



PEP ecopassport® PROGRAMME

PSR

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

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1. Introduction

This reference document complements and explains the Product Environmental Profile (PEP) Drafting Rules defined by the PEP ecopassport® program (PEP-PCR ed.3-EN-2015 04 02), available at www.pep-ecopassport.org).

It defines the additional requirements applicable to drives for blinds and closures installed in buildings. These requirements must be satisfied in order to:

- Qualify the environmental performance of these products 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 stakeholders and professionals in the drives for blinds and closures installed in buildings market.

	www.pep-ecopassport.org
PSR reference	PSR-0006-ed1.1-EN-2015 09 15
Critical review	The third-party critical review was carried out by Solinnen SAS. The certificate of compliance published on 12/02/2013 is shown in Appendix 2
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 certificate of compliance remain valid within 5 years or until the PEP Drafting Rules, or the normative reference texts to which they refer, are modified.

Following the publication of the PCR Edition 3 (PEP-PCR-ed 3-EN- 2015 04 02), this PSR was the subject of an impact analysis in April 2015², which led to an editorial revision.

¹ ISO 14025, ISO 14040 and ISO 14044 standards

² Document available from the PEP Association on request contact@pep-ecopassport.org

2. Scope

In accordance with the General Instructions of the PEP Ecopassport® program (PEP-General Instructions-ed 3.1-EN-2015 04 02) and in addition to the PCR, Product Category Rules (PEP-PCR ed.3-EN-2015 04 02) of the PEP Ecopassport® eco-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 life time taken into account for the Life Cycle Assessment (LCA),
- the conventional use scenarios to be adopted during the product use stage.

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.

The present specific rules cover the following types of systems:

Drives for blinds and closures installed on bay windows

External roller closures

Roller shutters

External Venetian blinds

Vertical blinds

Awnings

Swing shutters

Interior blinds

Drives for gates, shop doors and garage doors

Drives intended for private houses

Sliding gates for private houses

Swing gates for private houses

Garage doors for private houses

Drives intended for collective residential buildings

Sliding gates for collective residential buildings

Swing gates for collective residential buildings

Garage doors for collective residential buildings

3. Functional unit and reference flow

3.1. Drives for blinds and closures installed on bay windows

Drives for blinds and closures installed on bay windows concern:

- External roller closing systems (roller shutters, external Venetian blinds, external vertical blinds and awnings)
- Swing shutters
- Interior blinds (Venetian, roller, vertical, pleated in accordance with the terminology of EN 12 216),
- Internal horizontal blinds

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 adapter, 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, 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 average packaging and sales.

3.1.1. External roller closing systems

3.1.1.1. Roller shutters

“Ensure the closing and opening action by performing 14 000 operating cycles, on a reference service life of 15years, with a torque of X Nm, on a length of 2 meters, corresponding to 6 winding turns per half-cycle, with a tube diameter of 60 mm”.

For information:

- *X: considering a torque of around 10 Nm is recommended, in order to facilitate PEP Ecopassport comparisons.*
- *One operating cycle corresponds to one complete opening and closing action.*
- *This use corresponds to a mean activity of 2.56 cycles per day.*
- *The specified torque corresponds to an external roller closing system, with a mass between 11 and 18 kg.*

3.1.1.2. External Venetian blinds

“Ensure the closing action by performing 14 000 operating cycles, on a reference service life of 15 years, with a torque of Y Nm, on a length of 2 metres, corresponding to 13 winding turns per half-cycle, with a pulley diameter of 25 mm. If an external Venetian blind performs orientations, then the number of orientation cycles is 28 000.”

For information:

- *Y : considering a torque of around 6 Nm is recommended, in order to facilitate PEP Ecopassport comparisons.*
- *One operating cycle corresponds to one complete opening and closing action.*
- *This use corresponds to a mean activity of 2.56 cycles per day.*

3.1.1.3. Vertical blinds

“Ensure the closing and opening action by performing 14 000 operating cycles, on a reference service life of 15 years, with a torque of Z Nm, on a length of 2 meters, corresponding to 13 winding turns per half-cycle, with a tube diameter of 25 mm”.

For information:

- *Z : considering a torque of around 6 Nm is recommended, in order to facilitate PEP Ecopassport comparisons.*
- *One operating cycle corresponds to one complete opening and closing action.*
- *This use corresponds to a mean activity of 2.56 cycles per day.*
- *The specified torque corresponds to an external vertical blind of 2 m wide by 2.5 m high, with a mass of 3 kg.*

3.1.1.4. Awnings

“Ensure the closing and opening action by performing 14 000 operating cycles, on a reference service life of 15 years, with a torque of α Nm, on a projection of 3 meters, corresponding to 6 winding turns per half-cycle, with a tube diameter of 78 mm”.

For information:

- *α : torque of around 35 Nm is recommended, in order to facilitate PEP Ecopassport® comparisons.*
- *One operating cycle corresponds to one complete opening and closing action.*
- *This use corresponds to a mean activity of 2.56 cycles per day.*

3.1.2. Swing shutters

“Ensure the closing and opening action by performing 14 000 operating cycles, on a reference service life of 15 years, for any type of swing shutter with a mass of β kg per panel and a total width of 1.20 m, on an angle of 180°”.

For information:

- β : mass of around 20 kg per panel is recommended, in order to facilitate PEP Ecopassport® comparisons.
- One operating cycle corresponds to one complete opening and closing action.
- This use corresponds to a mean activity of 2.56 cycles per day.

3.1.3. Internal blinds

“Ensure the closing action by performing 10 000 operating cycles, on a reference service life of 15 years, with a torque of γ Nm, on a length of 2 meters, corresponding to 14 winding turns per half-cycle, with a pulley diameter of 22 mm. If the internal blind performs orientations, then the number of orientation cycles is 20 000.”

For information:

- γ : a torque of around 0.8 Nm is recommended, in order to facilitate PEP Ecopassport® comparisons.
- One operating cycle corresponds to one complete opening and closing action.
- This use corresponds to a mean activity of 1.82 fold/unfold cycles per day + 3.65 orientation cycles per day.

3.2. Drives for gates, shop doors and garage doors

Drives for gates, shop doors and garage doors concern:

- Sliding gates
- Pivoting gates (with arms, screw or underground drive)
- Doors (sectional, overhead, sliding, folding, hinged or roller)

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, bulb, etc.) required for the operation of these accessories (remote control, orange light, etc.),
- marking labels, packaging and documentation, computed based on average packaging and sales.

3.2.1. Drives intended for private houses

3.2.1.1. Sliding gates for private houses

“Ensure the closing and opening action by performing 30 000 operating cycles, on a reference service life of 15 years, on any type of sliding gate with a mass of ϵ kg, on a length of 3 meters”.

For information:

- ϵ : a mass of around 500 kg is recommended, in order to facilitate PEP Ecopassport comparisons.
- One operating cycle corresponds to one complete opening and closing action.
- This use corresponds to a mean activity of 5.48 cycles per day.

3.2.1.2. Swing gates for private houses

“Ensure the closing and opening action by performing 30 000 operating cycles, on a reference service life of 15 years, on any type of swing gate with a mass of ζ kg per panel, on an angle of 90°”.

For information:

- ζ : a mass of around 300 kg is recommended, in order to facilitate PEP Ecopassport comparisons.
- One operating cycle corresponds to one complete opening and closing action.
- This use corresponds to a mean activity of 5.48 cycles per day.

3.2.1.3. Garage doors for private houses

“Ensure the closing and opening action by performing 30 000 operating cycles, on a reference service life of 15 years, on any type of garage door, with a traction force of η daN, on a length of 2 meters”.

For information:

- η : a traction force of around 100 daN is recommended, in order to facilitate PEP Ecopassport® comparisons.
- One operating cycle corresponds to one complete opening and closing action.
- This use corresponds to a mean activity of 5.48 cycles per day.

3.2.2. Drives intended for collective residential buildings

3.2.2.1. Sliding gates for collective residential buildings

“Ensure the closing and opening action by performing 90 000 operating cycles, on a reference service life of 15 years, on any type of sliding gate with a mass of θ kg, on a length of 4 meters”.

For information:

- θ : a mass of around 500 kg is recommended, in order to facilitate PEP Ecopassport® comparisons.
- One operating cycle corresponds to one complete opening and closing action.
- This use corresponds to a mean activity of 16 cycles per day.

3.2.2.2. Swing gates for collective residential buildings

“Ensure the closing and opening action by performing 90 000 operating cycles, on a reference service life of 15 years, on any type of swing gate with a mass of λ kg, on an angle of 90°”.

For information:

- λ : a mass of around 300 kg is recommended, in order to facilitate PEP Ecopassport® comparisons.
- One operating cycle corresponds to one complete opening and closing action.
- This use corresponds to a mean activity of 16 cycles per day.

3.2.2.3. Garage doors for collective residential buildings

“Ensure the closing and opening action by performing 90 000 operating cycles, on a reference service life of 15 years, on any type of garage door, with a traction force of ϕ daN, on a length of 2 meters”.

For information:

- ϕ : a torque of around 200 daN is recommended, in order to facilitate PEP Ecopassport® comparisons.
- One operating cycle corresponds to one complete opening and closing action.
- This use corresponds to a mean activity of 16 cycles per day.

3.3. Overview of functional unit

This section presents an overview of the respective functional unit characteristics.

	Operating cycles	Reference Service Life	Length or angle	Approximate torque [Nm] or traction force [daN]	Mass [kg]	Section describing FU
External roller closing systems						
Roller shutters	14000	15 years	2m	10 Nm		3.1.1.1
External venetian blinds	14000	15 years	2m	6 Nm		3.1.1.2
Vertical blinds	14000	15 years	2m	6 Nm		3.1.1.3
Awnings	14000	15 years	3m	35 Nm		3.1.1.4
Hinged shutters	14000	15 years	180°		20 kg/panel	3.1.2.
Internal vertical blinds	10000	15 years	2m	0.8 Nm		3.1.3
Drives for gates, shop doors and garage doors						
Residential private house						
Sliding gates	30000	15 years	3m		500 kg	3.2.1.1.
Pivoting gates	30000	15 years	90°		300 kg/panel	3.2.1.2.
Garage doors	30000	15 years	2m	100 daN		3.2.1.3.
Collective residential building						
Sliding gates	90000	15 years	4m		500 kg	3.2.2.1.
Pivoting gates	90000	15 years	90°		300 kg/panel	3.2.2.2.
Garage doors	90000	15 years	2m	200 daN		3.2.2.3.

4. Development of scenarios

4.1. Manufacturing stage

For this stage, the rules defined in the Product Category Rules within the PEP Ecopassport® Program (PEP-PCR-ed 3-EN-2015-04 02) shall be applicable.

In particular, when a package is marketed, the consumables (batteries, bulb, etc.) supplied in the package must be counted in the manufacturing stage.

4.2. Distribution stage

For this stage, the rules defined in the Product Category Rules within the PEP Ecopassport® Program (PEP-PCR-ed 3-EN-2015-04 02) shall be applicable.

4.3. Installation stage

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

4.4. Use stage

The use stage of the drives for blinds and closures installed in buildings covers two phases:

- Motion phase of drive
- Standby phase

Manufacturers should thus specify the ratios of each of these stages (in %), on each PEP ecopassport. The ratios are computed using the following equations:

$$\frac{\text{No. of operating cycles per year} \times \text{time of 1 operating cycle}}{365 \times 24 \times 60} = \text{Motion ratio [\%]}$$

$$(1 - \text{Motion ratio [\%]}) = \text{Standby ratio [\%]}$$

The only variable is the operating cycle time. This value should preferably be determined by laboratory tests that are presented in the LCA report. If no such tests are conducted, the value could be computed theoretically and, in this case, computing details should be presented in the LCA report.

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

Consumption during the standby phase is measured in compliance with the test conditions defined by the international standard CEI ICE 62301: Household electrical appliances - Measurement of standby power

Moreover, when a package is marketed, the manufacture, distribution, and end of life of replacement consumables (batteries, bulbs, etc.) required for the operation of the accessories (remote control, orange light, etc.) during the reference service life of the drive must be counted in the use stage.

4.5. End of life cycle stage

For this stage, the rules defined in the Product Category Rules within the PEP Ecopassport® Program (PEP-PCR-ed 3-EN-2015-04 02) shall be applicable.

5. PEP update rules

When a drive for closures installed in buildings, with a registered PEP, is subject to one or more technological changes, the PEP issuing company should conduct a sensitivity analysis. A new registration is necessary if any impact varies significantly.

6. Appendices

6.1. Appendix 1: Reference standards used to define functional units

6.1.1. Reference standards

Brand regulations:

NF 202-Closing systems

NF 421-Garage doors for private houses

Standards:

NF P25-362: Closing systems for open bays and gates. Technical specifications - Safety requirements

NF EN 13120: Internal blinds. Performance requirements, including safety

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

IEC ICE 62301: Household electrical appliances - Measurement of standby power

6.1.2. Endurance category references

Translation of the original extract from NF 202 - Closing systems - Technical Document 1 - Page 12/14

Supplement to NF certification requirements-Closing systems (NF 202)	12/14
Technical document 1 : CLOSING SYSTEMS - Standards and supplementary specifications (Revision 03)	
<hr/>	
3.4.2. Mechanical endurance (E*) : 3 classes	
Qualification and monitoring tests	
E* ₂ 7 000 folding / unfolding cycles	
E* ₃ 10 000 folding / unfolding cycles	
E* ₄ 14 000 folding / unfolding cycles	

7.4 Endurance categories

Table 4 shows the number of cycles for the three endurance categories specified

Table 4 — Endurance category

Number of cycles	Category 1	Category 2	Category 3
Folding / unfolding	2 000	5 000	10 000
Orientation	4 000	10 000	20 000

3.3.2 Mechanical endurance (E)

Mechanical endurance qualifies the life cycle of the complete system when subjected to repeated mechanical operation (opening / closing). The endurance of each part depends on its own performance and also on that of the assembly of which it is a component.

The opening and closing timer systems are also applied. If no requirements are specified, a time of 1 minute will be applied by default.

During the endurance test, the specifications defined by the requesting authority are applied, together with those defined in the manufacturer's user manual, with the approval of the committee.

Category:

Category	Number of cycles	Specification
E ₁	10000	
E ₂	20000	
E ₃	30000	

Translation of the original extract from NF P25-362: Closing systems for open bays and gates.

6.2 Guaranteed reference travel per hour

Table 4 defines the values for the guaranteed reference travel per hour (expressed in metres), for the six utilisation categories, or closing system operating limits with normal servicing, including the replacement of parts subject to wear, and safety parts, as recommended by the manufacturer.

Table 4: Guaranteed reference travel per hour as a function of utilisation category for open bays operating in normal ambient conditions

Utilisation category	Number of cycles per day	Number of cycles per year	Guaranteed reference travel per hour (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

The works coordinator or its appointed representative should specify the utilisation category adopted.

In the case of automatic or semi-automatic garage doors, defining the traffic category is facilitated by the following consideration:

"It is generally accepted, as an initial approximation, that the number of cycles per day is twice the capacity of a vehicle park, when the park only has one door, and is equal to the capacity of the park when the park has two doors (one entry and one exit)".

The following categories are recommended:

- collective garages: category 2 - 4 - 5,
- private house garages: category 1.

6.2. Appendix 2: critical review certificate

 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-ed1-FR-2013 02 12 du 12 février 2013

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 du PROGRAMME PEP ecopassport Profils Environnementaux de Produits Electriques, Electroniques et du Génie Climatique », dont la référence est : « PEP-PCR-ed 2.1-FR-2012 12 11 » disponible à l'adresse : <http://www.pep-ecopassport.org/creer-un-pep> ;
- la norme NF EN ISO 14025:2010 ;
- les normes NF EN ISO 14040:2006 & NF EN ISO 14044:2006.

Conclusion

Le document 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.

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