-04	1,86E-05	2,99E-07	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,00E-06	4,95E-05	8,98E-08	-3,75E-04	8,48E-04
ADP-fossil resources	MJ	8,07E+02	7,77E+01	3,63E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	8,38E+00	5,00E+00	8,51E-01	-1,00E+02	8,99E+02
Water use ⁵⁾	m ³ e depr,	3,07E+01	3,39E-01	2,42E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,87E-02	9,92E-02	1,57E-02	5,20E+00	3,12E+01

MND – module not declared.

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO₄e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	Total
Particulate matter	Incidence	5,67E-06	4,54E-07	6,07E-09	MND	MND	MND	MND	MND	MND	MND	0,00E+00	4,87E-08	6,18E-08	6,01E-09	-4,90E-07	6,25E-06
Ionizing radiation ⁵⁾	kBq U235e	3,15E+00	3,61E-01	3,00E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	4,39E-02	5,56E-02	3,78E-03	1,83E-01	3,62E+00
Ecotoxicity (freshwater)	CTUe	2,06E+03	7,13E+01	3,09E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	6,95E+00	2,27E+01	7,00E-01	-2,82E+02	2,16E+03
Human toxicity, cancer	CTUh	4,34E-07	2,03E-09	8,73E-11	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,15E-10	7,04E-10	7,37E-10	1,24E-07	4,37E-07
Human tox, non-cancer	CTUh	1,91E-06	6,62E-08	1,74E-09	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,06E-09	3,11E-08	2,55E-09	7,41E-07	2,02E-06
SQP ⁶⁾	-	4,12E+02	5,33E+01	2,16E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,87E+00	1,00E+01	1,75E+00	-1,24E+02	4,83E+02

SQP = Land use related impacts/soil quality.

EN 15804+A2 disclaimer for Ionizing radiation, human health: This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

USE OF NATURAL RESOURCES

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	Total
Renew. PER as energy ⁷⁾	MJ	8,85E+01	9,06E-01	2,39E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,20E-01	8,84E-01	8,40E-03	-1,83E+01	9,05E+01
Renew, PER as material	MJ	1,49E+01	0,00E+00	-1,49E+01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew, PER	MJ	1,03E+02	9,06E-01	-1,49E+01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,20E-01	8,84E-01	8,40E-03	-1,83E+01	9,05E+01
Non-re, PER as energy	MJ	8,00E+02	7,77E+01	3,63E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	8,38E+00	5,00E+00	8,52E-01	-9,91E+01	8,92E+02
Non-re, PER as material	MJ	4,99E+00	0,00E+00	-9,26E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-1,39E+00	-2,68E+00	0,00E+00	0,00E+00
Total use of non-re, PER	MJ	8,05E+02	7,77E+01	-5,63E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	8,38E+00	3,61E+00	-1,82E+00	-9,91E+01	8,92E+02
Secondary materials	kg	9,74E+00	2,57E-02	5,06E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,81E-03	5,61E-03	2,75E-04	7,90E+00	9,77E+00
Renew. secondary fuels	MJ	3,01E-01	3,29E-04	3,49E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,10E-05	2,89E-04	4,91E-06	-3,67E-02	3,02E-01
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m3	5,20E-01	9,13E-03	4,09E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,05E-03	3,01E-03	9,27E-04	-3,35E-01	5,34E-01

PER = Primary energy resources

END OF LIFE – WASTE

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	Total
Hazardous waste	kg	2,38E+01	1,12E-01	4,07E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	9,40E-03	0,00E+00	0,00E+00	-7,43E+00	2,39E+01
Non-hazardous waste	kg	1,09E+02	1,78E+00	2,64E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,67E-01	0,00E+00	5,83E+00	-2,44E+01	1,17E+02
Radioactive waste	kg	1,97E-03	5,14E-04	1,66E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,77E-05	0,00E+00	0,00E+00	2,36E-05	2,54E-03

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	Total
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	1,15E+01	0,00E+00	4,93E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,68E+01	0,00E+00	0,00E+00	2,88E+01
Materials for energy rec	kg	0,00E+00	0,00E+00	2,50E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,50E-01
Exported energy	MJ	0,00E+00	0,00E+00	2,81E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	7,75E-01	0,00E+00	0,00E+00	3,59E+00

ENVIRONMENTAL IMPACTS – GWP-GHG

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	Total
GWP-GHG ⁹⁾	kg	7,29E+01	5,38E+00	5,93E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,65E-01	4,28E-01	5,95E-01	-1,20E+01	7,99E+01

This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product as defined by IPCC AR 5 (IPCC 2013) This indicator is almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

ROL

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Scenario parameter	Value
Product stage (A1-A3) Electricity mix	<p>Processes from manufacturing stage are modelled with generic data from the ecoinvent 3.8 database, The used processes are valid for European (RER) and world (GLO) context and the included electricity mixes are valid for the respective contexts.</p> <p>Certificates are provided by the electricity suppliers stating that 100% of the used electricity is from renewable source. The emission factor is 0,0042 kgCO₂-eq/kWh for the factory in Sweden and 0,057 kgCO₂-eq/kWh for the factory in Lithuania (source: ecoinvent 3.8).</p>
END OF LIFE PROCESSES Electricity mix	<p>End of life processes are modelled with generic data from the ecoinvent 3.8 database. The used processes are valid for European (RER) context.</p>

LIST OF REFERENCES

ISO 14040:2006 Environmental management. Life cycle assessment. Principles and frameworks.

ISO 14044:2006 Environmental management. Life cycle assessment. Requirements and guidelines.

EN 15804:2012+A2:2019/AC:2021 Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products.

General programme instructions for the international EPD® System version 4.0, 2021

NPCR 026 PCR - Part B for Furniture version 2.0

ROL

ABOUT THE MANUFACTURER

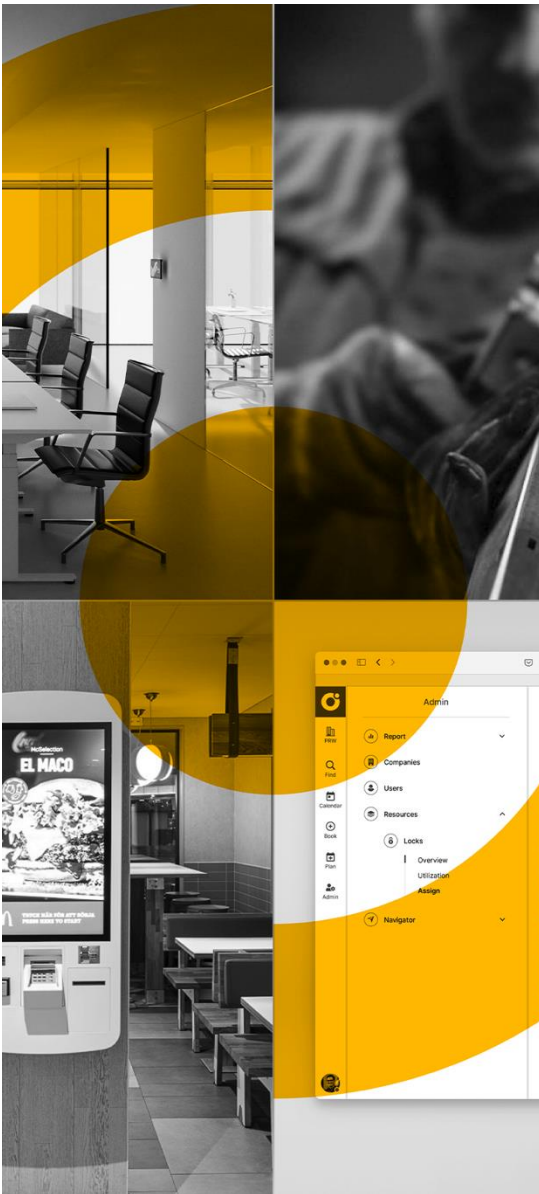
ROL is a global company offering a range of products and services incorporating the concept design, general contracting, and production of shopfitting and interiors to meet the needs of clients within the retail, restaurant, café and public spaces such as hotel, office, cinema, etc.

ROL was established in Jönköping, Sweden in 1985 and today ROL operates globally. The company has production facilities and sales offices in Sweden, Lithuania, China and USA as well as sales offices in Italy, UK and Germany. The mission of the company is to develop and deliver products and services that create inspiring and integrated environments.

ROL is determined to be a true steward of sustainability. The company is engaged in a number of actions to create new possibilities for sustainable and circular environments in collaboration with its clients and partners. The company is certified under ISO 14001, ISO 9001, ISO 28000.

LCA AUTHOR AND CONTRIBUTORS

Manufacturer	ROL AB
LCA author	Lucas Andersson, ROL AB
Background data	The generic data in this LCA is from the Ecoinvent 3.8 (cut-off),
LCA software	The LCA is created using One Click LCA pre-verified tool for the International EPD System, www.oneclicklca.com



ROL

ANNEX 1: ENVIRONMENTAL IMPACTS – TRACI 2.1. / ISO 21930

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	Total
Global Warming Pot.	kg CO ₂ e	7,03E+01	5,32E+00	6,86E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,60E-01	4,22E-01	5,94E-01	-1,13E+01	7,73E+01
Ozone Depletion	kg CFC-11e	4,57E-06	9,38E-07	2,95E-09	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,03E-07	3,68E-08	9,77E-09	-4,86E-07	5,66E-06
Acidification	kg SO ₂ e	1,48E+01	1,15E+00	9,86E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,09E-01	2,11E-01	1,62E-02	-2,14E+00	1,63E+01
Eutrophication	kg Ne	2,28E-02	2,23E-03	2,91E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,36E-04	1,79E-04	4,68E-05	1,41E-02	2,55E-02
POCP ("smog")	kg O ₃ e	1,77E-01	1,80E-02	1,58E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,77E-03	2,55E-03	3,07E-04	-3,32E-02	1,99E-01
ADP-fossil	MJ	6,29E+01	1,06E+01	3,67E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,16E+00	4,75E-01	1,18E-01	-2,12E+00	7,52E+01

Notes:

TRACI 2.1 impact indicators are developed by the US EPA (United States Environmental Protection Agency). TRACI is based on the specific conditions, monitoring and measurements of the United States and the results provided under these indicators will be of interest to users from the US market. Calculation methodologies for POCP and ADP-fossil differ than those recommended by the PCR, hence the magnitude of results is different, too.