3M Science. Applied to Life.™

EPD®

S-P-00987
Version 1

Publ. date: 2018-03-16
Exp. date: 2023-03-15

3M Sustainability

Environmental product declaration.

3M™ Scotchcast™ 4 GS
Electrical Insulating Resin

3M™ Scotchcast™ Electrical Insulating Resin 4 GS is a two component epoxy resin for room temperature curing. The resin has been designed for electrical insulation and mechanical protection of electrical cables joints. Once hardening is complete, the resin provides impact resistance and durability against moisture and atmospheric corrosion. The resin is SVHC-free, free of CMR-substances and does not contain isocyanates.

1 Programme Related Information

EPD Programme	The International EPD® System (www.environdec.com) Valhallavägen 81, 114 27 Stockholm, Sweden
Product Category Rules (PCRs)	EN 15804:2012+A1:2013 - Sustainability of construction works - Environmental Product Declarations - Core rules for the product category of construction products PCR 2012:01 v2.2 - Construction Products and Construction Services in accordance with ISO 14025 (Multiple CPC codes, date: 2015-03-03, valid until: 2019-03-03) XP P01-064/CN - Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction - National addition to NF EN 15804+A1 NBN/ DTD B 08-001:2017 - Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products - National supplement to NBN EN 15804+A1:2014 (Category 3)
Generic PCR review conducted by	The Technical Committee of the International EPD® System. Chair: Massimo Marino (info@environdec.com)
EPD Registration Number	S-P-00987
Publication Date (version)	2018-03-16 (vrs. 1)
Valid Until	2023-03-15
Geographical Validity	Europe
Independent Verification	☐ Internal ☐ External ■ EPD® Process Certification
Verified and approved by	SGS Italia S.p.A., Via Caldera, 21, Milan 20153, Italy (Accredited by ACCREDIA) Certificate N. IT14/0823
EPD Prepared By	Katerina Softa Sustainability Centre of Expertise, West Europe
Calculation Procedure	GaBi™ 8.2.055 Software (thinkstep) - Database vrs. 8.6 - Service pack 34
System Boundaries	☐ Cradle-to-Gate ☐ Cradle-to-Grave ■ Cradle-to-Gate with Options
Data Sources	Specific data collected by 3M, is not based on a full scaled up production process but based on data collected during the development stage and estimations. Specific data collected by Company for external filling of bags are representative for production year 2017. Generic data sources as available in the GaBi software and databases.
Disclaimer	All values provided in this Environmental Product Declaration are a direct result from the use of characterisation factors and calculation rules as defined in the GaBi software and the requirements of the product category rules as mentioned above. For more information about this Environmental Product Declaration or its contents, contact Kristof Peerens, EPD® publisher and process owner, at kpeerens@mmm.com.

2 Product Related Information

2.1 Manufacturing company

With operations employing nearly 90 000 3Mers globally in more than 70 countries, and products sold in nearly 200 countries, 3M is a diversified technology company with global sales of $31,7 billion (year-end 2017). 3M's commitment to innovation is reflected by the 8 100 scientists around the world. The company now has well over 110 000 patents in its name, and on overage, 3 000 patents are added to that list every year. Since February 2014, 3M is a signatory of the United Nations Global Compact.

3M™ Scotchcast™ Electrical Insulating Resin 4 GS covered by this Environmental Product Declaration is manufactured by 3M's Electrical Markets Division, a division of the Energy & Electronics Business Group within the 3M Company. The manufacturing sites are located in Zwijndrecht (Antwerp, Belgium) and Marcallo con Casone (Lombardy, Italy) both holding an ISO 14001 certificate for their environmental management system.

2.2 Specification of the product

The following products are covered by this Environmental Product Declaration:

Product name	Reference	Intended use
3M™ Scotchcast™ Electrical Insulating Resin 4 GS Sold-alone Bag, Size A, 90 ml	UU-0091-4209-0 (7100153756)	3M™ Scotchcast™ Resin 4 GS is a two component epoxy resin for room temperature curing. The resin has been designed for electrical insulation and mechanical protection of electrical cables joints. The product is available as a 2-component resin bags or as highly practical resin kit. There are various sizes and form factors for different cable jointing applications. Once hardening is complete, the resin provides impact resistance and durability against moisture and atmospheric corrosion.
3M™ Scotchcast™ Electrical Insulating Resin 4 GS Sold-alone Bag, Size B, 200 ml	UU-0091-4210-8 (7100153861)	
3M™ Scotchcast™ Electrical Insulating Resin 4 GS Sold-alone Bag, Size C, 370 ml	UU-0091-4211-6 (7100153560)	
3M™ Scotchcast™ Electrical Insulating Resin 4 GS Bag, Size D, 700 ml	N/A Not sold alone but only in kits	

The resin is SVHC-free, free of CMR-substances and does not contain isocyanates. 3M™ Scotchcast™ Electrical Insulating Resin 4 GS is classified as Low voltage Insulation Water curable (L-I-W), Low voltage outer protection Water curable (L-OP-W) and Medium voltage outer protection Water curable (M-OP-W) according to IEC 60455-3-8. The product is classified under code 34790 “Other plastics in primary forms; ion exchangers” in the United Nations Central Product Classification (CPC) System.

Depending on its application, the product covered by this Environmental Product Declaration can be considered a construction product as per the definition in European Regulation (EU) No 305/2011 laying down harmonised conditions for the marketing of construction products. This regulation defines construction products as “any product or kit which is produced and placed on the market for incorporation in a permanent manner in construction works or parts thereof and the performance of which has an effect on the performance of the construction works with respect to the basic requirements for construction works”. Because construction works are in this same regulation defined as “buildings and civil engineering works” 3M™ Scotchcast™ Electrical Insulating Resin 4 GS can be considered a construction product and consequently, PCR 2012:01 v2.2 and EN 15804:2012+A1:2013 apply. It is important to note that due to the absence of so-called harmonised technical specifications, the requirements for CE marking and declaration of performance as described in the same regulation do not apply.

2.3 Declared unit

The declared unit in this Environmental Product Declaration is determined to be one stand-alone bag of resin containing Parts A and B. The density for Part A is 1,17 g/ml and for Part B is 1,50 g/ml. The mix ratio for Parts A and B is 100:142.

Allocation of packaging materials to this amount of adhesive, results in reference flows corresponding to the following weights:

- 3M™ Scotchcast™ Electrical Insulating Resin 4 GS Sold-alone Bag, Size A, 90 ml: 1,69E-01 kg (1,43E-01 kg product + 2,60E-02 kg packaging)
- 3M™ Scotchcast™ Electrical Insulating Resin 4 GS Sold-alone Bag, Size B, 200 ml: 3,07E-01 kg (2,80E-01 kg product + 2,70E-02 kg packaging)
- 3M™ Scotchcast™ Electrical Insulating Resin 4 GS Sold-alone Bag, Size C, 370 ml: 5,75E-01 kg (5,39E-01 kg product + 3,60E-02 kg packaging)
- 3M™ Scotchcast™ Electrical Insulating Resin 4 GS Bag, Size D, 700 ml: 1,05E+00 kg (9,95E-01 kg product + 5,20E-02 kg packaging)

The results in the Environmental Product Declaration are provided for the 4 references in different tables.

2.4 Content of material and chemical substances

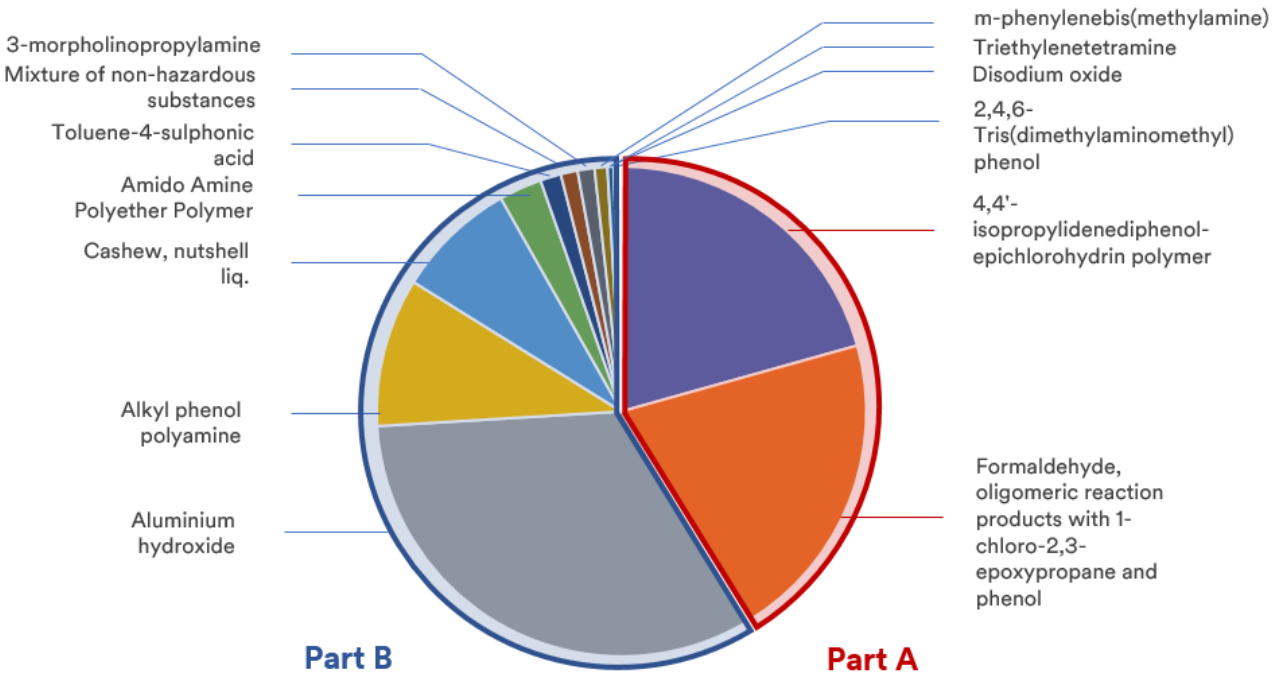
3M™ Scotchcast™ Electrical Insulating Resin 4 GS covered by this Environmental Product Declaration does not contain Substances of Very High Concern (SVHC) included in the REACH candidate list* at a concentration at or above 0,1% in weight.

The different references included in this Environmental Product Declaration cover the same resin, with the same mix ratio, but packaged differently. As a result, the composition presented below applies to each of the references.

* Candidate list according to article 59 (10) of Regulation (CE) n° 1907/2006 (REACH) dated 2018-01-15

Chemicals in Part A	CAS number	EU Inventory	Weight %	Classification
4,4'-isopropylidenediphenol-epichloro-hydrin polymer	25068-38-6	500-033-5	45-55%	Skin Irrit. 2, H315; Eye Irrit. 2, H319; Skin Sens. 1, H317; Aquatic Chronic 2, H411
Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypro-pane and phenol	9003-36-5	500-006-8	45-55%	Aquatic Chronic 2, H411 Skin Irrit. 2, H315; Skin Sens. 1A, H317

Chemicals in Part B	CAS number	EU Inventory	Weight %	Classification
Aluminium hydroxide	21645-51-2	244-492-7	55-60%	Substance with a Community level exposure limit in the workplace
Alkyl phenol polyamine	Trade Secret	N/A	15-20%	Substance not classified as hazardous
Cashew, nutshell liq.	8007-24-7	232-355-4	13-15%	Substance not classified as hazardous
Amido Amine Polyether Polymer	Trade secret	N/A	4-6%	Substance not classified as hazardous
Toluene-4-sulphonic acid	104-15-4	203-180-0	1-4%	Skin Irrit. 2, H315; Eye Irrit. 2, H319; STOT SE 3, H335
Mixture of non-hazardous substances	Trade secret	N/A	1-3%	Substance not classified as hazardous
3-morpholinopropylamine	123-00-2	204-590-2	1-3%	Skin Corr. 1B, H314 Acute Tox. 4, H312
m-phenylenebis(methylamine)	1477-55-0	216-032-5	1-2%	Acute Tox. 4, H332; Acute Tox. 4, H302; Skin Corr. 1B, H314; Skin Sens. 1, H317; Aquatic Chronic 3, H412
Triethylenetetramine	112-24-3	203-950-6	<1,5%	Acute Tox. 3, H311; Skin Corr. 1B, H314; Skin Sens. 1A, H317; Aquatic Chronic 3, H412
2,4,6-Tris(dimethylaminomethyl) phenol	90-72-2	202-013-9	<1,5%	Acute Tox. 4, H302; Skin Irrit. 2, H315; Eye Irrit. 2, H31
Disodium oxide	1313-59-3	215-208-9	<0,3%	Acute Tox. 3, H301



3 Environmental Performance-Related information

3.1 Life cycle stages

The Life Cycle Assessment (LCA) study supporting this Environmental Product Declaration is a cradle-to-gate with options analysis, including the life cycle stages listed in the table below. Due to the exclusion of the use phase, the reference service life (RSL) is not included in the study.

Product stage			Construction process stage		Use stage							End-of-life stage				Resource recovery stage
Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction / demolition	Transport	Waste processing	Disposal	Reuse - recovery - recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	X	X	X	X

(X = declared module; MND = module not declared)
A1 = Upstream module; A2-A3 = Core module; A4-C4 = Downstream module; D = Other environmental information

3.1.1 Product stage (A1, A2, A3)

Raw material supply includes the acquisition of raw materials from nature to create usable intermediates, as well as the packaging used to ship the raw materials. All raw materials are transported from the source to the 3M manufacturing site by truck and/or boat. Most of the time, raw materials need to be packed for transportation. Loading and unloading of raw materials are not included in the study.

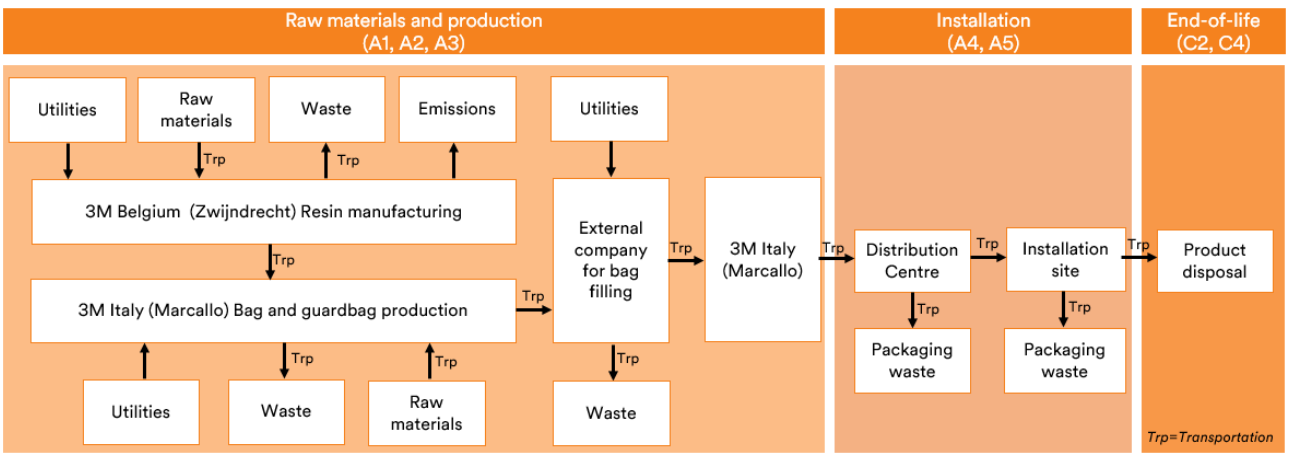
Production also includes all steps carried out at 3M manufacturing sites to produce the finished product, including utilities used and waste produced. The environmental profile of these energy carriers is modeled for local conditions. Machines and facilities (capital goods) required for and during production are excluded, as is transportation of employees.

3.1.2 Construction process stage (A4, A5)

The construction process stage includes transportation of the finished product to the distribution centre and construction site, disposal of the packaging (box and pallet) at the distribution centre and the disposal of the actual product's packaging at installation.

For transportation (A4), based on the location of the manufacturing site and the distribution centres in Europe, the assumption of a distribution distance of 2000 km by truck is made. It is assumed that the packaging (pallet and the box) are disposed before the transportation to the construction site (A4). Since the distance between the distribution centres and the construction site are not known the pallet and the box are included in the transportation of the total distance of 2000 km as the most conservative approach.

The installation (A5), includes only the disposal of the actual product's packaging waste. All waste from the construction site as well as the distribution centre are assumed to be transported by bulk truck over a distance of 100 km to the disposal site.



3.1.3 Use stage (B1 - B7)

The use phase is considered negligible in terms of environmental impacts as this is a passive product, assuming no energy consumption or release of substances during use.

3.1.4 End-of-life stage (C1 - C4)

End-of-life is considering transportation (100 km by bulk truck) of the cured resin to a disposal site and a disposal scenario based on European statistics.

3.1.5 Resource recovery stage (D)

This life cycle stage applies to the next product system. Because the cut-off approach is consistently applied, no credits for the reuse, recovery or recycling of products are taken into account.

3.2 Environmental performance-related information

The environmental parameters are declared for upstream, core and downstream processes. The overall impact of the product is divided into potential environmental impacts, use of resources and other indicators. All environmental impacts are reported per declared unit.

3.2.1 Potential environmental impact

The reported environmental impacts, as required per PCR 2012:01 v2.2 result from characterisation models applied to the life cycle stages considered in the study. Total pollutant emissions from the operations included in the system boundaries are reported as potential environmental impacts, using the Jan. 2016 version of CML 2001 characterisation factors as opposed to the EN 15804 reference to the October 2012 version. More recent versions of characterisation factors are more likely to have a higher level of accuracy in today's society. Data refer to the declared unit.

The negative values for POCP can be attributed to truck transport. Nitrogen oxide emissions from the truck have a negative impact on POCP as it lowers the formation of ozone in the lowest layers of the atmosphere.

National addition to NF EN 15804+A1 (XP P01-064/CN) requires two additional environmental impacts to be reported, air pollution and water pollution which are calculated based on characterisation factors specifically reported in tables C.10 and C.11 of the standard respectively.

National supplement to NBN EN 15804+A1:2014 (NBN/ DTD B 08-001:2017) (Category 3) requires eight additional environmental impacts to be reported, which are calculated based on characterisation factors specifically reported in the relevant part of A31 "Parameters describing additional environmental impacts" of the standard respectively.

	Environmental impact: 1,69E-01 kg of 3M™ Scotchcast™ Electrical Insulating Resin 4 GS Sold-alone Bag, Size A, 90 ml								
	Upstream	Core		Downstream					Other
	A1	A2	A3	A4	A5	C2	C3	C4	D
PCR 2012:01 v2.2									
ADPE [kg Sb eq.]	6,71E-06	2,09E-09	2,83E-08	2,70E-09	5,42E-10	2,61E-10	0,00E+00	2,98E-09	0,00E+00
ADPF [MJ]	1,42E+01	3,52E-01	1,18E+00	3,94E-01	6,03E-03	3,96E-02	0,00E+00	3,32E-02	0,00E+00
AP [kg SO_2 eq.]	3,27E-03	2,22E-04	8,52E-05	1,20E-04	2,65E-06	9,55E-06	0,00E+00	1,46E-05	0,00E+00
EP [kg PO_4^{3-} eq.]	1,78E-03	3,60E-05	3,57E-04	3,01E-05	7,41E-07	2,31E-06	0,00E+00	4,08E-06	0,00E+00
GWP [kg CO_2 eq.]	8,12E-01	2,60E-02	3,08E-02	4,12E-02	8,89E-03	2,89E-03	0,00E+00	4,89E-02	0,00E+00
ODP [kg CFC11 eq.]	7,51E-12	1,89E-14	3,37E-13	2,58E-14	2,21E-15	2,33E-15	0,00E+00	1,21E-14	0,00E+00
POCP [kg C_2H_2 eq.]	1,80E-04	-2,84E-05	1,03E-04	-4,63E-05	1,48E-07	8,98E-07	0,00E+00	8,15E-07	0,00E+00
National addition to NF EN 15804+A1 (XP P01-064/CN)									
AirP [m³]	7,12E+01	1,81E+00	1,01E+01	1,57E+00	1,33E-01	1,54E-01	0,00E+00	7,30E-01	0,00E+00
WP [m³]	4,12E+02	1,12E+01	1,22E+01	1,18E+01	6,26E-02	1,19E+00	0,00E+00	3,45E-01	0,00E+00
National supplement to NBN EN 15804+A1:2014 (NBN/ DTD B 08-001:2017)									
ETFW [CTUe]	3,07E-01	4,43E-03	7,55E-03	4,73E-03	1,61E-03	4,77E-04	0,00E+00	8,84E-03	0,00E+00
HT_c [CTUh]	7,70E-09	1,96E-10	1,10E-09	2,03E-10	3,17E-12	2,05E-11	0,00E+00	1,74E-11	0,00E+00
HT_nc [CTUh]	1,23E-07	1,63E-09	1,09E-07	1,99E-09	1,29E-10	2,00E-10	0,00E+00	7,11E-10	0,00E+00
LU [kg C deficit eq.]	1,31E+01	2,53E-02	1,27E-01	3,39E-02	6,84E-05	3,42E-03	0,00E+00	3,76E-04	0,00E+00
PM/RI [kg PM2,5 eq.]	1,80E-04	1,10E-05	1,91E-05	4,94E-06	8,91E-08	6,24E-07	0,00E+00	4,90E-07	0,00E+00
RDW [m³ eq.]	3,81E-02	3,19E-05	1,14E-03	5,03E-05	1,50E-05	4,09E-06	0,00E+00	8,28E-05	0,00E+00
MAETP [kg DCB eq.]	3,72E+02	3,77E-01	2,65E+00	4,15E-01	3,61E-02	4,10E-02	0,00E+00	1,99E-01	0,00E+00
TETP [kg DCB eq.]	3,78E-03	3,59E-05	3,66E-03	4,71E-05	5,55E-06	4,74E-06	0,00E+00	3,05E-05	0,00E+00

ADPE = Abiotic depletion potential for non fossil resources; ADPF = Abiotic depletion potential for fossil resources; AP = Acidification potential; EP = Eutrophication potential; GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; POCP = Formation potential of tropospheric ozone photochemical oxidants; AirP=Air pollution; WP = Water pollution; ETFW = Ecotoxicity freshwater; HT_c = Human toxicity (carcinogenic effects); HT_nc = Human toxicity (non-carcinogenic effects); LU = Land use; PM/RI = Particulate matter/ Respiratory inorganics; RDW = Resource depletion (water); MAETP = Marine aquatic ecotoxicity potential; TETP = Terrestric Ecotoxicity potential

	Environmental impact: 3,07E-01 kg of 3M™ Scotchcast™ Electrical Insulating Resin 4 GS Sold-alone Bag, Size B, 200 ml								
	Upstream	Core		Downstream					Other
	A1	A2	A3	A4	A5	C2	C3	C4	D
PCR 2012:01 v2.2									
ADPE [kg Sb eq.]	1,31E-05	3,95E-09	5,29E-08	4,87E-09	5,63E-10	5,12E-10	0,00E+00	5,84E-09	0,00E+00
ADPF [MJ]	2,55E+01	6,68E-01	2,27E+00	7,09E-01	6,26E-03	7,74E-02	0,00E+00	6,49E-02	0,00E+00
AP [kg SO_2 eq.]	6,08E-03	4,29E-04	1,60E-04	2,17E-04	2,75E-06	1,87E-05	0,00E+00	2,85E-05	0,00E+00
EP [kg PO_4^{3-} eq.]	3,46E-03	6,89E-05	6,98E-04	5,44E-05	7,70E-07	4,53E-06	0,00E+00	7,98E-06	0,00E+00
GWP [kg CO_2 eq.]	1,47E+00	4,93E-02	6,42E-02	7,45E-02	9,23E-03	5,67E-03	0,00E+00	9,57E-02	0,00E+00
ODP [kg CFC11 eq.]	1,33E-11	3,58E-14	6,18E-13	4,66E-14	2,29E-15	4,57E-15	0,00E+00	2,38E-14	0,00E+00
POCP [kg C_2H_2 eq.]	3,13E-04	-5,38E-05	2,01E-04	-8,42E-05	1,54E-07	1,76E-06	0,00E+00	1,60E-06	0,00E+00
National addition to NF EN 15804+A1 (XP P01-064/CN)									
AirP [m³]	1,29E+02	3,46E+00	1,95E+01	2,84E+00	1,38E-01	3,01E-01	0,00E+00	1,43E+00	0,00E+00
WP [m³]	7,66E+02	2,14E+01	2,35E+01	2,13E+01	6,51E-02	2,33E+00	0,00E+00	6,75E-01	0,00E+00
National supplement to NBN EN 15804+A1:2014 (NBN/ DTD B 08-001:2017)									
ETFW [CTUe]	5,87E-01	8,42E-03	1,45E-02	8,52E-03	1,67E-03	9,34E-04	0,00E+00	1,73E-02	0,00E+00
HT_c [CTUh]	1,44E-08	3,74E-10	2,15E-09	3,65E-10	3,29E-12	4,00E-11	0,00E+00	3,41E-11	0,00E+00
HT_nc [CTUh]	2,35E-07	3,09E-09	2,12E-07	3,58E-09	1,34E-10	3,92E-10	0,00E+00	1,39E-09	0,00E+00
LU [kg C deficit eq.]	2,57E+01	4,78E-02	2,19E-01	6,10E-02	7,10E-05	6,70E-03	0,00E+00	7,36E-04	0,00E+00
PM/RI [kg PM2,5 eq.]	3,35E-04	2,12E-05	3,35E-05	8,88E-06	9,25E-08	1,22E-06	0,00E+00	9,60E-07	0,00E+00
RDW [m³ eq.]	7,16E-02	6,04E-05	2,17E-03	9,08E-05	1,56E-05	8,01E-06	0,00E+00	1,62E-04	0,00E+00
MAETP [kg DCB eq.]	6,71E+02	7,17E-01	5,06E+00	7,48E-01	3,75E-02	8,03E-02	0,00E+00	3,89E-01	0,00E+00
TETP [kg DCB eq.]	7,17E-03	6,78E-05	7,14E-03	8,48E-05	5,77E-06	9,28E-06	0,00E+00	5,98E-05	0,00E+00

ADPE = Abiotic depletion potential for non fossil resources; ADPF = Abiotic depletion potential for fossil resources; AP = Acidification potential; EP = Eutrophication potential; GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; POCP = Formation potential of tropospheric ozone photochemical oxidants; AirP=Air pollution; WP = Water pollution; ETFW = Ecotoxicity freshwater; HT_c = Human toxicity (carcinogenic effects); HT_nc = Human toxicity (non-carcinogenic effects); LU = Land use; PM/RI = Particulate matter/ Respiratory inorganics; RDW = Resource depletion (water); MAETP = Marine aquatic ecotoxicity potential; TETP = Terrestric Ecotoxicity potential

	Environmental impact: 5,75E-01 kg of 3M™ Scotchcast™ Electrical Insulating Resin 4 GS Sold-alone Bag, Size C, 370 ml								
	Upstream	Core		Downstream					Other
	A1	A2	A3	A4	A5	C2	C3	C4	D
PCR 2012:01 v2.2									
ADPE [kg Sb eq.]	2,51E-05	7,50E-09	9,95E-08	9,10E-09	7,50E-10	9,85E-10	0,00E+00	1,12E-08	0,00E+00
ADPF [MJ]	4,71E+01	1,27E+00	4,34E+00	1,32E+00	8,35E-03	1,49E-01	0,00E+00	1,25E-01	0,00E+00
AP [kg SO_2 eq.]	1,14E-02	8,20E-04	3,02E-04	4,06E-04	3,67E-06	3,60E-05	0,00E+00	5,50E-05	0,00E+00
EP [kg PO_4^{3-} eq.]	6,62E-03	1,31E-04	1,34E-03	1,02E-04	1,03E-06	8,72E-06	0,00E+00	1,54E-05	0,00E+00
GWP [kg CO_2 eq.]	2,72E+00	9,37E-02	1,26E-01	1,39E-01	1,23E-02	1,09E-02	0,00E+00	1,84E-01	0,00E+00
ODP [kg CFC11 eq.]	2,38E-11	6,79E-14	1,16E-12	8,70E-14	3,06E-15	8,79E-15	0,00E+00	4,57E-14	0,00E+00
POCP [kg C_2H_2 eq.]	5,70E-04	-1,02E-04	3,86E-04	-1,58E-04	2,05E-07	3,38E-06	0,00E+00	3,07E-06	0,00E+00
National addition to NF EN 15804+A1 (XP P01-064/CN)									
AirP [m³]	2,38E+02	6,59E+00	3,72E+01	5,30E+00	1,84E-01	5,79E-01	0,00E+00	2,75E+00	0,00E+00
WP [m³]	1,44E+03	4,06E+01	4,49E+01	3,97E+01	8,67E-02	4,49E+00	0,00E+00	1,30E+00	0,00E+00
National supplement to NBN EN 15804+A1:2014 (NBN/ DTD B 08-001:2017)									
ETFW [CTUe]	1,12E+00	1,60E-02	2,76E-02	1,59E-02	2,23E-03	1,80E-03	0,00E+00	3,33E-02	0,00E+00
HT_c [CTUh]	2,71E-08	7,10E-10	4,11E-09	6,82E-10	4,39E-12	7,71E-11	0,00E+00	6,57E-11	0,00E+00
HT_nc [CTUh]	4,48E-07	5,86E-09	4,06E-07	6,69E-09	1,79E-10	7,55E-10	0,00E+00	2,68E-09	0,00E+00
LU [kg C deficit eq.]	4,92E+01	9,06E-02	4,01E-01	1,14E-01	9,46E-05	1,29E-02	0,00E+00	1,42E-03	0,00E+00
PM/RI [kg PM2,5 eq.]	6,29E-04	4,06E-05	6,17E-05	1,66E-05	1,23E-07	2,35E-06	0,00E+00	1,85E-06	0,00E+00
RDW [m³ eq.]	1,35E-01	1,15E-04	4,12E-03	1,70E-04	2,08E-05	1,54E-05	0,00E+00	3,12E-04	0,00E+00
MAETP [kg DCB eq.]	1,25E+03	1,36E+00	9,63E+00	1,40E+00	5,00E-02	1,55E-01	0,00E+00	7,48E-01	0,00E+00
TETP [kg DCB eq.]	1,36E-02	1,28E-04	1,37E-02	1,58E-04	7,69E-06	1,79E-05	0,00E+00	1,15E-04	0,00E+00

ADPE = Abiotic depletion potential for non fossil resources; ADPF = Abiotic depletion potential for fossil resources; AP = Acidification potential; EP = Eutrophication potential; GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; POCP = Formation potential of tropospheric ozone photochemical oxidants; AirP=Air pollution; WP = Water pollution; ETFW = Ecotoxicity freshwater; HT_c = Human toxicity (carcinogenic effects); HT_nc = Human toxicity (non-carcinogenic effects); LU = Land use; PM/RI = Particulate matter/ Respiratory inorganics; RDW = Resource depletion (water); MAETP = Marine aquatic ecotoxicity potential; TETP = Terrestric Ecotoxicity potential

	Environmental impact: 1,05E+00 kg of 3M™ Scotchcast™ Electrical Insulating Resin 4 GS Bag, Size D, 700 ml								
	Upstream	Core		Downstream					Other
	A1	A2	A3	A4	A5	C2	C3	C4	D
PCR 2012:01 v2.2									
ADPE [kg Sb eq.]	4,62E-05	1,38E-08	1,83E-07	1,65E-08	1,08E-09	1,82E-09	0,00E+00	2,07E-08	0,00E+00
ADPF [MJ]	8,65E+01	2,33E+00	8,01E+00	2,41E+00	1,21E-02	2,75E-01	0,00E+00	2,31E-01	0,00E+00
AP [kg SO_2 eq.]	2,10E-02	1,51E-03	5,54E-04	7,38E-04	5,30E-06	6,64E-05	0,00E+00	1,01E-04	0,00E+00
EP [kg PO_4^{3-} eq.]	1,22E-02	2,42E-04	2,47E-03	1,85E-04	1,48E-06	1,61E-05	0,00E+00	2,84E-05	0,00E+00
GWP [kg CO_2 eq.]	4,99E+00	1,72E-01	2,34E-01	2,53E-01	1,78E-02	2,01E-02	0,00E+00	3,40E-01	0,00E+00
ODP [kg CFC11 eq.]	4,34E-11	1,25E-13	2,12E-12	1,58E-13	4,41E-15	1,62E-14	0,00E+00	8,44E-14	0,00E+00
POCP [kg C_2H_2 eq.]	1,05E-03	-1,88E-04	7,12E-04	-2,87E-04	2,96E-07	6,25E-06	0,00E+00	5,67E-06	0,00E+00
National addition to NF EN 15804+A1 (XP P01-064/CN)									
AirP [m³]	4,38E+02	1,21E+01	6,85E+01	9,63E+00	2,65E-01	1,07E+00	0,00E+00	5,08E+00	0,00E+00
WP [m³]	2,65E+03	7,47E+01	8,26E+01	7,23E+01	1,25E-01	8,29E+00	0,00E+00	2,40E+00	0,00E+00
National supplement to NBN EN 15804+A1:2014 (NBN/ DTD B 08-001:2017)									
ETFW [CTUe]	2,06E+00	2,94E-02	5,08E-02	2,89E-02	3,21E-03	3,32E-03	0,00E+00	6,15E-02	0,00E+00
HT_c [CTUh]	5,00E-08	1,31E-09	7,58E-09	1,24E-09	6,34E-12	1,42E-10	0,00E+00	1,21E-10	0,00E+00
HT_nc [CTUh]	8,26E-07	1,08E-08	7,48E-07	1,22E-08	2,59E-10	1,39E-09	0,00E+00	4,95E-09	0,00E+00
LU [kg C deficit eq.]	9,08E+01	1,66E-01	7,28E-01	2,07E-01	1,37E-04	2,38E-02	0,00E+00	2,62E-03	0,00E+00
PM/RI [kg PM2,5 eq.]	1,16E-03	7,48E-05	1,12E-04	3,01E-05	1,78E-07	4,34E-06	0,00E+00	3,41E-06	0,00E+00
RDW [m³ eq.]	2,48E-01	2,11E-04	7,58E-03	3,08E-04	3,01E-05	2,85E-05	0,00E+00	5,76E-04	0,00E+00
MAETP [kg DCB eq.]	2,30E+03	2,51E+00	1,77E+01	2,54E+00	7,22E-02	2,85E-01	0,00E+00	1,38E+00	0,00E+00
TETP [kg DCB eq.]	2,51E-02	2,36E-04	2,52E-02	2,88E-04	1,11E-05	3,30E-05	0,00E+00	2,13E-04	0,00E+00

ADPE = Abiotic depletion potential for non fossil resources; ADPF = Abiotic depletion potential for fossil resources; AP = Acidification potential; EP = Eutrophication potential; GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; POCP = Formation potential of tropospheric ozone photochemical oxidants; AirP=Air pollution; WP = Water pollution; ETFW = Ecotoxicity freshwater; HT_c = Human toxicity (carcinogenic effects); HT_nc = Human toxicity (non-carcinogenic effects); LU = Land use; PM/RI = Particulate matter/ Respiratory inorganics; RDW = Resource depletion (water); MAETP = Marine aquatic ecotoxicity potential; TETP = Terrestric Ecotoxicity potential

3.2.2 Use of resources

The main resource consumption contributors for 3M™ Scotchcast™ Electrical Insulating Resin 4 GS are reported in the tables below. Use of resources without energy content is expressed in kg or m³ per declared unit. Energy data are expressed in MJ per declared unit and as net calorific value. The net calorific value or lower heating value is calculated by subtracting the heat of vaporisation of water from the higher heating value. The results from the tables should be interpreted over the different modules and as they are calculated by the GaBi software.

	Resource use: 1,69E-01 kg of 3M™ Scotchcast™ Electrical Insulating Resin 4 GS Sold-alone Bag, Size A, 90 ml								
	Upstream	Core		Downstream					Other
	A1	A2	A3	A4	A5	C2	C3	C4	D
PERE [MJ]	2,64E+00	1,53E-02	6,70E-01	2,06E-02	7,94E-04	2,04E-03	0,00E+00	4,37E-03	0,00E+00
PERM [MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT [MJ]	2,64E+00	1,53E-02	6,70E-01	2,06E-02	7,94E-04	2,04E-03	0,00E+00	4,37E-03	0,00E+00
PENRE [MJ]	1,34E+01	3,54E-01	1,23E+00	3,96E-01	6,55E-03	3,98E-02	0,00E+00	3,61E-02	0,00E+00
PENRM [MJ]	2,21E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT [MJ]	1,56E+01	3,54E-01	1,23E+00	3,96E-01	6,55E-03	3,98E-02	0,00E+00	3,61E-02	0,00E+00
SM [kg]	8,89E-03	0,00E+00	5,69E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF [MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF [MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW [m³]	4,18E-02	2,87E-05	3,46E-04	6,78E-05	2,15E-05	3,78E-06	0,00E+00	1,18E-04	0,00E+00

PERE = Use of renewable primary energy as energy carrier; PERM = Use of renewable primary energy as raw materials; PERT = Total use of renewable primary energy (PERE + PERM); PENRE = Use of non renewable primary energy as energy carrier; PENRM = Use of non renewable primary energy as raw materials; PENRT = Total use of non renewable primary energy (PENRE + PENRM); SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non renewable secondary fuels; FW = Use of net fresh water

	Resource use: 3,07E-01 kg of 3M™ Scotchcast™ Electrical Insulating Resin 4 GS Sold-alone Bag, Size B, 200 ml								
	Upstream	Core		Downstream					Other
	A1	A2	A3	A4	A5	C2	C3	C4	D
PERE [MJ]	4,56E+00	2,88E-02	1,16E+00	3,71E-02	8,24E-04	4,00E-03	0,00E+00	8,55E-03	0,00E+00
PERM [MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT [MJ]	4,56E+00	2,88E-02	1,16E+00	3,71E-02	8,24E-04	4,00E-03	0,00E+00	8,55E-03	0,00E+00
PENRE [MJ]	2,38E+01	6,71E-01	2,36E+00	7,14E-01	6,81E-03	7,79E-02	0,00E+00	7,06E-02	0,00E+00
PENRM [MJ]	4,33E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT [MJ]	2,81E+01	6,71E-01	2,36E+00	7,14E-01	6,81E-03	7,79E-02	0,00E+00	7,06E-02	0,00E+00
SM [kg]	1,14E-02	0,00E+00	1,10E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF [MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF [MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW [m³]	8,10E-02	5,42E-05	6,53E-04	1,23E-04	2,23E-05	7,40E-06	0,00E+00	2,32E-04	0,00E+00

PERE = Use of renewable primary energy as energy carrier; PERM = Use of renewable primary energy as raw materials;
PERT = Total use of renewable primary energy (PERE + PERM); PENRE = Use of non renewable primary energy as energy carrier;
PENRM = Use of non renewable primary energy as raw materials; PENRT = Total use of non renewable primary energy (PENRE + PENRM);
SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non renewable secondary fuels; FW = Use of net fresh water

	Resource use: 5,75E-01 kg of 3M™ Scotchcast™ Electrical Insulating Resin 4 GS Sold-alone Bag, Size C, 370 ml								
	Upstream	Core		Downstream					Other
	A1	A2	A3	A4	A5	C2	C3	C4	D
PERE [MJ]	8,08E+00	5,47E-02	2,11E+00	6,94E-02	1,10E-03	7,70E-03	0,00E+00	1,65E-02	0,00E+00
PERM [MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT [MJ]	8,08E+00	5,47E-02	2,11E+00	6,94E-02	1,10E-03	7,70E-03	0,00E+00	1,65E-02	0,00E+00
PENRE [MJ]	4,36E+01	1,28E+00	4,52E+00	1,33E+00	9,08E-03	1,50E-01	0,00E+00	1,36E-01	0,00E+00
PENRM [MJ]	8,34E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT [MJ]	5,19E+01	1,28E+00	4,52E+00	1,33E+00	9,08E-03	1,50E-01	0,00E+00	1,36E-01	0,00E+00
SM [kg]	1,59E-02	0,00E+00	2,09E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF [MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF [MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW [m³]	1,55E-01	1,03E-04	1,24E-03	2,29E-04	2,98E-05	1,42E-05	0,00E+00	4,46E-04	0,00E+00

PERE = Use of renewable primary energy as energy carrier; PERM = Use of renewable primary energy as raw materials;
PERT = Total use of renewable primary energy (PERE + PERM); PENRE = Use of non renewable primary energy as energy carrier;
PENRM = Use of non renewable primary energy as raw materials; PENRT = Total use of non renewable primary energy (PENRE + PENRM);
SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non renewable secondary fuels; FW = Use of net fresh water

	Resource use: 1,05E+00 kg of 3M™ Scotchcast™ Electrical Insulating Resin 4 GS Bag, Size D, 700 ml								
	Upstream	Core		Downstream					Other
	A1	A2	A3	A4	A5	C2	C3	C4	D
PERE [MJ]	1,47E+01	1,00E-01	3,84E+00	1,26E-01	1,59E-03	1,42E-02	0,00E+00	3,04E-02	0,00E+00
PERM [MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT [MJ]	1,47E+01	1,00E-01	3,84E+00	1,26E-01	1,59E-03	1,42E-02	0,00E+00	3,04E-02	0,00E+00
PENRE [MJ]	7,99E+01	2,35E+00	8,32E+00	2,42E+00	1,31E-02	2,77E-01	0,00E+00	2,51E-01	0,00E+00
PENRM [MJ]	1,54E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT [MJ]	9,53E+01	2,35E+00	8,32E+00	2,42E+00	1,31E-02	2,77E-01	0,00E+00	2,51E-01	0,00E+00
SM [kg]	2,60E-02	0,00E+00	3,86E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF [MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF [MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW [m³]	2,85E-01	1,89E-04	2,28E-03	4,17E-04	4,30E-05	2,63E-05	0,00E+00	8,23E-04	0,00E+00

PERE = Use of renewable primary energy as energy carrier; PERM = Use of renewable primary energy as raw materials;
PERT = Total use of renewable primary energy (PERE + PERM); PENRE = Use of non renewable primary energy as energy carrier;
PENRM = Use of non renewable primary energy as raw materials; PENRT = Total use of non renewable primary energy (PENRE + PENRM);
SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non renewable secondary fuels; FW = Use of net fresh water

3.2.3 Output flows and waste categories

The important output flows and waste categories for 3M™ Scotchcast™ Electrical Insulating Resin 4 GS are reported in the tables below. All material flows are expressed in kg per declared unit while the exported energy data is expressed in MJ per declared unit and as net calorific value. CRU, MFR, MER, EEE and EET are required to be reported as per EN 15804. It should be noted that 3M processes do not generate radioactive waste and the values are presented as calculated in the GaBi software.

	Output flows / waste: 1,69E-01 kg of 3M™ Scotchcast™ Electrical Insulating Resin 4 GS Sold-alone Bag, Size A, 90 ml								
	Upstream	Core		Downstream					Other
	A1	A2	A3	A4	A5	C2	C3	C4	D
HWD [kg]	1,56E-03	1,53E-08	2,97E-02	2,05E-08	2,78E-11	2,07E-09	0,00E+00	1,53E-10	0,00E+00
NHWD [kg]	6,78E-02	2,37E-05	2,57E-02	1,85E-02	2,97E-02	3,15E-06	0,00E+00	1,64E-01	0,00E+00
RWD [kg]	5,41E-04	6,53E-07	1,88E-05	9,87E-07	2,08E-07	8,22E-08	0,00E+00	1,14E-06	0,00E+00
CRU [kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR [kg]	9,85E-04	0,00E+00	2,18E-02	1,12E-02	1,96E-02	0,00E+00	0,00E+00	1,08E-01	0,00E+00
MER [kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE [MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET [MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy

	Output flows / waste: 3,07E-01 kg of 3M™ Scotchcast™ Electrical Insulating Resin 4 GS Sold-alone Bag, Size B, 200 ml								
	Upstream	Core		Downstream					Other
	A1	A2	A3	A4	A5	C2	C3	C4	D
HWD [kg]	2,93E-03	2,89E-08	5,76E-02	3,70E-08	2,89E-11	4,06E-09	0,00E+00	2,99E-10	0,00E+00
NHWD [kg]	1,18E-01	4,47E-05	4,32E-02	3,35E-02	3,09E-02	6,16E-06	0,00E+00	3,20E-01	0,00E+00
RWD [kg]	1,00E-03	1,23E-06	3,57E-05	1,78E-06	2,16E-07	1,61E-07	0,00E+00	2,24E-06	0,00E+00
CRU [kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR [kg]	1,64E-03	0,00E+00	3,60E-02	2,04E-02	2,03E-02	0,00E+00	0,00E+00	2,11E-01	0,00E+00
MER [kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE [MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET [MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy

	Output flows / waste: 5,75E-01 kg of 3M™ Scotchcast™ Electrical Insulating Resin 4 GS Sold-alone Bag, Size C, 370 ml								
	Upstream	Core		Downstream					Other
	A1	A2	A3	A4	A5	C2	C3	C4	D
HWD [kg]	5,54E-03	5,48E-08	1,10E-01	6,90E-08	3,85E-11	7,82E-09	0,00E+00	5,76E-10	0,00E+00
NHWD [kg]	2,16E-01	8,48E-05	7,70E-02	6,28E-02	4,12E-02	1,19E-05	0,00E+00	6,17E-01	0,00E+00
RWD [kg]	1,88E-03	2,34E-06	6,78E-05	3,33E-06	2,88E-07	3,10E-07	0,00E+00	4,31E-06	0,00E+00
CRU [kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR [kg]	2,94E-03	0,00E+00	6,32E-02	3,82E-02	2,71E-02	0,00E+00	0,00E+00	4,06E-01	0,00E+00
MER [kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE [MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET [MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy

	Output flows / waste: 1,05E+00 kg of 3M™ Scotchcast™ Electrical Insulating Resin 4 GS Bag, Size D, 700 ml								
	Upstream	Core		Downstream					Other
	A1	A2	A3	A4	A5	C2	C3	C4	D
HWD [kg]	1,02E-02	1,01E-07	2,03E-01	1,25E-07	5,56E-11	1,44E-08	0,00E+00	1,06E-09	0,00E+00
NHWD [kg]	3,97E-01	1,56E-04	1,40E-01	1,14E-01	5,95E-02	2,19E-05	0,00E+00	1,14E+00	0,00E+00
RWD [kg]	3,45E-03	4,31E-06	1,25E-04	6,05E-06	4,16E-07	5,72E-07	0,00E+00	7,96E-06	0,00E+00
CRU [kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR [kg]	5,38E-03	0,00E+00	1,15E-01	6,96E-02	3,92E-02	0,00E+00	0,00E+00	7,50E-01	0,00E+00
MER [kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE [MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET [MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy

3.2.4 Release of dangerous substances during the use stage

As this product is a passive product, the use stage (B1-B7) is excluded from the study. As a result, no information is provided in this section for the release of dangerous substances to indoor air, soil and water during this stage.

4 Additional Information

4.1 Other environmental information

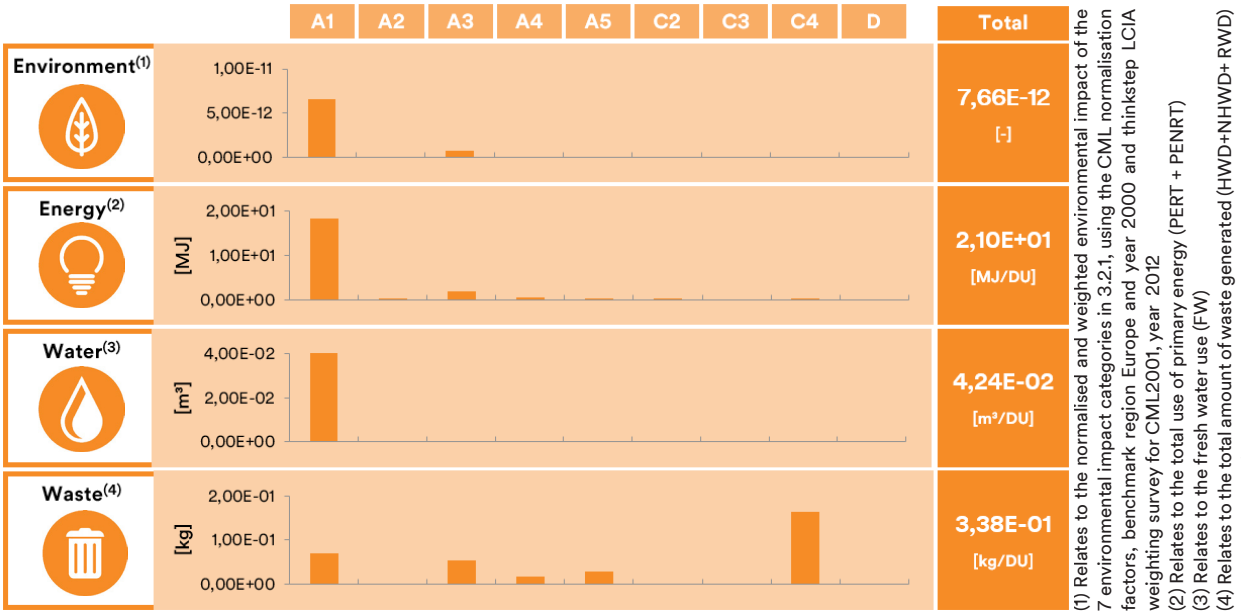
4.1.1 Module D - Recyclability potentials

This life cycle stage applies to the next product system. Because the cut-off approach is consistently applied, no credits for the reuse, recovery or recycling of products are taken into account. Therefore this stage is equal to zero for each indicator in section 3.2.

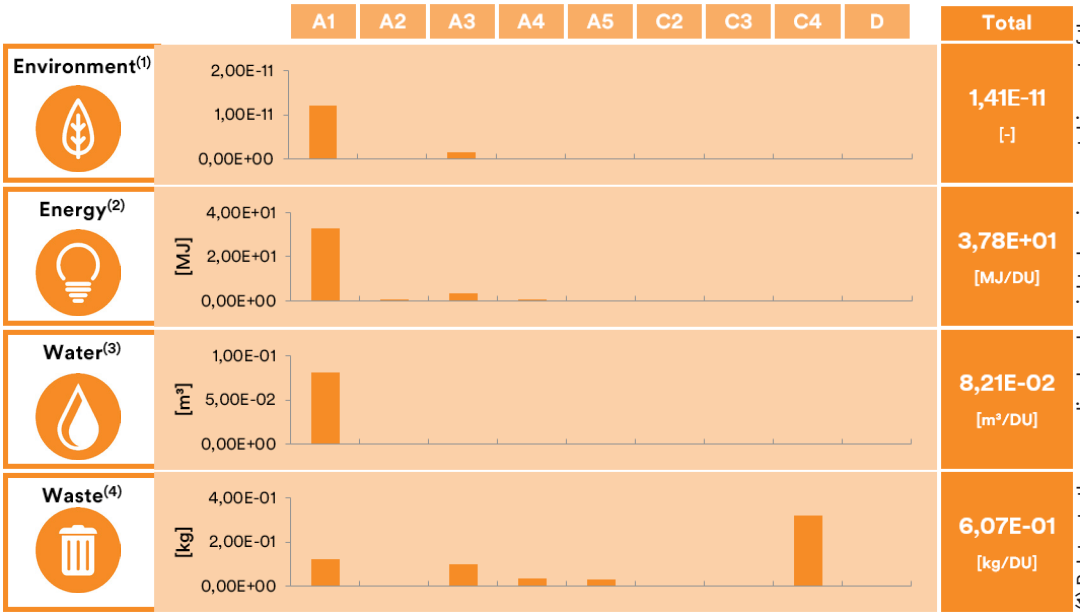
4.1.2 LCA results interpretation for 3M™ Scotchcast™ Electrical Insulating Resin 4 GS

In the 4 charts below a visual interpretation of the LCA results is given for respectively the 90 ml, 200 ml, 370 ml and 700 ml packaging version of 3M™ Scotchcast™ Electrical Insulating Resin 4 GS Sold-alone Bag. Althought the results differ between the different packaging versions, the conclusions are the same for all products.

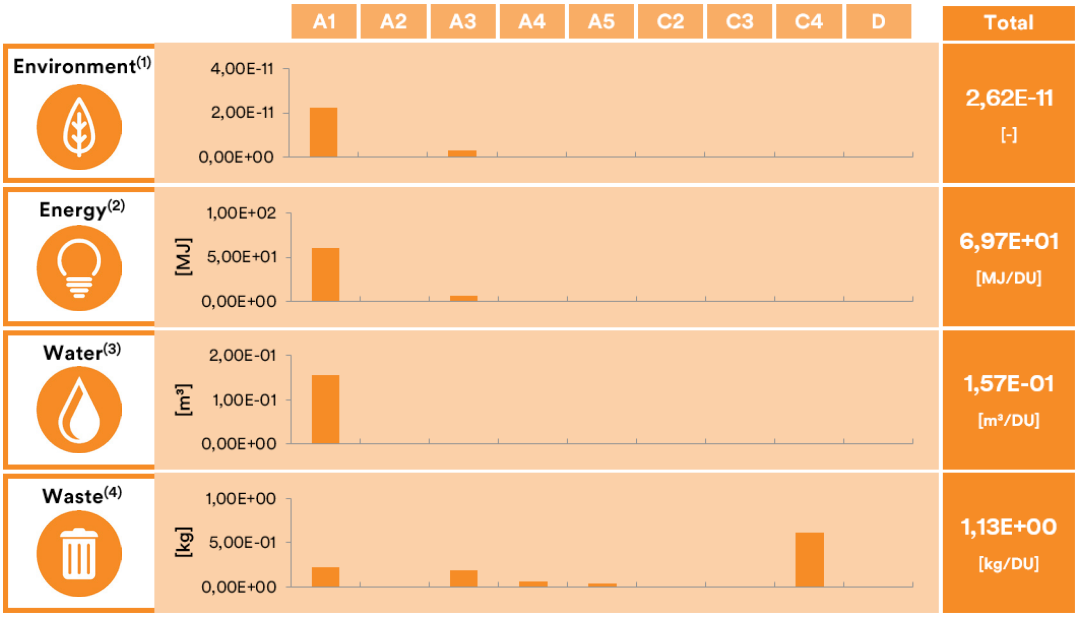
The most significant environmental impact of the product's life cycle is related to the raw material supply (A1) as shown in the charts represented below. A1 is also the module with the highest impact on energy consumption and water use. Note that A1 does not only contain the raw material production, but also the generation of energy used during manufacturing which may suggest a skewed result for this module. Modules A2, A4 and C2 which are related to transportation, have an insignificant impact. End-of-Life disposal (C4) is the life cycle stage twith the highest contribution to waste. The reason why A4 has a higher impact in waste category compared to the rest of the transportation modules is due to the disposal of packaging at the distribution centres.



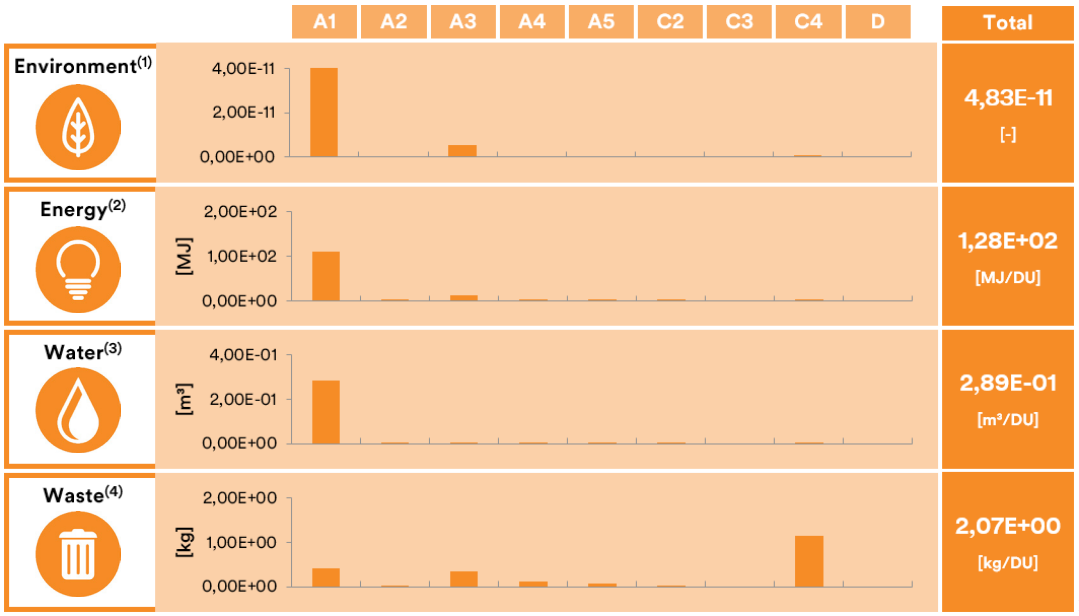
LCA results interpretation for 3M™ Scotchcast™ Electrical Insulating Resin 4 GS Sold-alone Bag, Size A, 90 ml



LCA results interpretation for 3M™ Scotchcast™ Electrical Insulating Resin 4 GS Sold-alone Bag, Size B, 200 ml



LCA results interpretation for 3M™ Scotchcast™ Electrical Insulating Resin 4 GS Sold-alone Bag, Size C, 370 ml



LCA results interpretation for 3M™ Scotchcast™ Electrical Insulating Resin 4 GS Bag, Size D, 700 ml

4.2 Uncertainty on the environmental indicators

Data quality and uncertainty are mutually dependent. The precision of the data depends on measuring tolerance, assumptions, completion, comprehensiveness of the considered system and the representativeness of the data. Uncertainty is also introduced in the impact assessment phase of the study, and will vary according to the impact categories considered.

To get an idea of the uncertainty of the potential environmental impact, it is calculated for each reference and midpoint based on a pedigree matrix, using six different data quality indicators, and Monte Carlo analysis. The uncertainty results are presented below and are calculated for the totals of the different modules.

	3M™ Scotchcast™ Electrical Insulating Resin 4 GS Sold-alone Bag, Size A, 90 ml			
	Min	Max	Base	Δ%
ADPE [kg Sb eq.]	5,57E-06	7,88E-06	6,76E-06	18%
ADPF [MJ]	1,35E+01	1,63E+01	1,63E+01	21%
AP [kg SO_2 eq.]	3,27E-03	3,73E-03	3,73E-03	16%
EP [kg PO_4^{3-} eq.]	1,83E-03	2,22E-03	2,22E-03	26%
GWP [kg CO_2 eq.]	8,21E-01	9,75E-01	9,75E-01	20%
ODP [kg CFC11 eq.]	7,23E-12	7,92E-12	7,92E-12	10%
POCP [kg C_2H_2 eq.]	1,60E-04	2,11E-04	2,11E-04	25%

	3M™ Scotchcast™ Electrical Insulating Resin 4 GS Sold-alone Bag, Size B, 200 ml			
	Min	Max	Base	Δ%
ADPE [kg Sb eq.]	1,09E-05	1,57E-05	1,32E-05	19%
ADPF [MJ]	2,40E+01	2,95E+01	2,95E+01	23%
AP [kg SO_2 eq.]	6,05E-03	6,95E-03	6,95E-03	16%
EP [kg PO_4^{3-} eq.]	3,51E-03	4,30E-03	4,30E-03	27%
GWP [kg CO_2 eq.]	1,45E+00	1,78E+00	1,78E+00	23%
ODP [kg CFC11 eq.]	1,27E-11	1,41E-11	1,41E-11	10%
POCP [kg C_2H_2 eq.]	2,83E-04	3,81E-04	3,81E-04	26%

	3M™ Scotchcast™ Electrical Insulating Resin 4 GS Sold-alone Bag, Size C, 370 ml			
	Min	Max	Base	Δ%
ADPE [kg Sb eq.]	2,06E-05	2,98E-05	2,53E-05	19%
ADPF [MJ]	4,53E+01	5,46E+01	5,46E+01	23%
AP [kg SO_2 eq.]	1,14E-02	1,31E-02	1,31E-02	15%
EP [kg PO_4^{3-} eq.]	6,84E-03	8,22E-03	8,22E-03	25%
GWP [kg CO_2 eq.]	2,71E+00	3,30E+00	3,30E+00	21%
ODP [kg CFC11 eq.]	2,26E-11	2,52E-11	2,52E-11	10%
POCP [kg C_2H_2 eq.]	5,00E-04	7,05E-04	7,05E-04	29%

	3M™ Scotchcast™ Electrical Insulating Resin 4 GS Bag, Size D, 700 ml			
	Min	Max	Base	Δ%
ADPE [kg Sb eq.]	3,85E-05	5,62E-05	4,66E-05	21%
ADPF [MJ]	8,14E+01	1,00E+02	1,00E+02	24%
AP [kg SO_2 eq.]	2,10E-02	2,40E-02	2,40E-02	17%
EP [kg PO_4^{3-} eq.]	1,24E-02	1,52E-02	1,52E-02	25%
GWP [kg CO_2 eq.]	4,95E+00	6,06E+00	6,06E+00	22%
ODP [kg CFC11 eq.]	4,12E-11	4,59E-11	4,59E-11	12%
POCP [kg C_2H_2 eq.]	9,10E-04	1,30E-03	1,30E-03	30%

4.3 Comparisons of EPD® within this Product Category

Environmental Product Declaration in accordance with ISO 14025 and EN 15804.

EPD of construction products may not be comparable if they do not comply with EN 15804.

Environmental product declarations within the same product category from different programs may not be comparable.

4.4 Validity of the EPD® and changes versus previous version

This Environmental Product Declaration is the first version for this product.

If changes in the product's life cycle result in environmental impacts varying more than ±10% from the numbers reported above, the Environmental Product Declaration shall be adjusted. On a yearly basis, or upon modifications in the production process, the supply chain is evaluated to assess the need for an update of the supporting Life Cycle Assessment and accompanying Environmental Product Declaration. Regardless, the Environmental Product Declaration shall be reviewed every five years.

4.5 References

K. Softa, LCA report "Project Electra" (EPD0010, version 2), 3M Internal, Diegem, 2018.

SGS Italia S.p.A., EPD Process Certification, Certificate N. IT14/0823, 30/06/2017 - 30/06/2020.

International Standardization Organization, Environmental Management - Life Cycle Assessment - Principles and Framework (ISO 14040:2006), Dublin 9: NSAI, 2006.

International Standardization Organization, Environmental Management - Life Cycle Assessment - Requirements and Guidelines (ISO 14044:2006), Dublin 9: NSAI, 2006.

International Standardization Organization, Environmental labels and declarations - Type III environmental declarations - Principles and procedures (ISO 14025:2006), La Plaine Saint-Denis: Afnor, 2013.

European Standard, Sustainability of construction works - Environmental Product Declarations - Core rules for the product category of construction products (EN 15804:2012+A1:2013), La Plaine Saint-Denis: Afnor, 2013.

The International EPD® System, General Programme Instructions (version 2.5), The International EPD® System, 2015.

The International EPD® System, Construction Products and Construction Services for multiple CPC codes (PCR 2012:01, version 2.2), The International EPD® System, 2017.

National addition to NF EN 15804+A1, Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction (XP P01-064/CN), La Plaine Saint-Denis: Afnor, 2013.

National supplement to NBN EN 15804+A1:2014, Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products (NBN/ DTD B 08-001:2017), Brussels, Bureau for Standarisation, 2017

BS EN 60455-3-8:2013 Resin based reactive compounds used for electrical insulation. Specifications for individual materials. Sheet 8: Resins for cable accessories, BSI, July 2013.

More information on Sustainability at 3M:
http://www.3M.com/Sustainability

3M Sustainability
Centre of Expertise, West Europe
Hermeslaan 7
1831 Diegem, Belgium

Phone +32 2 722 4584
Web http://www.3M.com

Please recycle.
© 3M 2018. All rights reserved.