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ECO PLATFORM EPD VERIFIED

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Geographical scope: Europe

Environmental product declaration

in accordance with ISO 14025:2006 and EN 15804:2012+A2:2019 for:

3M™ Sun Control Window Film Prestige 40 Exterior Series

3M Prestige 40 Exterior, 0.91 m x 30.48 m
3M Prestige 40 Exterior, 1.52 m x 30.48 m
3M Prestige 40 Exterior, 1.83 m x 30.48 m

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com.

3M Sustainability, Hermeslaan 7, 1831 Diegem, Belgium

Programme: The International EPD® System
Programme operator: EPD International AB
www.environdec.com

Contents

1 Programme Information

EPD operator	EPD International AB (info@environdec.com) Box 210 60, SE-100 31 Stockholm, Sweden
Product Category Rules (PCRs)	International norms, standard and PCR: EN 15804:2012+A2:2019 - Sustainability of construction works - Environmental Product Declarations - Core rules for the product category of construction products PCR 2019:14 v 1.1 - Construction Products (Multiple CPC codes, date: 2020-09-14, valid until: 2024-12-20)
Generic PCR review conducted by	The Technical Committee of the International EPD® System. See www.environdec.com/TC for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact.
Comparisons of EPD	EPDs of construction products may not be comparable if they do not comply with EN 15804:2012+A2:2019. EPDs within the same product category but from different programmes may not be comparable. For further information about comparability, see EN 15804:2006 and ISO 14025:2006.
Independent Verification	☐ External EPD verification ■ External EPD process certification
Verified and approved by	SGS Italia S.p.A. Via Caldera, 21, Milan 20153, Italy Accredited by ACCREDIA Accreditation number DAP N° 006H Certificate N. IT14/0823
Data follow-up	Procedure for follow-up of data during EPD validity involves third-pary verifier: ☐ Yes ■ No
Goal of the study	A cradle-to-gate A1-A3, modules C1-C4, module D and optional modules A4-A5 Life Cycle Assessment (LCA) study has been conducted in accordance with ISO 14040:2006 and ISO 14044:2006 and the requirements stated in the General Programme Instructions by The International EPD® System, and abovementioned PCRs. The goal of the LCA study is to assess the potential environmental impact for 3M™ Sun Control Window Film Prestige 40 Exterior, 0.91 m / 1.52 m / 1.83 m x 30.48 m specifically available in this EPD.
Disclaimer	The owner of the EPD is 3M and has the sole ownership, liability and responsibility of the EPD. All values provided in this EPD are a direct result from the use of characterisation factors and calculation rules as defined in the GaBi™ software from thinkstep GmbH, acquired by sphera™, and the requirements of the product category rules as mentioned above. Energy savings are calculated using Efilm™ software, an EnergyPlus based programme, developed by the International Window Film Association (IWFA). For more information about this EPD or its contents, contact Jonas Depelchin, EPD publisher and process owner, at jdepelchin@mmm.com.

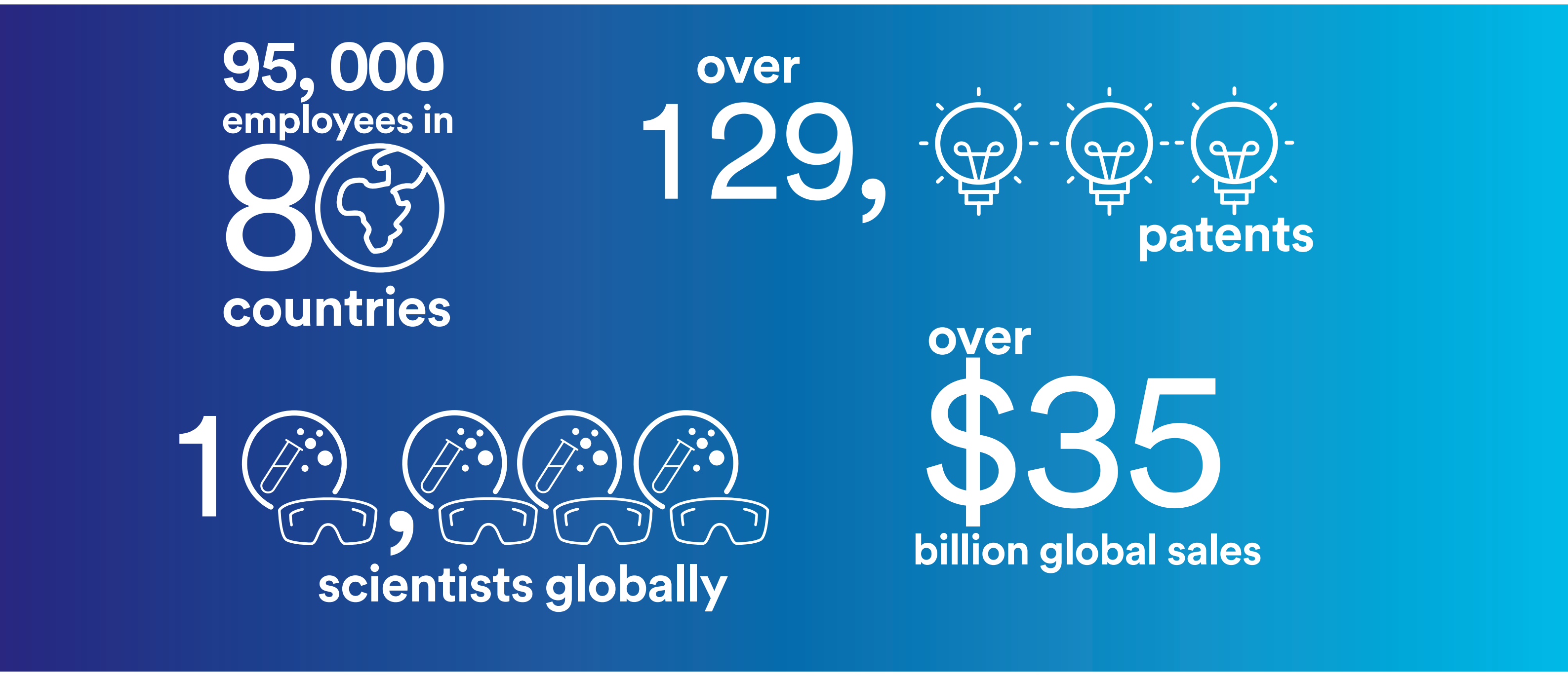
2 Company Information

Over the last century 3M has grown into a global powerhouse, developing products that improve lives around the world. It began life as a small-scale mining venture in Northern Minnesota back in 1902, then named Minnesota Mining and Manufacturing Company.

3M's success and longevity weren't apparent from the start. Our five founders were looking for corundum, a mineral ideal for making sandpaper and grinding wheels. It turns out, what they thought was corundum was really a low-grade mineral. Despite the early setback they persevered with their operation, gained the trust of important investors and built up sales, giving birth to the spirit of innovation and collaboration that still shapes 3M today.

Over the following decades scientific, technical and marketing innovations produced success upon success, eventually making 3M a constant name on the Fortune 500 list. Today, more than 60,000 3M products are used in homes, businesses, schools, hospitals and other industries.

With operations employing almost 95,000 employees in 80 different countries, and products sold in nearly 200 countries, 3M is a diverse technology company with global sales in excess of $35 billion. 3M's commitment to innovation is reflected by the 10,000 scientists and engineers working around the world. The company now has well over 129,000 patents in its name, with an average of 4,000 new patents added every year.



3M brings solutions to different markets through four separate business groups, each one represents a core area of the company, with ideas and innovations shared between them. This collaborative approach has led to unexpected solutions by enabling designers to see problems from different perspectives.

Safety & Industrial is our biggest earning business group, with a vast range of products used in industrial production, electrical and safety markets. This includes automotive, bonding and protecting surfaces in construction, securing things together and developing lightweight parts to help reduce weight and increase efficiency, whilst protecting people at work, and enhancing visual and design communication.

Transportation & Electronics provides solutions for improving road safety and creating a more connected world, such as developing global telecommunications and power grids, restoring underground pipelines and locating key underground infrastructure. It's known for integrating with customers to create innovative solutions and providing opportunities for energy conservation and generation.

Healthcare provides innovations which are pioneering medical advancements in hospitals, emergency rooms and dental clinics around the world. It features a range of products designed for preventing infections and protecting wounds, improving oral health and ensuring food quality.

And finally, Consumer business group features many of our most familiar products and brands, including Post-It®, Scotch® and Command™. It develops solutions to make life easier and more productive at home and in the office, such as simplifying communication, cleaning and protecting surfaces, making home improvement easy and inspiring hobbies, crafts and creativity.

At 3M, we innovate with purpose. We empower individuals to address issues they want to impact, and collaborate with our customers and communities to take on shared global challenges – bringing value to both our business and society as a whole. We call this purpose-driven business. It's an exciting path forward because we know that with creativity, collaboration and a shared sense of purpose, no problem is unsolvable. Working together, we can improve every life.

We look at sustainability in terms of shared global needs and the future of our business. As the population grows, particularly in emerging economies, challenges like energy availability and security, raw material scarcity, human health and safety, education, and development must be addressed to ensure people across the world can lead healthy, fulfilling lives. Every day, 3M innovations aim to tackle some of the world's most pressing areas of concern: raw materials; water; energy and climate; health and safety, and education and development.

Setting goals to drive sustainability progress is nothing new at 3M. We've been setting global environmental goals since 1990. A strong part of our company history, these goals have helped dramatically reduce our own environmental footprint and established us as a leader in environmental stewardship.

3M's iconic Pollution Prevention Pays (3P) programme has been running since 1975. The programme has prevented more than 2.85 million tons of pollutants and saved over $2.34 billion based on aggregated data from the first year of each 3P project.

In 2021, we achieved a 18.5 million pound reduction in the use of virgin fossil-based plastic in our packaging and products toward our goal of 125 million pounds by 2025.

Over the last two decades, while 3M's revenues have doubled, we have reduced our greenhouse gas emissions by 75%, and moved 45.2% of our manufacturing sites to zero landfill waste. At the same time, we've intensified our focus on creating a range of innovative solutions that help our customers be more sustainable — from glass bubbles that enable lower vehicle weight and improved fuel economy, to films that make homes, businesses, and electronics more energy efficient. In 2021 alone, 3M Science helped our customers avoid 18.1 million metric tons of emissions, which is the equivalent of taking more than three million cars off the road.

Another initiative led by 3M is the Sustainability Value Commitment, which ensures that every new product made by 3M from 2019 onwards is manufactured with sustainability in mind. It commits our product developers to focus on reusability, recyclability, energy, waste, water savings, responsible sourcing, and/or renewable materials appropriate to the specific product, from the beginning to the end of each product's lifecycle.

Since February 2014, 3M has become a signatory of the United Nations Global Compact. While 3M has always acted in accordance with the core values represented by the Compact, we are proud to formalise our commitment to its 10 principles in the areas of human rights, labour, environmental and anti-corruption and to grow our partnership with the organisation.

3 Product Information

3.1 Product description

The following products are covered by this EPD:

Product name	Reference
3M™ Sun Control Window Film Prestige 40 Exterior, 0.91 m x 30.48 m	7000049482
3M™ Sun Control Window Film Prestige 40 Exterior, 1.52 m x 30.48 m	7100002552
3M™ Sun Control Window Film Prestige 40 Exterior, 1.83 m x 30.48 m	7100002589

3M™ Sun Control Window Film Prestige 40 Exterior series (hereafter referred to as '3M Prestige 40 Exterior') is a multilayer, metal free, spectrally selective, solar control film with a durable scratch resistant surface and a weather stable acrylic adhesive. 3M Prestige 40 Exterior is intended for exterior application on flat glass substrates.

The film series provide the best balance between maximum light transmission and heat rejection. The nanotechnology significantly reduces heat while leaving the window appearance virtually unchanged. The films are designed for exterior use and they block up to 99.9% of damaging ultraviolet (UV) rays to reduce fading in interiors and furnishings. They keep homes and office buildings cool and comfortable in summer whilst ensuring minimal heat loss during the winter months. Their performance accelerates as the sun's angle increases, which means the need for greater protection and comfort is met as required.

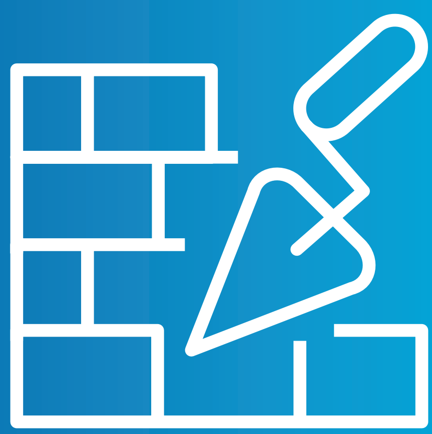
The film rejects up to 97% of the sun's infrared light[1], up to 60% of the heat coming through your windows, and helps to provide energy savings by reducing the use of air conditioning. The films are free of metals and corrosion, and won't interfere with mobile phone, GPS and satellite radio reception.

3M Prestige 40 Exterior is classified under code 391990 "Self-adhesive plates, sheets, film, foil, tape, strip and other flat shapes, of plastics" in the United Nations Central Product Classification (CPC) System.

1 m² of 3M Prestige 40 Exterior is equal to 0.130 kg (0.096 kg film, 0.034 kg liner) and is packaged depending on the size of the film.

Window film substrate[2]	Reflected visible light (interior)	Reflected visible light (exterior)	Transmitted visible light	Solar energy rejected	G value[3] (SHGC)	Light to solar gain	UV block	Heat gain reduction	Glare reduction
Single pane	5%	6%	42%	61%	0.39	1.1	99.9%	53%	53%
Dual pane	13%	7%	37%	71%	0.29	1.3	99.9%	59%	53%

Depending on its application, the product covered by this EPD 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". Consequently, PCR 2019:14 v1.1 and EN 15804:2012+A2:2019 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.



(1) 3M Prestige Series Window Films block energy across the entire IR range. The 97% rejection value is based on performance in the 900-1000 nanometers (nm) range.
(2) Typical Performance Properties according to EN 410. The values mentioned are for the window film applied on the glass substrate, and are the result of illustrative lab test measurements that shall not be considered as a commitment from 3M.
(3) G-value (sometimes also called a Solar Factor or Total Solar Energy Transmittance) is the coefficient commonly used in Europe to measure the solar energy transmittance of windows. A g-value of 1.0 represents full transmittance of all solar radiation while 0.0 represents a window with no solar energy transmittance.

3.2 Content declaration

3.2.1 Product composition

3M Prestige 40 Exterior covered by this EPD does not contain Substances of Very High Concern (SVHC) as defined by article 59 (10) of Regulation (CE) n° 1907/2006 (dated 2023-01-17), also known as the REACH candidate list, at a concentration at or above 0.1% in weight.

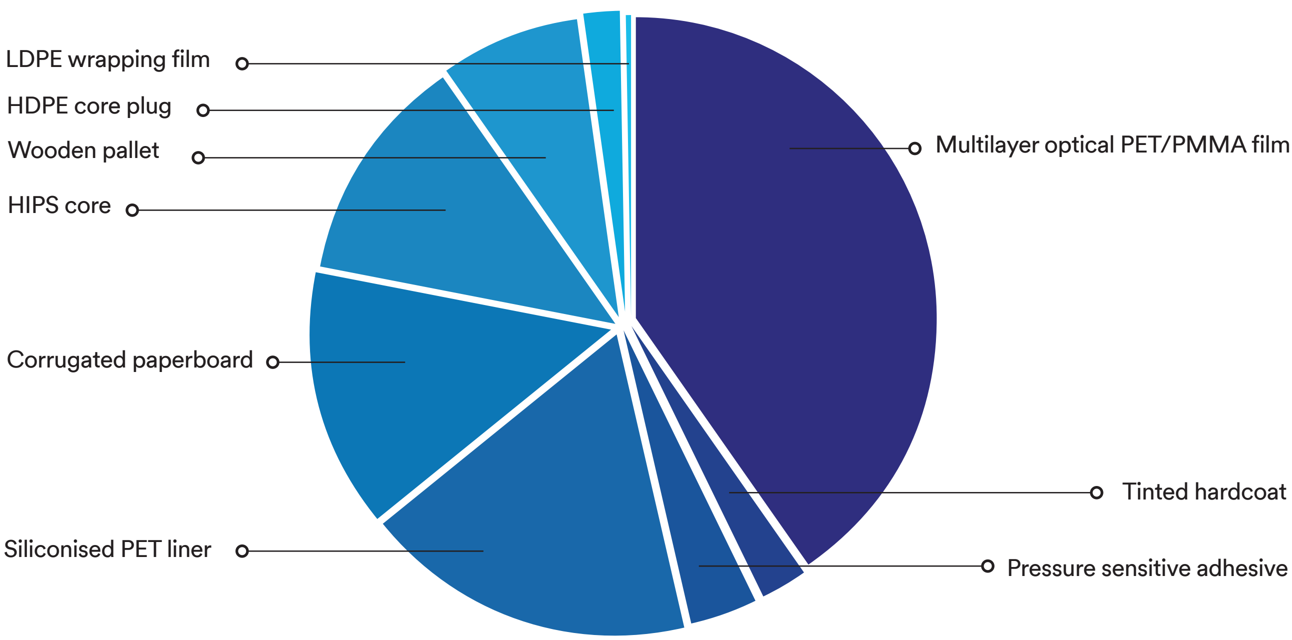
The tables below report respectively the product composition (first table applies to all film sizes) and the product packaging (split per reference depending on the film size). Weight in kg is presented following the declared unit.

The pie charts give the composition of 3M Prestige 40 Exterior including the packaging.

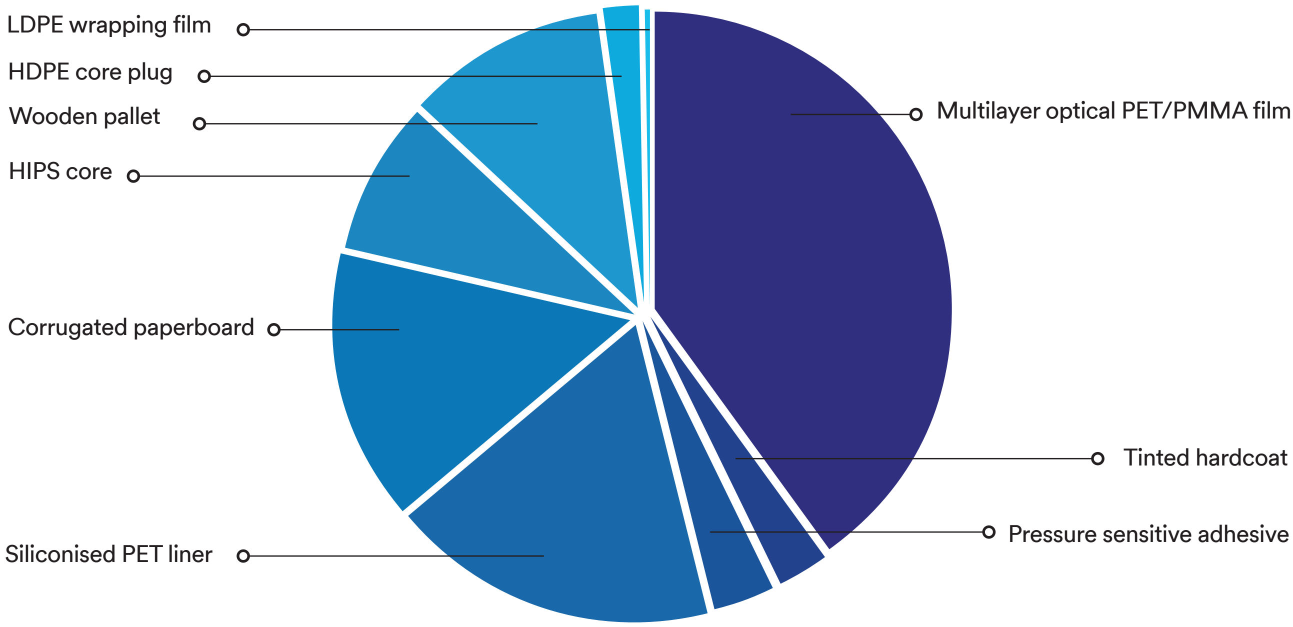
Product component 3M Prestige 40 Exterior film (all sizes)	Weight [kg]	Weight [wt%]	Post-consumer material(1) [wt%]	Renewable material [wt%]
Multilayer optical PET/PMMA film	0.079-0.093	58-68	0%	0%
Pressure sensitive adhesive	0.004-0.011	3-8	0%	0%
Tinted hardcoat	0.003-0.008	2-6	0%	0%
Siliconised PET liner	0.034-0.041	25-30	0%	0%
Total	**0.137**	**100**	**0%**	**0%**

(1) Accounts for both pre-consumer and post-consumer waste (scraps) as recovered material

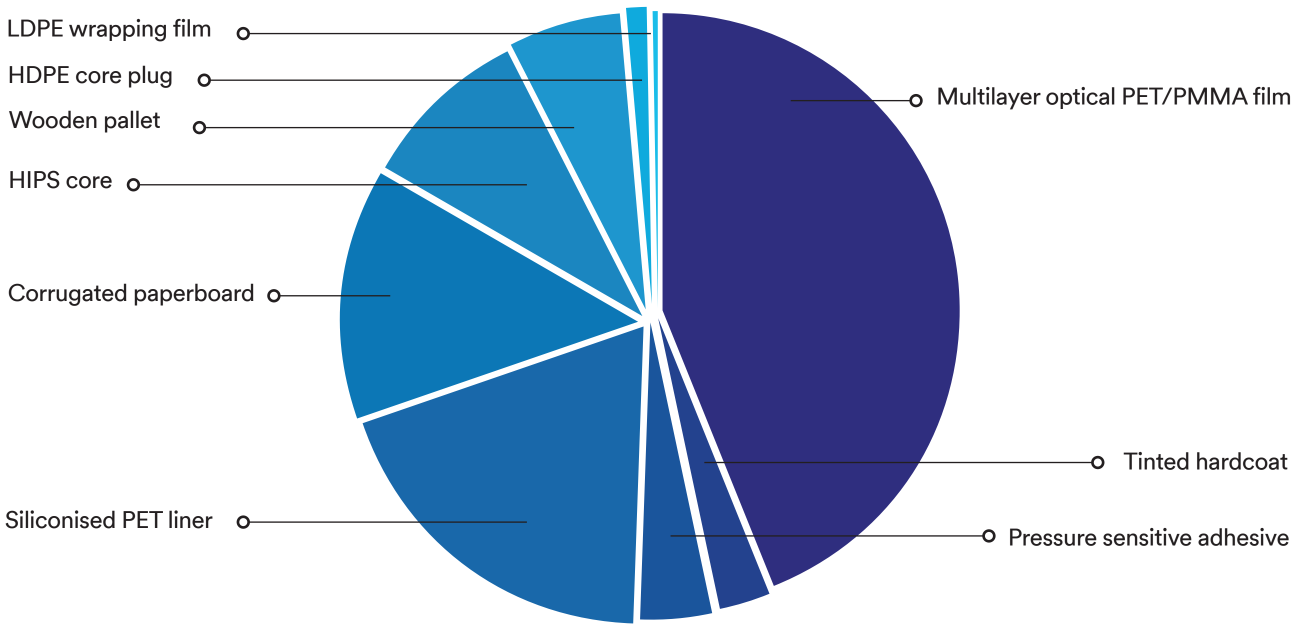
0.91 m x 30.48 m packaging components	Weight [kg]	Weight vs the product [wt%]	Material source	Purpose
Corrugated paperboard	0.030	21.8	Wood	Consumer
HIPS core	0.026	18.7	Petroleum	Consumer
Wooden pallet	0.016	11.9	Wood	Consumer
HDPE core plug	0.004	3.2	Petroleum	Consumer
LDPE wrapping film	0.0005	0.4	Petroleum	Consumer
Total	**0.077**	**56.0**		



1.52 m x 30.48 m packaging components	Weight [kg]	Weight vs the product [wt%]	Material source	Purpose
Corrugated paperboard	0.032	23.6	Wood	Consumer
HIPS core	0.018	13.3	Petroleum	Consumer
Wooden pallet	0.023	17.1	Wood	Consumer
HDPE core plug	0.003	2.1	Petroleum	Consumer
LDPE wrapping film	0.0004	0.3	Petroleum	Consumer
Total	**0.077**	**56.4**		



1.83 m x 30.48 m packaging components	Weight [kg]	Weight vs the product [wt%]	Material source	Purpose
Corrugated paperboard	0.027	20.0	Wood	Consumer
HIPS core	0.017	12.7	Petroleum	Consumer
Wooden pallet	0.012	9.1	Wood	Consumer
HDPE core plug	0.002	1.6	Petroleum	Consumer
LDPE wrapping film	0.0004	0.3	Petroleum	Consumer
Total	**0.060**	**43.7**		




INFOGRAPHICS
FIRST
SECOND
THIRD
22%
FOURTH

3.2.2 Recycling

3M has been recycling since 1975 when we established the Corporate Environmental Policy and adopted a voluntary Pollution Prevention Pays (3P) program based on the then-novel idea that pollution prevention is more environmentally effective, technically sound and economically advantageous than pollution control.

Today 3M practices responsible waste management at every company location to reduce the amount of waste materials generated, and deal with hazardous waste in the most efficient way possible.

Every location has a Waste Management Coordinator and is required to manage all returned, recycled and waste materials from the time of generation until reused, recycled, treated or disposed.

At our manufacturing location in Hutchinson (MN, US)[1]

3M operates under **ISO9001** and **ISO14001** certifications

water use was **reduced** by more than **50%** from 2000-2018

91% of the **waste** was either **reused, recycled,** or **converted to energy**

3M reduced energy use by more than **18%** from 2000-2018

(1) Information related to the manufacturing site goes beyond the scope of the system under analysis and has therefore not been subject to verification. Data is coming from 3M's Environmental Targets Database, a database that monitors different manufacturing parameters and that tracks the progress toward 3M's 2025 Sustainability Goals.

3.3 Manufacturing

At 3M, we approach our sustainability goals and strategy by delivering excellence in operations and across our supply chain, innovating to improve lives with our customers and partners, and enriching the communities where we live and work. Our ambition, working collaboratively, is to realise a world where every life is improved, where natural resources are reliably available, where people everywhere have access to education and opportunity, and where communities are safe, healthy, connected and thriving.

When it comes to fabrication, assembly or processing, 3M understand that increasing efficiency is vital for our selling partners and their bottom line. From ultra-strong abrasives that keep processes running smoothly to futuristic materials that can literally lighten your workload, we provide innovative solutions that help businesses and employees improve efficiency.

3M's International Environmental Operations group enhances and integrates our global environmental management system which guarantees compliance with environmental regulations and prepares facilities to meet the requirements of international standards.

3M Prestige 40 Exterior covered by this Environmental Product Declaration is manufactured by 3M's Commercial Solutions Division (CSD), a division of the Transportation and Electronics Business Group (TEBG) with the 3M Company. The 3M manufacturing sites part of the supply chain are: St. Paul (MN, US), Cordova (IL, US), Hutchinson (MN, US) and Decatur (AL, US), all, apart from St. Paul (MN, US), operating under ISO9001:2015 and ISO14001:2015 certifications.

4 Life Cycle Assessment

4.1 Declared unit

The declared unit in this EPD is the surface needed of 3M Prestige 40 Exterior (including packaging) to cover 1 m² of a building's window. This equals to 1.05 m² because to apply 1 m² of 3M Prestige 40 Exterior there is 5% wastage during application.

4.2 Reference service life

The reference service life (RSL) of 3M Prestige 40 Exterior has been estimated to be at least 10 years, which corresponds to the guaranteed life of the film, provided that the specified conditions for packaging, transport, storage, installation, use, maintenance and repair are followed.

4.3 System boundaries

The LCA study supporting this EPD is a cradle-to-gate A1-A3, modules C1-C4, module D and optional modules A4-A5. The included modules and life cycle stages are listed in the table below.

In addition to the declared modeles, the table below lists the geographical location per module and the share of the GWP-GHG indicator results in A1-A3 coming from product-specific LCI data. This LCI data is defined as measured data, representative data or data that can be proven to be conservative. All other data is regarded as proxy data and identified as estimates during data collection.

Stage	Product			Construction		Use							End-of-life				Resource recovery
	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
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Declared	X	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	(1)	(2)	US	(3)	EU	-	-	-	-	-	-	-	EU	EU	EU	EU	EU
Specific data	> 90%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation products(4)	Not relevant			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation sites(5)	Not relevant			-	-	-	-	-	-	-	-	-	-	-	-	-	-

X = declared module; ND = not declared
A1 = Upstream module; A2-A3 = Core module; A4-C4 = Downstream module; D = Other environmental information
(1) United States, China, Japan, Singapore
(2) United States, China, Japan, Singapore
(3) United States, Europe
(4) Relative difference of GWP-GHG in A1-A3 between reported average and the results for the underlying products
(5) Relative difference of GWP-GHG in A1-A3 between reported average and the results for the underlying sites

4.3.1 Product stage (A1 - 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 (A1). All raw materials are transported from the source to the 3M manufacturing site by truck and/or boat (A2). 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 ancillaries, packaging materials used and waste produced (A3), but excluding process utilities (e.g. electricity, steam, etc.) which are part of A1. 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.

4.3.2 Construction process stage (A4 - A5)

The construction process stage includes transportation of the finished product to the building site, and its installation in the construction works.

For transportation (A4), the scope of the study is Europe, and as such the assumption of a distribution distance of 1,960 km by US truck (LC[1] 20,412 kg, FCFC[2] 49.6 l diesel/100 km, CU[3] 78%), 9,262 km by boat (LC 43,000,000 kg, FCFC 10,060.6 l heavy fuel oil/100 km, CU 70%) and 2,000 km by EU truck (LC 22,000 kg, FCFC 55.7 l diesel/100 km, CU 61%) is made.

The installation (A5), is focused on installing the film on the exterior window surface of a European building. It comprises cleaning the exterior window surface with water (10 kg/m^2, 0.01 m^3) and soap (0.005 kg/m^2) before manually applying the window film. Packaging (see section 3.2.1), liner (0.036 kg) and 5% product waste (0.005 kg) is disposed at this stage. Waste is transported for disposal with EU dry bulk truck (LC 22,680 kg, FCFC 77.3 l diesel/100 km, CU 58%).

As the product's and packaging's waste management are not known due to the characteristics of the product, Eurostat data for Europe is used to represent the reality. This data represents the main type of disposal (incineration and landfill) and recycling of the waste with the corresponding quantities.

4.3.3 Use stage (B1 - B7)

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

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

Deconstruction stage (C1) includes the removal of the window film and it is included in the study. The stage includes the impacts of the water used for the removal (1 kg/m^2). End-of-life treatment is considering transportation (100 km by EU dry bulk truck) of the film to a disposal site (C2). The choice for a scenario based on statistical data was made, which means it is assumed that the product is disposed in different ways. Module C3 represents the waste processing for reuse, recovery and/or recycling, while module C4 represents the disposal of the product at its end of life.

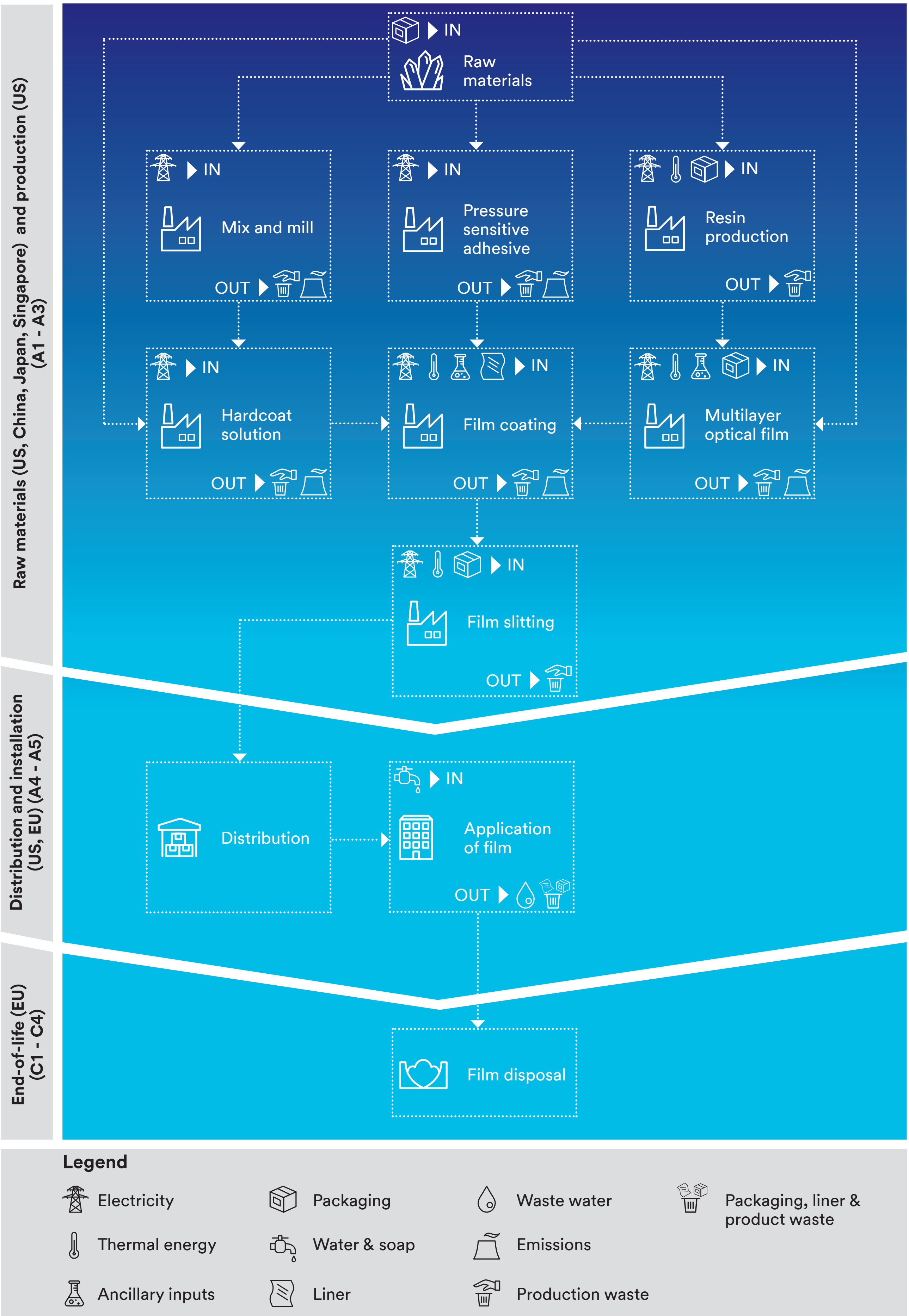
As the waste management of the film is not known due to the characteristics of the product, Eurostat data for Europe is used to represent the reality. This data represents the main type of disposal (incineration and landfill) and recycling of the waste with the corresponding quantities. Depending on the type of material in the film, the following disposal and recycling methods are modelled. The film is considered to contain 19.58% chemicals (0.019 kg of 0.096 kg) and 80.42% plastics (0.077 kg of 0.096 kg). 4.2% of plastic waste is sent to landfill, 18.4% to incineration and 77.4% to recycling. Chemical waste is landfilled at 15.7%, incinerated at 39.6% and recycled at 44.7%.

4.3.5 Resource recovery stage (D)

Module D applies to the next product system and calculates the potential environmental benefits of the recycling, recovery or reuse of materials. It contains credits from the recycling of production, product and packaging waste as well as the credits from the heat and electricity generated by incineration with energy recovery in modules A3, A5 and C3. The impacts of the recycling process are considered when the different waste fractions are collected and recycled for use in substitution of virgin raw aggregates (including for some materials a devaluation factor).

(1) LC = load capacity (kg)
(2) FCFC = full capacity fuel consumption (l/100 km)
(3) CU = capacity utilisation, including empty returns (%)

4.3.6 Flow diagram



4.4 Data collection and quality

Specific data was gathered by 3M for the core processes and are based on 2018-2020 production volumes and extrapolations of measurements on specific machines.

Generic data for upstream and downstream processes are used as available in the GaBi software and databases and are representative of the years 2011-2018.

Both specific and generic data are modelled to be specific to the technologies or technology mixes under analysis. Where technology-specific data are unavailable, proxy data are used. The technological representativeness is considered to be good.

All data are collected specific to the countries or regions under analysis. Where country or region specific data are unavailable, proxy data are used. The geographical representativeness is considered to be good.

Data quality analysis is performed based on the EU Product Environmental Footprint (PEF) Guidance. The overall data quality is at least good meaning that each indicator can be used in this EPD.

4.5 Calculation procedure

The LCA model was created using the GaBi software (version 10.5.1.124, DB 8.7, Service Pack 39 (2019.3)) system for life cycle engineering. The modelling process used both primary data collected from the actual manufacturing process, and secondary data available in the GaBi databases including industry-average data, data available from literature studies and data available from published databases.

All relevant process steps for each scenario are considered and modelled to represent each specific situation. The process chain is considered sufficiently complete with regard to the goal and scope of this study. Cross-checks concerning the plausibility of mass and energy flows are carried out on the data received. Similar checks are made on the software model developed during the study. To ensure consistency, all primary data are collected with the same level of detail, while all background data are selected from the GaBi databases.

4.5.1 Key assumptions

Key assumptions made in this study relate to energy input and waste data for certain manufacturing process steps, as well as the material inputs and utilities of an intermediate product based on plant production data. During the application phase of the product, ancillary usage is based on assumptions as well. The end-of-life of the product is modelled using statistical data.

Due to the complexity of this model, uncertainty for this product is determined based on grouping input and output flows and calculating the weighted average scores from different manufacturing processes instead of actual dataset scores.

Next to key assumptions, some general assumptions are included on different levels in the model:

- When no specific data for the raw material is available it is modelled based on the material content information in combination with generic production data.
- When specific raw material packaging data is not provided, a default packaging is assumed based on professional judgement and the type of raw material.
- Distances between raw material suppliers, manufacturers and 3M sites on the same continent are assumed to be 1000 km (or 621 miles).
- 100 km (or 62.1 miles) transport distance is assumed for the disposal of materials.
- When the type of waste disposal is unknown, Eurostat data for EU-28 countries and available waste data from EPA for US is used in order to represent the reality.

4.5.2 Cut-off criteria

All available data from the production processes are considered, i.e. all pre-products/raw materials used, packaging material and relevant energy flows using best available LCI datasets. Transport processes for raw material packaging as well as internal transport in the facilities is excluded. Production of machines, facilities and infrastructure required during manufacture are also excluded.

4.5.3 Allocation

For all upstream data, allocation by mass and net calorific value is applied. No co-products are created in the production processes, but allocation by mass on plant level is applied for certain data points in this study.

5 Environmental Performance

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.

5.1 Potential environmental impact

The reported environmental impacts, as required per PCR 2019:14 v 1.1 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 EC-JRC characterisation factors as required by EN 15804:2012+A2:2019. Data refer to the declared unit.

For EP-freshwater, results are reported in kg P eq. and converted and reported in kg PO_4 eq. to comply with EN 15804:2012+A2:2019 requirements.

Next to the mandatory indicators some additional indicators are reported. One is GWP-GHG and is not using the EC-JRC characterisation factors, but IPCC AR5 as required in PCR 2019:14 v1.1. This inclusion makes that results will be compatible with the climate impact results of EPDs based on other PCRs of the International EPD® System aligned with version 3.01 of the GPI (or other versions of the GPI requiring this indicator)[1].

5.1.1 3M Prestige 40 Exterior, 0.91 m x 30.48 m

	Mandatory indicators according to EN 15804+A2 (Table 1)									
	Product			Construction		End of life				Other
	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
AP [mol H^+ eq]	2.32E-02	1.27E-03	7.69E-03	1.33E-03	1.78E-03	1.96E-06	6.52E-06	0.00E+00	5.97E-05	-4.59E-04
GWP-total [kg CO_2 eq]	8.20E+00	2.02E-01	1.38E+00	1.03E-01	5.57E-01	1.46E-03	1.99E-03	0.00E+00	4.18E-02	-2.26E-01
GWP-biogenic(2) [kg CO_2 eq]	-1.50E-01	1.31E-03	-6.51E-03	-6.69E-06	-4.07E-03	7.29E-04	-3.15E-05	0.00E+00	7.68E-06	6.14E-03
GWP-fossil [kg CO_2 eq]	8.34E+00	2.01E-01	1.39E+00	1.03E-01	5.45E-01	7.28E-04	1.99E-03	0.00E+00	4.18E-02	-2.31E-01
GWP-luluc [kg CO_2 eq]	2.96E-03	2.19E-04	6.23E-04	6.35E-04	1.58E-02	4.90E-07	3.01E-05	0.00E+00	1.51E-05	-7.75E-04
EP-freshwater [kg PO_4 eq]	8.07E-05	2.41E-06	1.12E-04	1.05E-06	3.89E-05	1.91E-06	2.88E-08	0.00E+00	1.08E-07	1.48E-06
EP-freshwater [kg P eq]	2.66E-05	7.94E-07	3.68E-05	3.46E-07	1.28E-05	6.30E-07	9.51E-09	0.00E+00	3.57E-08	4.89E-07
EP-marine [kg N eq]	3.72E-03	5.78E-04	3.44E-03	4.13E-04	5.46E-04	2.89E-06	2.88E-06	0.00E+00	2.00E-05	-1.11E-04
EP-terrestrial [mol N eq]	4.03E-02	6.37E-03	3.71E-02	4.54E-03	4.86E-03	5.89E-06	3.23E-05	0.00E+00	2.19E-04	-1.12E-03
ODP [kg CFC11 eq]	8.11E-09	1.42E-17	2.33E-10	1.12E-17	1.35E-09	4.90E-18	3.63E-19	0.00E+00	9.81E-17	2.09E-13
POCP [kg NMVOC eq]	1.19E-02	1.19E-03	1.22E-02	1.03E-03	1.38E-03	1.47E-06	5.84E-06	0.00E+00	5.79E-05	-4.87E-04
ADP-fossil(3) [MJ]	1.63E+02	2.65E+00	1.32E+01	1.33E+00	9.11E+00	7.00E-03	2.63E-02	0.00E+00	2.38E-01	-5.94E+00
ADP-min&met(3) [kg Sb eq]	2.81E-06	3.56E-08	2.06E-07	1.42E-08	1.97E-07	7.28E-11	1.57E-10	0.00E+00	1.84E-09	-2.52E-08
WDP(3) [m^3 world eq]	1.13E+00	1.02E-02	1.21E-01	2.96E-03	1.17E-01	2.48E-04	4.39E-05	0.00E+00	9.20E-04	-2.93E-02

See section 6.6 for a list acronyms used in this table

(2) The negative values for GWP-biogenic can be attributed to the production of the paper and/or wood products. Trees, used for the production of the paper, absorb CO_2 during the growth process which therefore gives a negative impact on CO_2 emissions.

(3) The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicato

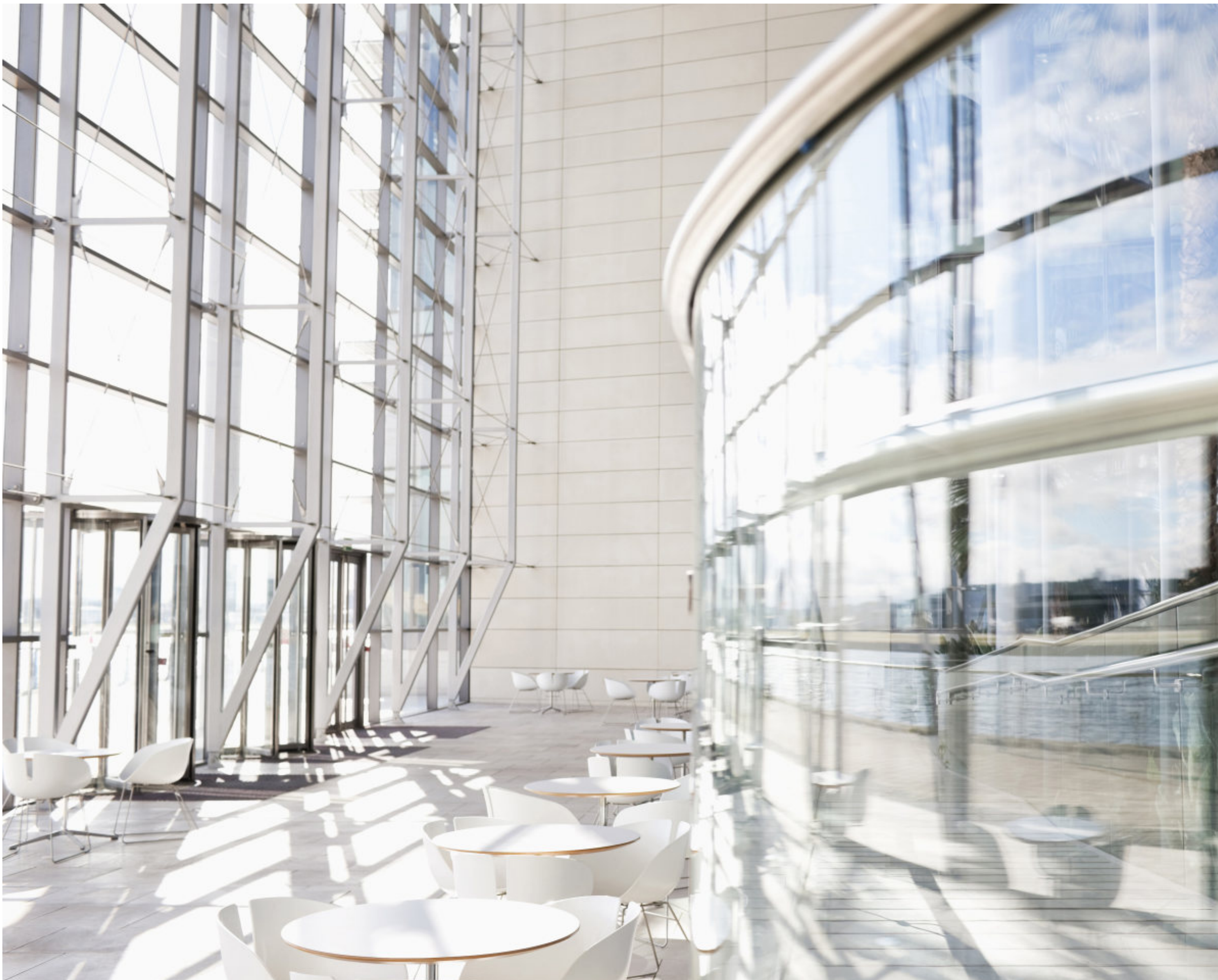
(1) This indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide emissions and uptake and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013, which will support comparability with EPDs based on the previous version of EN 15804 (EN 15804:2012+A1:2013).

	Additional mandatory (PCR2019:14) and voluntary indicators (EN 15804+A2)									
	Product			Construction		End of life				Other
	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG [kg CO_2 eq]	8.18E+00	1.99E-01	1.41E+00	1.02E-01	5.40E-01	8.42E-04	1.97E-03	0.00E+00	4.14E-02	-2.26E-01
EN 15804+A2										
HT-cancer(1) [CTUh]	8.40E-09	5.86E-11	2.47E-09	2.51E-11	5.79E-10	1.09E-12	3.79E-13	0.00E+00	3.93E-10	-3.43E-10
ET-freshwater(1) [CTUe]	7.03E+01	3.59E+00	9.28E+00	1.48E+00	5.45E+00	3.15E-02	1.91E-02	0.00E+00	8.98E-02	-2.44E+00
IRP(2) [kBq U235 eq]	3.79E-01	5.14E-04	3.84E-02	3.13E-04	2.21E-02	8.78E-05	8.06E-06	0.00E+00	3.95E-04	-2.93E-02
SQP(1) [pt]	1.89E+01	2.73E+00	8.88E+00	7.60E-01	2.55E+00	3.00E-03	1.19E-02	0.00E+00	2.60E-02	-4.10E+00
HT-non-cancer(1) [CTUh]	5.21E-07	1.82E-09	2.43E-07	8.41E-10	3.91E-08	2.41E-11	1.58E-11	0.00E+00	4.48E-08	-1.99E-08
PM/RI [disease inc.]	8.66E-07	1.27E-08	3.63E-08	1.91E-08	4.80E-08	1.94E-11	8.25E-11	0.00E+00	4.81E-10	-5.63E-09

See section 6.6 for a list acronyms used in this table

(1) The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

(2) 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.



5.1.2 3M Prestige 40 Exterior, 1.52 m x 30.48 m

	Mandatory indicators according to EN 15804+A2									
	Product			Construction		End of life				Other
	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
AP [mol H^+ eq]	1.48E-02	8.49E-04	4.95E-03	1.34E-03	1.22E-03	1.96E-06	6.52E-06	0.00E+00	5.97E-05	-4.13E-04
GWP-total [kg CO_2 eq]	5.30E+00	1.35E-01	7.58E-01	1.04E-01	3.82E-01	1.46E-03	1.99E-03	0.00E+00	4.18E-02	-2.05E-01
GWP-biogenic(1) [kg CO_2 eq]	-1.01E-01	8.77E-04	-3.83E-02	-6.72E-06	3.21E-03	7.29E-04	-3.15E-05	0.00E+00	7.68E-06	5.92E-03
GWP-fossil [kg CO_2 eq]	5.40E+00	1.34E-01	7.96E-01	1.03E-01	3.63E-01	7.28E-04	1.99E-03	0.00E+00	4.18E-02	-2.10E-01
GWP-luluc [kg CO_2 eq]	1.94E-03	1.46E-04	5.03E-04	6.38E-04	1.58E-02	4.90E-07	3.01E-05	0.00E+00	1.51E-05	-5.64E-04
EP-freshwater [kg PO_4 eq]	5.18E-05	1.61E-06	7.78E-05	1.05E-06	3.58E-05	1.91E-06	2.88E-08	0.00E+00	1.08E-07	1.28E-06
EP-freshwater [kg P eq]	1.71E-05	5.30E-07	2.57E-05	3.48E-07	1.18E-05	6.30E-07	9.51E-09	0.00E+00	3.57E-08	4.21E-07
EP-marine [kg N eq]	2.41E-03	3.86E-04	2.21E-03	4.15E-04	4.11E-04	2.89E-06	2.88E-06	0.00E+00	2.00E-05	-9.86E-05
EP-terrestrial [mol N eq]	2.61E-02	4.25E-03	2.37E-02	4.57E-03	3.39E-03	5.89E-06	3.23E-05	0.00E+00	2.19E-04	-1.01E-03
ODP [kg CFC11 eq]	5.12E-09	9.47E-18	1.66E-10	1.12E-17	1.20E-09	4.90E-18	3.63E-19	0.00E+00	9.81E-17	2.09E-13
POCP [kg NMVOC eq]	7.71E-03	7.97E-04	7.80E-03	1.03E-03	9.38E-04	1.47E-06	5.84E-06	0.00E+00	5.79E-05	-4.51E-04
ADP-fossil(2) [MJ]	1.06E+02	1.77E+00	9.00E+00	1.34E+00	6.04E+00	7.00E-03	2.63E-02	0.00E+00	2.38E-01	-5.38E+00
ADP-min&met(2) [kg Sb eq]	1.84E-06	2.37E-08	1.39E-07	1.42E-08	1.45E-07	7.28E-11	1.57E-10	0.00E+00	1.84E-09	-2.14E-08
WDP(2) [m^3 world eq]	7.25E-01	6.83E-03	7.24E-02	2.97E-03	9.46E-02	2.48E-04	4.39E-05	0.00E+00	9.20E-04	-2.73E-02

See section 6.6 for a list acronyms used in this table

(1) The negative values for GWP-biogenic can be attributed to the production of the paper and/or wood products. Trees, used for the production of the paper, absorb CO_2 during the growth process which therefore gives a negative impact on CO_2 emissions.

(2) The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

	Additional mandatory (PCR2019:14) and voluntary indicators (EN 15804+A2)									
	Product			Construction		End of life				Other
	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG [kg CO_2 eq]	5.29E+00	1.33E-01	8.12E-01	1.03E-01	3.60E-01	8.42E-04	1.97E-03	0.00E+00	4.14E-02	-2.06E-01
EN 15804+A2										
HT-cancer(1) [CTUh]	5.44E-09	3.91E-11	1.32E-09	2.52E-11	3.74E-10	1.09E-12	3.79E-13	0.00E+00	3.93E-10	-3.23E-10
ET-freshwater(1) [CTUe]	4.60E+01	2.40E+00	6.39E+00	1.48E+00	4.05E+00	3.15E-02	1.91E-02	0.00E+00	8.98E-02	-2.19E+00
IRP(2) [kBq U235 eq]	2.41E-01	3.43E-04	2.58E-02	3.15E-04	1.46E-02	8.78E-05	8.06E-06	0.00E+00	3.95E-04	-2.81E-02
SQP(1) [pt]	1.25E+01	1.82E+00	8.66E+00	7.64E-01	2.18E+00	3.00E-03	1.19E-02	0.00E+00	2.60E-02	-4.07E+00
HT-non-cancer(1) [CTUh]	3.32E-07	1.21E-09	1.21E-07	8.45E-10	2.36E-08	2.41E-11	1.58E-11	0.00E+00	4.48E-08	-1.96E-08
PM/RI [disease inc.]	5.51E-07	8.48E-09	2.58E-08	1.92E-08	3.17E-08	1.94E-11	8.25E-11	0.00E+00	4.81E-10	-4.97E-09

See section 6.6 for a list acronyms used in this table

(1) The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

(2) 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.

5.1.3 3M Prestige 40 Exterior, 1.83 m x 30.48 m

	Mandatory indicators according to EN 15804+A2									
	Product			Construction		End of life				Other
	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
AP [mol H^+ eq]	1.33E-02	7.24E-04	4.44E-03	1.22E-03	1.08E-03	1.96E-06	6.52E-06	0.00E+00	5.97E-05	-3.74E-04
GWP-total [kg CO_2 eq]	4.62E+00	1.16E-01	7.22E-01	9.53E-02	3.28E-01	1.46E-03	1.99E-03	0.00E+00	4.18E-02	-1.93E-01
GWP-biogenic(1) [kg CO_2 eq]	-8.53E-02	7.51E-04	-2.22E-02	-6.16E-06	-5.28E-03	7.29E-04	-3.15E-05	0.00E+00	7.68E-06	2.05E-03
GWP-fossil [kg CO_2 eq]	4.70E+00	1.15E-01	7.43E-01	9.48E-02	3.18E-01	7.28E-04	1.99E-03	0.00E+00	4.18E-02	-1.94E-01
GWP-luluc [kg CO_2 eq]	1.66E-03	1.25E-04	4.12E-04	5.85E-04	1.57E-02	4.90E-07	3.01E-05	0.00E+00	1.51E-05	-5.41E-04
EP-freshwater [kg PO_4 eq]	4.64E-05	1.38E-06	6.00E-05	9.67E-07	3.45E-05	2.88E-08	0.00E+00	0.00E+00	1.08E-07	1.21E-06
EP-freshwater [kg P eq]	1.53E-05	4.55E-07	1.98E-05	3.19E-07	1.14E-05	6.30E-07	9.51E-09	0.00E+00	3.57E-08	4.00E-07
EP-marine [kg N eq]	2.10E-03	3.30E-04	2.00E-03	3.81E-04	3.76E-04	2.89E-06	2.88E-06	0.00E+00	2.00E-05	-9.17E-05
EP-terrestrial [mol N eq]	2.28E-02	3.64E-03	2.15E-02	4.19E-03	3.01E-03	5.89E-06	3.23E-05	0.00E+00	2.19E-04	-9.42E-04
ODP [kg CFC11 eq]	4.76E-09	8.13E-18	1.57E-10	1.03E-17	1.18E-09	4.90E-18	3.63E-19	0.00E+00	9.81E-17	1.88E-13
POCP [kg NMVOC eq]	6.75E-03	6.80E-04	7.06E-03	9.45E-04	8.26E-04	1.47E-06	5.84E-06	0.00E+00	5.79E-05	-4.29E-04
ADP-fossil(2) [MJ]	9.19E+01	1.52E+00	7.56E+00	1.22E+00	5.12E+00	7.00E-03	2.63E-02	0.00E+00	2.38E-01	-5.06E+00
ADP-min&met(2) [kg Sb eq]	1.57E-06	2.04E-08	1.20E-07	1.30E-08	1.29E-07	7.28E-11	1.57E-10	0.00E+00	1.84E-09	-1.79E-08
WDP(2) [m^3 world eq]	6.50E-01	5.87E-03	7.04E-02	2.72E-03	8.89E-02	2.48E-04	4.39E-05	0.00E+00	9.20E-04	-2.59E-02

See section 6.6 for a list acronyms used in this table

(1) The negative values for GWP-biogenic can be attributed to the production of the paper and/or wood products. Trees, used for the production of the paper, absorb CO_2 during the growth process which therefore gives a negative impact on CO_2 emissions.

(2) The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

	Additional mandatory (PCR2019:14) and voluntary indicators (EN 15804+A2)									
	Product			Construction		End of life				Other
	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG [kg CO_2 eq]	4.61E+00	1.14E-01	7.58E-01	9.40E-02	3.15E-01	8.42E-04	1.97E-03	0.00E+00	4.14E-02	-1.90E-01
EN 15804+A2										
HT-cancer(1) [CTUh]	4.78E-09	3.35E-11	1.23E-09	2.31E-11	3.31E-10	1.09E-12	3.79E-13	0.00E+00	3.93E-10	-3.13E-10
ET-freshwater(1) [CTUe]	3.95E+01	2.06E+00	5.05E+00	1.36E+00	3.59E+00	3.15E-02	1.91E-02	0.00E+00	8.98E-02	-2.09E+00
IRP(2) [kBq U235 eq]	2.17E-01	2.95E-04	2.25E-02	2.88E-04	1.30E-02	8.78E-05	8.06E-06	0.00E+00	3.95E-04	-2.63E-02
SQP(1) [pt]	1.09E+01	1.56E+00	6.19E+00	7.00E-01	1.94E+00	3.00E-03	1.19E-02	0.00E+00	2.60E-02	-3.48E+00
HT-non-cancer(1) [CTUh]	3.03E-07	1.04E-09	1.19E-07	7.75E-10	2.17E-08	2.41E-11	1.58E-11	0.00E+00	4.48E-08	-1.95E-08
PM/RI [disease inc.]	5.03E-07	7.19E-09	2.11E-08	1.76E-08	2.84E-08	1.94E-11	8.25E-11	0.00E+00	4.81E-10	-4.38E-09

See section 6.6 for a list acronyms used in this table

(1) The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

(2) 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.

5.2 Use of resources

The main resource consumption contributors for 3M Prestige 40 Exterior are reported in the table 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.

5.2.1 3M Prestige 40 Exterior, 0.91 m x 30.48 m

	Use of resources according to EN 15804+A2									
	Product			Construction		End of life				Other
	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
PERE [MJ]	1.28E+01	8.48E-02	1.89E+00	4.85E-02	9.17E-01	1.56E-03	1.57E-03	0.00E+00	2.34E-02	-5.29E-01
PERM [MJ]	0.00E+00	0.00E+00	3.06E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT [MJ]	1.28E+01	8.48E-02	2.20E+00	4.85E-02	9.17E-01	1.56E-03	1.57E-03	0.00E+00	2.34E-02	-5.29E-01
PENRE [MJ]	1.62E+02	2.82E+00	1.14E+01	1.39E+00	9.24E+00	7.00E-03	2.64E-02	0.00E+00	2.39E-01	-5.94E+00
PENRM [MJ]	3.63E+00	0.00E+00	1.85E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT [MJ]	1.65E+02	2.82E+00	1.33E+01	1.39E+00	9.24E+00	7.00E-03	2.64E-02	0.00E+00	2.39E-01	-5.94E+00
SM [kg]	9.53E-02	0.00E+00	3.49E-02	0.00E+00	6.41E-03	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	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	0.00E+00
FW [m³]	4.02E-02	3.29E-04	3.93E-03	1.20E-04	3.49E-03	7.57E-06	2.64E-06	0.00E+00	4.49E-05	-9.35E-04

See section 6.6 for a list acronyms used in this table

5.2.2 3M Prestige 40 Exterior, 1.52 m x 30.48 m

	Use of resources according to EN 15804+A2									
	Product			Construction		End of life				Other
	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
PERE [MJ]	8.06E+00	5.66E-02	1.47E+00	4.88E-02	6.69E-01	1.56E-03	1.57E-03	0.00E+00	2.34E-02	-4.99E-01
PERM [MJ]	0.00E+00	0.00E+00	4.37E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT [MJ]	8.06E+00	5.66E-02	1.91E+00	4.88E-02	6.69E-01	1.56E-03	1.57E-03	0.00E+00	2.34E-02	-4.99E-01
PENRE [MJ]	1.04E+02	1.88E+00	7.69E+00	1.39E+00	6.14E+00	7.00E-03	2.64E-02	0.00E+00	2.39E-01	-5.38E+00
PENRM [MJ]	3.63E+00	0.00E+00	1.38E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT [MJ]	1.08E+02	1.88E+00	9.07E+00	1.39E+00	6.14E+00	7.00E-03	2.64E-02	0.00E+00	2.39E-01	-5.38E+00
SM [kg]	6.33E-02	0.00E+00	3.31E-02	0.00E+00	4.74E-03	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	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	0.00E+00
FW [m^3]	2.59E-02	2.20E-04	2.50E-03	1.20E-04	2.72E-03	7.57E-06	2.64E-06	0.00E+00	4.49E-05	-8.42E-04

See section 6.6 for a list acronyms used in this table

5.2.3 3M Prestige 40 Exterior, 1.83 m x 30.48 m

	Use of resources according to EN 15804+A2									
	Product			Construction		End of life				Other
	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
PERE [MJ]	7.34E+00	4.86E-02	1.27E+00	4.47E-02	6.04E-01	1.56E-03	1.57E-03	0.00E+00	2.34E-02	-4.47E-01
PERM [MJ]	0.00E+00	0.00E+00	2.38E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT [MJ]	7.34E+00	4.86E-02	1.51E+00	4.47E-02	6.04E-01	1.56E-03	1.57E-03	0.00E+00	2.34E-02	-4.47E-01
PENRE [MJ]	8.92E+01	1.62E+00	6.36E+00	1.28E+00	5.21E+00	7.00E-03	2.64E-02	0.00E+00	2.39E-01	-5.06E+00
PENRM [MJ]	3.63E+00	0.00E+00	1.25E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT [MJ]	9.29E+01	1.62E+00	7.61E+00	1.28E+00	5.21E+00	7.00E-03	2.64E-02	0.00E+00	2.39E-01	-5.06E+00
SM [kg]	5.32E-02	0.00E+00	2.83E-02	0.00E+00	3.93E-03	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	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	0.00E+00
FW [m^3]	2.29E-02	1.89E-04	2.31E-03	1.10E-04	2.50E-03	7.57E-06	2.64E-06	0.00E+00	4.49E-05	-7.98E-04

See section 6.6 for a list acronyms used in this table

5.3 Output flows and waste categories

The important output flows and waste categories for 3M Prestige 40 Exterior 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.

5.3.1 3M Prestige 40 Exterior, 0.91 m x 30.48 m

	Waste categories according to EN 15804+A2									
	Product			Construction		End of life				Other
	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
HWD [kg]	8.51E-02	2.21E-08	1.31E+00	3.31E-08	6.94E-02	1.00E+00	1.47E-09	0.00E+00	4.52E-10	3.87E-09
NHWD [kg]	1.05E-01	1.04E-04	1.86E+00	6.82E-05	1.02E+01	8.15E-04	2.22E-06	0.00E+00	1.45E-01	6.76E-03
RWD [kg]	3.93E-03	6.08E-06	4.31E-04	2.90E-06	2.22E-04	5.54E-07	5.40E-08	0.00E+00	3.96E-06	0.00E+00

See section 6.6 for a list acronyms used in this table

	Output flows according to EN 15804+A2									
	Product			Construction		End of life				Other
	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
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	0.00E+00
MFR [kg]	5.14E-04	0.00E+00	1.41E-01	0.00E+00	9.99E-02	0.00E+00	0.00E+00	4.91E-02	0.00E+00	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	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	2.65E-01
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	3.23E-01

See section 6.6 for a list acronyms used in this table

5.3.2 3M Prestige 40 Exterior, 1.52 m x 30.48 m

	Waste categories according to EN 15804+A2									
	Product			Construction		End of life				Other
	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
HWD [kg]	5.37E-02	1.48E-08	8.21E-01	3.33E-08	4.40E-02	1.00E+00	1.47E-09	0.00E+00	4.52E-10	4.01E-09
NHWD [kg]	6.68E-02	6.91E-05	1.23E+00	6.86E-05	1.02E+01	8.15E-04	2.22E-06	0.00E+00	1.45E-01	5.91E-03
RWD [kg]	2.51E-03	4.06E-06	2.86E-04	2.92E-06	1.44E-04	5.54E-07	5.40E-08	0.00E+00	3.96E-06	0.00E+00

See section 6.6 for a list acronyms used in this table

	Output flows according to EN 15804+A2									
	Product			Construction		End of life				Other
	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
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	0.00E+00
MFR [kg]	3.10E-04	0.00E+00	9.39E-02	0.00E+00	9.60E-02	0.00E+00	0.00E+00	4.91E-02	0.00E+00	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	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	2.19E-01
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	2.79E-01

See section 6.6 for a list acronyms used in this table

5.3.3 3M Prestige 40 Exterior, 1.83 m x 30.48 m

	Waste categories according to EN 15804+A2									
	Product			Construction		End of life				Other
	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
HWD [kg]	4.99E-02	1.27E-08	6.32E-01	3.05E-08	3.38E-02	1.00E+00	1.47E-09	0.00E+00	4.52E-10	3.66E-09
NHWD [kg]	6.04E-02	5.94E-05	9.26E-01	6.29E-05	1.02E+01	8.15E-04	2.22E-06	0.00E+00	1.45E-01	5.73E-03
RWD [kg]	2.24E-03	3.49E-06	2.51E-04	2.67E-06	1.27E-04	5.54E-07	5.40E-08	0.00E+00	3.96E-06	0.00E+00

See section 6.6 for a list acronyms used in this table

	Output flows according to EN 15804+A2									
	Product			Construction		End of life				Other
	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
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	0.00E+00
MFR [kg]	3.15E-04	0.00E+00	7.85E-02	0.00E+00	8.33E-02	0.00E+00	0.00E+00	4.91E-02	0.00E+00	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	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	1.57E-01
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	2.08E-01

See section 6.6 for a list acronyms used in this table

5.4 Biogenic carbon content

By the process of photosynthesis, growing plants absorb atmospheric carbon dioxide which is then, together with the release of some of the oxygen back into the atmosphere, incorporated into the cells of the plants.

The absorbed carbon dioxide is effectively fixed in the plants as biogenic carbon. The biogenic carbon content for 3M Prestige 40 Exterior is reported in the table below and is expressed in kg C per declared unit. One kg biogenic carbon is equivalent to 44/12 kg CO_2.

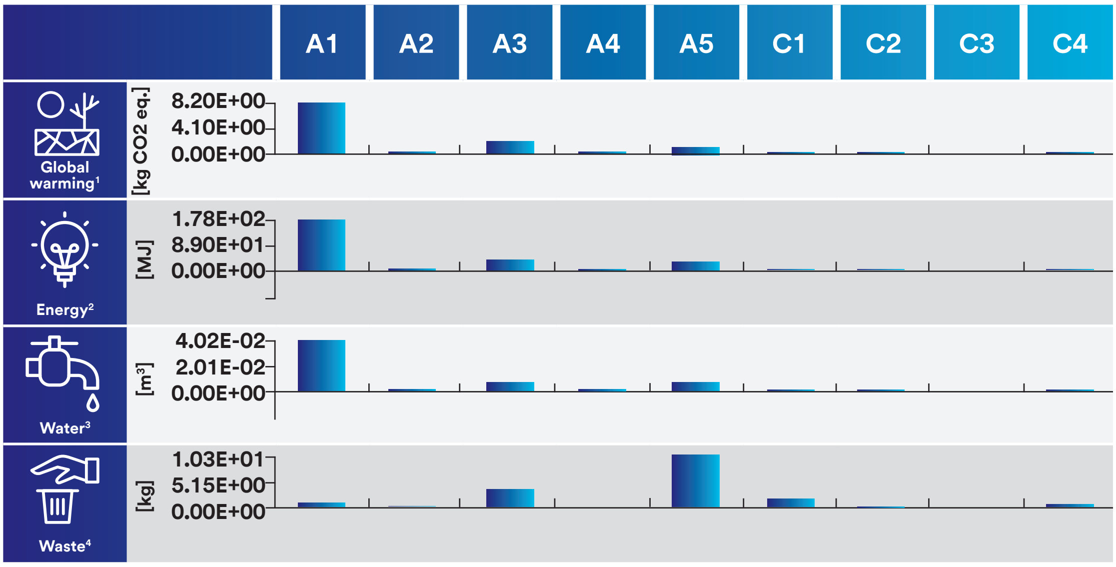
Biogenic carbon content	Amount [kg C]
Product	0.00E+00
Packaging 0.91 m x 30.48 m	2.00E-02
Packaging 1.52 m x 30.48 m	2.43E-02
Packaging 1.83 m x 30.48 m	1.68E-02

6 Additional Information

6.1 Other environmental information

6.1.1 LCA results interpretation

6.1.1.1 3M Prestige 40 Exterior, 0.91 m x 30.48 m

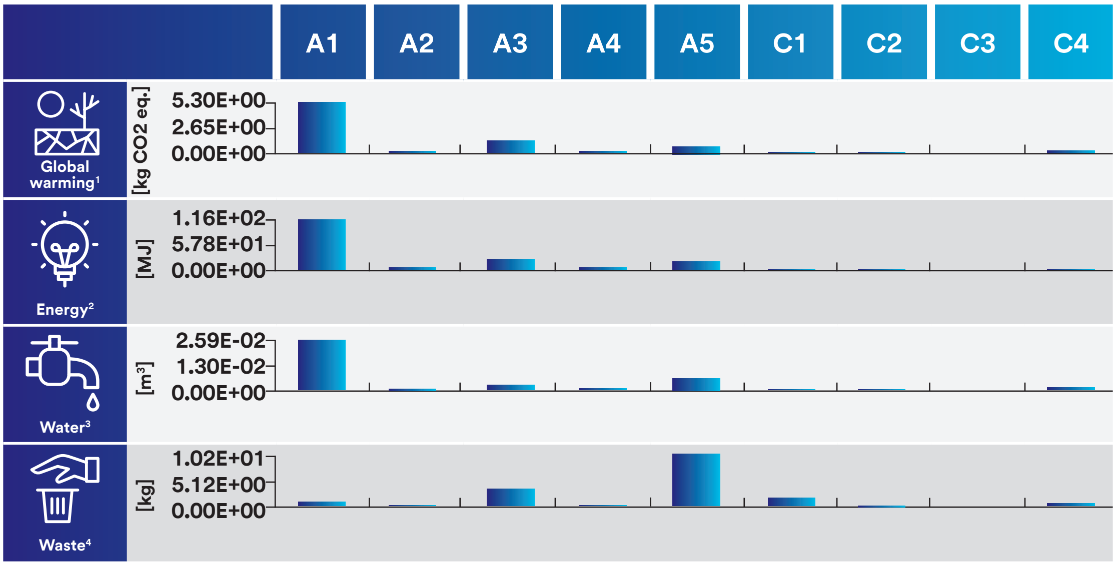


(1) Relates to the global warming potenial (GWP-total), using the EC-JRC charcterisation factor
(2) Relates to the total use of primary energy (PERT + PENRT)
(3) Relates to the fresh water consumption (FW)
(4) Relates to the total amount of waste generated (HWD + NHWD + RWD)
DU = Declared Unit

The most significant potential environmental impact of the product's life cycle in global warming is related to the raw material supply (A1), followed by the manufacturing process (A3) as shown in the first chart represented above. A1 is also the module with the highest impact on energy consumption and has a significant impact on fresh water consumption. No other modules are significantly impacting either global warming, energy usage or fresh water consumption. Modules A3 and A5 both have a significant impact on waste.

Waste water, coming from the high amount of cleaning water for the window, is considered as waste and therefore explains the high impact of A5 on the waste indicator. Note that A1 contains not only the production of raw materials, but also the generation of energy used during manufacturing, which may suggest a biased result for this module. Modules A2, A4, and C2, which are all related to transportation, have an insignificant impact.

6.1.1.2 3M Prestige 40 Exterior, 1.52 m x 30.48 m

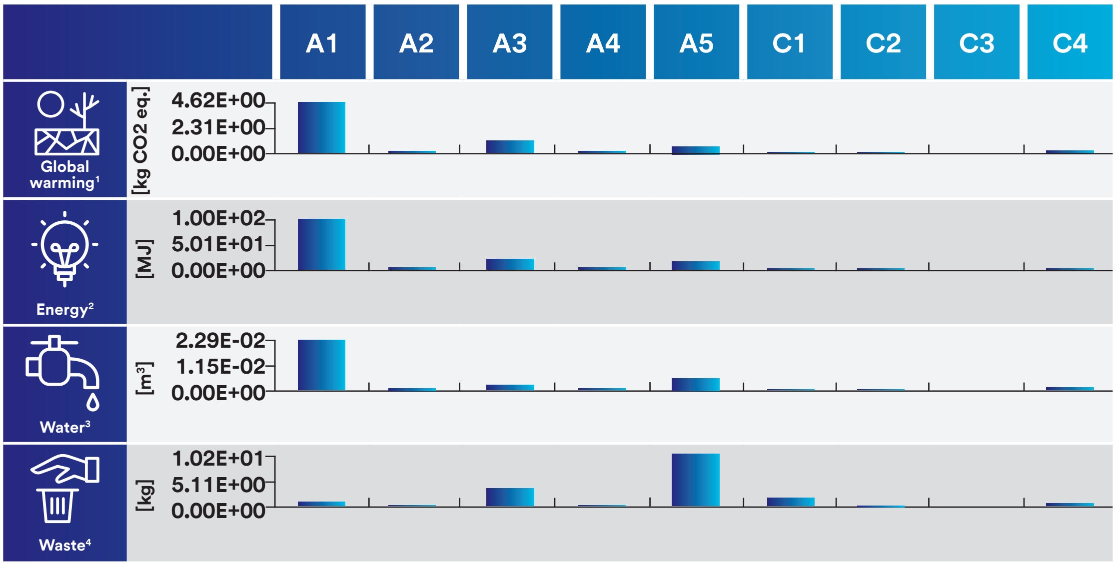


(1) Relates to the global warming potenial (GWP-total), using the EC-JRC characterisation factor
(2) Relates to the total use of primary energy (PERT + PENRT)
(3) Relates to the fresh water consumption (FW)
(4) Relates to the total amount of waste generated (HWD + NHWD + RWD)
DU = Declared Unit

The most significant potential environmental impact of the product‘s life cycle in global warming is related to the raw material supply (A1), followed by the manufacturing process (A3) as shown in the first graph represented above. A1 is also the module with the highest impact on energy consumption and has a significant impact on fresh water consumption. No other modules are significantly impacting either global warming, energy usage or fresh water consumption. Modules A3 and A5 both have a significant impact on waste.

Waste water, coming from the high amount of cleaning water for the window, is considered as waste and therefore explains the high impact of A5 on the waste indicator. Note that A1 contains not only the production of raw materials, but also the generation of energy used during manufacturing, which may suggest a biased result for this module. Modules A2, A4, and C2, which are all related to transportation, have an insignificant impact.

6.1.1.3 3M Prestige 40 Exterior, 1.83 m x 30.48 m



(1) Relates to the global warming potenial (GWP-total), using the EC-JRC charcterisation factor
(2) Relates to the total use of primary energy (PERT + PENRT)
(3) Relates to the fresh water consumption (FW)
(4) Relates to the total amount of waste generated (HWD + NHWD + RWD)
DU = Declared Unit

The most significant potential environmental impact of the product's life cycle in global warming is related to the raw material supply (A1) followed by the manufacturing process (A3) as shown in the first chart represented above. A1 is also the module with the highest impact on energy consumption and has a significant impact on fresh water consumption. No other modules are significantly impacting either global warming, energy usage or fresh water consumption. Modules A3 and A5 have a significant impact on waste.

Waste water, coming from the high amount of cleaning water for the window, is considered as waste and therefore explains the high impact of A5 on the waste indicator. Note that A1 contains not only the production of raw materials, but also the generation of energy used during manufacturing, which may suggest a biased result for this module. Modules A2, A4, and C2, which are all related to transportation, have an insignificant impact.

6.1.2 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 5.

6.1.3 LEED Certification

LEED, or Leadership in Energy and Environmental Design, is a 3rd party building certification program output by the US Green Building Council. The program is designed to transform the way buildings and communities are designed, built and operated, enabling an environmentally and socially responsible, healthy and prosperous environment that improves the quality of life.

With this goal in mind, LEED certifies projects, not products. Below is a list of areas where 3M Prestige 40 Exterior may apply to the intent of a credit. This does not in any way imply that window films will satisfy the requirement for the LEED credit, but the product will work toward the intent of the credit.

LEED Certification

3M Prestige 40 Exterior may be used toward the following LEED credits

SS8	EA-1	MR 1.1-1.2	MR 5.1-5.2	EQ 7.1	EQ-7.2	EQ-8.1-8.2	ID

6.1.4 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 and for the mandatory potential environmental indicators of EN 15804:2012+A2:2019, as well as for the additional mandatory indicator for climate impact (GWP-GHG) mentioned in PCR 2019:14, v1.1.

For GWP-luluc, uncertainty is 40% for all Prestige 40 Exterior sizes in scope, and GWP-biogenic 32%, 37% and 33% for Prestige 40 Ext 0.91 m, 1.52 m and 1.83 m respectively. These high values be explained by the significant contribution of a number of datasets with lower data quality scores. Nevertheless, this result can be justified because correct data selection rules were followed, uncertainty is biased by these datasets and the weight of certain data quality indicators that were scored lower is highest. In addition, data quality for GWP-luluc and GWP-biogenic is overall good, and typically results in a low and acceptable uncertainty.

Δ% Table	3M Prestige 40 Exterior, 0.91 m x 30.48 m	3M Prestige 40 Exterior, 1.52 m x 30.48 m	3M Prestige 40 Exterior, 1.83 m x 30.48 m
AP [mol H^+ eq]	10%	13%	14%
GWP-total [kg CO_2 eq]	10%	10%	18%
GWP-biogenic [kg CO_2 eq]	32%	37%	33%
GWP-fossil [kg CO_2 eq]	10%	10%	10%
GWP-luluc [kg CO_2 eq]	40%	40%	40%
EP-freshwater [kg PO_4 eq]	10%	10%	10%
EP-freshwater [kg P eq]	10%	10%	10%
EP-marine [kg N eq]	10%	10%	10%
EP-terrestrial [mol N eq]	10%	10%	10%
ODP [kg CFC11 eq]	22%	29%	30%
POCP [kg NMVOC eq]	10%	10%	13%
ADP-fossil [MJ]	10%	10%	10%
ADP-min&met [kg Sb eq]	10%	10%	10%
WDP [m^3 world eq]	12%	18%	19%
GWP-GHG [kg CO_2 eq]	10%	10%	10%

6.2 Building's operational energy use

When applying 3M Prestige 40 Exterior to a window, the solar energy transmittance will be reduced (± 97% infrared light is rejected), which results in a lower need for building cooling and thus less use of airconditioning systems in warmer months, but may also increase the need for heating during cooler months. This can vary per geographical region and its respective weather and climate conditions.

Energy consumption for natural gas and electricity of a building with and without window film is simulated using the Efilm™ software.

The difference per energy type (gas, electricity) is calculated by subtracting the film scenario (film applied) from the base case scenario (no film applied).

Next, the total source energy[1] savings per m^2 of window can be determined by taking the sum of the differences after applying a corresponding source energy factor for each energy type, as given:

- Electricity: 3.163
- Gas: 1.092

(1) Source energy accounts for primary energy use

These factors allow for different types of energy to be combined, and are used to convert site energy to source energy to take into account both how much energy is consumed and the amount of energy needed to generate that consumed energy.

The results are shown in section 6.2.2 for both single pane and double pane glass window types.

Whilst the main scope of application is Europe, additional scenario assessments for Africa, Asia, the US, LATAM and Oceania are included as well. The analysis covers data for 56 cities spread over 35 countries.

Applying the film to the windows will consistently result in a total net energy benefit (i.e., less primary energy required compared to the base case scenario) which is reflected in the positive energy saving values as shown in the tables in section 6.2.2.

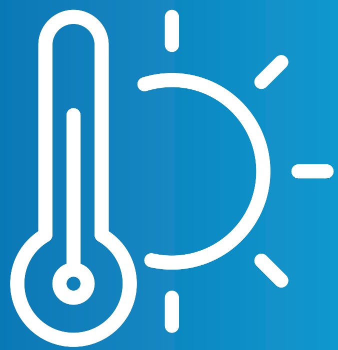
6.2.1 Building and Efilm™ parameter details

The energy consumption and net energy savings for 1 m^2 of window are calculated based on a reference building[1] for both the base case (no film applied) and when applying 3M Prestige 40 Exterior and leaving it for the entire film's warranted lifespan, which is 10 years.

The office building used is a 4 storey rectangular building, entrance door facing east, with 1,858 m^2 conditioned space and 725 m^2 clear glass window panes.

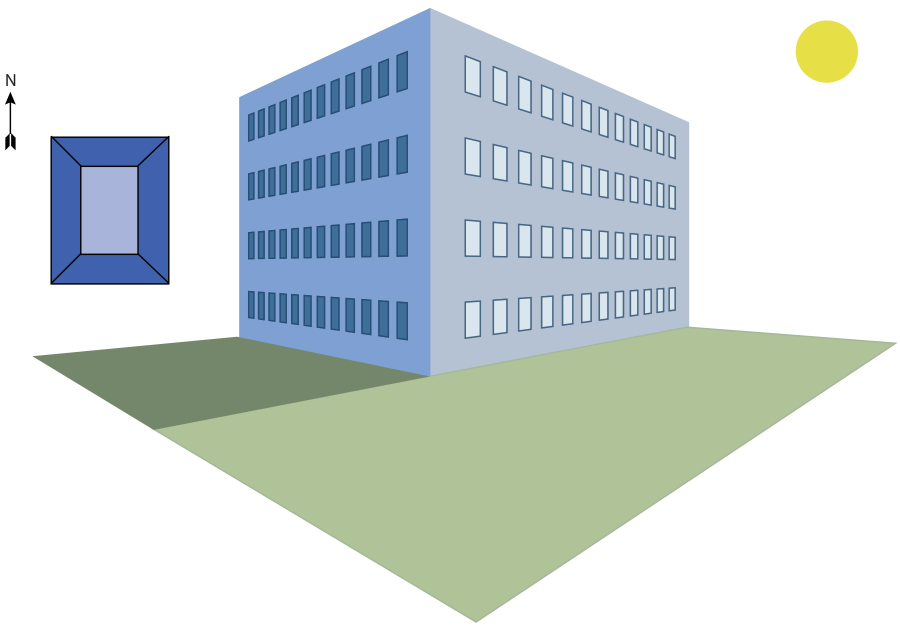
Efilm™ use predefined parameters to calculate energy consumption[2], such as the orientation of the building, building and window size, building usage and age, location, the type of cooling and heating system used, internal loads of energy usage, building construction details, daylight duration, glass pane type and window film type.

The software program works with typical meteorological year version 3 (TMY3) weather files from the National Renewable Energy Lab in order to simulate the weather conditions of each location. The TMY data sets hold hourly values of solar radiation and meteorological elements for a "typical year" at a particular location and thus hourly weather data are used for the simulations.



Building information

Building Type:	Office building
Building Shape:	Rectangular
Orientation:	East
No. of windows:	212
No. of Floors:	4
Floor height:	4.96 m
Area:	1,858 m^2
Glass:	725 m^2
Heating:	Natural gas[3]
Cooling:	Electricity



(1) An office building is chosen because they typically account for over 50% of commercial buildings.
(2) Energy consumption is in line with the utility bills corresponding to a building this size.
(3) This is the most common scenario applied, but in some locations the energy used for heating is electricity based.

6.2.2 Energy use and source energy savings in kWh/m² window

Continent	Location	Value type	Single pane		Double pane	
			Gas	Electricity	Gas	Electricity
Europe	Brussels, Belgium	Base	1.03E+02	1.48E+02	6.75E+01	1.41E+02
		Film	4.14E+02	1.39E+02	2.81E+02	1.32E+02
		Difference	-3.11E+02	8.58E+00	-2.13E+02	9.98E+00
		Source energy saved	1.37E+01		2.02E+01	
	Geneva, Switzerland	Base	9.16E+01	1.59E+02	6.42E+01	1.52E+02
		Film	3.70E+02	1.46E+02	2.67E+02	1.38E+02
		Difference	-2.79E+02	1.31E+01	-2.03E+02	1.43E+01
		Source energy saved	2.90E+01		3.44E+01	
	Athens, Greece	Base	1.98E+01	1.85E+02	1.24E+01	1.79E+02
		Film	8.85E+01	1.59E+02	5.78E+01	1.52E+02
		Difference	-6.88E+01	2.54E+01	-4.54E+01	2.69E+01
		Source energy saved	7.52E+01		8.10E+01	
	Berlin, Germany	Base	1.26E+02	1.54E+02	8.49E+01	1.47E+02
		Film	4.99E+02	1.43E+02	3.45E+02	1.35E+02
		Difference	-3.73E+02	1.10E+01	-2.60E+02	1.21E+01
		Source energy saved	2.11E+01		2.65E+01	
	Madrid, Spain	Base	4.77E+01	1.78E+02	3.23E+01	1.70E+02
		Film	2.03E+02	1.56E+02	1.43E+02	1.47E+02
		Difference	-1.55E+02	2.20E+01	-1.11E+02	2.34E+01
		Source energy saved	6.02E+01		6.58E+01	
	Lisbon, Portugal	Base	1.62E+01	1.74E+02	1.01E+01	1.69E+02
		Film	7.38E+01	1.47E+02	4.77E+01	1.41E+02
		Difference	-5.76E+01	2.65E+01	-3.76E+01	2.79E+01
		Source energy saved	7.91E+01		8.49E+01	
	London, UK	Base	8.78E+01	1.48E+02	5.84E+01	1.42E+02
		Film	3.61E+02	1.38E+02	2.49E+02	1.30E+02
		Difference	-2.73E+02	9.92E+00	-1.90E+02	1.13E+01
		Source energy saved	1.79E+01		2.40E+01	
	Rome, Italy	Base	3.80E+01	1.62E+02	2.59E+01	1.58E+02
		Film	1.59E+02	1.46E+02	1.12E+02	1.40E+02
		Difference	-1.21E+02	1.67E+01	-8.61E+01	1.78E+01
		Source energy saved	4.64E+01		5.07E+01	
	Warsaw, Poland	Base	1.56E+02	1.53E+02	1.07E+02	1.46E+02
		Film	6.13E+02	1.43E+02	4.34E+02	1.35E+02
		Difference	-4.57E+02	1.07E+01	-3.26E+02	1.17E+01
		Source energy saved	1.79E+01		2.29E+01	
	Copenhagen, Denmark	Base	1.36E+02	1.49E+02	9.06E+01	1.42E+02
		Film	5.46E+02	1.40E+02	3.73E+02	1.32E+02
		Difference	-4.09E+02	9.27E+00	-2.83E+02	1.06E+01
		Source energy saved	1.28E+01		1.92E+01	
	Oslo, Norway	Base	1.74E+02	1.53E+02	1.28E+02	1.46E+02
		Film	6.74E+02	1.44E+02	5.04E+02	1.36E+02
		Difference	-5.00E+02	9.20E+00	-3.76E+02	1.01E+01
		Source energy saved	1.46E+01		1.87E+01	

See section 6.6 for a list acronyms used in this table.

Negative difference values for gas are occurring because gas consumption for the film scenario is higher since extra heat is prevented from entering the building, while the positive difference values in electricity consumption are highlighting a saving.

Continent	Location	Value type	Single pane		Double pane	
			Gas	Electricity	Gas	Electricity
Europe	Stockholm, Sweden	Base	1.80E+02	1.54E+02	1.29E+02	1.46E+02
		Film	7.03E+02	1.44E+02	5.11E+02	1.36E+02
		Difference	-5.22E+02	9.78E+00	-3.82E+02	1.09E+01
		Source energy saved	1.46E+01		2.02E+01	
	Helsinki, Finland	Base	2.16E+02	1.53E+02	1.55E+02	1.46E+02
		Film	8.39E+02	1.43E+02	6.13E+02	1.35E+02
		Difference	-6.23E+02	9.60E+00	-4.58E+02	1.07E+01
		Source energy saved	1.21E+01		1.77E+01	
	Szombathely, Hungary	Base	1.15E+02	1.61E+02	8.09E+01	1.54E+02
		Film	4.62E+02	1.47E+02	3.35E+02	1.39E+02
		Difference	-3.47E+02	1.34E+01	-2.54E+02	1.46E+01
		Source energy saved	2.77E+01		3.31E+01	
	Bucharest, Romania	Base	1.14E+02	1.73E+02	8.07E+01	1.65E+02
		Film	4.62E+02	1.57E+02	3.38E+02	1.47E+02
		Difference	-3.48E+02	1.65E+01	-2.57E+02	1.78E+01
		Source energy saved	3.65E+01		4.19E+01	
	Paris, France	Base	8.84E+01	1.53E+02	5.86E+01	1.46E+02
		Film	3.58E+02	1.41E+02	2.45E+02	1.34E+02
		Difference	-2.70E+02	1.14E+01	-1.87E+02	1.27E+01
		Source energy saved	2.41E+01		2.99E+01	
	Amsterdam, Netherlands	Base	1.15E+02	1.37E+02	6.52E+01	1.41E+02
		Film	4.13E+02	1.37E+02	2.76E+02	1.30E+02
		Difference	-2.98E+02	0.00E+00	-2.11E+02	1.10E+01
		Source energy saved	1.49E+01		2.21E+01	
	Dublin, Ireland	Base	8.62E+01	1.41E+02	5.40E+01	1.35E+02
		Film	3.62E+02	1.33E+02	2.36E+02	1.26E+02
		Difference	-2.76E+02	7.47E+00	-1.82E+02	9.34E+00
		Source energy saved	7.99E+00		1.71E+01	
	Prague, Czech Republic	Base	1.51E+02	1.53E+02	1.05E+02	1.45E+02
		Film	5.95E+02	1.44E+02	4.24E+02	1.35E+02
		Difference	-4.44E+02	8.62E+00	-3.19E+02	9.78E+00
		Source energy saved	1.16E+01		1.69E+01	
Asia	Istanbul, Turkey	Base	5.48E+01	1.69E+02	3.49E+01	1.63E+02
		Film	2.31E+02	1.51E+02	1.54E+02	1.43E+02
		Difference	-1.76E+02	1.81E+01	-1.19E+02	1.94E+01
		Source energy saved	4.70E+01		5.28E+01	
	Riyadh, Saudi Arabia	Base	N/A	2.68E+02	N/A	2.50E+02
		Film	N/A	2.28E+02	N/A	2.09E+02
		Difference	N/A	4.02E+01	N/A	4.13E+01
		Source energy saved	1.27E+02		1.31E+02	
	Abu Dhabi, UAE	Base	N/A	2.89E+02	N/A	2.72E+02
		Film	N/A	2.46E+02	N/A	2.28E+02
		Difference	N/A	4.27E+01	N/A	4.36E+01
		Source energy saved	1.35E+02		1.38E+02	

See section 6.6 for a list acronyms used in this table.

Negative difference values for gas are occurring because gas consumption for the film scenario is higher since extra heat is prevented from entering the building, while the positive difference values in electricity consumption are highlighting a saving.

Continent	Location	Value type	Single pane		Double pane	
			Gas	Electricity	Gas	Electricity
Asia	New Delhi, India	Base	4.98E+00	2.59E+02	3.51E+00	2.46E+02
		Film	2.13E+01	2.25E+02	1.55E+01	2.10E+02
		Difference	-3.49E+01	2.90E+01	-2.34E+01	3.03E+01
		Source energy saved	8.92E+01		9.40E+01	
	Bombay, India	Base	4.64E-02	2.67E+02	1.81E-02	2.56E+02
		Film	2.53E-01	2.32E+02	1.08E-01	2.20E+02
		Difference	-2.07E-01	3.45E+01	-8.99E-02	3.57E+01
		Source energy saved	1.09E+02		1.13E+02	
	Bangkok, Thailand	Base	1.06E-02	2.89E+02	4.44E-03	2.75E+02
		Film	5.90E-02	2.52E+02	2.70E-02	2.37E+02
		Difference	-4.84E-02	3.63E+01	-2.26E-02	3.74E+01
		Source energy saved	1.15E+02		1.18E+02	
	Hong Kong, China	Base	2.09E+00	2.12E+02	1.31E+00	2.06E+02
		Film	9.19E+00	1.88E+02	5.97E+00	1.82E+02
		Difference	-7.10E+00	2.31E+01	-4.66E+00	2.41E+01
		Source energy saved	7.25E+01		7.58E+01	
Africa	Cairo, Egypt	Base	4.61E+00	2.11E+02	3.07E+00	2.03E+02
		Film	2.13E+01	1.79E+02	1.47E+01	1.70E+02
		Difference	-1.66E+01	3.21E+01	-1.17E+01	3.31E+01
		Source energy saved	1.00E+02		1.03E+02	
	Nairobi, Kenya	Base	N/A	1.77E+02	N/A	1.73E+02
		Film	N/A	1.50E+02	N/A	1.46E+02
		Difference	N/A	2.69E+01	N/A	2.78E+01
		Source energy saved	8.49E+01		8.78E+01	
	Johannesburg, South Africa	Base	1.30E+01	1.73E+02	7.72E+00	1.69E+02
		Film	6.23E+01	1.44E+02	3.95E+01	1.39E+02
		Difference	-4.92E+01	2.85E+01	-3.18E+01	2.97E+01
		Source energy saved	8.56E+01		9.04E+01	
	Cape Town, South Africa	Base	1.28E+01	1.70E+02	8.19E+00	1.67E+02
		Film	5.86E+01	1.42E+02	3.92E+01	1.38E+02
		Difference	-4.58E+01	2.78E+01	-3.10E+01	2.89E+01
		Source energy saved	8.40E+01		8.86E+01	
North America	Boston, MA	Base	1.14E+02	1.67E+02	7.73E+01	1.60E+02
		Film	4.79E+02	1.50E+02	3.38E+02	1.42E+02
		Difference	-3.65E+02	1.68E+01	-2.61E+02	1.82E+01
		Source energy saved	3.25E+01		3.92E+01	
	Seattle, WA	Base	5.45E+01	1.53E+02	3.70E+01	1.48E+02
		Film	2.29E+02	1.37E+02	1.61E+02	1.31E+02
		Difference	-1.75E+02	1.55E+01	-1.24E+02	1.68E+01
		Source energy saved	3.89E+01		4.45E+01	
	Dallas, TX	Base	3.23E+01	2.25E+02	2.15E+01	2.14E+02
		Film	1.38E+02	1.94E+02	9.63E+01	1.82E+02
		Difference	-1.06E+02	3.06E+01	-7.48E+01	3.19E+01
		Source energy saved	9.01E+01		9.52E+01	

See section 6.6 for a list acronyms used in this table.
Negative difference values for gas are occurring because gas consumption for the film scenario is higher since extra heat is prevented from entering the building, while the positive difference values in electricity consumption are highlighting a saving.

Continent	Location	Value type	Single pane		Double pane	
			Gas	Electricity	Gas	Electricity
North America	Houston, TX	Base	1.03E+01	2.11E+02	6.60E+00	2.04E+02
		Film	4.52E+01	1.82E+02	3.00E+01	1.74E+02
		Difference	-3.49E+01	2.90E+01	-2.34E+01	3.03E+01
		Source energy saved	8.92E+01		9.40E+01	
	Austin, TX	Base	1.63E+01	2.12E+02	1.08E+01	2.04E+02
		Film	7.05E+01	1.82E+02	4.87E+01	1.73E+02
		Difference	-5.41E+01	2.94E+01	-3.79E+01	3.06E+01
		Source energy saved	8.94E+01		9.37E+01	
	NYC, NY	Base	9.09E+01	1.76E+02	6.13E+01	1.70E+02
		Film	3.81E+02	1.57E+02	2.68E+02	1.49E+02
		Difference	-2.90E+02	1.96E+01	-2.07E+02	2.09E+01
		Source energy saved	4.57E+01		5.18E+01	
	Washington DC	Base	7.30E+01	1.83E+02	4.98E+01	1.75E+02
		Film	3.08E+02	1.62E+02	2.20E+02	1.53E+02
		Difference	-2.35E+02	2.08E+01	-1.70E+02	2.21E+01
		Source energy saved	5.22E+01		5.75E+01	
	Miami, FL	Base	1.52E+00	2.34E+02	9.54E-01	2.27E+02
		Film	6.71E+00	1.99E+02	4.43E+00	1.91E+02
		Difference	-5.18E+00	3.50E+01	-3.48E+00	3.58E+01
		Source energy saved	1.10E+02		1.13E+02	
	Atlanta, GA	Base	6.29E+01	1.83E+02	4.28E+01	1.76E+02
		Film	2.66E+02	1.62E+02	1.89E+02	1.54E+02
		Difference	-2.03E+02	2.09E+01	-1.47E+02	2.22E+01
		Source energy saved	5.41E+01		5.95E+01	
	Portland, OR	Base	5.91E+01	1.57E+02	3.99E+01	1.52E+02
		Film	2.49E+02	1.41E+02	1.74E+02	1.35E+02
		Difference	-1.89E+02	1.63E+01	-1.34E+02	1.77E+01
		Source energy saved	4.06E+01		4.67E+01	
	Los Angeles, CA	Base	6.69E+00	1.70E+02	4.45E+00	1.68E+02
		Film	3.16E+01	1.43E+02	2.22E+01	1.39E+02
		Difference	-2.49E+01	2.78E+01	-1.78E+01	2.89E+01
		Source energy saved	8.56E+01		8.95E+01	
	Denver, CO	Base	1.03E+02	1.82E+02	6.95E+01	1.73E+02
		Film	4.33E+02	1.57E+02	3.06E+02	1.47E+02
		Difference	-3.30E+02	2.52E+01	-2.37E+02	2.65E+01
		Source energy saved	6.08E+01		6.66E+01	
	Phoenic, AZ	Base	9.18E+00	2.58E+02	6.17E+00	2.42E+02
		Film	4.07E+01	2.16E+02	2.85E+01	1.98E+02
		Difference	-3.15E+01	4.23E+01	-2.23E+01	4.37E+01
		Source energy saved	1.31E+02		1.36E+02	
	San Francisco, CA	Base	1.91E+01	1.55E+02	1.23E+01	1.53E+02
		Film	8.89E+01	1.32E+02	5.99E+01	1.28E+02
		Difference	-6.98E+01	2.27E+01	-4.76E+01	2.42E+01
		Source energy saved	6.58E+01		7.18E+01	

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Continent	Location	Value type	Single pane		Double pane	
			Gas	Electricity	Gas	Electricity
LATAM	Buenos Aires, Argentina	Base	2.48E+01	1.88E+02	1.67E+01	1.81E+02
		Film	2.93E+01	1.60E+02	2.02E+01	1.52E+02
		Difference	-4.44E+00	2.79E+01	-3.48E+00	2.92E+01
		Source energy saved	8.33E+01		8.86E+01	
	Lima, Peru	Base	1.22E+00	1.82E+02	7.32E-01	1.79E+02
		Film	1.54E+00	1.55E+02	1.01E+00	1.52E+02
		Difference	-3.23E-01	2.69E+01	-2.74E-01	2.77E+01
		Source energy saved	8.47E+01		8.74E+01	
	Mexico City, Mexico	Base	8.85E+00	1.78E+02	5.59E+00	1.74E+02
		Film	1.06E+01	1.49E+02	6.95E+00	1.44E+02
		Difference	-1.73E+00	2.89E+01	-1.36E+00	2.99E+01
		Source energy saved	8.95E+01		9.30E+01	
	Rio de Janeiro, Brazil	Base	8.85E+00	1.78E+02	5.59E+00	1.74E+02
		Film	1.20E-01	2.18E+02	6.58E-02	2.07E+02
		Difference	-3.00E-02	3.75E+01	-1.94E-02	3.88E+01
		Source energy saved	1.18E+02		1.23E+02	
	Sao Paolo, Brazil	Base	2.91E+00	2.00E+02	1.83E+00	1.95E+02
		Film	3.61E+00	1.68E+02	2.39E+00	1.62E+02
		Difference	-7.04E-01	3.15E+01	-5.56E-01	3.28E+01
		Source energy saved	9.89E+01		1.03E+02	
Oceania	Adelaide, Australia	Base	1.58E+01	1.70E+02	1.03E+01	1.66E+02
		Film	2.00E+01	1.44E+02	1.35E+01	1.39E+02
		Difference	-4.12E+00	2.56E+01	-3.14E+00	2.69E+01
		Source energy saved	7.65E+01		8.18E+01	
	Auckland, New Zealand	Base	1.53E+01	1.53E+02	9.63E+00	1.52E+02
		Film	1.97E+01	1.31E+02	1.27E+01	1.29E+02
		Difference	-4.39E+00	2.17E+01	-3.05E+00	2.31E+01
		Source energy saved	6.38E+01		6.98E+01	
	Brisbane, Australia	Base	5.71E+00	1.90E+02	3.77E+00	1.86E+02
		Film	7.17E+00	1.60E+02	4.96E+00	1.55E+02
		Difference	-1.46E+00	2.99E+01	-1.20E+00	3.08E+01
		Source energy saved	9.31E+01		9.63E+01	
	Canberra, Australia	Base	4.26E+01	1.68E+02	2.89E+01	1.62E+02
		Film	5.28E+01	1.45E+02	3.74E+01	1.38E+02
		Difference	-1.02E+01	2.24E+01	-8.48E+00	2.40E+01
		Source energy saved	5.99E+01		6.67E+01	
	Melbourne, Australia	Base	2.99E+01	1.59E+02	1.86E+01	1.54E+02
		Film	3.77E+01	1.40E+02	2.45E+01	1.33E+02
		Difference	-7.76E+00	1.90E+01	-5.90E+00	2.08E+01
		Source energy saved	5.15E+01		5.93E+01	
	Perth, Australia	Base	1.07E+01	1.84E+02	7.14E+00	1.79E+02
		Film	1.35E+01	1.54E+02	9.45E+00	1.48E+02
		Difference	-2.79E+00	3.04E+01	-2.31E+00	3.13E+01
		Source energy saved	9.30E+01		9.65E+01	
	Sydney, Australia	Base	1.02E+01	1.74E+02	6.81E+00	1.71E+02
		Film	1.25E+01	1.49E+02	8.63E+00	1.44E+02
		Difference	-2.36E+00	2.53E+01	-1.83E+00	2.64E+01
		Source energy saved	7.73E+01		8.16E+01	

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6.3 Contribution of the product to health risks and quality of life inside buildings

6.3.1 Health risks

Indoor air quality

Because the 3M Prestige 40 Exterior is typically applied to the exterior face of a building window, indoor air quality claims do not apply to this product.

Soil and water

The 3M Prestige 40 Exterior is not in contact with water intended for human consumption. No tests concerning the sanitary quality of the water in contact with the product during its life have been performed.

6.3.2 Contribution of the product to the quality of life inside buildings

Hygrothermal comfort

The 3M Prestige 40 Exterior provides a 53% reduction in solar heat gain when applied to clear single pane glass and a 59% reduction when applied to clear dual pane glass. Exterior films can also reject up to 99.9% of harmful UV rays. The film offers a solar G-value of between 0.29 (dual pane) and 0.39 (single pane). No effect on building humidity is reported for this product.

Acoustic comfort

The 3M Prestige 40 Exterior is typically applied to the exterior face of a building window, and as such, acoustic comfort statements about the quality of life inside buildings do not apply.

Visual comfort

The 3M Prestige 40 Exterior has a visual light transmission of 42% when applied to single pane clear glass and 37% when applied to dual pane clear glass. In both cases, the film provides a 53% reduction in glare to increase visual comfort.

Olfactory comfort

The 3M Prestige 40 Exterior is typically applied to the exterior of building windows and, as such, olfactory comfort statements on the quality of life inside buildings do not apply.

6.4 Social and economic aspects

As a company which operates around the world, including many underdeveloped areas, 3M has grown into a global leader in helping others. For many years we've been investing our people and resources to make a positive impact through schemes like 3Mgives, focusing on helping improve education, communities and the environment.

3Mgives improves lives and builds sustainable communities through social investments and thoughtful engagement of 3Mers worldwide. 3M was one of the first companies to establish a foundation in 1953, and since then we've contributed over $1.45 billion in cash and in-kind gifts to our community partners.

Our employees regularly take on challenges to raise money through charity events and share their skills through 3M's Impact programme, with diverse teams of 3Mers travelling to communities around the world to spend two immersive weeks collaborating with a local non-profit organisation, social enterprise or government agency to contribute to a solution for a pressing social or environmental issue.

3M also has a strong culture of inclusion and diversity, which is an essential driver of our continual innovation. To encourage this, we regularly form strategic partnerships with many professional associations, colleges and universities to help identify diverse candidates and regularly participate in campus recruiting activities.

6.5 Validity of the EPD and changes versus previous version

This version of the EPD is valid until 2026-10-18.

Compared to the previous version of the EPD, the following changes were made to the supporting LCA:

- Update of company information
- Updated SVHC compliance information
- Removal of aggregated results from other environmental information in the additional information section
- Removal of environmental indicators from building's operation energy use in the additional information section
- Inclusion of LATAM countries as additional scenario for the building's operational energy use in the additional information section
- Update of references

Throughout its validity, 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 LCA and corresponding EPD. If changes in the product's life cycle result in potential environmental impacts varying more than 10% from the numbers reported in the sections above, the EPD is revised accordingly.

Regardless, the EPD shall be reviewed when approaching the end of its validity period. At that stage, a new version of the EPD shall be published as appropriate.

6.6 Acronyms

Acronym	Meaning
3M	Minnesota Mining and Manufacturing Company
ADP-fossil	Abiotic depletion potential for fossil resources
ADP-min&met	Abiotic depletion potential for non fossil resources (elements)
AL	Alabama
AP	Acidification potential, Accumulated Exceedance
AZ	Arizona
CA	California
CE	Conformité Européenne
CO	Colorado
CO_2	Carbon dioxide
CPC	Construction Products and Construction Services/ Central Product Classification
CRU	Components for re-use
CSD	Commercial Solutions Division
CU	Capacity utilisation
DC	District of Columbia
EEE	Exported electrical energy
EET	Exported thermal energy
EMEA	Europe, Middle-East and Africa
EN	European norm
EPD	Environmental product declaration
EP-freshwater	Eutrophication potential, fraction of nutrients reaching freshwater end compartment
EP-marine	Eutrophication potential, fraction of nutrients reaching marine end compartment
EP-terrestrial	Eutrophication potential, Accumulated Exceedance
ET-freshwater	Potential Comparative Toxic Unit for ecosystem
EU	European union
FCFC	Full capacity fuel consumption
FL	Florida
FW	Fresh water consumption
GA	Georgia
GaBi	Ganzheitliche Bilanzierung (German for holistic balancing)
GPS	Global Positioning System
GWP-biogenic	Global Warming Potential biogenic
GWP-fossil	Global Warming Potential fossil fuels
GWP-GHG	Global Warming Potential total excl. biogenic carbon following IPCC AR5 methodology
GWP-luluc	Global Warming Potential land use and land use change
GWP-total	Global Warming Potential total
HDPE	High density polyethylene
HIPS	High intensity polystyrene
HT-cancer	Potential Comparative Toxic Unit for humans carcinogenic effects
HT-non-cancer	Potential Comparative Toxic Unit for humans, non-carcinogenic effects
HWD	Hazardous waste disposed
IFWA	International Window Film Association
IL	Illinois
IPCC	International Panel on Climate Change
IRP	Potential Human exposure efficiency relative to U235
ISO	International Organisation for Standardisation
LATAM	Latin America

LCA	Life Cycle Assessment
LCI	Life cycle inventory
LDPE	Low Density polyethylene
LEED	Leadership in Energy and Environmental Design
MA	Massachusetts
MER	Materials for energy recovery
MFR	Materials for recycling
MJ	Megajoule
MN	Minnesota
NBN	Bureau of Normalization (Belgium)
ND	Not declared
NF	Bureau of Normalisation (France)
NHWD	Non hazardous waste disposed
NRSF	Use of non renewable secondary fuels
NY	New York
NYC	New York City
ODP	Depletion potential of the stratospheric ozone layer
OR	Oregon
PCR	Product Category Rules
PEF	Product environmental footprint
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)
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)
PET	Polyethylene terephthalate
PMMA	Polymethyl methacrylate
PM/RI	Particulate matter/respiratory inorganics
POCP	Formation potential of tropospheric ozone
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RDW	Resource depletion (water)
RSF	Use of renewable secondary fuels
RSL	Reference service life
RWD	Radioactive waste disposed
SHGC	Solar heat gain coefficient
SVHC	Substances of Very High Concern
SM	Use of secondary material
SQP	Potential soil quality index
TEBG	Transportation and Electronics Business Group
TX	Texas
UAE	United Arab Emirates
US	United States
UV	Ultraviolet
WA	Washington
WDP	Water (user) deprivation potential, deprivation-weighted water consumption

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More information on Sustainability at 3M:
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