

Product Environmental Profile

Independent verification of the declaration and data in compliance with ISO 14025: 2006



Sylvania Quantum family

Registration number	SYLV-00007-V01.01-EN	Drafting rules	PCR-ed4-EN-2021 09 06
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Date of issue	11-2024	Information and reference documents	www.pep-ecopassport.org
PEP prepared by	Feilo Sylvania International Group Kft.	Validity period	5 years
Independent verification of the declaration and data in compliance with ISO 14025: 2006			
Internal		External	X
The PCR review was conducted by a panel of experts chaired by Julie Orgelet (DDemain)			
PEPs are compliant with XP C08-100-1:2016 and EN 50693:2019 or NF E38-500:2022			
The components of the present PEP may not be compared with components from any other program.			
Document complies with ISO 14025: 2006 “Environmental labels and declarations. Type III environmental declarations”			

1 General information

1.1 Product information

The Sylvania Quantum family is a highly efficient range of LED Panel luminaires, ideal for offices, meeting rooms, corridors, breakout areas and other general indoor lighting applications including humid areas.

The range features a high IP54 degree of protection on the front side and a Multipower functionality where the luminous flux of the luminaire can be tailored to local needs during installation by only setting a quick selector switch.

The range also comprises of DALI dimmable and CRI90 versions.

With a small PIR sensor, SSA products can be connected to SylSmart Connected system, which provides a ready-to-go, open standard, luminaire integrated control system for floor-wide and building-wide use.

The Quantum range generates a greater lumen efficacy (up to 161lm/W) than other backlit panels.

Tp(a) rated diffuser that self-extinguished within 5 sec when a flame has been removed.

Applicable product standards:

- EN 60598-1
- EN 61347-1, 2-13
- EN 62717
- EN 55015
- EN 61547
- EN 61000-3-2

The function of Sylvania Quantum family with its different series are described below:

- Non dimmable: without dimming function, only power on and off.
- DALI(DA): Work with DALI lighting management system.
- SSA: Work with PIR sensor which can be connected to Sylvania wireless lighting management system Sylsmart Connect (Silvair).

The Sylvania Quantum reference product: 0044650 Quantum 600x600 4500lm 840 SSA03

belongs to SSA series, which can be connected to Sylvania wireless lighting management system Sylsmart Connect (Silvair).

Its technological key data are listed below:

Table 1: Key technological data for reference product

Information	Unit	
Product code	-	0044650
Light source	-	LED
Power supply	-	External
Colour temperature	K	4000
Protection index for water and dust (IP)	-	54/20
Impact resistance index (IK)	-	03
Nominal operating voltage	V	220-240V
Declared lifetime of the luminaire (L70B50)	h	120,000
Declaration lifetime of the light source	h	120,000
Useful output flux	lm	4,500
Total power consumption	W	28
Luminous efficiency	lm/W	161
Length	mm	595
Width/Diameter	mm	595
Height	mm	35 (without driver)
Reference use scenario	-	Office

Sylvania Quantum family are declared with below lifetime:

- L70B50 120,000hrs
- L80B20 95,000hrs
- L90B10 44,000hrs

L70B50 120,000hrs is used for LCA analysis.

In the reference scenario, the product has 2,500 annual operating hours, resulting in a lifetime of 48 years.

1.2 Overview

The general information used for the PEP are listed below:

Table 2: Basic PEP information

Information	
Functional unit	Provide lighting that delivers an outgoing artificial luminous flux of 1,000 lumens during a reference lifetime of 35,000 hours
Reference flow / declared unit*	0.0648 pieces of product
Life cycle stages cover (according to EN15804+A2)	Cradle-to-grave and Module D
Product category according to PSR	Luminaires
Product family name	Sylvania Quantum
All products of the product family	Table 16 - Table 18
Extrapolation rules	Table 19 - Table 21

* The reference flow is calculated as: $(1,000/\text{outgoing luminous flux of the analyzed product in lumens}) \times (35,000/\text{declared product lifetime of the analyzed product in hours})$

Consequently, the reference flow of the following product corresponds to:

$$(1,000/4,500) \times (35,000/120,000) = 0.0648$$

2 Constituent materials

2.1 Overview

Table 3: Product composition

Information	Weight/product [kg]	Weight/functional unit [kg]	Share [%]
Total weight	2.918	1.89E-01	100.0%
Product	2.242	1.45E-01	76.8%
Packaging	0.677	4.39E-02	23.2%

2.2 Product

Table 4: Material composition - product

Information	Weight/product [kg]	Weight/functional unit [kg]	Share [%]
Total weight	2.242	1.45E-01	100.0%
Metals	1.026	6.65E-02	45.8%
- Steel	0.774	5.02E-02	34.5%
- Aluminium	0.252	1.63E-02	11.2%
Plastics	0.896	5.81E-02	40.0%
- Polystyrene (PS)	0.662	4.29E-02	29.5%
- Polycarbonate (PC)	0.105	6.81E-03	4.7%
- Polymethyl methacrylate (PMMA)	0.073	4.73E-03	3.3%
- Polyethylene terephthalate (PET)	0.056	3.63E-03	2.5%
Electronics (incl. wires)	0.319	2.07E-02	14.2%

Note: The total weight in this table differs slightly from the total weight of the product due to rounding inaccuracies.

2.3 Packaging

Table 5: Material composition - packaging

Information	Weight/product [kg]	Weight/functional unit [kg]	Share [%]
Total weight	0.677	4.39E-02	100.0%
Paper/cardboard	0.666	4.32E-02	98.4%
Plastics	0.003	1.94E-04	0.4%
Wood	0.008	5.19E-04	1.2%

3 Information on life cycle stages

3.1 Manufacturing (A1-A3)

For the manufacturer sources all parts come from international/Chinese suppliers. The final products are assembled and tested in Chinese factory, under the quality control of Feilo Sylvania International Group Kft.. The manufacturer is certified to ISO 9001:2015 / 14001:2015.

Metal scrap, plastic, waste carton/paper of the production side are mostly recycled, whereas electronic scrap is 100% incinerated with energy recovery and the waste wood is mostly considered as landfilling.

The energy model used in manufacturing is based on Sphera's Managed LCA Content V.10:

CN: Electricity grid mix Sphera.

3.2 Distribution (A4)

The main market of the product is Europe. For this reason, an intercontinental and intracontinental transport, following PEP-PCR-ed4-EN-2021 09 06, is considered in the following model:

- 18,500km by ship (heavy fuel oil driven, container ship, 5,000 to 200,000 dwt payload capacity, deep sea)
- 1,400 km by truck (diesel driven, EURO 0-6, >27t payload).

The background assumptions for the transportation are listed below.

Table 6: Background information distribution

Information	Unit	Truck	Ship
Fuel type	-	Diesel	Heavy fuel oil
Fuel consumption	l/(kg*km)	1.99E-05	3.24E-06
Total distance	km	1,400	18,500
Capacity utilisation (including empty runs)	%	85	70

3.3 Installation (A5)

The product can easily be installed with hooks or poles and tool free. No energy or material input is required. Packaging waste is treated with reference to chapter 3.5.3.1 of PSR-0014-ed 2.0-2023 07 13.

3.4 Use stage (B1-B7)

During the use stage of the product, the product only consumes electricity (B6). The main market of the product is Europe. Consequently, an average European electricity grid mix (database from Sphera) has been used for the calculations.

According to [PSR-0014-ED2.0-EN- 2023 07 13](#), the theoretical energy saving coefficients for the 3 series of SYLVANIA Quantum family are:

- Non dimmable: 1
- DALI (DA): 0.5
- SSA : 0.5

The Sylvania Quantum reference product 0044650 is grouped under SSA series and is capable to be connected to the Sylvania wireless lighting management system Sylsmart Connect (Silvair). Therefore, the theoretical energy saving coefficient of the reference product is 0.5 - according to [PSR-0014-ED2.0-EN- 2023 07 13](#).

The declared power consumption of the reference product is 28 Watts, and its assigned lifetime is 120,000 hours (L70B50).

Combining all these information leads to a total energy consumption of 1,680 kWh.

All other modules of the life cycle stage have no environmental impact, since the product has no direct emissions (B1), no maintenance (B2), and no replacement (B4), repair (B3), or refurbishment activities (B5). The luminaire does not consume water during its use (B7).

3.5 End of life (C1-C4)

The product falls under the Waste from Electrical and Electronic Equipment (WEEE) directive 2012/19/EU subcategory 4. EOL model is created referring to chapter 2.5.6 End of life treatment scenarios of PCR-ed4-EN-2021 09 06.

The share of the different end of life pathways are shown below. For the energy consumed in material separation, an average European grid mix has been used.

- Incineration with energy recovery: 33.0%
- Landfilling: 31.5%
- Recycling: 35.5%

3.6 Benefits and loads beyond the system boundaries (D)

Incineration with energy recovery and recycling of the product, packaging, and manufacturing scrap generate environmental benefits by avoiding the production of primary materials or energy. The amount and type of waste streams are listed in Table 7.

Table 7: Material flows for Benefits and loads beyond the system boundaries.

Information	Unit	Value
Total weight going into reuse	kg/functional unit	0.000
Total weight going into recycling	kg/functional unit	0.0937
- Share from product	%	55.1
- Share from packaging	%	38.2
- Share from upstream packaging & manufacturing scrap	%	6.7
Total weight going into incineration with energy recovery	kg/functional unit	0.0536
- Share from product	%	89.4
- Share from packaging	%	7.7
- Share from upstream packaging & manufacturing scrap	%	2.9

4 Environmental impacts

4.1 Introduction

The following table summarizes the key information for the calculation of the environmental impacts:

Table 8: Basic information LCA model

Information	Value
Used LCA software	LCA for Experts 10
Used LCI database	LCA Managed Content Professional 2024.1 + Extension 2024.1
PCR version	PEP-PCR-ED4-EN-2021 09 06
PSR version	PEP-PSR-0014-ED2.0-EN-2023 07 13
Functional unit	Provide lighting that delivers an outgoing artificial luminous flux of 1,000 lmens during a reference lifetime of 35,000 hours

4.2 Results per functional unit

The following results of the environmental declaration have been developed by considering an outgoing artificial luminous flux of 1,000 lumens over a reference lifetime of 35,000 hours. The results refer to the core environmental impact indicators and indicators describing resource use, waste categories, and output flows according to EN 15804:2012+A2:2019.

Table 9: Results core environmental impact indicators per functional unit (0.189 kg product incl. packaging)

	Total (Excl.D)	Raw materials & parts		Manufacturing	Distribution	Installation	Use							End of life				Benefits and loads beyond the system boundaries
		A1	A2				B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	
GWP - total [kg CO2 eq.]	3.68 E+01	1.18 E+00	8.68 E-03	1.44 E-02	5.58 E-02	3.48 E-02	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	3.54 E+01	0.00 E+00	0.00 E+00	9.21 E-03	1.10 E-01	2.82 E-03	-1.91 E-01
GWP - fossil [kg CO2 eq.]	3.66 E+01	1.26 E+00	8.22 E-03	1.29 E-02	5.48 E-02	1.96 E-02	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	3.51 E+01	0.00 E+00	0.00 E+00	8.72 E-03	1.10 E-01	2.81 E-03	-2.42 E-01
GWP - biogenic [kg CO2 eq.]	2.44 E-01	-7.96 E-02	3.87 E-04	1.52 E-03	8.38 E-04	1.51 E-02	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	3.05 E-01	0.00 E+00	0.00 E+00	4.10 E-04	1.56 E-04	5.51 E-06	5.09 E-02
GWP - luluc [kg CO2 eq.]	5.02 E-03	8.09 E-04	7.59 E-05	8.12 E-06	1.58 E-04	6.22 E-05	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	3.82 E-03	0.00 E+00	0.00 E+00	8.05 E-05	9.32 E-06	2.46 E-06	-1.01 E-04
ODP [kg CFC-11 eq.]	6.54 E-10	5.64 E-12	1.07 E-15	5.85 E-14	4.79 E-15	3.72 E-14	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	6.48 E-10	0.00 E+00	0.00 E+00	1.13 E-15	3.24 E-13	4.72 E-15	-7.09 E-13
AP [Mole of H+ eq.]	8.19 E-02	5.92 E-03	9.55 E-06	4.59 E-05	7.56 E-04	3.59 E-05	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	7.50 E-02	0.00 E+00	0.00 E+00	1.01 E-05	7.86 E-05	8.60 E-06	-6.71 E-04
EP - freshwater [kg P eq.]	1.42 E-04	9.84 E-06	2.99 E-08	1.57 E-08	7.07 E-08	5.85 E-07	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	1.31 E-04	0.00 E+00	0.00 E+00	3.18 E-08	7.86 E-08	4.09 E-07	-8.15 E-07
EP - marine [kg N eq.]	1.94 E-02	1.08 E-03	3.20 E-06	9.98 E-06	3.18 E-04	1.65 E-05	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	1.80 E-02	0.00 E+00	0.00 E+00	3.39 E-06	2.47 E-05	2.02 E-06	-1.63 E-04
EP - terrestrial [Mole of N eq.]	2.03 E-01	1.13 E-02	3.77 E-05	1.08 E-04	3.49 E-03	1.51 E-04	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	1.88 E-01	0.00 E+00	0.00 E+00	4.00 E-05	2.98 E-04	2.22 E-05	-1.73 E-03
POCP [kg NMVOC eq.]	5.21 E-02	3.20 E-03	8.32 E-06	3.00 E-05	8.67 E-04	3.48 E-05	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	4.79 E-02	0.00 E+00	0.00 E+00	8.83 E-06	7.85 E-05	6.39 E-06	-4.93 E-04
ADPE [kg Sb eq.]	1.99 E-04	1.94 E-04	5.43 E-10	5.56 E-10	1.47 E-09	8.50 E-09	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	5.43 E-06	0.00 E+00	0.00 E+00	5.76 E-10	3.57 E-09	7.52 E-11	-1.55 E-08
ADPF [MJ]	7.60 E+02	1.86 E+01	1.12 E-01	1.38 E-01	6.93 E-01	2.73 E-01	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	7.39 E+02	0.00 E+00	0.00 E+00	1.18 E-01	3.27 E-01	4.21 E-02	-2.91 E+00
WDP [m³ world equiv.]	8.14 E+00	2.94 E-01	9.90 E-05	4.07 E-03	2.68 E-04	1.26 E-03	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	7.83 E+00	0.00 E+00	0.00 E+00	1.05 E-04	1.03 E-02	-3.94 E-05	-1.06 E-02

Table 10: Results indicators describing resource use, waste categories, and output flows per functional unit (0.189 kg product incl. packaging)

	Total (Excl.D)	Raw materials & parts		Manufacturing	Distribution	Installation	Use								End of life				Benefits and loads beyond the system boundaries
		A1	A2				A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	
PERE [MJ]	4.47 E+02	4.68 E+00	8.12 E-03	3.72 E-02	1.89 E-02	7.25 E-02	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	4.42 E+02	0.00 E+00	0.00 E+00	8.61 E-03	1.64 E-01	3.80 E-03	-1.73 E+00
PERM [MJ]	7.86 E-01	7.86 E-01	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00
PERT [MJ]	4.48 E+02	5.47 E+00	8.12 E-03	3.72 E-02	1.89 E-02	7.25 E-02	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	4.42 E+02	0.00 E+00	0.00 E+00	8.61 E-03	1.64 E-01	3.80 E-03	-1.73 E+00
PENRE [MJ]	7.58 E+02	1.68 E+01	1.12 E-01	1.38 E-01	6.95 E-01	2.73 E-01	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	7.39 E+02	0.00 E+00	0.00 E+00	1.19 E-01	3.27 E-01	4.21 E-02	-1.81 E+00
PENRM [MJ]	1.98 E+00	1.98 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	-1.11 E+00
PENRT [MJ]	7.60 E+02	1.87 E+01	1.12 E-01	1.38 E-01	6.95 E-01	2.73 E-01	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	7.39 E+02	0.00 E+00	0.00 E+00	1.19 E-01	3.27 E-01	4.21 E-02	-2.92 E+00
SM [kg]	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	-5.45 E-02
RSF [MJ]	2.50 E-02	0.00 E+00	5.99 E-03	0.00 E+00	1.24 E-02	1.92 E-04	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	6.36 E-03	0.00 E+00	0.00 E+00	0.00 E+00
NRSF [MJ]	8.14 E-01	0.00 E+00	9.40 E-02	0.00 E+00	6.17 E-01	3.01 E-03	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	9.97 E-02	0.00 E+00	0.00 E+00	0.00 E+00
FW [m3]	3.70 E-01	1.24 E-02	8.89 E-06	9.69 E-05	2.11 E-05	3.04 E-04	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	3.57 E-01	0.00 E+00	0.00 E+00	9.43 E-06	3.16 E-04	4.30 E-07	-1.18 E-03
HWD [kg]	4.12 E-08	8.92 E-08	3.47 E-13	-6.42 E-12	2.18 E-12	9.64 E-09	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	-5.79 E-08	0.00 E+00	0.00 E+00	3.68 E-13	1.72 E-10	3.53 E-12	-7.43 E-09
NHWD [kg]	6.77 E-01	7.01 E-02	1.71 E-05	1.13 E-03	7.77 E-05	4.09 E-03	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	5.42 E-01	0.00 E+00	0.00 E+00	1.81 E-05	1.41 E-02	4.57 E-02	-2.50 E-02
RWD [kg]	1.18 E-01	4.71 E-04	2.10 E-07	3.25 E-06	9.78 E-07	6.32 E-06	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	1.18 E-01	0.00 E+00	0.00 E+00	2.22 E-07	1.92 E-05	4.97 E-07	-1.35 E-04
CRU [kg]	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00
MFR [kg]	9.37 E-02	2.37 E-03	0.00 E+00	3.92 E-03	0.00 E+00	3.58 E-02	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	5.16 E-02	0.00 E+00	0.00 E+00
MER [kg]	5.36 E-02	0.00 E+00	0.00 E+00	1.57 E-03	0.00 E+00	4.12 E-03	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	4.79 E-02	0.00 E+00	0.00 E+00
EEE [MJ]	1.56 E-01	2.98 E-04	0.00 E+00	0.00 E+00	0.00 E+00	1.07 E-02	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	1.45 E-01	0.00 E+00	-2.52 E-03
EET [MJ]	3.41 E-01	6.91 E-04	0.00 E+00	0.00 E+00	0.00 E+00	1.64 E-02	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	3.24 E-01	0.00 E+00	-5.83 E-03
Biog. C in product [kg]	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00
Biog. C in packaging [kg]	0.00 E+00	-1.88 E-02	0.00 E+00	0.00 E+00	0.00 E+00	1.88 E-02	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00

Table 11: Additional environmental impact indicators per functional unit (0.189 kg product incl. packaging)

	Total (Excl.D)	Raw materials & parts		Manufacturing	Distribution	Installation	Use							End of life				Benefits and loads beyond the system boundaries
		A1	A2				B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	
PM [Disease incidences]	7.21 E-07	6.83 E-08	6.96 E-11	6.28 E-10	1.96 E-08	3.03 E-10	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	6.32 E-07	0.00 E+00	0.00 E+00	7.38 E-11	9.42 E-10	8.59 E-11	-8.03 E-09
IRP [kBq. U235 eq.]	1.96 E+01	5.15 E-02	3.13 E-05	2.05 E-04	1.43 E-04	1.04 E-03	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	1.96 E+01	0.00 E+00	0.00 E+00	3.32 E-05	2.18 E-03	7.34 E-05	-2.56 E-02
ETP-fw [CTUe]	2.16 E+02	9.75 E+00	7.99 E-02	1.98 E-02	4.92 E-01	3.78 E-02	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+01	0.00 E+00	2.05 E+02	0.00 E+00	0.00 E+00	8.48 E-02	9.34 E-02	3.01 E-02	-6.57 E-01
HTP-c [CTUh]	1.31 E-08	2.21 E-09	1.62 E-12	2.66 E-12	9.31 E-12	3.95 E-12	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	1.09 E-08	0.00 E+00	0.00 E+00	1.72 E-12	8.93 E-12	1.76 E-12	-1.80 E-10
HTP-nc [CTUh]	1.97 E-07	2.20 E-08	7.22 E-11	5.03 E-11	3.39 E-10	2.00 E-10	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	1.73 E-07	0.00 E+00	0.00 E+00	7.65 E-11	5.49 E-10	1.46 E-10	-1.41 E-09
SQP [dimensionless]	3.05 E+02	1.42 E+01	4.66 E-02	1.71 E-02	9.83 E-02	3.90 E-01	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	2.90 E+02	0.00 E+00	0.00 E+00	4.95 E-02	1.26 E-01	3.72 E-03	-6.94 E+00

4.3 Results per unit of product

The following results of the environmental declaration have been developed by considering the entire life cycle of one product with the technical properties described in Table 1. The results refer to the core environmental impact indicators and indicators describing resource use, waste categories, and output flows according to EN 15804:2012+A2:2019.

Table 12: Results core environmental impact indicators per unit of product

	Total (Excl.D)	Raw materials & parts		Manufacturing	Distribution	Installation	Use							End of life				Benefits and loads beyond the system boundaries
		A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP - total [kg CO2 eq.]	5.69 E+02	1.82 E+01	1.34 E-01	2.23 E-01	8.61 E-01	5.36 E-01	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	5.47 E+02	0.00 E+00	0.00 E+00	1.42 E-01	1.70 E+00	4.35 E-02	-2.95 E+00
GWP - fossil [kg CO2 eq.]	5.65 E+02	1.94 E+01	1.27 E-01	1.99 E-01	8.46 E-01	3.02 E-01	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	5.42 E+02	0.00 E+00	0.00 E+00	1.35 E-01	1.69 E+00	4.34 E-02	-3.73 E+00
GWP - biogenic [kg CO2 eq.]	3.77 E+00	-1.23 E+00	5.96 E-03	2.35 E-02	1.29 E-02	2.33 E-01	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	4.71 E+00	0.00 E+00	0.00 E+00	6.33 E-03	2.40 E-03	8.50 E-05	7.85 E-01
GWP - luluc [kg CO2 eq.]	7.75 E-02	1.25 E-02	1.17 E-03	1.25 E-04	2.44 E-03	9.60 E-04	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	5.89 E-02	0.00 E+00	0.00 E+00	1.24 E-03	1.44 E-04	3.79 E-05	-1.57 E-03
ODP [kg CFC-11 eq.]	1.01 E-08	8.70 E-11	1.64 E-14	9.02 E-13	7.40 E-14	5.73 E-13	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	1.00 E-08	0.00 E+00	0.00 E+00	1.74 E-14	5.00 E-12	7.28 E-14	-1.09 E-11
AP [Mole of H+ eq.]	1.26 E+00	9.13 E-02	1.47 E-04	7.08 E-04	1.17 E-02	5.54 E-04	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	1.16 E+00	0.00 E+00	0.00 E+00	1.56 E-04	1.21 E-03	1.33 E-04	-1.04 E-02
EP - freshwater [kg P eq.]	2.19 E-03	1.52 E-04	4.62 E-07	2.42 E-07	1.09 E-06	9.03 E-06	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	2.02 E-03	0.00 E+00	0.00 E+00	4.90 E-07	1.21 E-06	6.31 E-06	-1.26 E-05
EP - marine [kg N eq.]	2.99 E-01	1.66 E-02	4.93 E-05	1.54 E-04	4.90 E-03	2.55 E-04	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	2.77 E-01	0.00 E+00	0.00 E+00	5.24 E-05	3.81 E-04	3.12 E-05	-2.52 E-03
EP - terrestrial [Mole of N eq.]	3.13 E+00	1.75 E-01	5.82 E-04	1.67 E-03	5.38 E-02	2.33 E-03	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	2.89 E+00	0.00 E+00	0.00 E+00	6.17 E-04	4.60 E-03	3.42 E-04	-2.66 E-02
POCP [kg NMVOC eq.]	8.04 E-01	4.94 E-02	1.28 E-04	4.63 E-04	1.34 E-02	5.37 E-04	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	7.39 E-01	0.00 E+00	0.00 E+00	1.36 E-04	1.21 E-03	9.86 E-05	-7.61 E-03
ADPE [kg Sb eq.]	3.07 E-03	2.99 E-03	8.38 E-09	8.58 E-09	2.27 E-08	1.31 E-07	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	8.38 E-05	0.00 E+00	0.00 E+00	8.89 E-09	5.51 E-08	1.16 E-09	-2.39 E-07
ADPF [MJ]	1.17 E+04	2.88 E+02	1.72 E+00	2.13 E+00	1.07 E+01	4.21 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	1.14 E+04	0.00 E+00	0.00 E+00	1.83 E+00	5.04 E+00	6.50 E-01	-4.49 E+01
WDP [m³ world equiv.]	1.26 E+02	4.54 E+00	1.53 E-03	6.27 E-02	4.14 E-03	1.94 E-02	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	1.21 E+02	0.00 E+00	0.00 E+00	1.62 E-03	1.59 E-01	-6.08 E-04	-1.63 E-01

Table 13: Results indicators describing resource use, waste categories, and output flows per unit of product.

	Total (Excl.D)	Raw materials & parts		Manufacturing	Distribution	Installation	Use							End of life				Benefits and loads beyond the system boundaries
		A1	A2				B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	
PERE [MJ]	6.89 E+03	7.23 E+01	1.25 E-01	5.74 E-01	2.91 E-01	1.12 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	6.82 E+03	0.00 E+00	0.00 E+00	1.33 E-01	2.53 E+00	5.86 E-02	-2.68 E+01
PERM [MJ]	1.21 E+01	1.21 E+01	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00
PERT [MJ]	6.91 E+03	8.44 E+01	1.25 E-01	5.74 E-01	2.91 E-01	1.12 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	6.82 E+03	0.00 E+00	0.00 E+00	1.33 E-01	2.53 E+00	5.86 E-02	-2.68 E+01
PENRE [MJ]	1.17 E+04	2.59 E+02	1.73 E+00	2.13 E+00	1.07 E+01	4.21 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	1.14 E+04	0.00 E+00	0.00 E+00	1.83 E+00	5.04 E+00	6.50 E-01	-2.79 E+01
PENRM [MJ]	3.05 E+01	3.05 E+01	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	-1.72 E+01
PENRT [MJ]	1.17 E+04	2.89 E+02	1.73 E+00	2.13 E+00	1.07 E+01	4.21 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	1.14 E+04	0.00 E+00	0.00 E+00	1.83 E+00	5.04 E+00	6.50 E-01	-4.50 E+01
SM [kg]	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	-8.41 E-01
RSF [MJ]	3.85 E-01	0.00 E+00	9.24 E-02	0.00 E+00	1.92 E-01	2.96 E-03	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	9.81 E-02	0.00 E+00	0.00 E+00	0.00 E+00
NRSF [MJ]	1.26 E+01	0.00 E+00	1.45 E+00	0.00 E+00	9.52 E+00	4.65 E-02	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	1.54 E+00	0.00 E+00	0.00 E+00	0.00 E+00
FW [m3]	5.71 E+00	1.92 E-01	1.37 E-04	1.50 E-03	3.26 E-04	4.69 E-03	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	5.50 E+00	0.00 E+00	0.00 E+00	1.46 E-04	4.87 E-03	6.64 E-06	-1.81 E-02
HWD [kg]	6.35 E-07	1.38 E-06	5.35 E-12	-9.90 E-11	3.36 E-11	1.49 E-07	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	-8.93 E-07	0.00 E+00	0.00 E+00	5.68 E-12	2.65 E-09	5.45 E-11	-1.15 E-07
NHWD [kg]	1.04 E+01	1.08 E+00	2.63 E-04	1.74 E-02	1.20 E-03	6.30 E-02	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	8.35 E+00	0.00 E+00	0.00 E+00	2.79 E-04	2.18 E-01	7.05 E-01	-3.86 E-01
RWD [kg]	1.82 E+00	7.26 E-03	3.23 E-06	5.01 E-05	1.51 E-05	9.75 E-05	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	1.81 E+00	0.00 E+00	0.00 E+00	3.43 E-06	2.97 E-04	7.66 E-06	-2.08 E-03
CRU [kg]	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00
MFR [kg]	1.45 E+00	3.66 E-02	0.00 E+00	6.04 E-02	0.00 E+00	5.52 E-01	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	7.96 E-01	0.00 E+00	0.00 E+00
MER [kg]	8.27 E-01	0.00 E+00	0.00 E+00	2.42 E-02	0.00 E+00	6.35 E-02	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	7.40 E-01	0.00 E+00	0.00 E+00
EEE [MJ]	2.40 E+00	4.60 E-03	0.00 E+00	0.00 E+00	0.00 E+00	1.65 E-01	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	2.23 E+00	0.00 E+00	-3.88 E-02
EET [MJ]	5.27 E+00	1.07 E-02	0.00 E+00	0.00 E+00	0.00 E+00	2.53 E-01	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	5.00 E+00	0.00 E+00	-8.99 E-02
Biog. C in product [kg]	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00
Biog. C in packaging [kg]	0.00 E+00	-2.90 E-01	0.00 E+00	0.00 E+00	0.00 E+00	2.90 E-01	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00

Table 14: Additional environmental impact indicators per unit of product

	Total (Excl.D)	Raw materials & parts		Manufacturing	Distribution	Installation	Use							End of life				Benefits and loads beyond the system boundaries
		A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM [Disease incidences]	1.11 E-05	1.05 E-06	1.07 E-09	9.69 E-09	3.02 E-07	4.67 E-09	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	9.74 E-06	0.00 E+00	0.00 E+00	1.14 E-09	1.45 E-08	1.32 E-09	-1.24 E-07
IRP [kBq. U235 eq.]	3.03 E+02	7.94 E-01	4.82 E-04	3.17 E-03	2.20 E-03	1.61 E-02	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	3.02 E+02	0.00 E+00	0.00 E+00	5.12 E-04	3.36 E-02	1.13 E-03	-3.94 E-01
ETP-fw [CTUe]	3.33 E+03	1.50 E+02	1.23 E+00	3.05 E-01	7.59 E+00	5.83 E-01	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	3.17 E+03	0.00 E+00	0.00 E+00	1.31 E+00	1.44 E+00	4.65 E-01	-1.01 E+01
HTP-c [CTUh]	2.02 E-07	3.41 E-08	2.50 E-11	4.10 E-11	1.44 E-10	6.09 E-11	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	1.68 E-07	0.00 E+00	0.00 E+00	2.65 E-11	1.38 E-10	2.71 E-11	-2.78 E-09
HTP-nc [CTUh]	3.04 E-06	3.40 E-07	1.11 E-09	7.76 E-10	5.24 E-09	3.08 E-09	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	2.68 E-06	0.00 E+00	0.00 E+00	1.18 E-09	8.47 E-09	2.25 E-09	-2.18 E-08
SQP [dimensionsless]	4.71 E+03	2.19 E+02	7.19 E-01	2.64 E-01	1.52 E+00	6.02 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	4.48 E+03	0.00 E+00	0.00 E+00	7.63 E-01	1.94 E+00	5.74 E-02	-1.07 E+02

4.4 Data quality

The underlying LCA model has been developed in Sphera's LCA software LCA for Experts V.10 and with datasets from Sphera's Managed LCA Content. The overall DQR for the representativeness has been calculated as average of the individual ratings according to the PCR respectively the Product Environmental Footprint Guide, version 6.3. Consequently, the overall representativeness is assessed as good (DQR = 1.81).

The individual rating for technological, time and geographical representativeness is assessed as good (DQR = 2.13, 1.44 and 1.84).

5 Extrapolation Rules

The extrapolation coefficients included in the PEP Eco-passport have been developed according to the valid PCR & PSR. Table 15 shows the key properties of the reference product, function as extrapolation basis.

Table 15: Reference values for the extrapolations.

Parameter	Unit	Reference value
Weight of structural/ mechanical parts	kg	1.777
Weight of power equipment	kg	0.236
Weight of light source	kg	0.197
Weight of light management system	kg	0.032
Weight of product (excl. packaging)	kg	2.242
Weight of packaging	kg	0.677
Weight of product (incl. packaging)	kg	2.918
Typical power consumption	W	28
Lumen output	lm	4,500
Energy saving coefficient	-	0.5

The extrapolation at the level of the functional unit needs to be done according to the following formula:

$$\text{Extrapolation coefficient at the product level} \times \frac{\text{Lighting output of reference product(lumen)}}{\text{Lighting output of product concerned(lumen)}}$$

Lumen output of each product variant and other important properties are listed in the tables below.

Table 16: Information for product family: Non dimmable

Product code	Product name	Power (W)	Luminaire structure weight (kg)	Product packaging weight (kg)	Power equipment weight (kg)	Light source weight (kg)	Light management weight (kg)	Total weight (kg)	Energy saving coefficient
0044600	Quantum 625x625 Multipower 4300lm 830	28	1.822	0.603	0.148	0.195	0.000	2.768	1
0044601	Quantum 1200x600 Multipower 5800lm 830	38	3.653	1.263	0.148	0.298	0.000	5.362	1
0044617	Quantum 1200x300 Multipower 4500lm 940	35	1.731	0.613	0.148	0.168	0.000	2.660	1
0044640	Quantum 600x600 Multipower 4500lm 840	28	1.703	0.593	0.148	0.193	0.000	2.637	1
0044641	Quantum 1200x300 Multipower 4500lm 840	28	1.731	0.613	0.148	0.168	0.000	2.660	1
0044642	Quantum 625x625 Multipower 4500lm 840	28	1.822	0.603	0.148	0.195	0.000	2.768	1
0044643	Quantum 1200x600 Multipower 6000lm 840	38	3.653	1.263	0.148	0.298	0.000	5.362	1
0044648	Quantum 600x600 Multipower 4500lm 940	35	1.703	0.593	0.148	0.193	0.000	2.637	1
0044658	Quantum 600x600 Multipower 4300lm 830	28	1.703	0.593	0.148	0.193	0.000	2.637	1
0044660	Quantum 1200x300 Multipower 4300lm 830	28	1.731	0.613	0.148	0.168	0.000	2.660	1
0044672	Quantum 600x600 Multipower 4500 865	28	1.703	0.593	0.148	0.193	0.000	2.637	1

Table 17: Information for product family: Dali (DA)

Product code	Product name	Power (W)	Luminaire structure weight (kg)	Product packaging weight (kg)	Power equipment weight (kg)	Light source weight (kg)	Light management weight (kg)	Total weight (kg)	Energy saving coefficient
0044602	Quantum 1200x300 DALI 4300lm 830	28	1.731	0.613	0.217	0.168	0.000	2.729	0.5
0044603	Quantum 625x625 DALI 4300lm 830	28	1.822	0.603	0.217	0.195	0.000	2.837	0.5
0044604	Quantum 1200x600 DALI 5800lm 830	38	3.653	1.263	0.217	0.298	0.000	5.431	0.5
0044644	Quantum 600x600 DALI 4500lm 840	28	1.703	0.593	0.217	0.193	0.000	2.706	0.5
0044645	Quantum 1200x300 DALI 4500lm 840	28	1.731	0.613	0.217	0.168	0.000	2.729	0.5
0044646	Quantum 625x625 DALI 4500lm 840	28	1.822	0.603	0.217	0.195	0.000	2.837	0.5
0044647	Quantum 1200x600 DALI 6000lm 840	38	3.653	1.263	0.217	0.298	0.000	5.431	0.5
0044649	Quantum 600x600 DALI 4500lm 940	35	1.703	0.593	0.217	0.193	0.000	2.706	0.5
0044659	Quantum 600x600 DALI 4300lm 830	28	1.703	0.593	0.217	0.193	0.000	2.706	0.5

Table 18: Information for product family: SSA

Product code	Product name	Power (W)	Luminaire structure weight (kg)	Product packaging weight (kg)	Power equipment weight (kg)	Light source weight (kg)	Light management weight (kg)	Total weight (kg)	Energy saving coefficient
0044605	Quantum 600x600 4300lm 830 SSA03	28	1.777	0.677	0.236	0.197	0.032	2.918	0.5
0044606	Quantum 1200x300 4300lm 830 SSA03	28	1.831	0.753	0.236	0.175	0.032	3.027	0.5
0044607	Quantum 625x625 4300lm 830 SSA03	28	1.913	0.703	0.236	0.202	0.032	3.086	0.5
0044608	Quantum 600x600 4300lm 830 SSA01D	28	1.703	0.593	0.125	0.193	0.000	2.614	0.5
0044609	Quantum 1200x300 4300lm 830 SSA01D	28	1.731	0.613	0.125	0.168	0.000	2.637	0.5
0044610	Quantum 625x625 4300lm 830 SSA01D	28	1.822	0.603	0.125	0.195	0.000	2.745	0.5
0044650	Quantum 600x600 4500lm 840 SSA03	28	1.777	0.677	0.236	0.197	0.032	2.918	0.5
0044651	Quantum 1200x300 4500lm 840 SSA03	28	1.831	0.753	0.236	0.175	0.032	3.027	0.5
0044652	Quantum 625x625 4500lm 840 SSA03	28	1.913	0.703	0.236	0.202	0.032	3.086	0.5
0044661	Quantum 600x600 4500lm 840 SSA01D	28	1.703	0.593	0.125	0.193	0.000	2.614	0.5
0044662	Quantum 1200x300 4500lm 840 SSA01D	28	1.731	0.613	0.125	0.168	0.000	2.637	0.5
0044663	Quantum 625x625 4500lm 840 SSA01D	28	1.822	0.603	0.125	0.195	0.000	2.745	0.5

The required extrapolation coefficients at the product level are listed in the following tables.

Table 19: Extrapolation coefficients at product level for Constant current Non dimmable

Product code	Product name	Power (W)	Manufacturing stage (A1-A3)	distribution stage (A4)	installation stage (A5)	use stage (B6)	EOL stage (C1 to C4)	Benefits stage (D)
0044600	Quantum 625x625 Multipower 4300lm 830	28	0.97	0.95	0.89	2.00	0.97	0.97
0044601	Quantum 1200x600 Multipower 5800lm 830	38	1.94	1.84	1.87	2.71	1.83	1.94
0044617	Quantum 1200x300 Multipower 4500lm 940	35	0.93	0.91	0.91	2.50	0.91	0.93
0044640	Quantum 600x600 Multipower 4500lm 840	28	0.92	0.90	0.88	2.00	0.91	0.92
0044641	Quantum 1200x300 Multipower 4500lm 840	28	0.93	0.91	0.91	2.00	0.91	0.93
0044642	Quantum 625x625 Multipower 4500lm 840	28	0.97	0.95	0.89	2.00	0.97	0.97
0044643	Quantum 1200x600 Multipower 6000lm 840	38	1.94	1.84	1.87	2.71	1.83	1.94
0044648	Quantum 600x600 Multipower 4500lm 940	35	0.92	0.90	0.88	2.50	0.91	0.92
0044658	Quantum 600x600 Multipower 4300lm 830	28	0.92	0.90	0.88	2.00	0.91	0.92
0044660	Quantum 1200x300 Multipower 4300lm 830	28	0.93	0.91	0.91	2.00	0.91	0.93
0044672	Quantum 600X600 Multipower 4500 865	28	0.92	0.90	0.88	2.00	0.91	0.92

Table 20: Extrapolation coefficients at product level for Dali (DA)

Product code	Product name	Power (W)	Manufacturing stage (A1-A3)	distribution stage (A4)	installation stage (A5)	use stage (B6)	EOL stage (C1 to C4)	Benefits stage (D)
0044602	Quantum 1200x300 DALI 4300lm 830	28	0.95	0.94	0.91	1.00	0.94	0.95
0044603	Quantum 625x625 DALI 4300lm 830	28	0.99	0.97	0.89	1.00	1.00	0.99
0044604	Quantum 1200x600 DALI 5800lm 830	38	1.94	1.86	1.87	1.36	1.86	1.94
0044644	Quantum 600x600 DALI 4500lm 840	28	0.94	0.93	0.88	1.00	0.94	0.94
0044645	Quantum 1200x300 DALI 4500lm 840	28	0.95	0.94	0.91	1.00	0.94	0.95
0044646	Quantum 625x625 DALI 4500lm 840	28	0.99	0.97	0.89	1.00	1.00	0.99
0044647	Quantum 1200x600 DALI 6000lm 840	38	1.94	1.86	1.87	1.36	1.86	1.94
0044649	Quantum 600x600 DALI 4500lm 940	35	0.94	0.93	0.88	1.25	0.94	0.94
0044659	Quantum 600x600 DALI 4300lm 830	28	0.94	0.93	0.88	1.00	0.94	0.94

Table 21: Extrapolation coefficients at product level for SSA

Product code	Product name	Power (W)	Manufacturing stage (A1-A3)	distribution stage (A4)	installation stage (A5)	use stage (B6)	EOL stage (C1 to C4)	Benefits stage (D)
0044605	Quantum 600x600 4300lm 830 SSA03	28	1.00	1.00	1.00	1.00	1.00	1.00
0044606	Quantum 1200x300 4300lm 830 SSA03	28	1.04	1.04	1.11	1.00	1.01	1.04
0044607	Quantum 625x625 4300lm 830 SSA03	28	1.06	1.06	1.04	1.00	1.06	1.06
0044608	Quantum 600x600 4300lm 830 SSA01D	28	0.92	0.90	0.88	1.00	0.90	0.92
0044609	Quantum 1200x300 4300lm 830 SSA01D	28	0.93	0.90	0.91	1.00	0.90	0.93
0044610	Quantum 625x625 4300lm 830 SSA01D	28	0.97	0.94	0.89	1.00	0.96	0.97
0044650	Quantum 600x600 4500lm 840 SSA03	28	1.00	1.00	1.00	1.00	1.00	1.00
0044651	Quantum 1200x300 4500lm 840 SSA03	28	1.04	1.04	1.11	1.00	1.01	1.04
0044652	Quantum 625x625 4500lm 840 SSA03	28	1.06	1.06	1.04	1.00	1.06	1.06
0044661	Quantum 600x600 4500lm 840 SSA01D	28	0.92	0.90	0.88	1.00	0.90	0.92
0044662	Quantum 1200x300 4500lm 840 SSA01D	28	0.93	0.90	0.91	1.00	0.90	0.93
0044663	Quantum 625x625 4500lm 840 SSA01D	28	0.97	0.94	0.89	1.00	0.96	0.97

DA /DALI Digital Addressable Lighting Interface

PIR Passive Infrared Radiation

SSA SylSmart connected systems (Silvair)

TW Tunable white