



KTK-R Fuse (0.1-12A)

Representative product	<p>KTK-R-1 Fuse (Eaton Bussmann series) Product Category: Other Equipment (Passive product - continuous operation)</p>																													
Description of the product	<p>Eaton Bussmann Series offers a complete range of KTK-R-1 Fuse. KTK-R-1 Fuses provides 10X better current limitation to help prevent equipment damage caused by short-circuit events. These fuses are ideal for critical industrial or commercial applications that have specific current limitation requirements. The representative KTK-R-1 Fuse under the study is Eaton Bussmann series KTK-R-1 Fuse with the offerings ranges from 1A to 30A of current rating. Representative product selected for the study has current rating of 1A.</p>																													
Homogeneous Product Family	<p>PEP covers following part numbers under homogenous family:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">KTK-R-1/10</td> <td style="text-align: center;">KTK-R-9</td> <td style="text-align: center;">KTK-R-4/10</td> </tr> <tr> <td style="text-align: center;">KTK-R-6/10</td> <td style="text-align: center;">KTK-R-5</td> <td style="text-align: center;">KTK-R-2-1/2</td> </tr> <tr> <td style="text-align: center;">KTK-R-3-1/2</td> <td style="text-align: center;">KTK-R-15</td> <td style="text-align: center;">KTK-R-8</td> </tr> <tr> <td style="text-align: center;">KTK-R-10</td> <td style="text-align: center;">KTK-R-1/4</td> <td style="text-align: center;">KTK-R-1/2</td> </tr> <tr> <td style="text-align: center;">KTK-R-1/8</td> <td style="text-align: center;">KTK-R-1-1/2</td> <td style="text-align: center;">KTK-R-3</td> </tr> <tr> <td style="text-align: center;">KTK-R-3/4</td> <td style="text-align: center;">KTK-R-6</td> <td></td> </tr> <tr> <td style="text-align: center;">KTK-R-4</td> <td style="text-align: center;">KTK-R-3/10</td> <td></td> </tr> <tr> <td style="text-align: center;">KTK-R-12</td> <td style="text-align: center;">KTK-R-2</td> <td></td> </tr> <tr> <td style="text-align: center;">KTK-R-2/10</td> <td style="text-align: center;">KTK-R-7</td> <td></td> </tr> </table>			KTK-R-1/10	KTK-R-9	KTK-R-4/10	KTK-R-6/10	KTK-R-5	KTK-R-2-1/2	KTK-R-3-1/2	KTK-R-15	KTK-R-8	KTK-R-10	KTK-R-1/4	KTK-R-1/2	KTK-R-1/8	KTK-R-1-1/2	KTK-R-3	KTK-R-3/4	KTK-R-6		KTK-R-4	KTK-R-3/10		KTK-R-12	KTK-R-2		KTK-R-2/10	KTK-R-7	
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KTK-R-2/10	KTK-R-7																													
Functional unit	<p>To protect the circuit for 20 years of installation against the overload of more than 1A current and 600 Vac rated voltage.</p>																													
Company information	<p>Eaton Bussmann S. de R. L de C.V., Partido Manuel Doblado, Cd. Juarez, Chih. Mexico 32310. Email: productstewardship-es@eaton.com</p>																													

Constituent Materials of			
Reference Product:	2.03E-02 (With Packaging)		
Materials	Category PEP Material	Mass (kg)	Percentage (%)
Others	Sand	7.50E-03	37.0%
Metals	Copper	4.01E-03	19.7%
Others	Cardboard	3.96E-03	19.5%
Others	Wood	2.78E-03	13.7%
Others	Glass Fiber	9.00E-04	4.4%
Plastics	Polyester resin	6.00E-04	3.0%
Metals	Zinc	5.05E-04	2.5%
Others	Paper	2.67E-05	0.1%
Plastics	Epoxy resin	1.00E-05	<0.1%
Plastics	Glue	3.28E-06	<0.1%
Metals	Silicon	2.05E-06	<0.1%
Others	Nickel	2.00E-13	<0.1%
	Total	2.03E-02	100%

Additional Environmental Information	
Manufacturing	The reference product is assembled at an Eaton plant holding management system certifications according to ISO 14001 standards.
Distribution	Eaton is committed to minimizing weight and volume of product and packaging with focus to optimize transport efficiency.
Installation	During installation of the product only standard tools are needed, which do not require any additional energy source and no waste other than the obsolete product packaging is generated during this step.
Use	The product does not have maintenance during operation.
End of life	The product is disposed considering 100% incineration without energy recovery.

Environmental Impacts	
The calculation of the environmental impacts is the result of the Product's Life Cycle Analysis in accordance with ISO 14040/44, covering the entire lifecycle, i.e., "Cradle-to-Grave" including the following life cycle phases: production, distribution, installation, use and end of life. System modelling was carried out using the commercial LCA software EIME v6.2.5-6 with database version CODDE-2024-04-updated on 2024-06-04. Indicators Set used: PEF EF 3.1 (Compliance: PEP ed.4, EN15804+A2) v1.0	
Manufacturing Phase	The product is assembled as well as packed at Eaton Bussmann plant in Mexico. Energy model used: Europe
Distribution Phase	Distribution of the product in its packaging from the Eaton's last logistics platform to the installation place in United States is considered as per PCR rules.
Installation Phase	Only treatment of packaging waste is considered in this phase. Energy model used for treatment of packaging: Europe
Use Phase	PSR Product Category: Other Equipment (Scenario: Passive product - continuous operation) Reference lifetime: 20 Years Energy model used: United States

	Usage profile: The product has 1 A rated current and resistance of 0.525-ohm, 100% active mode with 30% of the loading rate, total losses are 8.28 kWh over 20 years. Product do not require any maintenance/replacement during useful life.
End of life Phase	The product is disposed considering 100% incineration without energy recovery.

Environmental Impact for Functional Unit

Environmental Impact Indicators: Mandatory

Mandatory environmental impact indicators	Units	Sum	A1-A3 - Manufacturing	A4 - Distribution	A5 - Installation	B1-B7-Use (B6 Only)*	C1-C4 - End of life
Climate change - total	kg CO2 eq.	3.95E+00	6.97E-02	4.56E-03	1.28E-02	3.86E+00	5.59E-03
Climate change - fossil fuels	kg CO2 eq.	3.93E+00	6.13E-02	4.56E-03	2.50E-03	3.85E+00	5.58E-03
Climate change - biogenics	kg CO2 eq.	2.42E-02	8.35E-03	1.87E-08	1.03E-02	5.52E-03	1.31E-05
Climate change - land use and land use transformation	kg CO2 eq.	1.31E-08	5.97E-09	6.90E-09	9.24E-11	0.00E+00	1.85E-10
Ozone depletion	kg eq. CFC-11	2.24E-08	6.43E-09	5.53E-11	8.47E-11	1.53E-08	4.92E-10
Acidification (AP)	mole of H+ eq.	1.86E-02	9.57E-04	7.20E-06	1.44E-05	1.75E-02	4.24E-05
Freshwater eutrophication	kg P eq.	7.11E-06	1.74E-07	1.70E-08	2.18E-09	6.91E-06	5.39E-09
Marine aquatic eutrophication	kg of N eq.	2.29E-03	5.05E-05	1.31E-06	3.40E-06	2.23E-03	1.03E-05
Terrestrial eutrophication	mole of N eq.	2.73E-02	5.36E-04	1.43E-05	4.49E-05	2.65E-02	1.36E-04
Photochemical ozone formation	kg of NMVOC eq.	7.59E-03	2.15E-04	4.63E-06	9.63E-06	7.33E-03	2.95E-05
Depletion of abiotic resources - elements	kg eq. Sb	6.71E-06	6.20E-06	1.63E-09	1.96E-10	5.15E-07	4.63E-10
Depletion of abiotic resources - fossil fuels	MJ	8.72E+01	1.02E+00	8.10E-02	4.65E-02	8.59E+01	1.03E-01
Water scarcity	m3 of eq. deprivation worldwide	2.29E-01	4.77E-02	1.64E-04	1.05E-04	1.81E-01	4.82E-04

***Note:** B6 (energy requirements during the use stage) is considered. Other sub modules in the use stage (B1-B5, B7) are equal to zero. So, it is not listed in the result tables.

Inventory Flow Indicators: Mandatory

Mandatory environmental impact indicators	Units	Sum	A1-A3 - Manufacturing	A4 - Distribution	A5 - Installation	B1-B7-Use (B6 Only)*	C1-C4 - End of life
Use of renewable primary energy, excluding renewable primary energy resources used as raw materials	MJ	9.30E+00	-1.70E-02	2.55E-04	3.49E-03	9.31E+00	6.15E-03
Use of renewable primary energy resources used as raw materials	MJ	1.24E-01	1.24E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ	9.42E+00	1.07E-01	2.55E-04	3.49E-03	9.31E+00	6.15E-03
Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials	MJ	8.71E+01	9.95E-01	8.10E-02	4.65E-02	8.59E+01	1.03E-01
Use of non-renewable primary energy resources used as raw materials	MJ	2.38E-02	2.38E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ	8.72E+01	1.02E+00	8.10E-02	4.65E-02	8.59E+01	1.03E-01
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
Net use of fresh water	m ³	5.35E-03	1.11E-03	3.82E-06	4.02E-06	4.22E-03	1.44E-05
Hazardous waste disposed of	kg	6.52E-01	5.45E-01	1.91E-05	2.51E-03	8.36E-02	2.09E-02
Non-hazardous waste disposed of	kg	6.94E-01	1.18E-01	4.23E-04	3.60E-04	5.74E-01	8.22E-04
Radioactive waste disposed of	kg	1.47E-04	9.13E-06	3.35E-07	1.51E-07	1.37E-04	3.94E-07
Components for re-use	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ by energy vector	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Biogenic carbon content of the product	kg of C.	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Biogenic carbon content of the associated packaging	kg of C.	1.14E-05	1.14E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00

***Note:** B6 (energy requirements during the use stage) is considered. Other sub modules in the use stage (B1-B5, B7) are equal to zero. So, it is not listed in the result tables.

Environmental Impact Indicators: Optional

Optional Environmental impact indicators	Units	Sum	A1-A3 - Manufacturing	A4 - Distribution	A5 - Installation	B1-B7-Use (B6 Only)*	C1-C4 - End of life
Emission of fine particles	incidence of diseases	1.34E-07	1.13E+00	8.12E-02	5.00E-02	1.28E-07	2.80E-10
Ionizing radiation, human health	kBq of U235 eq.	5.20E+00	5.80E-09	6.18E-11	9.96E-11	3.78E+00	2.11E-03
Ecotoxicity, fresh water	CTUe	6.22E+00	1.41E+00	1.61E-04	1.04E-03	5.29E+00	1.92E-01
Human toxicity, cancer effects	CTUh	6.47E-10	5.44E-01	1.33E-01	5.91E-02	4.54E-10	1.90E-12
Human toxicity, non-cancer effects	CTUh	2.47E-08	1.89E-10	8.94E-13	4.37E-13	1.17E-08	8.67E-11
Impacts related to land use/soil quality	-	7.18E-02	1.28E-08	1.70E-11	1.75E-11	7.11E-02	1.31E-04
Total use of primary energy during the life cycle	MJ	9.66E+01	1.13E+00	8.12E-02	5.00E-02	9.52E+01	1.10E-01

***Note:** B6 (energy requirements during the use stage) is considered. Other sub modules in the use stage (B1-B5, B7) are equal to zero. So, it is not listed in the result tables.


To evaluate the environmental impact of other products covered by this PEP, multiply the impact figures by

Multiplying factors for homogeneous family products :

Product	Current rating (A)	Manufacturing, Distribution, Installation, End-of-Life Phase	Use phase
KTK-R-1/10	0.1	0.34	1
KTK-R-6/10	0.6	0.86	2.50
KTK-R-3-1/2	3.5	1.33	3.88
KTK-R-10	10	3.24	9.44
KTK-R-1/8	0.125	0.34	1.00
KTK-R-3/4	0.75	1.01	2.94
KTK-R-4	4	1.34	3.91
KTK-R-12	12	3.85	11.24
KTK-R-2/10	0.2	0.34	1.01
KTK-R-5	5	2.24	6.53
KTK-R-1/4	0.25	0.36	1.04
KTK-R-1-1/2	1.5	1.32	3.84
KTK-R-6	6	2.67	7.80
KTK-R-3/10	0.3	0.36	1.04
KTK-R-2	2	1.52	4.42
KTK-R-7	7	2.99	8.71
KTK-R-4/10	0.4	0.40	1.18
KTK-R-2-1/2	2.5	1.80	5.24
KTK-R-8	8	2.96	8.64
KTK-R-1/2	0.5	0.75	2.17
KTK-R-3	3	1.18	3.44
KTK-R-9	9	2.99	8.73

Disclaimer

This Product Environmental Profile and its content is based on information available to us. It refers to the product at the date of issue. We make no express or implied representations or warranties with respect to the information contained herein.

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<i>Date of issue</i>	05-2025	<i>Information and reference documents</i>	www.pep-ecopassport.org
		<i>Validity period</i>	5 years
Independent verification of the declaration and data, in compliance with ISO 14025: 2006			
Internal	X	External	
The PCR review was conducted by a panel of experts chaired by Julie ORGELET (DDemain)			
<i>PEPs are compliant with XP C08-100-1:2016 and EN 50693:2019</i>			
<i>The components of the present PEP may not be compared with components from any other program.</i>			
<i>Document complies with ISO 14025:2006 "Environmental labels and declarations. Type III environmental declarations"</i>			