



ENVIRONMENTAL PRODUCT DECLARATION

SIRIUS Position Switch Plastic Enclosure

3SE5[1,2][3,4,5].-.....; 3SE5322-.....

Type II according to ISO 14021 including life cycle impact assessment (LCIA)



SIEMENS

General information

This environmental product declaration (EPD) is based on the international standard ISO 14021 ("Environmental labels and declarations – Self declared environmental claims – Type II environmental labelling"). The data in this EPD has been evaluated on a full-scale life cycle assessment (LCA) study according to ISO 14040/44, taking into account the product category rules (PCR) for electronic and electrotechnical products and systems defined in EN 50693, as well as product specific rules (PSR) for low-voltage switchgear and control gear equipment in IEC TS 63058 ED1.0

Siemens is dedicated to an environmentally conscious design of its products in line with IEC 62430 and has implemented an integrated management system according to ISO 9001, ISO 14001 and ISO 45001.

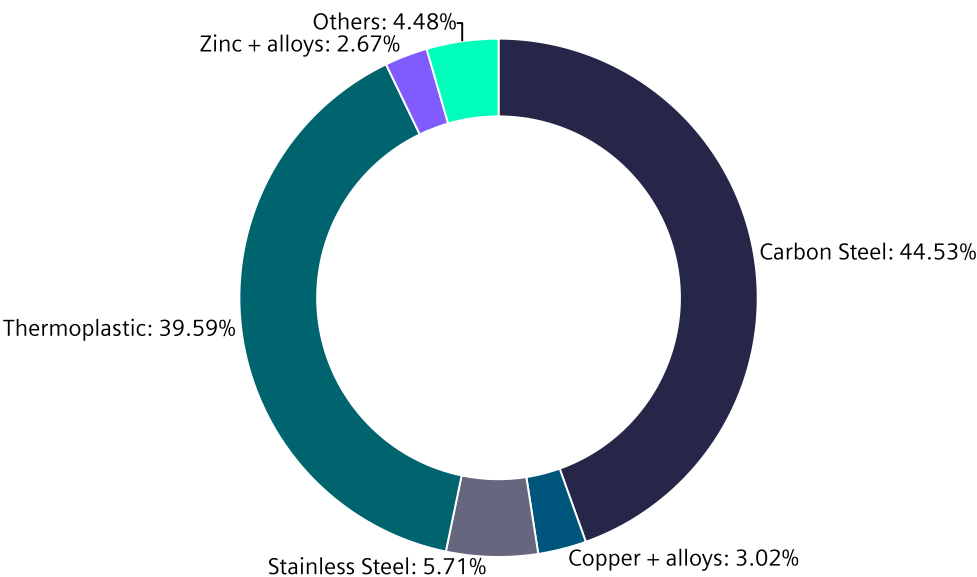
Products	All variants in the range of 3SE5[1,2][3,4,5]-....., 3SE5322-.....
Represented by the reference product	3SE5322-0SD21
Product Description	Safety position switch with tumbler /guard locking (plastic housing)
Functional Unit	Compact, safe and versatile. This SIRIUS safety switch with plastic housing and 1300 N locking force (locking force 1000 N according to ISO 14119) is ideal for applications with medium force requirements. The coded actuator reliably protects against manipulation. - 5 approach directions for flexible integration - Spring-force locking for secure locking - Meets the highest safety standards: up to PL e / SIL 3 - International approvals (IEC, UL) - The reference service lifetime (RSL) is 20 years. ¹

¹ The lifetime value used for calculation is a reference value and does not equate with the minimum, average or real life time.

Material composition

The following chart outlines the overall material composition of the calculated reference product without packaging. Product weight of 0.55 kg adds up with packaging weight of 0.04 kg to a total weight of 0.59 kg.

Product Weight 0.55 kg



Substance assessment

At Siemens, we are committed to the development and production of environmentally sound and sustainably produced equipment. This includes avoiding hazardous substances in our products without compromising their benefits for our customers. Please visit the following website to learn more about how we comply with product-related environmental regulations like RoHS, REACH, WEEE and others: [Product Related Environmental Protection](#)

Life cycle stages and reference scenarios

 Manufacturing This stage covers the extraction of natural resources, production of raw materials, manufacturing, packaging, and transportation.	 Distribution and Operation This stage covers the product's distribution, installation, use, and maintenance. Different operating conditions can lead to deviations from the reference scenario.	 End-of-Life This stage covers the disassembly or shredding and material recycling of all recyclable materials, as well as energy recovery, thermal treatment and the disposal of all other materials.
Scenarios		
Energy model used: Europe (standard mix), Germany (standard mix) Transportation model: road Truck-trailer (34-40 t)	Energy model used: Europe (standard mix); Distribution scenario: Truck-trailer (34-40 t) 3500 km Use Scenario: 3.5 W full load, 20% loading rate, 30% service up-time: reference lifetime 20 years	Energy model used: EMEA End-of-Life methodology: Avoided burden (net-scrap calculation)

Key environmental performance indicators

The following impact categories characterize the product's environmental footprint. They have been calculated with LCIA methodology EN15804+A2 (EF 3.1); LCA tool: Green Digital Twin Version 4.0, Database: One Siemens LCA Database (based on Sphera MLC CUP 2024.1).

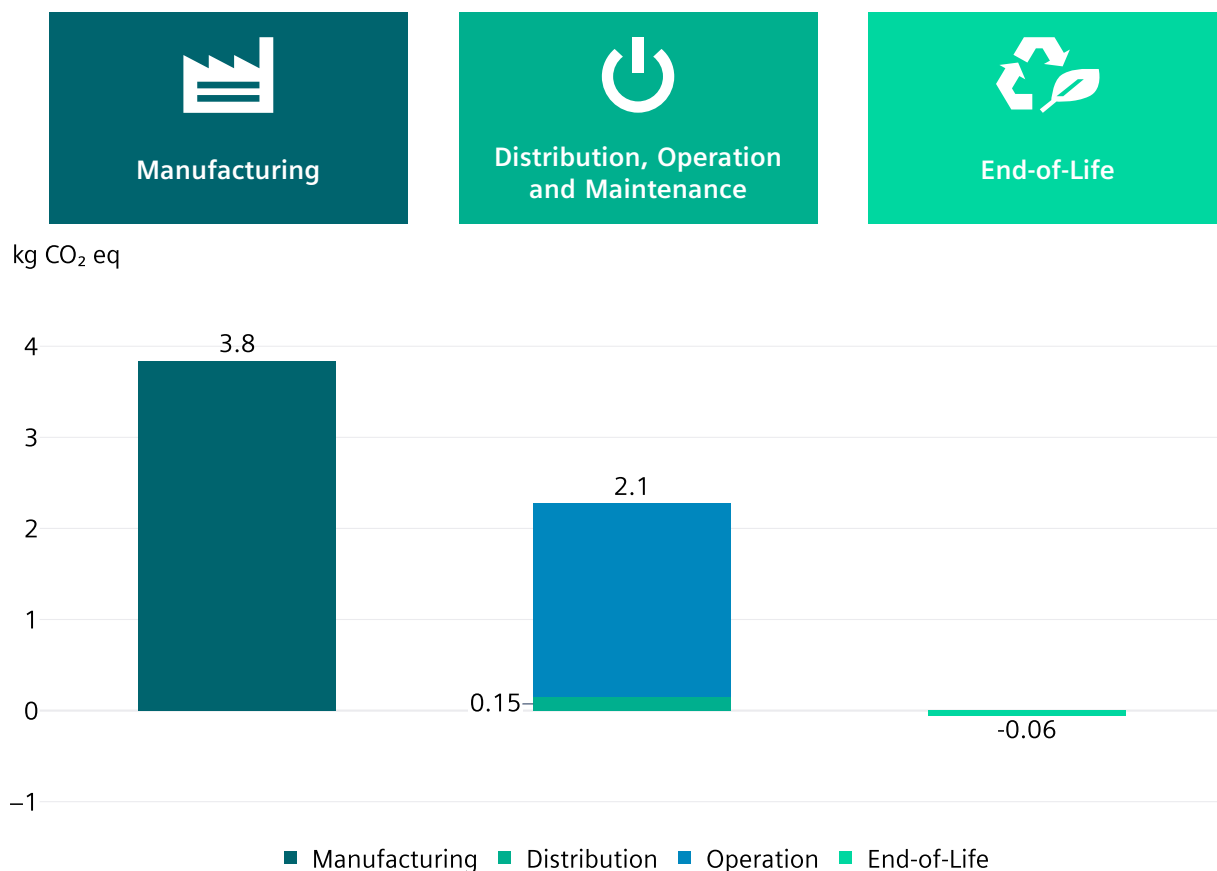
To ensure the high quality and completeness of the LCA results, primary data have been used whenever possible. Datasets for resources, such as electrical energy or natural gas, are chosen from the region where the device is produced and assembled. If primary data are not available, datasets reflecting state-of-the-art manufacturing technology are considered.

For products belonging to the same homogeneous product family range the extrapolation rules in the appendix can be used to derive their corresponding environmental impact values (i) according to the standard EN50693.

Impact Category	Unit	Total	Manufacturing	Distribution	Operation	End of life
Climate change – total	kg CO ₂ eq	6.06E+0	3.84E+0	1.47E-1	2.13E+0	-5.58E-2
Climate change – fossil	kg CO ₂ eq	6.02E+0	3.83E+0	1.44E-1	2.11E+0	-5.68E-2
Climate change – biogenic	kg CO ₂ eq	2.94E-2	9.83E-3	3.45E-4	1.90E-2	2.45E-4
Climate Change, land use and land use change	kg CO ₂ eq	6.92E-3	5.28E-3	2.43E-3	3.21E-4	-1.10E-3
Ozone depletion	kg CFC-11 eq	7.79E-11	3.01E-11	2.13E-14	4.78E-11	-5.48E-14
Acidification	Mole of H+ eq	1.70E-1	1.67E-1	1.98E-4	4.06E-3	-1.57E-3
Eutrophication, freshwater	kg P eq	6.13E-5	5.09E-5	6.16E-7	8.79E-6	1.07E-6
Eutrophication, marine	kg N eq	2.00E-2	1.89E-2	7.17E-5	1.02E-3	-8.48E-6
Eutrophication, terrestrial	Mole of N eq	1.94E-1	1.83E-1	8.54E-4	1.06E-2	1.91E-4
Photochemical ozone formation, human health	kg NMVOC eq	5.50E-2	5.24E-2	1.97E-4	2.68E-3	-2.60E-4
Resource use, mineral and metals	kg Sb eq	2.48E-4	3.03E-4	1.26E-8	3.94E-7	-5.56E-5
Resource use, fossils	MJ	9.39E+1	5.17E+1	1.90E+0	4.41E+1	-3.81E+0
Water use	m ³ world eq deprived water	8.04E+0	7.51E+0	2.23E-3	5.74E-1	-4.53E-2
Particulate matter	Disease incidences	1.03E-6	1.01E-6	1.98E-9	3.40E-8	-1.76E-8
Ionising radiation, human health	kBq U235 eq	1.56E+0	4.02E-1	5.02E-4	1.16E+0	1.79E-3
Ecotoxicity, freshwater – total	CTUe	9.20E+1	7.82E+1	1.41E+0	1.28E+1	-4.44E-1
Human toxicity, cancer – total	CTUh	6.72E-8	6.64E-8	2.85E-11	7.18E-10	1.86E-11
Human toxicity, non-cancer – total	CTUh	1.58E-7	1.50E-7	1.28E-9	1.10E-8	-4.22E-9
Land Use	dimensionless (pt)	3.05E+1	1.13E+1	9.35E-1	1.87E+1	-4.00E-1

Climate change

This chart shows the overall impact of the product on climate change – total. Different operating conditions can lead to deviations from the reference scenario.



End-of-Life results



The end-of-life stage was modelled by shredding of the device, followed by sorting and material separation process. The end-of-life parameters are calculated according to IEC TR 62635.

It leads to:

- **product recyclability of up to 52%** mainly due to metal content
- **energy recoverability of up to 37%** from plastic materials
- **minimum disposal rate of 11%**

The exact final values depend on the used recycling process and add up to 100%.

Note: The device should not be disposed of as unsorted municipal waste. Special treatment for specific components may be mandated by law or recommended for environmental reasons. Observe all local and applicable laws.

Appendix – Extrapolation Rules

To extrapolate the impact from the reference product to another product from the range, apply the following extrapolation rules to each key environmental impact (i) per life cycle stage from page 4:

MANUFACTURING (i) = Mass of (product) / Mass of (reference product) * manufacturing impact value (i) of the reference product

DISTRIBUTION (i) = Mass of (product) / Mass of (reference product) * distribution impact value (i) of the reference product

OPERATION (i) = Power loss in Watts (product) / Power loss in Watts (reference product) * operation impact value (i) of the reference product

END-OF-LIFE (i) = Mass of (product) / Mass of (reference product) * end-of-life impact value (i) of the reference product

TOTAL (i) = Σ Life Cycle Stages (i)

Data Sources:

Mass of product in the product catalog

Product specific electrical data in the technical data sheets

Legal Disclaimer

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