PEP ecopassport® PROGRAM

PSR

PRODUCT SPECIFIC RULES FOR DRIVES FOR BLINDS AND CLOSURES INSTALLED IN BUILDING

PSR-0006-ed2.0-EN-2023 06 06

According to PSR-template-ed2-EN-2021 11 18

CONTENTS

1. Introduction

This reference document complements and explains the Product Environmental Profile (PEP) Drafting Rules defined by the PEP ecopassport® Program (PEP-PCR ed4-EN-2021 09 06), available at www.pep-ecopassport.org).

It sets out the additional requirements applicable to drives for blinds and closures installed in buildings. Compliance with these requirements is necessary to :

- Qualify the environmental performance of these solutions on an objective and consistent basis,
- Publish PEPs compliant with the PEP ecopassport® program and international reference standards.[1]

This reference document was drawn up in compliance with the open, transparent rules of the PEP ecopassport® program with the support of professionals in drives for blinds and closures installed in buildings market.

	www.pep-ecopassport.org
PSR reference	PSR-0006-ed2-FR-2023 06 06
Critical review	The third-party critical review was carried out by SOLINNEN. The declaration of conformity published on 17/04/2023 can be found in Appendices.
Availability	The critical review report is available on request from the PEP Association contact@pep-ecopassport.org
Scope of validity	The critical review report and the declaration of conformity remain valid within 5 years or until the PEP Drafting Rules, or the normative reference texts to which they refer, are modified.

[1] ISO 14025, ISO 14040 and ISO 14044 standards

2. Scope

In accordance with the General Instructions of the PEP ecopassport® program (PEP-General Instructions- ed 4.1-EN-2017 10 17) and in addition to the PCR, Product Category Rules (PEP-PCR ed4-EN-2021 09 06) of the PEP ecopassport® environmental product declaration program, this document sets out the specific rules for drives for blinds and closures installed in buildings

and defines the product specifications to be adopted by manufacturers in the development of their PRODUCT ENVIRONMENTAL PROFILES (PEPs), particularly with regard to:

- The technology and its type of application,
- The reference service reference service life taken into account for the Life Cycle Assessment (LCA),
- The conventional use scenarios to be adopted during the product use stage.

PEPs can cover all markets (French, European, international).

To provide specific default scenarios tailored to these different markets, the scenarios will be described by geographic zone:

- For a French scope,
- For a European scope,
- For an international scope (excluding France and Europe).

Note: given the difficulty of sourcing information for an international market, the default scenarios for this market are based on the worst case scenarios.

2.1. Description of the product families covered

The purpose of these specific rules is to provide a common basis for manufacturers of drives for blinds and closures installed in buildings, when drafting a LCA (Life Cycle Assessment). Thus, the present document describes the various types of drives.

2.1.1. Drives for blinds and closures installed on bay windows

The 'Drives for blinds and closures installed on bay windows' product family is defined by:

- **External roller closing systems**
    - *Roller shutters*
    - *External Venetian blinds*
    - *Vertical blinds (Venetian, roller, vertical, pleated)*
    - *Awnings*
- **Swing shutters (in accordance with the terminology of EN 12 216)**
- **Internal horizontal blinds**

2.1.2. Drives for gates, shop doors and garage doors

The 'Drives for gates, shop doors and garage doors' product family is defined by:

- **Drives intended for private houses**
    - *Sliding gates for private houses*
    - *Swing gates for private houses (with arms, screw or underground drive)*

- *Garage doors for private houses (sectional, overhead, sliding, folding, hinged or roller)*

- **Drives intended for collective residential buildings**
  - *Sliding gates for collective residential buildings*
  - *Swing gates for collective residential buildings (with arms, screw or underground drive)*
  - *Garage doors for collective residential buildings (sectional, overhead, sliding, folding, hinged or roller)*

3. Product Life Cycle Assessment

3.1. Functional Unit and reference flow description

These specific rules are additional to section 2.1 'Functional unit and reference flow description' of the PCR in force (PEP-PCR ed4-EN-2021 09 06).

3.1.1. Functional unit

For all the product categories considered, the manufacturer shall write the functional unit as follows:

'Ensure the closing and opening action by performing **W1** operating cycles, with an **X** of **Y** Nm/daN/kg, on a travel **Z** and over a reference service life of 15 years.'

If the product performs orientations, the manufacturer shall write the functional unit as follows:

'Ensure the closing and opening action by performing **W1** operating cycles and **W2** orientation movement cycles with an **X** of **Y** Nm/daN/kg, on a travel **Z** and over a reference service life of 15 years.'

Table 1 overleaf provides the equivalence between the analysed product and the FU parameters.

Description of functional unit parameters:

W1 = Number of operating cycles over the reference service life of the product. One operating cycle corresponds to one complete opening and closing action.

W2 = Number of orientation cycles over the reference service life of the product. One orientation cycle corresponds to a complete orientation movement and a return to the initial position.

X = Mechanical specification of the product which is expressed differently according to the type of product and the function fulfilled.

- 'a torque' in Nm
- OR 'a traction force' in daN
- OR 'a bearing product mass' in kg or in kg/panel according to the product

Y = Value of X to be considered. Figure 1 below provides the equivalence between the product and parameter Y.

Z = The travel corresponds to the distance or angle required to complete an operating half-cycle. This travel may be expressed in metres or in degrees according to the type of product.

To facilitate PEP ecopassport® comparability, the reference product selected must be that in which parameter X is closest to that entered in Table No. 1, defining the specific parameters for each drive category.

	W1 Operating cycles	**W2** Orientation cycles	**Y** Torque [Nm]	**Y** Traction force [daN]	**Y** Bearing product mass [kg]	**Z** Travel [m or degrees]
External roller closing systems						
Roller shutters	14000	⊗	10 Nm	⊗	⊗	2m
External Venetian blinds	14000	28000	6 Nm	⊗	⊗	2m
Vertical blinds	14000	⊗	6 Nm	⊗	⊗	2m
Awnings	14000	⊗	35 Nm	⊗	⊗	3 m
Swing shutters	14000	⊗	⊗	⊗	20 kg/panel	180°
Internal vertical blinds	10000	20000	0.8 Nm	⊗	⊗	2m
Drives for gates, commercial blinds and garage doors						
Residential private house						
Sliding gates	30000	⊗	⊗	⊗	500 kg	3 m
Swing gates	30000	⊗	⊗	⊗	300 kg/panel	90 °
Garage doors	30000	⊗	⊗	100 daN	⊗	2m
Collective residential building						
Sliding gates	90000	⊗	⊗	⊗	500 kg	4 m
Swing gates	90000	⊗	⊗	⊗	300 kg/panel	90 °
Garage doors	90000	⊗	⊗	200 daN	⊗	2m

Table 1: Description of functional unit parameters

If a manufacturer wishes to create a PEP on a drive not covered by the existing categories, all the FU parameters, except the reference service life, may be redefined subject to justification.

The functional unit shall then follow one of the two writing options provided in this section. Only parameters **W1**, **W2, X, Y and Z** may change subject to justification.

In the cases where more than 1 product is required to fulfil the function over the reference service life set at 15 years; if the number of products is not a whole number, it shall be rounded to the next highest whole number. At least 2 products are then required to complete the functional unit. These replacement operations shall be taken into account in the use stage (module B4).

E.g.:

A drive has the following specifications:

- *X = torque*
- *Y = 10Nm*
- *Z =2m*
- *RLT: 10 years*
- *Number of cycles: 10000*

Then the functional unit shall be:

*'Ensure the closing and opening action by performing **15,000** operating cycles, with a torque of **10** Nm, on a travel of **2**m and over a reference service life of 15 years.'*

Indeed, if this product can perform 10,000 cycles over 10 years, 1.5 products shall be required to fulfil its function of the reference service life of 15 years set by the FU. Therefore, it shall be necessary to count 2 products (rounded to the next highest whole number) over the life cycle, which corresponds to one replaced in the use stage (module B4).

3.1.2. Reference flow description

3.1.2.1. Drives for blinds and closures installed on bay windows

The reference flow of Drives for blinds and closures installed on bay windows includes the following elements:

- The drive system (including motor tube and cover),
- Interface accessories between the motor and driven part, i.e. the ring, the wheel and the mounting adaptor, and any other installation component only if delivered and/or prescribed by the manufacturer in the installation instructions,
- The power cable, 2.50 m long,
- Any other accessory (e.g. remote control, etc.) only if sold in a package with the drive system,
- Where applicable, in the context of a package, any consumables (batteries, solar panels, etc.) required for the operation of these accessories (remote control, etc.),
- The marking label, packaging and documentation for all these subassemblies, computed as a function of actual or worst case scenario packaging on sales in the case of PEPs covering multiple commercial catalogue numbers.

3.1.2.2. Drives for gates, shop doors and garage doors

The reference flow for Drives for gates, shop doors and garage doors includes the following elements:

- The drive system (with arms, screw or underground drive),
- The elements necessary for operation (control cabinet),
- Any installation component only if delivered and/or prescribed by the manufacturer in the installation instructions,
- Any other accessory (e.g. orange light, photoelectric cells, power cable, etc.), only if sold in a package with the drive system,
- Where applicable, in the context of a package, any consumables (batteries, bulbs, etc.) required for the operation of these accessories (remote control, orange light, etc.),
- The marking label, packaging and documentation for all these subassemblies, computed as a function of actual or worst case scenario packaging on sales in the case of PEPs covering multiple commercial catalogue numbers.

3.2. System boundaries

These specific rules are additional to Section 2.2 'System Boundaries' of the PCR in force (PEP-PCR ed4-EN-2021 09 06) which describes the boundaries for each stage of the life cycle.

The manufacturing stage includes all the elements required for the initial operation of the product. Replacement components associated with product maintenance are not considered in this stage.

As described in PEP-PCR ed4-EN-2021 09 06, the following stages shall be included:

- Manufacturing stage: the rules defined in Section 2.2.3 of PEP-PCR ed4-EN-2021 09 06 apply. The manufacturing stage includes all the elements required for the initial operation of the product. Replacement components associated with product maintenance are not considered in this stage.
- Distribution stage: the rules defined in Section 2.2.4 of PEP-PCR ed4-EN-2021 09 06 apply.
- Installation stage: the rules defined in Section 2.2.5 of PEP-PCR ed4-EN-2021 09 06 apply.
- Use stage: the rules defined in Section 2.2.6 of PEP-PCR ed4-EN-2021 09 06 apply.

In the case of breakdown of module B as defined in Section 2.2.6 of the PCR ed.4, the environmental impacts of the use stage must be broken down as follows for all PSR-0006 product families:

B1 - Use or application of the product installed	The specific rules of this PSR do not define elements to be declared in B1.
B2 - Maintenance	Manufacture, distribution, and end of life of replacement consumables (batteries, bulbs, etc.) required for the operation of the motor and accessories (remote control, orange light, etc.).
B3 - Repair	The specific rules of this PSR do not define elements to be declared in B3.
B4 - Replacement	Product replacement if required for a drive not covered by the existing categories (see Section 2.1.1)
B5 - Restoration	The specific rules of this PSR do not define elements to be declared in B5.
B6 - Energy requirements during the use stage	Electricity consumption of the reference product by applying the use scenario as defined by this PSR-0006.
B7 - Water requirements during the use stage	The specific rules of this PSR do not define elements to be declared in B7.

- End of life stage: the rules defined in Section 2.2.7 of PEP-PCR ed4-EN-2021 09 06 apply.

In the case of breakdown of module C, the environmental impacts of the use stage shall be broken down as following:

C1: Deinstallation
C2: Transport to waste treatment site
C3: Treatment of waste in view of its reuse, recovery and/or recycling
C4: Disposal

- Benefits and loads beyond the system boundaries: the rules defined in Section 2.2.8 of PEP-PCR ed4-EN-2021 09 06 apply.

3.3. Cut-off criteria

The rules defined in Section 2.3 'Cut-off criteria' of the PCR in force (PEP-PCR ed4-EN-2021 09 06) apply.

3.4. Rules for allocation between co-products

These specific rules are additional to Section 2.4 'Rules for allocation between co-products' of the PCR in force (PEP-PCR ed4-EN-2021 09 06).

In the event of primary data being shared with other products than those concerned by these specific rules, the impacts may be calculated in proportion to the mass of the devices manufactured. Any other rule must be justified in the appended report and mentioned in the PEP.

3.5. Development of scenarios (default scenarios)

These specific rules are additional to Section 2.5 'Development of scenarios (default scenarios)' of the PCR in force (PEP-PCR ed4-EN-2021 09 06).

***Accepted supporting documents to amend default scenarios**

If the declarant wishes to use specific data, the data shall be justified in the report. Such data, forwarded by manufacturers, is not necessarily certified but based on supporting documents on the traceability chain. These supporting documents involve the liability of the declarant or supplier or third party (example of third party: independent certification body). These supporting documents shall be available if requested.

The recycled content of raw materials may for example be justified with supplier data (data sheet or supplier declaration), but may not be justified with generic data (e.g.: system, professional associations, ADEME). The method for calculating the recycled content may be based on that proposed by the EN 45557 standard providing a general method for evaluating the recycled material content of energy-related products.

The scrap rates of raw materials may for example be justified with an internal document from the production factory (e.g.: annual report mentioning the input and output material quantity of the process).

The end-of-life waste treatment may for example be justified with a statement from the contractor tasked with the treatment of waste from the factory.

3.5.1. Manufacturing stage

Recycled content

The recycled content of raw materials shall be justified*. In the absence of justified specific information, the recycled content of the constituent materials of the product shall be considered to be nil.

The recycled content of the raw materials shall be declared in the PEP as described in Section '4.1.1Constituent Materials' of this PSR.

Packaging of raw materials and components

The packaging of raw materials and components as well as their transport to the manufacturing site(s) shall be considered. Supplier data shall be used.

Failing justification, an average packaging scrap rate of 5% of the mass of the reference equipment (equipment + packaging) shall be considered, broken down as follows:

- Wood 50%
- Cardboard 40%
- Low-density polyethylene 10%

Packaging reused on-site is not considered.

The end-of-life treatment of packaging is modelled as described below, in the manufacturing waste treatment section of this PSR.

Scrap rate

Specific scrap rates shall be justified*. Declarants whose scrap rates are not available shall consider the default values presented in the first column of Table 2. Columns two and three of Table 2 give an example of how the rates shall be applied.

	Default scrap rate	Mass of part after manufacture (kg)	Scrap mass (kg)	Mass to be considered with scraps (kg)
Metal				
Machining	60%	19,20	11,52	30,72
Sheet metal cutting	60%	14,40	8,64	23,04
Coiling	10%	2,00	0,20	2,20
Injection	10%	0,90	0,09	0,99
Moulage	10%	12,60	1,26	13,86
Plastics				
Injection	10%	9,90	0,99	10,89
Packaging	10%	5,00	0,50	5,50
Other processes	30%	24,50	7,35	31,85

Table 2: default scrap rates to be used in the absence of specific data

Manufacturing waste treatment

By sector-based convention, the transport stage of this manufacturing waste shall be considered based on an assumption of 100 km transport by truck.

In the absence of justified* specific data, and for waste treatment in Europe, Table 6 of Appendix D of PEP-PCR ed4-EN-2021 09 06 applies.

For any other case (excluding specific data and excluding European manufacture), the declarant shall apply the following default scenario: 100% incineration with no energy recovery.

3.5.2. Installation stage

Masonry work and utility connections (roads and various networks) are not considered in the analysis as they are selected on a case-by-case basis depending on the configuration of the installation site.

The end of life of packaging, the production of which is included in the manufacturing stage, is included in the installation stage. Packaging waste produced during the installation stage falls within the category of non-hazardous waste and is disposed of, in principle, by the installer once the equipment is installed.

In the absence of supporting documents showing a specific end of life, the treatment scenarios presented in the table below shall be applied by default. The tables presented below are representative of the year 2019. The latest consolidated Eurostat data, if available, may be accessed using the information available at the address: https://ec.europa.eu/eurostat/databrowser/view/ENV_WASPAC__custom_3801295/default/bar?lang=en.
The reference year of the data used shall be mentioned in the PEP.

For all geographic scopes:

- By sector-based convention, the transport stage of this manufacturing waste shall be considered based on an assumption of **100 km transport by truck**.
- The strapping, packaging notes and labels present on or in the packaging of the system are considered to be negligible and may be excluded from the life cycle assessment of the packaging waste.
- A pallet may be considered to be suitable for reuse up to 28 times[2].

For France scope:

	Recycling rate	Incineration with energy recovery	Incineration with no energy recovery	Landfill rate
Metal	83	1	0	16
Steel	88	0	0	12
Aluminium	60	7	0	33
Paper-cardboard	91	5	0	4
Wood	7	31	0	62
Plastic	27	43	0	30

Table 2: Default packaging end-of-life data for France scope

For European scope:

	Recycling rate	Incineration with energy recovery	Incineration with no energy recovery	Landfill rate
Metal	77	2	0	21
Paper-cardboard	82	9	0	9
Wood	31	31	0	38
Plastic	41	37	0	22

Table 3: Default packaging end-of-life data for European scope

In the absence of data in Tables 2 and 3, waste shall be treated according to the following scenario: **100% incineration with no energy recovery.**

For another international geographic scope (excluding France or Europe): waste shall be treated according to the following scenario: **100% incineration with no energy recovery**

[2] Sources: https://epalia.fr/blog/conseils-dexperts/reemploi-recyclage-valorisation-de-palettes-bois

3.5.3. Distribution stage

The rules defined in Section 2.5 'Development of scenarios (default scenarios)' of the PCR (PEP-PCR ed4-EN-2021 09 06) apply.

3.5.4. Use stage

3.5.4.1. Energy consumption

The energy consumption of Drives for blinds and closures installed in buildings shall be computed on the total life cycle of the product. It involves two phases:

- Motion phase of drive
- Standby phase

Manufacturers should thus specify the rates of each of these stages in [%], on each PEP ecopassport®. The rates are computed using the following equations:

$$Rate\ of'use\ (\%) = \frac{N_{cycle} * T_{cycle}}{365 * 24 * 60 * 60}$$

$$Standby\ rate\ (\%) = 1 - Use\ rate$$

Where:

N_{cycle} = Number of operating cycles over 1 year. Dependent on parameter W1 defined in the functional unit by Table 1.

T_{cycle} = Operating cycle time in seconds.

T_{cycle}, the operating cycle time shall preferably be determined by laboratory tests presented in the LCA report.

Failing tests, this value shall be computed theoretically using the following formulas. These formulas differ according to the type of travel of the product (vertical, horizontal or angular):

- **Motors characterised by vertical travels**

Roller shutters / External Venetian blinds / Vertical blinds / Awnings / Internal vertical blinds / Garage doors

$$Tcycle = \left(\frac{Length\ or\ angle}{2 * \pi * r} * \frac{60}{RPM}\right) + \left(\frac{Length\ or\ angle}{2 * \pi * r} * \frac{60}{RPM}\right) * 1.25$$

- **Motors characterised by horizontal travels**

Sliding gates

$$Tcycle = \left(\frac{Travel * 2}{2 * \pi * r} * \frac{60}{RPM}\right)$$

- **Products characterised by angular travels**

Hinged shutters / Swing gates

$$Tcycle = \left(\frac{Angular\ travel * 2}{Angular\ travel/revolution} * \frac{60}{RPM}\right)$$

For products equipped with an orientation function, apply the above formula to compute the orientation cycle time. The consumption generated by the orientation cycles shall be added to that of the operating cycles.

Where:

Travel = The travel corresponds to the distance or angle required to complete an operating half-cycle. This travel may be expressed in metres or in degrees according to the type of product.

RPM = number of revolutions per minute

r = Radius of winding tube in metres

Angular travel/revolution = Number of degrees travelled by the product per motor revolution

1.25 = Safety coefficients to account for additional time associated with gravity during upward motion

Consumption during the motion phase shall be measured over 3 consecutive operating cycles, under the standard test conditions defined in EN 60335-1.

Consumption during the standby phase shall be measured in compliance with the test conditions defined by EN 50564 : Electrical and electronic household and office equipment - Measurement of low power consumption.

3.5.4.2. Maintenance scenario

3.5.4.2.1. Accounting for consumables

Manufacture, distribution, and end of life of replacement consumables (batteries, bulbs, etc.) required for the operation of the motor and accessories (remote control, orange light, etc.) during the reference service life of the drive shall be counted in the use stage. The end of life of accumulators shall comply with the requirements described in Section 3.5.4.2.2.

In the absence of more specific data, the use scenario of the elements required for the electrical power supply of self-contained products shall be as follows:

Elements	Number of replacements to consider over total RLT
Battery	3 battery replacements during maintenances
Accessory batteries and control points	7 replacements
Solar panels	The RSL of solar panels makes it possible to meet the FU requirements. By default, the panel is considered to undergo end-of-life treatment at the same time as the product. If another end of life can be justified for the solar panels (proof of recovery and reuse of the panel through another system), then a choice of allocation of the production impacts of the panel may be made (e.g., in proportion to the years of use).

The manufacturer may use specific data for its products. In this case, the RLT shall be justified using cyclic test and extreme temperature calendar ageing test reports. Note that the number of batteries and solar panels considered for maintenance must always be a whole number.

The choice of data used to model these consumables has a significant impact on the environmental results. At the present time, the environmental data for these products available in various LCA databases may exhibit substantial variations. Specific PEP for these products should soon be created, which will make it possible to incorporate specific data rather than generic data from databases. In this way, when available, the specific PEP may be used to model these elements.

For all scopes:

By sector-based convention, the transport stage for waste generated in the maintenance stage shall be considered based on an assumption of 100 km transport by truck.

For a France and European scope:

In the absence of justified specific data (see page 11), Table 6 of Appendix D of PEP-PCR ed4-EN-2021 09 06 applies. For any other case, the declarant shall apply the following default scenario: 100% incineration with no energy recovery.

For an international scope (excluding France and Europe):

In the absence of justified specific data (see page 11), the declarant shall apply the following default scenario: 100% incineration with no energy recovery.

3.5.4.2.2. End of life of accumulators

The end of life of replaced accumulators shall be taken into account in the maintenance stage (B2).

In the absence of supporting documents showing a specific end of life, the treatment scenarios presented in the table below shall be applied by default.

For all scopes:

By sector-based convention, the transport stage of this manufacturing waste shall be considered based on an assumption of 100 km transport by truck.

For France scope[3]:

Battery type	Recycling	Incineration with energy recovery	Incineration with no energy recovery
Lead accumulators	78 %	2 %	20 %
Nickel-cadmium accumulators	73 %	0 %	27 %
Nickel-metalhydride accumulators	87 %	0 %	13 %
Lithium accumulators	66 %	14 %	20 %
Other accumulators	100 %	0 %	0 %
Alkaline, salt and zinc-air batteries	69 %	2 %	29 %
Lithium batteries	13 %	6 %	81 %
Button cells	82 %	0 %	18 %

Table 4: Default accumulators data for France scope

[3] Batteries & accumulators, 2020 data (ADEME, 2021)

For European scope[4]:

Battery type	Recycling	Incineration with no energy recovery
Lead accumulators	65 %	35 %
Nickel-cadmium accumulators	75 %	25 %
Other batteries and accumulators	50 %	50 %

Table 5: Default accumulator data for European scope

For international scope (excluding France and Europe): waste shall be treated according to the following scenario: 100% incineration with no energy recovery.

3.5.5. End of life cycle stage

For France and European scope:

If the declarant is able to prove its membership of a producer responsibility organisation, **it is strongly recommended to model the end-of-life treatment of Drives for blinds and closures installed in buildings in Europe with the life cycle inventory modules provided in the EcoSystem public database (referred to as ESR)**. This is the only French database assessing the environmental footprint of end-of-life electrical and electronic equipment. Given that WEEE treatment technologies are generally harmonised in Europe, this database also covers the European scope. 96 materials are modelled and broken down according to the different flows treated to make it possible to quantify the environmental impacts and benefits of WEEE at the end of its life cycle.

If the ESR database is used, the data shall be selected in the 'Small Professional Elec. Equip. (Medical & Building & Industry & Research)' category.

Note that the waste transport stage is already taken into account in ESR data.

This database does not allow computation of the following two indicators: 'Materials intended for recycling' and 'Materials intended for energy recovery'. To compute these indicators:

- Use the generic data of the producer responsibility organisation with which the company is affiliated (specific or annual report),
- Otherwise, enter 0.

If the ESR database is not used, and in the absence of justified data (see page 11), refer to Table 6 of Appendix D of PEP-PCR ed4-EN-2021 09 06. For all materials not included in the table, consider 100% incineration with no energy recovery. By sector-based convention, the transport stage of this manufacturing waste shall be considered based on an assumption of 100 km transport by truck.

For an international scope (excluding France and Europe): in the absence of justified specific data (see page 11), the declarant shall apply the following default scenario: 100% incineration with no energy recovery. By sector-based convention, the transport stage of this manufacturing waste shall be considered based on an assumption of 100 km transport by truck.

[4] Rates set by European Directive 1(2006/66/EC)

3.5.6. Scenario for considering net benefits and loads beyond the system boundaries

If ESR data is used to model the end of life of the product in C1-C4 (see Section 2.5.5), then the relevant ESR data for the benefits of the 'Small Professional Elec. Equip. (Medical & Building & Industry & Research)' category shall be used.

3.6. Rule(s) for extrapolation to a homogeneous environmental family

The rules defined in Section 2.6 'Rule(s) for extrapolation to a homogeneous environmental family' of the PCR in force (PEP-PCR ed4-EN-2021 09 06) apply.

3.7. Rules applying to joint environmental declarations

The rules defined in Section 2.7 'Rules applying to joint environmental declarations' of the PCR in force (PEP-PCR ed4-EN-2021 09 06) apply.

3.8. Environmental impact calculation

The rules defined in Section 2.10 'Environmental data requirements' of the PCR in force (PEP-PCR ed4-EN-2021 09 06) apply.

4. Drawing up the Product Environmental Profile

4.1. General information

These specific rules are additional to Section 4.1 'General information' of the PCR in force (PEP-PCR ed4-EN 2021-09 06).

The PEP shall include a product specifications section. This section shall feature at the start of the PEP. **The following specifications shall be declared**:

1. Product category (e.g.: Sliding gates for private houses)
2. Mass of motor / Mass of package / Mass of accessories / Total mass
3. Torque or traction force or bearing product mass
4. Lifetime
5. In order to provide product specifications that are comprehensible for the greatest number, the declarant shall specify the surface area covered by the product set in motion by the motor. The following phrase shall be included:

'The specified torque corresponds to an external closing system, with a surface area between …m² and … m²'.

6. If the product is accompanied by a pack including accessories (remote controls, batteries, solar panels, etc.), its composition shall be detailed.

4.1.1. Constituent materials

These specific rules are additional to Section 4.2 'Constituent materials' of the PCR in force (PEP-PCR ed4-EN 2021-09 06).

In the product specifications section described in Section '4.1 General information', **add a table listing the materials in decreasing order of mass and the average recycled content considered for each.** Limit the list to 15 materials. If a high-impact material including recycled content is not in the selection, include it in the table.

4.2. Additional environmental information

These specific rules are additional to the 'Additional environmental information' section of the PCR (PEP-PCR-ed4-EN-2021-09 06).

Within the scope of Life Cycle Assessments in respect of a building, the environmental impacts of the equipment shall be considered in respect to the product and impacts associated with energy consumption in the use stage shall be extracted. In this way, to facilitate PEP use for the building LCA, the PEP may include the environmental impact results in the use stage according to a breakdown of module B (B1 to B7) in line with the EN 15978 and EN 15804 standards.

PEP ecopassport®	Manufacturing stage			Distribution stage	Installation stage	Use stage							End of life cycle stage				Benefits and loads
EN 15978 / 15804	Production stage			Construction stage		Use stage							End of life cycle stage				Benefits and loads
	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
	Procurement of raw materials	Transport	Manufacture	Transport	Installation processes	Use	Maintenance	Repair	Replacement	Restoration	Energy consumption during building use	Water consumption during building use	Demolition / Deconstruction	Transport	Waste treatment	Disposal	Benefits beyond the system boundaries

Note: When the total for module D is negative, this represents a benefit. When the total for module D is positive, this represents a load.

4.3. Environmental data requirements

Note: The ICV module used to model the raw material or the component may contain a default scrap rate.

- If the scrap rate included in the ICV module is editable, the default values of table 2 should apply.
- If the scrap rate included in the ICV module is not modifiable:
    - The scrap rate is lower than the default values of table 2: this scrap rate must be entered in the support report and the modelling must, as far as possible, be adapted to take into account the difference in waste generated (hazardous or not dangerous).
    - The scrap rate is higher than the default values of table 2: this scrap rate must be entered in the support report.

4.4. Environmental impact calculation

In order to meet the requirements of the PCR in force (PEP- PCR-ed4-EN-2021-09 06), the results presented in the environmental impact table relate to the implementation of the functional unit.

The environmental database version shall be mentioned in the PEP and the LCA report, including the EF (Environmental Footprint) version number.

If mentioning the quantity of biogenic carbon stored in kg: for biogenic carbon storage, both 0/0 or -1/+1 assessment methodologies are accepted until the environmental databases are updated. The methodology used shall be mentioned in the PEP and in the LCA report.

4.5. Digital services

The rules associated with the impacts of digital services in this PSR are adapted from the Methodological guidance for the environmental assessment of digital services issued by ADEME in July 2021.

4.5.1. Specific rules for connected equipment

The motors for blinds and closures installed in buildings covered by this PSR may be communicating objects (e.g.: motor connected remotely via a Smartphone app). In this case, they involve a set of equipment , infrastructures and other digital services to capture, circulate, process, analyse, restore and store data. The communicating objects covered form one of the components of a digital service characterised in 3 tiers[5]: terminals, telecommunication networks and computer centres. A set of software is used at different levels to 'orchestrate' the physical equipment and deliver the expected service.

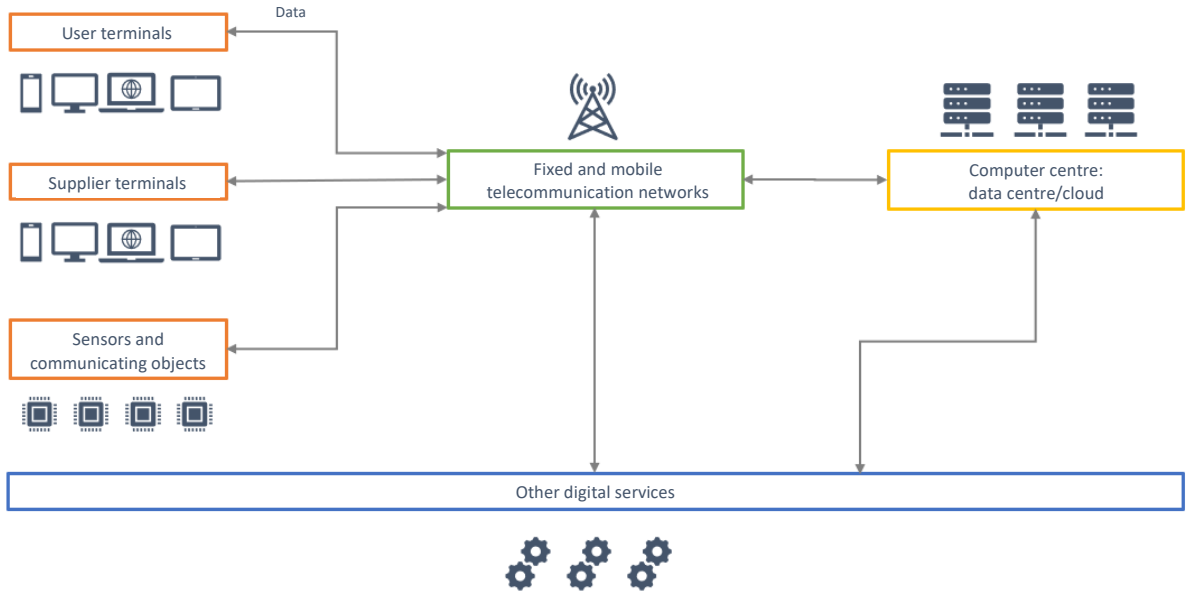

Figure 1: Example of functional diagram of a digital service illustrating the 3 tiers[6]

Examples of communicating objects covered by this PSR:

- Connected shutter motors,
- Connected gate motors,
- Connected garage door motors.

[5] Three-tier architecture, also known as three-level architecture or three-layer architecture, is the application of the more general multi-tier model. The logical architecture is divided into three tiers or layers - presentation layer (operated by terminals); application layer (operated by data centres); data access layer (operated by telecommunication networks). [Wikipedia]

[6] Methodological guidance for the environmental assessment of digital services – ADEME, July 2021

Within the framework of a PEP on a communicating object, the declarant may carry out the Life Cycle Assessment by incorporating the 3 tiers of the digital service in accordance with the following requirements.

If the Life Cycle Assessment does not incorporate the 3 tiers of the digital service, the declarant shall specify, below the environmental impacts table, that *'digital service-related impacts of the product are not assessed (terminals, telecommunication networks and computer centres)'*. They may then be completed by the user. The declarant may provide additional information on the nature of the digital service.

4.5.2. Functional unit

When a product covered by this PSR includes digital service-related functions, the functional unit defined in the PSR shall be used and shall be completed in order to take into account these additional functions.

Examples of functional units for communicating objects covered by the PSR:

'Ensure the closing and opening action by performing 14,000 operating cycles, with a torque of X Nm, on a travel of 2 metres and over a reference service life of 15 years. This product includes a digital remote control service for the roller shutter motor via a smartphone app.'

4.5.3. Reference product and reference flow description

To describe the analysed reference product, a functional diagram shall be described in the LCA report. This functional diagram shall be supplemented by a data flow diagram representing the 'user pathway' and the different stages of the digital service.

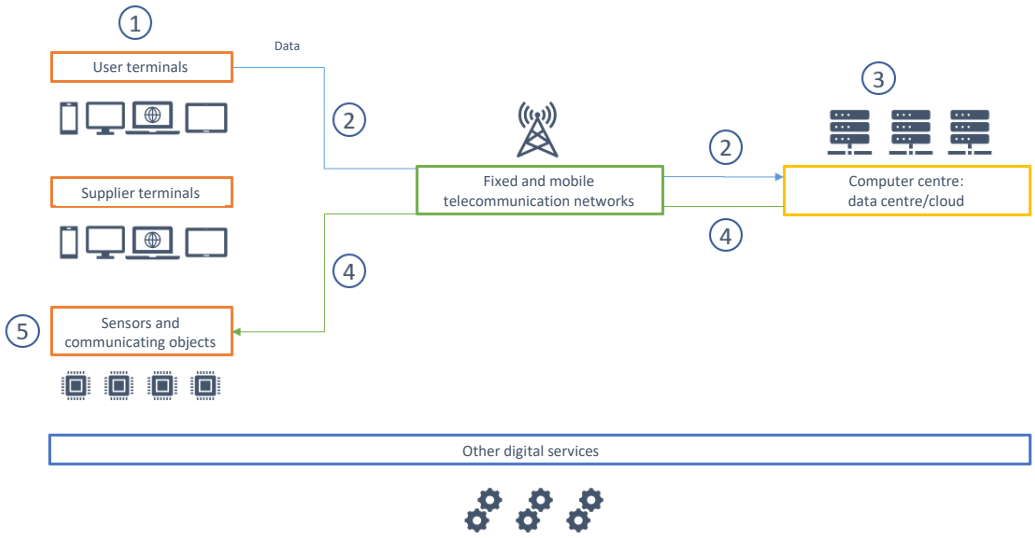

Figure 2: Example of data flow diagram (motor OFF/ON mode control)

1. Launch of mobile app linked with the motor
2. Sending of command via fixed/mobile network
3. Processing of request in manufacturer's data centre
4. Sending of request to motor via fixed network
5. Processing of request by motor

**Non-representative example of all connected motor technologies. The exchanged data flow may vary according to the motor functions, use scenario and communication technologies (fibre, mobile, Wi-Fi, Bluetooth, RFID networks, etc.)*

4.5.4. System boundary

All aspects associated with production, transport, installation, use and end of life, up to the final elimination of the required flows to feed the digital service shall be taken into account. This covers service user and provider terminals, telecommunication networks and computer centres. In the specific case of computer centres, cooling activities shall be included.

The ADEME guidance on the general principles for the environmental display of consumer products – Part 0: general principles and methodological framework has been used as a reference for writing this digital service-related section. Hence, the digital service computation in respect of this PSR shall consider the same exclusions:

- R&D-related flows
- Flows related to employee transport from their home to the workplace and work travel.
- Service-related flows

Specific to these sector-based rules, the following stages are excluded from the environmental assessment:

- Retail service-related flows (stores, after-sales support, etc.)
- Administrative department-related flows

Given that more stages are excluded from PCR-ed4 than those cited above, the digital service-related impact computation is based on the worst case scenario.

In accordance with PCR-ed4, accounting for benefits and loads beyond the system boundaries associated with digital services is optional.

4.5.5. Rules for allocation between co-products

The allocations of the manufacturing, distribution, installation and end of life stages of the elements of the digital service shall define, in order of priority and non-exhaustively:

- On a physical criterion: data usage volume over total data volume - 'GB used / Total GB during reference service life', 'CPU usage (GHz used / Total GHz during reference service life)', 'GPU usage (GHz used / Total GHz during reference service life)'.
- On time criteria: time of use/duration of use of equipment throughout its reference service life.
- On another criterion, in accordance with the ISO 14044 standard (e.g. the economic criterion).

Physical allocation shall be prioritised, unless it is not possible. Economic allocations shall only be used if it is not possible to use a physical allocation.

4.5.6. Development of scenarios (default scenarios)

4.5.6.1. Use stage

The use scenario associated with the digital service shall be justified in the LCA report and described in the PEP. The use scenario shall describe at least:

- The use time of service user and provider terminals,
- The data flow exchanged on telecommunication networks and stored in computer centres,
- The geographic zone and the electricity mix associated with computer centres.

E.g.:

- Control a connected motor using a Smartphone app 2 minutes per day for the reference reference service life,

- Equivalent to the exchange of 500 KB of data exchanged on a mobile network (4G), and the storage of 200 KB of data in a data centre,
- Hosted in France, using a certified 100% renewable electricity mix.

4.5.7. Environmental data requirements

Wherever possible, the environmental impacts of the digital service shall be assessed on the basis of primary data.

When the primary data is not available, secondary data may be used for the processes included in the system boundaries. The secondary data shall be identified and be consistent with the scope of the study in terms to time-related, geographic and technological coverage.

The Life Cycle Inventory database used for modelling the digital service shall be justified in the LCA report and described in the PEP.

Note: The LCI module used to model the raw material or component may contain a default scrap rate.

- If the scrap rate included in the LCI module is modifiable, the above default values shall apply.
- If the scrap rate included in the LCI module is non-modifiable:
    - The scrap rate is less than the above default values: this scrap rate shall be entered in the LCA report, and insofar as possible, the modelling should be adapted to account for the difference in waste generated (hazardous or non-hazardous).
    - The scrap rate is greater than the above default values: this scrap rate must be entered in the LCA report.

4.5.8. Environmental impact calculation

The environmental database version shall be mentioned in the PEP and the LCA report, including the EF (Environmental Footprint) version number.

If mentioning the quantity of biogenic carbon stored in kg: for biogenic carbon storage, both 0/0 or -1/+1 assessment methodologies are accepted until the environmental databases are updated. The methodology used shall be mentioned in the PEP and in the LCA report.

The environmental impacts of the digital service shall be described in the PEP in the form of an additional column in the results tables as shown in the following example:

	[A1-A3]	[A4]	[A5]	[B1-B7]	[C1-C4]	**Total [A1-C4]**	[D]	Digital service
Indicator 1								

5. PEP update rules

The rules defined in Section 5 'PEP update rules' of the PCR in force (PEP-PCR ed4-EN-2021 09 06) apply.

6. Appendices

6.1. Appendix 1: classification of product families covered by this PSR in the PEP ecopassport® database

The product families covered by this PSR are:

Product family	Level 1	Level 2	Level 3	Level 4
Drives for blinds and closures installed on bay windows	Installation wiring devices for electric power and communication networks (≤ 63 amperes)	Others	Motorization of shutter, awning, garage door, gate …	Motorization of shutter, awning
Drives for gates, shop doors and garage doors	Installation wiring devices for electric power and communication networks (≤ 63 amperes)	Others	Motorization of shutter, awning, garage door, gate …	Motorization of garage door gate

6.2. Appendix 2: Reference standards used to define functional units

6.2.1. Reference standards

Brand regulations:
NF 202-Closing systems

NF 421-Garage doors for private houses

Standards:

EN 12453 + A1 : Industrial, commercial and garage doors and gates - Safety in use of power operated doors - Requirements and test methods

EN 13120: Internal blinds. Performance requirements, including safety

EN 60335-1: Household electrical and similar appliances – Safety

EN 50564 : Electrical and electronic household and office equipment - Measurement of low power consumption.

6.2.2. Endurance category references

Original extract from NF 202 - Closing systems - Technical Document 1 - Page 12/14

Complément aux Règles de certification NF-Fermetures (NF 202) 12/14
Document technique 1 : FERMETURES – Normes et Spécifications complémentaires (Révision n° 03)

3.4.2 Endurance mécanique (E*) : 3 classes

Essais de qualification et de suivi

E^*_2	7 000 cycles de repliement / déploiement
E^*_3	10 000 cycles de repliement / déploiement
E^*_4	14 000 cycles de repliement / déploiement

Original extract from NF EN 13120 - Interior blinds

Complément aux Règles de certification NF-Fermetures (NF 202) 12/14
Document technique 1 : FERMETURES – Normes et Spécifications complémentaires (Révision n° 03)

3.4.2 Endurance mécanique (E*) : 3 classes

Essais de qualification et de suivi

E^*_2	7 000 cycles de repliement / déploiement
E^*_3	10 000 cycles de repliement / déploiement
E^*_4	14 000 cycles de repliement / déploiement

Original extract from NF 421 - Garage door for private house

3.3.2 Endurance mécanique (E)

L'endurance mécanique qualifie la durée de vie du produit complet face aux sollicitations mécaniques répétées (ouverture/fermeture). La tenue de chaque pièce dépend de sa performance propre mais aussi de celle de l'ensemble dont elle fait partie.

Les temporisations en fermetures et ouvertures seront appliquées. En l'absence d'exigences spécifiques du demandeur, elles seront par défaut de 1 minute.

Au cours de l'essai d'endurance, les spécifications du demandeur seront appliquées comme celles décrites dans la notice d'utilisation du fabricant avec accord du comité.

Classement :

Classe	Nombre de cycles	Spécification
E_1	10000	
E_2	20000	
E_3	30000	

Original extract from NF P25-362: Closing systems for open bays and gates.

6.2 Parcours de référence horaire garanti

Le tableau 4 définit des valeurs de parcours de référence horaire garanti (exprimé en mètres) associées à six classes d´utilisation, ou limites de fonctionnement des fermetures, moyennant un entretien normal comportant le changement des pièces d´usure et de sécurité préconisé par le constructeur.

Tableau 4 : parcours de référence horaire garanti en fonction d´une classe d´utilisation pour fermetures pour baies libres fonctionnant en atmosphère normale

Classes d'utilisation	Nombre de cycles par jour	Nombre de cycles par an	Parcours de référence horaire garanti (m)
1	≤ 6	≤ 2 400	16
2	≤ 16	≤ 6 400	75
3	≤ 40	≤ 16 000	100
4	≤ 100	≤ 40 000	150
5	≤ 250	≤ 100 000	200
6	≤ 630	≤ 252 000	250

Il appartient au maître d´ouvrage ou à son mandataire de préciser la classe d´utilisation envisagée.

Dans le cas de portes automatiques ou semi-automatiques de garage la détermination de la classe de trafic est facilitée par la considération suivante :

« Il est généralement admis, en première approximation, que le nombre de cycles par jour est le double de la capacité d´un parking lorsque celui-ci est équipé d´une seule porte, et est égal à la capacité du parking quand celui-ci est équipé de deux portes (une entrée et une sortie)».

Les classes suivantes sont recommandées :

- ensembles collectifs : classe 2 - 4 - 5,
- maisons individuelles : classe 1.

6.3. Appendix 3: Glossary

LCA	Life Cycle Assessment
RSL	Reference service life
IEC	International Electrotechnical Commission
IGNES	Industrie du Génie Numérique, Energétique et Sécuritaire
PCR	Product Category Rules
PEP	Product Environmental Profile
PSR	Product Specific Rules
RPM	Revolutions per minute
FU	Functional Unit

6.4. Appendix 4: Definitions

There are currently no specific definitions for PSR 0006

6.5. Appendix 5: References

ADEME - Methodological guidance for the environmental assessment of digital services – July 2021

ADEME - Household Packaging Report 2020 data p28 - https://librairie.ademe.fr/dechets-economie-circulaire/28-dechets-chiffres-cles-edition-2020-9791029712135.html#:~:text=Cette%20nouvelle%20%C3%A9dition%202020%20des,de%20graphes%2C%20cartes%20et%20tableaux.

ADEME - Household Waste Report 2020 key figures p15 - https://librairie.ademe.fr/dechets-economie-circulaire/28-dechets-chiffres-cles-edition-2020-9791029712135.html#:~:text=Cette%20nouvelle%20%C3%A9dition%202020%20des,de%20graphes%2C%20cartes%20et%20tableaux.

Citeo - Report on key household waste sorting and recycling figures in 2020 - https://www.citeo.com/le-mag/les-chiffres-du-recyclage-en-france#materiaux

ADEME - Methodological guidance for the environmental assessment of digital services – July 2021

6.6. Appendix 6: Declaration of conformity

Solinnen

Solutions innovantes pour l'environnement

PROGRAMME PEP Ecopassport

Attestation de revue-critique des règles spécifiques aux Produits de motorisation des stores et fermetures des bâtiments

Document revu : PSR, Règles spécifiques aux produits de motorisation des stores et fermetures des bâtiments

Version et date : PSR-0006-ed2.0-FR-2023 v2.0 du 17 avril 2023

Établi par : l'Industrie du Génie Numérique, Énergétique et Sécuritaire

L'Industrie du Génie Numérique, Énergétique et Sécuritaire (IGNES) a demandé à Solinnen, en tant que bureau d'études spécialisé en Analyse du Cycle de Vie (ACV), la revue critique des règles spécifiques aux Produits de motorisation des stores et fermetures des bâtiments.

Référentiels

L'objectif de la revue critique est de vérifier la conformité de ce document avec les référentiels suivants :

- le Programme PEP ecopassport, il s'agit du document intitulé : « PCR Règles de définition des catégories de produits relatives aux équipements électriques, électroniques et de génie climatique », dont la référence est : « PCR-ed4-FR-2021 09 06 » disponible à l'adresse : https://register.pep-ecopassport.org/documents;
- la norme NF EN ISO 14025:2010;
- les normes NF EN ISO 14040:2006 & NF EN ISO 14044:2006.

Conclusion

Le PSR revu ne comporte pas de non-conformité par rapport aux référentiels. Par conséquent, ce document – PSR, Règles spécifiques aux produits de motorisation des stores et fermetures des bâtiments – est conforme aux exigences des référentiels.

Le 17 avril 2023

Philippe Osset
Président de Solinnen

Solinnen, société par action simplifiée au capital de 79 721,00 Euros
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Déclaration d'activité comme prestataire de formation enregistrée sous le numéro 11 75 47228 75 auprès du préfet de région d'Ile-de-France et référençable dans Datadock. Cet enregistrement ne vaut pas agrément de l'Etat