PRODUCTS FAMILY DECLARATION FOR DINRAILS PRODUCTS OF ABB

PRODUCT ENVIRONMENTAL PROFILE

Environmental Product Declaration

ORGANIZATION	WEBSITE
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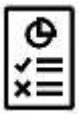
ABB Purpose & Embedding Sustainability

ABB is demonstrating their commitment to sustainability by making themselves sustainable. Across their own operations and value chain, aspiring to become a role model for others to follow. With **ABB Purpose** ABB is focusing on reducing harmful emissions, preserving natural resources, and championing ethical and humane behavior to achieve this. Detail info see the website: Sustainability strategy 2030 — ABB Group (global.abb)



General Information

Reference product	The reference product is one unit of Din rails product produced by ABB; the representative product is 83330 (2TMA020110N0001).
Description of the product	The product is Din rails product. It works as the auxiliary device to receive and transmit data to the door entry system.
Functional unit of the representative product	To receive and transmit data to the door entry system over a reference lifetime of 10 years.
Products concerned	The homogeneous family products covered in this PEP are other Din rails products. The products concerned: M2302 (2TMA070060W0006), M2302-02 (2TMA210160H0003), 83325/2-500-01 (2TMA020070N0011), 83325/2-500-02 (2TMA210160H0004), 83320/2 (2TMA020070N0001), 83320/2-500 (2TMA020070N0007), 83320/2-500 (2TMA020070N0004), 83325/2 (2TMA020070N0003), 83325/2-500 (2TMA020070N0009), 83325/2-500 (2TMA020070N0006), H8304(2TMA130160H0051), H8304-03(2TMA130160H0061), H8308(2TMA130161W0003), H8308-03(2TMA130160W0042), M2307(2TMA070150N0044), M2307-02(2TMA210160N0013), M2307-03(2TMA130160H0091), 83330(2TMA020110N0001), 83330-500(2TMA020110N0003), 83330-500(2TMA020110N0002)

Constituent materials

Total weight of Reference product	Net weight of the product is 129.4 g. The total weight of packaged product is 200.7 g (including product packaging and transportation packaging).

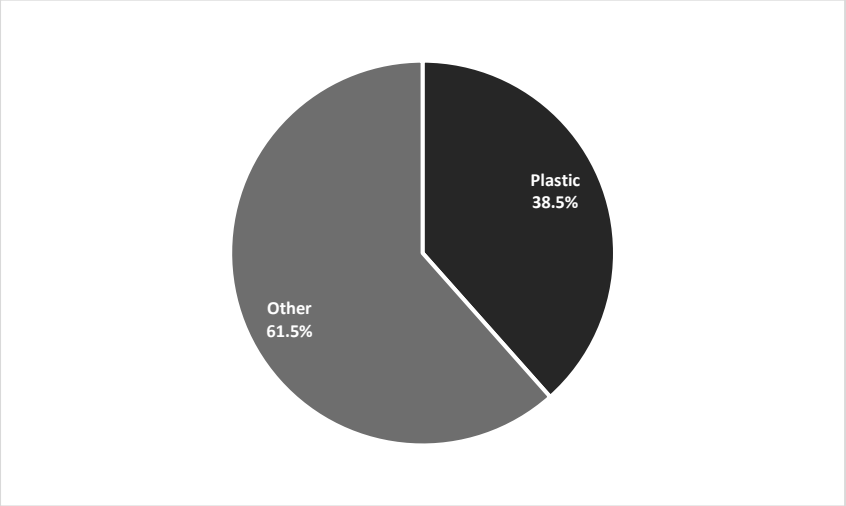


Figure 1 Constituent materials of the reference product (2TMA020110N0001)

Table 1 Information on mass of reference product and its packaging

Components	2TMA020110N0001	Product weight, incl. product pack (g)	Product weight, incl. product pack and transportation pack (g)
Product (g)	129.4	199.0	200.7
Product packaging (g)	69.6		
Transportation packaging (g)	1.7		

Detailed constituent materials of the reference product were shown in Figure 1 and then listed in Table 2.

Table 2 Materials distribution of the reference product

Plastics as % of weight		Paper as % of weight		Other as % of weight	
Name and CAS number	Weight-%	Name and CAS number	Weight-%	Name and CAS number	Weight-%
PA 66	35.2%	Corrugated paper	14.3%	Electronic parts	29.1%
PE	2.6%	Folding boxboard carton	12.5%	Others	< 0.1%
PC	0.7%	Printed paper	5.5%		

Environmental impacts

Reference lifetime		10 years.
Product category		Switch actuator, door/light module. According to the Specific rules for electrical switchgear and control gear Solutions (PSR-0005-ed3-EN-2023 06 06), the product is covered by other equipment - Category 2: active products.
Installation elements		The product is installed manually. There is no input of materials / accessories and energy during the installation. The main environmental impact was caused by the waste generated in this stage.

Use scenario		The reference product is used in Germany using low voltage electricity.
Geographical representativeness		The studied product is produced in China but used in Germany.
Technological representativeness		In the manufacturing stage, specific data was collected to calculate the environmental impact caused by the manufacturing process. To produce raw materials and parts, datasets from Ecoinvent 3.8 were used. During the dataset selection, the technological representation was considered carefully. Datasets with the same production processes were preferred. If not available, datasets with similar production processes were chosen.
Software and databases used		Simapro version 9.4.04 & databases Ecoinvent 3.8 & EF 3.0
Standards applied in ABB		ABB had used many recycling materials, e.g., plastic and metal. The products' standards applied include: EN 62368-1:2014/A11:2017 EN IC 61000-6-1:2019 EN 61000-6-3:2007/A1:2011

	Manufacturing	**Distribution**	**Installation**	**Use**	**End of life**
Energy model used	Average electricity mix in China	Non-applicable	Non-applicable	Germany	Global

Table 3 Environmental impact indicators of life cycle Impact assessment

Compulsory Indicators

Impact indicators	Unit	Total	Manufacturing	Distribution	Installation	Use	End of life
Climate change	kg CO2 eq	1.68E+01	4.58E+00	1.82E+00	1.17E-01	9.98E+00	2.62E-01
Climate change - Fossil	kg CO2 eq	1.59E+01	4.61E+00	1.82E+00	1.55E-02	9.19E+00	2.61E-01
Climate change - Biogenic	kg CO2 eq	8.37E-01	-4.22E-02	5.81E-04	1.02E-01	7.76E-01	5.09E-04
Climate change - Land use and LU change	kg CO2 eq	2.10E-02	8.25E-03	1.09E-04	1.32E-06	1.26E-02	3.51E-05
Ozone depletion	kg CFC11 eq	8.85E-07	2.08E-07	4.13E-07	4.70E-10	2.52E-07	1.14E-08
Acidification	mol H+ eq	7.37E-02	3.84E-02	9.49E-03	2.58E-05	2.35E-02	2.29E-03
Eutrophication, freshwater	kg P eq	1.71E-02	3.29E-03	2.30E-05	3.81E-07	1.38E-02	3.65E-06
Eutrophication, marine	kg N eq	1.83E-02	6.37E-03	3.49E-03	1.22E-05	6.83E-03	1.61E-03
Eutrophication, terrestrial	mol N eq	1.49E-01	6.00E-02	3.82E-02	1.10E-04	4.94E-02	1.19E-03
Photochemical ozone formation	kg NMVOC eq	4.13E-02	1.84E-02	9.85E-03	2.79E-05	1.26E-02	4.24E-04
Resource use, minerals and metals	kg Sb eq	8.79E-04	7.97E-04	5.06E-07	1.07E-08	8.13E-05	9.92E-08
Resource use, fossils	MJ	2.12E+02	5.83E+01	2.54E+01	3.47E-02	1.27E+02	1.13E+00
Water use	m3 depriv.	2.67E+00	2.03E+00	1.68E-02	3.03E-03	5.88E-01	3.68E-02

Note: the recycled content and the scrape rates of raw materials of the products and products' packaging are adjusted to 0% and 30% respectively according to the PSR.

Table 4 Resource use indicators of life cycle Impact assessment

Compulsory Indicators

Resource use indicators	Unit	Total	Manufacturing	Distribution	Installation	Use	End of life

Use of renewable primary energy, excluding renewable primary energy resources used as raw materials	MJ	3.63E+01	6.43E+00	7.64E-02	8.77E-04	2.97E+01	1.30E-01
Use of renewable primary energy resources as raw materials	MJ	8.22E-01	8.22E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources	MJ	3.71E+01	7.26E+00	7.64E-02	8.77E-04	2.97E+01	1.30E-01
Use of non-renewable primary energy, excluding renewable primary energy resources used as raw materials	MJ	2.09E+02	5.58E+01	2.54E+01	3.47E-02	1.27E+02	1.13E+00
Use of non-renewable primary energy resources as raw materials	MJ	2.46E+00	2.46E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources	MJ	2.12E+02	5.83E+01	2.54E+01	3.47E-02	1.27E+02	1.13E+00
Use of secondary materials	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Freshwater	m^3	1.20E-01	5.65E-02	7.29E-04	1.00E-04	6.19E-02	1.12E-03

Table 5 Waste category indicators of life cycle Impact assessment

Compulsory Indicators

Waste category indicators	Unit	Total	Manufacturing	Distribution	Installation	Use	End of life
Hazardous waste disposed	kg	1.04E-03	7.64E-04	6.80E-05	8.57E-08	2.02E-04	1.56E-06
Non-hazardous waste disposed	kg	1.95E+00	6.99E-01	4.09E-02	7.22E-02	5.99E-01	5.39E-01
Radioactive waste disposed	kg	8.31E-04	1.18E-04	1.81E-04	1.56E-07	5.26E-04	6.41E-06

Table 6 Output flow indicators

Compulsory Indicators

Output flow indicators	Unit	Total	Manufacturing	Distribution	Installation	Use	End of life
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	3.57E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.57E-02
Exported energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Note: The recovery of materials for materials and energy was calculated according to Annex D of the PCR.

Biogenic Carbon of product and packaging

As no biogenic carbon in the product, thus, only the biogenic carbon in the packaging was calculated. Of the product packaging and packaging for transportation, the materials containing biogenic carbon are wood pallet and paper board.

Table 7 Amount of biogenic carbon of product and packaging

Item	Unit (kg of C)	Total
Biogenic carbon content of the product	0.00E+00	0.00E+00
Biogenic carbon content of the associated packaging	2.45E-02	2.45E-02

Extrapolation to a homogeneous environmental family

To determine the environmental impact of a product covered by the PEP other than the representative product, the following rules apply:

1) Manufacturing stage

The impact for this phase of a product covered by the PEP other than the representative product is proportional to weight of the product, thus, the impacts should be calculated by multiple the coefficients factor_1 in Table 8 by the environmental impact for this phase of the representative product.

2) Distribution

The impact for this phase of a product covered by the PEP other than the representative product is proportional to the packaged product weight, thus, the impacts should be calculated by multiple the coefficients factor_2 in Table 8Table 8 Extrapolation rules for by the environmental impact for those phases of the representative product.

3) Installation

The impact for this phase of a product covered by the PEP other than the representative product is proportional to weight of the product packaging, thus, the impacts should be calculated by multiple the coefficients factor_3 in Table 8 by the environmental impact for those phases of the representative product.

4) Use

The environmental impact for B1-B6 stage of a product covered by the PEP other than the representative product should be calculated by multiple the factor_4 in Table 8 by the environmental impact for this phase of the representative product. Factor_4 is proportional to the amount of energy consumption.

5) End of life phases

The impacts of the representing product from the end-of-life are less than 2% of the total impact. However, the impact for this phase of a product covered by the PEP other than the representative product is calculated by multiple the coefficients factor_1 in Table 8Table 8 Extrapolation rules for by the environmental impact for this phase of the representative product.

Table 8 Extrapolation rules for homogeneous environmental family products

SAP Number	Article Number	Factor_1	Factor_2	Factor_3	Factor_4
2TMA070060W0006	M2302	1.12	1.07	0.98	5.55
2TMA210160H0003	M2302-02	1.12	1.07	0.98	5.55
2TMA020070N0011	83325/2-500-01	0.53	0.56	0.61	0.00
2TMA210160H0004	83325/2-500-02	0.53	0.56	0.61	0.00
2TMA020070N0001	83320/2	0.54	0.57	0.63	0.00
2TMA020070N0007	83320/2-500	0.54	0.57	0.61	0.00
2TMA020070N0004	83320/2-500	0.54	0.57	0.61	0.00
2TMA020070N0003	83325/2	0.53	0.56	0.61	0.00
2TMA020070N0009	83325/2-500	0.53	0.56	0.61	0.00
2TMA020070N0006	83325/2-500	0.53	0.56	0.61	0.00
2TMA130160H0051	H8304	1.24	1.17	1.05	4.12
2TMA130160H0061	H8304-03	1.24	1.17	1.05	4.12
2TMA130161W0003	H8308	0.98	1.01	1.05	4.63
2TMA130160W0042	H8308-03	0.98	1.01	1.05	4.63
2TMA070150N0044	M2307	3.01	2.52	1.58	4.56
2TMA210160N0013	M2307-02	3.01	2.47	1.45	4.56
2TMA130160H0091	M2307-03	3.01	2.52	1.58	4.56
2TMA020110N0001	83330	1.00	1.00	1.00	1.00
2TMA020110N0003	83330-500	1.00	0.99	0.98	1.00
2TMA020110N0002	83330-500	1.00	0.99	0.98	1.00

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Verifier accreditation number: VH50	Information and reference documents: www.pep-ecopassport.org
Date of issue: 09-2023	Validity period: 5 years
Independent verification of the declaration and data in compliance with ISO 14025: 2006	
Internal: ☐	External: ☒
The PCR review was conducted by a panel of experts chaired by Julie Orgelet (DDemain)	
PEPs are compliant with XP C08-100-1:2016 or EN 50693:2019 The components of the present PEP may not be compared with components from any other program.	
Document complies with ISO 14025:2006 "Environmental labels and declarations. Type III environmental declarations"	