



Certification standard

Robot Vacuum and Mop

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8. Completeness of usage information
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I. GENERAL INFORMATION

Building on the EN 45550 series of standards, and in line with EN 45552 and EN 45554, the LONGTIME® product-group reference frameworks set out the requirements for assessing the robustness, reliability and repairability of the relevant product families.

The data used—whether qualitative, semi-quantitative or quantitative—derive from a structured research and consultation process that complies with applicable standards. They are grounded in scientific, regulatory and standardisation references, and incorporate input from a wide range of stakeholders: manufacturers, importers, distributors, suppliers, subcontractors, repairers, installers, professional testers, spare-parts stakeholders, refurbishers, consumers, consumer associations, environmental associations, as well as any expert able to provide added value.

LONGTIME® forms part of a wider societal momentum aimed at anticipating regulatory developments and supporting a profound transformation of production and consumption patterns. Conceived as a citizen-focused tool, the label guarantees that the certified product is designed for long-lasting use and remains economically repairable. It provides clear information for consumers concerned about the environmental impact of their purchases, while recognising manufacturers committed to optimising the service life of their products.

This approach responds to a growing expectation across society: to move away from a throwaway model and promote an economy based on sufficiency and durability. ADEME's work demonstrates the major environmental benefit of extending the period of use, at a time when global consumption of raw materials now exceeds 60 billion tonnes per year. By encouraging products designed to last and to be repaired, the label contributes to conserving resources, reducing waste and enabling more responsible consumption—without seeking “immortal” goods, but by combating artificially short lifespans.

The label applies to many product families provided they are based on the assembly of parts: household appliances, electronic products, power tools, furniture, leisure equipment and professional equipment. It nevertheless excludes certain complex technology sectors (automotive, aeronautics, etc.), as well as textile products (except leather goods), food products, cosmetics and chemical products.

Any standards or regulations cited in the framework refer to the most recent versions and/or to equivalent texts published in the Official Journal of the European Union.

II. STRUCTURE OF THE CERTIFICATION FRAMEWORK

Structure of the Certification Criteria

The criteria are divided into three main categories (reliability, maintainability and life cycle). In the standard, the criteria are presented as follows:

Criteria category
Criteria subcategory

1. Criterion number and title: Each cross-cutting criterion is identified by a number and a title corresponding to its thematic focus. In total, there are 38 criteria. Beneath the title and number is the specification of the cross-cutting criterion, which applies to all product categories.

T0 criterion or T1 criterion : A time marker is assigned to each criterion according to the following classification:

Criteria T0	These criteria must be met to qualify for certification after the initial audit (year N).
Criteria T1	Criteria must be met at a minimum level of 70% during the initial audit (year N). Any criteria assessed as “non-compliant” will require the implementation of corrective actions in order to mandatorily reach 100% compliance in year N+1.

In addition to the cross-cutting criterion, sub-criteria may be included, indicated by a small blue diamond:

- ❖ **Specification or Product-Specific Requirement (PSR):** A specific criterion whose scope is tailored to the product category covered by the framework.

Mandatory and Complementary PSR

Mandatory PSR covers requirements that are central to the durability assessment of the product, including structural reliability, fundamental repairability, spare parts availability, regulatory compliance, and the effective possibility of long-term use. Mandatory PSR are not subject to any specific visual indication in this standard and are presented as standard criteria in the framework.

Complementary PSR cover requirements that support the overall durability approach but are less directly related to the core robustness, repairability or long-term usability of the product, such as secondary information, ergonomic aspects, peripheral environmental improvements, or emerging requirements for which market feedback is still limited. Complementary PSR are identified by the mention “**Complementary**”, displayed in blue next to the relevant criterion.

To qualify for certification, **the product shall comply with 100% of Mandatory PSR and at least 80% of applicable Complementary PSR.** The number of Complementary PSR

always remains limited and doesn't exceed half the number of Mandatory PSR, in order to preserve the robustness and discriminating nature of the certification framework.

The Mandatory/Complementary classification applies only to Product-Specific Requirements (PSR), whereas the T0/T1 classification applies only to the 38 cross-cutting criteria. Non-compliance with up to 20% of applicable Complementary PSRs is assessed as an absolute tolerance and is not linked to any corrective-action timeframe.

Methods of proof

Operational-type evidence: See definition

Commitment- and process-type evidence: See definition

The types of evidence are classified into four expectation levels by the inspection body.

- **Mandatory:** Evidence that must systematically be provided to the inspection body.
- **Priority:** Evidence expected as a first priority by the inspection body. It constitutes the preferred means of justification compared with secondary evidence.
- **Secondary:** Substitute evidence accepted when priority evidence cannot be provided. Its use may lead the inspection body to examine the criterion in greater detail and to request additional information.
- **Not applicable:** Used when operational-type or commitment- and process-type evidence is not relevant to demonstrating compliance with a criterion.

A set of documents and administrative procedures is used to establish evidence of compliance with the various criteria of the framework. These evidence methods may be cross-cutting, applying to several criteria, or specific to a single criterion. They are systematically detailed under each criterion and sub-criterion and consist of two types of evidence:

1. Operational-type evidence:

Operational evidence is factual, dated and traceable material demonstrating that the company effectively applies its commitments and processes to meet a criterion of the framework. It attests to actual implementation (for a given product, period, batch or version) and enables an auditor to verify compliance based on activity records and/or measured results. Operational evidence is considered more robust and acceptable when it is attributable (product/version/scope), understandable (explicit methods and indicators) and verifiable (identifiable source, consistency and integrity).

They may include in particular:

- Qualification phases and tests.
- Performance and endurance tests.

- Field records (completed checklists/work instructions, signed inspections, test reports).
- Production control records and final test results related to batches or series (demonstrating day-to-day application of the system).
- Test reports or test data (testing, reliability, audits, periodic reviews).
- Audit reports including findings, non-conformities, action plans and associated evidence of closure.
- System extracts (failure statistics, after-sales/CRM/ERP data: tickets, histories, KPIs, lead times, stock levels).
- Evidence of access or availability (time-stamped screenshots, active URLs, communication media).
- Visual evidence (photographs, dismantling or maintenance videos) where relevant.
- Visual inspection by a mandated third-party auditor during an on-site audit.
- Documentation made available to interested parties (maintenance plans, user instructions, maintenance manuals, etc.).

2. Commitment- and process-type evidence

These evidence methods include the framework documents demonstrating that the company has a structured system in place to meet the requirements of the framework, as well as the formal commitments it makes (internal and/or external). They cover both the steering and control of activities (governance, responsibilities, methods, control criteria, indicators, risk management), and binding and verifiable commitments (warranties, policies, certifications, service agreements).

They may include in particular:

- Type documentation (technical documentation) and associated regulatory information, registered in the European Commission's EPREL database pursuant to Article 12(5) of Regulation (EU) 2017/1369.
- Evidence demonstrating control of production quality by the manufacturer (inspection procedures, traceability, quality assurance, Module D/E where applicable).
- Functional analysis tools.
- Design studies (operation, materials, constraints of use).
- Technical data sheets specifying components, materials, coatings, and internal or supplier processes.
- Quality management manual (or equivalent documentation).
- Quality management processes for the service or supply chain (e.g. qualification/validation, non-conformity management, CAPA, quality control, traceability, document management).
- Control methods and plans (acceptance criteria, thresholds, frequencies, sampling rules).
- Formalised company commitments (e.g. manufacturer's warranty, ISO certification, after-sales service charter, commitments on spare parts or software update availability).
- Quality certifications and Type 1 or Type 2 labels (ISO 9001, ISO 14001).
- General terms and conditions of sale.

Control system

The assessment of compliance with the criteria of the LONGTIME® framework is carried out exclusively by an approved and independent inspection body. Audits are conducted by qualified auditors who are trained in the LONGTIME® programme, ensuring a rigorous, impartial and transparent verification process.

The label owner, Ethikis ad Civis, is responsible for the governance of the programme (definition and updating of the frameworks, coordination of technical work, brand management, etc.). Ethikis does not intervene at any stage in the conduct of audits, nor in the decision to award or refuse the label.

The certification decision falls exclusively within the competence and responsibility of the independent inspection body, based on the audit results and in accordance with the impartiality requirements applicable to certification schemes.

Each criterion is assessed using a compliant / non-compliant approach.

Further details on the inspection system and the labelling process are available at the following link: <https://www.longtimelabel.com/conditionslongtime>

III. PRODUCT SCOPE DEFINITION

This standard applies to autonomous household robotic appliances primarily intended for cleaning indoor floors.

These battery-powered appliances move autonomously by means of motorised drive and navigate using an onboard sensor system (obstacle, cliff and contact detection), which may include a bumper and, depending on the model, environmental mapping based on LiDAR, camera and/or odometry, enabling localisation, obstacle avoidance and automatic return to the docking station.

Cleaning is performed through the controlled application of water or detergent solution combined with mechanical action, provided—depending on the design—by one or more cleaning pads (static, oscillating/vibrating or rotating) or by a microfibre cleaning roller module. The system typically comprises a clean water tank, located either on the robot or within the docking station depending on the configuration, a distribution circuit (pump/solenoid valve and hydraulic connections), a dirty water recovery system feeding a dirty water tank, and sealing components.

Depending on the model, the robot may incorporate a dry debris vacuuming function (suction motor assembly, brushes, dry debris container and filtration system), operating either simultaneously with the wet cleaning function or independently, without wet cleaning.

The appliance is used in conjunction with a docking station providing either battery charging only or automated maintenance functions, such as automatic emptying, cleaning of the cleaning elements, water tank management and drying.

Product scope

- Household autonomous robot washer for indoor hard floors, without a vacuuming function, equipped with cleaning pad(s) (static, oscillating/vibrating or rotating) or a cleaning roller module.
- Household autonomous robot washer for indoor hard floors, with a vacuuming function (combo), equipped with cleaning pad(s) (static, oscillating/vibrating or rotating) or a cleaning roller module.
- Robot washer or robot vacuum washer used with a charging dock (charging function only).
- Robot washer or robot vacuum washer used with an advanced docking station providing automated functions (dust and/or dirty water emptying, cleaning of the pads/roller, clean and dirty water management, water heating and tool drying with ambient air or heated air).
- Household autonomous robot vacuum cleaner without a wet cleaning function.

Outside product scope

- Household autonomous robot washer for indoor hard floors using a manually moistened pad/cloth.
- Corded or non-autonomous floor cleaning appliance (hard floor cleaner, carpet cleaner/extractor, single-disc machine, walk-behind scrubber dryer).
- Autonomous robot washer intended for other operating environments (pool cleaning robot, window cleaning robot, outdoor cleaning robot).
- Professional or industrial robot washer (commercial applications, high-capacity robotic scrubber dryer).

In the rest of the standard, the term "**household autonomous robot washer**" is replaced by "**robot washer**".

Boundaries of the product system

This section specifies the boundaries of the product system under consideration and defines which elements associated with the product are included in the assessment and which are not.

This section is not intended to provide an exhaustive list of the components of the product being assessed. Its purpose is solely to identify equipment, accessories, or peripheral elements whose inclusion in the assessment scope may be open to interpretation, and to specify whether they are included in or excluded from the analysis.

The analysis covers components or accessories supplied with the product that are necessary for its normal operation, the failure of which could compromise its use or durability.

This excludes generic, external or easily replaceable components, such as standard cables or optional accessories, which have no direct impact on the product's reliability or performance.

Product-related item	Included	Explanation
Docking station supplied with the robot	Yes	Considered part of the product system, whether it provides charging only or additional automated maintenance functions.
Functional modules integrated into the robot or docking station	Yes	Includes navigation, locomotion, washing, vacuuming where applicable, battery, electrical/electronic, hydraulic and automated maintenance systems identified in the nomenclature.
Wear, consumable and maintenance parts identified in the nomenclature	Yes	These parts contribute directly to normal product operation even though periodic maintenance or replacement may be expected.
Embedded software and firmware	Yes	Necessary for the operation and continued functionality of the robot and, where applicable, the docking station.
Manufacturer application and associated digital services	Yes	Included (if applicable) where they are necessary for essential configuration, operation, diagnosis, maintenance or software support functions.
Rechargeable battery pack and Battery Management System (BMS)	Yes	Essential to the autonomous operation of the robot. Battery degradation or failure directly affects operating time, mobility, cleaning performance and the ability to return to the docking station.
Power supply unit / charger / external transformer supplied with the product	Yes	Dedicated component necessary for charging and normal operation of the robot or docking station. Its failure may prevent the product from being used.
Detergent / cleaning solution	No	Consumable substance rather than a product component.
Dust bags or equivalent disposable collection media	No	Disposable consumable used during normal operation; not considered a durable component of the product system.
Optional water supply/drainage installation kit	No	(Unless supplied as part of the assessed configuration) External installation accessory where the product can normally operate without it using removable water tanks.

Product-related item	Included	Explanation
Smartphone, tablet or computer	No	Generic external equipment used to access connected functions.

Impact of the durability of the Robot Vacuum and Mop

Within the [functional unit](#) of "providing autonomous wet cleaning of indoor hard floors for 2,080 hours, corresponding to five one-hour cleaning tasks per week over eight years", the robot washer delivers a mechanised cleaning service combining autonomous movement, controlled water application, mechanical cleaning action and automatic return to the docking station. This functional unit should be adapted where the actual cleaned surface area varies significantly, for example by expressing the results in terms of cumulative square metres cleaned. As life cycle assessment (LCA) data specific to robot washers remain limited, the analysis is based on a cautious analogy with motorised and electronic household appliances.

Manufacturing primarily requires engineering plastics, metals, electric motors, pumps or solenoid valves, sensors, electronic boards, lithium-ion batteries, tanks, seals and, depending on the model, an advanced docking station. The expected environmental impacts mainly relate to climate change, cumulative energy demand, depletion of mineral and fossil resources, respiratory effects and acidification, with electronic components, the battery, electric motors and injection-moulded plastic parts likely to make a significant contribution. Distribution may also contribute to the overall impacts, particularly for models supplied with an advanced docking station, whose greater mass, packaged volume and accessories increase transport and packaging requirements.

The use phase is also a significant contributor. It includes the electricity required for cleaning cycles, battery charging, standby operation and docking station functions, together with water, detergent solution where applicable and maintenance consumables. For advanced docking stations, pad or roller washing, dirty water management, water heating and drying functions may significantly increase use-phase impacts. The environmental benefit of a more durable robot therefore also depends on its energy efficiency, standby power consumption, water and detergent efficiency, and the electricity mix used.

Extending the product's service life spreads the fixed manufacturing impacts over a greater number of cleaning hours. This effect is particularly relevant for equipment incorporating a battery, electronics, electric motors and, where applicable, a docking station, since a substantial proportion of the environmental impacts is incurred during manufacturing. However, this assumes that the product maintains an adequate level of performance throughout its extended service life, particularly with regard to battery runtime, cleaning effectiveness and the consumption of electricity, water and consumables.

At the end of its life, the robot falls within the scope of Waste Electrical and Electronic Equipment (WEEE) collection and treatment schemes. The ability to separate the battery, electronic boards, metals, plastics, tanks and docking station components determines the

potential for material recovery. Recycling can provide significant environmental benefits for certain metals, although these benefits remain more limited for miniaturised assemblies, mixed plastics and complex electronic components.

Given the technological maturity of batteries and heating systems, there appears to be no robust justification for the premature replacement of a robot washer in the coming years.

IV. NOMENCLATURE OF PARTS

This chapter details a typical nomenclature, representative of the target product group but not exhaustive. The various parts present in the BOM will then be prioritized by type of part.

- **Robot body assembly**
 - Chassis
 - Housing, covers and body panels (top, side and bottom)
 - Bumper
 - Access flaps and maintenance covers
 - On-board user interface (buttons, indicator lights and status indicators)
 - Speaker, buzzer
- **Navigation, detection and localisation assembly**
 - Cliff sensor(s)
 - Obstacle sensor(s)
 - Contact sensor(s)
 - Wall-following sensor(s)
 - Docking station return sensor(s)
 - LiDAR module
 - Navigation / object recognition camera (where applicable)
 - Wheel encoder(s)
 - Inertial Measurement Unit (IMU) (gyroscope, accelerometer)
 - Dirt or surface detection sensor(s) (where applicable)
- **Electrical and electronic assembly**
 - Electronic boards or modules for the robot or docking station (power supply, control and display)
 - Navigation electronic board(s) or module(s)
 - Communication module (Wi-Fi, Bluetooth, IoT)
 - Electrical or thermal protection device
 - Electrical wiring harness(es), ribbon cables and connectors
 - Internal power and signal wiring
- **Robot locomotion and drive assembly**
 - Caster wheel (omnidirectional wheel)
 - Drive wheel module(s) (motor and transmission)
 - Drive wheels (wheel and tyre)
 - Wheel suspension(s) (spring, arm and support)
 - Washing module lifting system

‣ **Washing assembly**

- Water tanks (clean water and dirty water)
- Detergent tank
- Liquid tank closure component(s)
- Valve(s), non-return valve(s) or liquid tank dispensing component(s)
- Liquid presence or level sensor(s)
- Liquid circuit filter(s) and strainer(s)
- Water distribution pump(s)
- Solenoid valve(s)
- Hydraulic connections (pipes and hoses)
- Spray system (nozzles and spray bars)
- Heating module
- Water temperature management (temperature sensor / thermostat)
- Dirty water duct
- Debris separator (strainer)
- Textile/microfibre cleaning pad(s)
- Cleaning pad plate(s) or holder(s)
- Cleaning pad drive motor(s) (oscillation, vibration or rotation)
- Cleaning roller drive motor(s)
- Cleaning roller(s) (textile or microfibre)
- Squeegees (wiper seals, squeegees, scraper blades)
- Washing module lifting system (where applicable)
- Cleaning element access and retention system

‣ **Dry debris vacuuming assembly (where applicable)**

- Suction motor assembly
- Suction duct(s)
- Dry debris collection roller(s)
- Dry debris collection roller drive motor(s)
- Side brush(es)
- Side brush motor(s)
- Dry debris container
- Dust container access flap(s) and opening mechanism(s)
- Suction motor inlet filtration (pre-filter, fine filter, HEPA filter or equivalent)

‣ **Battery assembly**

- Battery cell pack(s)
- Battery Management System (BMS) board
- On-board charging device
- Charging contacts

‣ **Docking station and maintenance assembly**

- Docking station housing, covers and outer panels
- Docking station base
- Docking ramps and guide rails
- Docking station charging contacts
- Robot presence sensor(s)
- Docking station dust container
- Dry debris transfer system to the docking station

- Docking station tank level sensor(s)
- Docking station clean water tank
- Water heating module
- Docking station dirty water tank
- Detergent tank
- Docking station tank closure component(s)
- Docking station pump(s)
- Docking station solenoid valve(s)
- Docking station hydraulic connections
- Air heating module
- Drying fan assembly
- Hot air duct
- Power supply unit / charger
- Cleaning tray, basin or washing area for the cleaning pads/roller
- **Sealing and mechanical fastening assembly**
 - Sealing components (O-rings, lip seals, membranes, silicone seals, etc.)
 - Fastening components (screws, clips, bolts, circlips, washers, etc.)
 - Stabilisation components (springs, spacers, rubber mounts, bearings, etc.)
 - Sliding, guide rail and linear guidance mechanisms

V. PRIORITIZATION BY PARTY CATEGORY

The product parts are divided into two main categories: functional parts and priority parts.

- Functional parts are not targeted by the criteria of the framework and are listed for information purposes only.
- Only priority parts, comprising critical, vulnerable and consumable parts involved in the failure scenarios of the product family, are subject to requirements under the criteria of the framework.

Product functions, components involved and priority areas

Functional analysis enables the identification and structuring of a product's various functions in order to assess their importance for its usability and durability, and to identify the priority components. The following are generally distinguished:

- Primary functions: those that are essential to the product's core functionality and whose failure renders the product unusable.
- Secondary functions: those that complement or facilitate the use of the product, but whose failure does not prevent it from performing its basic functions.
- Tertiary functions: those that enhance comfort, ergonomics or the user experience, but whose failure has little impact on overall performance.

A priority part is a component involved in a primary function of the product; its failure generally has a significant impact on usability and occurs with relative frequency, making it a critical factor for durability and repairability.

This prioritisation helps to identify critical components and prioritise actions to improve durability and repairability.

Function description	Function type	Related failures	Impact of failures	Failure frequency	Central part involved	Priority section
Automatic floor cleaning	Primary	Hydraulic system failure, cleaning motor failure	High	Medium to High	Washing or vacuuming assembly	Yes
Collecting waste water	Primary	Suction failure, leaks	High	Medium	Washing assembly	Yes
Moving around the area to be cleaned	Primary	Electric motor, wheel encoder, battery	High	Medium to High	Locomotion and drive assembly, Battery assembly, Navigation assembly	Yes
Localisation, environmental sensing	Primary	Navigation circuit board fault	High	Medium	Robot locomotion and drive assembly, Battery assembly	Yes
Power supply, battery management and charging	Primary	Worn-out battery, faulty BMS, faulty charger	Medium	Medium to High	Battery assembly, Docking station	Yes
Controlling the electronic functions of the robot and the station	Primary	Faulty electronic control unit, motor control fault, sensors, faulty connectors	High	Low	Electrical and electronic assembly	Yes
Collect dry rubbish	Secondary	Loss of suction, clogged filter, blocked duct, jammed brush or roller, full or damaged dust bin	Medium	Medium	Washing assembly	Yes
Storing, measuring out and monitoring the liquids required for washing	Secondary	Cracked tank, broken cap, faulty level sensor, leak, incorrect detergent dosage	Low	Medium	Washing assembly	No
Ensure automated maintenance via the station, where this function is available	Secondary	Unable to fill or empty, incomplete cleaning of cleaning modules, insufficient drying, unable to remove	Medium	High	Docking station and maintenance assembly	Yes

Function description	Function type	Related failures	Impact of failures	Failure frequency	Central part involved	Priority section
		debris, faulty level sensor				
Enable user interaction and status information	Tertiary	Button stuck, indicator light not working, buzzer silent, incorrect indicator, status display fault	Medium	Low	Electrical and electronic assembly	No
Enable connected control and application functions	Tertiary	Unable to connect via Wi-Fi or Bluetooth, pairing lost, faulty IoT module, app features unavailable	Low	Medium	Electrical and electronic assembly	No

Analysis:

- The integrated battery is a major failure point in robot washers. Its capacity decreases with charge/discharge cycles, which may prevent the robot from completing a cleaning cycle or returning to its docking station.
- The navigation and detection system is essential for autonomous operation. Sensors, the LiDAR module, camera where applicable, the Inertial Measurement Unit (IMU) and wheel encoders determine localisation, obstacle avoidance and correct cleaning coverage.
- The hydraulic circuit is a critical subsystem. Pumps, solenoid valves, nozzles, hydraulic connections, filters, seals and tanks are exposed to hot water, limescale deposits and pressure. Failure of any of these components directly impairs the washing function and may even immobilise the appliance in the event of a leak.
- Components in contact with the floor (microfibre cleaning pads, cleaning rollers, squeegees, brushes and filters) are highly exposed to wear and contamination. They should therefore be regarded as consumable or maintenance parts.
- The wheel motors, cleaning module motors, suction motor, brush motors and motors driving auxiliary functions are critical whenever they perform a primary function. Their failure results directly in the loss of mobility, washing, vacuuming or debris collection.
- The docking station becomes a critical subsystem where the robot depends on it for battery charging, pad washing, water refilling, emptying, drying or automatic dust emptying.
- The user interface, status indicators, buzzer and communication module enhance usability and diagnostics. Their failure does not generally prevent the appliance from operating, unless the product relies heavily on its mobile application or network connectivity.

FUNCTIONALS PARTS

Groups together all parts related to the operation or use of the product, but which are not, or only marginally, involved in failure scenarios.

- **Robot body assembly**
 - Chassis
 - Housing, covers and body panels (top, side and bottom)
 - Bumper
 - Access flaps and maintenance covers
 - On-board user interface (buttons, indicator lights and status indicators)
 - Speaker, buzzer
- **Navigation, detection and localisation assembly**
 - Cliff sensor(s)
 - Obstacle sensor(s)
 - Contact sensor(s)
 - Wall-following sensor(s)
 - Docking station return sensor(s)
 - Navigation / object recognition camera (where applicable)
 - Inertial Measurement Unit (IMU) (gyroscope, accelerometer)
 - Dirt or surface detection sensor(s) (where applicable)
- **Electrical and electronic assembly**
 - Communication module (Wi-Fi, Bluetooth, IoT)
 - Electrical or thermal protection device
 - Electrical wiring harness(es), ribbon cables and connectors
 - Internal power and signal wiring
- **Robot locomotion and drive assembly**
 - Caster wheel (omnidirectional wheel)
 - Drive wheel module(s) (motor and transmission)
 - Drive wheels (wheel and tyre)
 - Wheel suspension(s) (spring, arm and support)
 - Washing module lifting system
- **Washing assembly**
 - Detergent tank
 - Valve(s), non-return valve(s) or liquid tank dispensing component(s)
 - Liquid presence or level sensor(s)
 - Hydraulic connections (pipes and hoses)
 - Water temperature management (temperature sensor / thermostat)
 - Dirty water duct
 - Cleaning pad plate(s) or holder(s)
 - Washing module lifting system (where applicable)
 - Cleaning element access and retention system
- **Dry debris vacuuming assembly (where applicable)**
 - Suction duct(s)
 - Dust container access flap(s) and opening mechanism(s)

- › **Battery assembly**
 - › On-board charging device
 - › Charging contacts
- › **Docking station and maintenance assembly**
 - › Docking station housing, covers and outer panels
 - › Docking station base
 - › Docking ramps and guide rails
 - › Docking station charging contacts
 - › Robot presence sensor(s)
 - › Dry debris transfer system to the docking station
 - › Docking station tank level sensor(s)
 - › Detergent tank
 - › Docking station tank closure component(s)
 - › Docking station hydraulic connections
 - › Hot air duct
 - › Power supply unit / charger
- › **Sealing and mechanical fastening assembly**
 - › Fastening components (screws, clips, bolts, circlips, washers, etc.)
 - › Stabilisation components (springs, spacers, rubber mounts, bearings, etc.)
 - › Sliding, guide rail and linear guidance mechanisms

PRIORITY PARTS

Groups together all parts that play a major role in the failure scenarios of the product category. This systematically includes critical, vulnerable and consumable parts.

Critical parts

Parts characterised by proven criticality, due either to the severity of the consequences in the event of failure or to the recurrence of their malfunctions.

- › **Navigation, detection and localisation assembly**
 - › LiDAR module
 - › Wheel encoder(s)
- › **Electrical and electronic assembly**
 - › Electronic boards or modules for the robot or docking station (power supply, control and display)
 - › Navigation electronic board(s) or module(s)
- › **Washing assembly**
 - › Water distribution pump(s)
 - › Spray system (nozzles and spray bars)
 - › Solenoid valve(s)
 - › Heating module
 - › Cleaning pad drive motor(s) (oscillation, vibration or rotation)
 - › Cleaning roller drive motor(s)

- › **Dry debris vacuuming assembly (where applicable)**
 - › Suction motor assembly
 - › Dry debris collection roller drive motor(s)
 - › Side brush motor(s)
- › **Battery assembly**
 - › Battery cell pack(s)
 - › Battery Management System (BMS) board
- › **Docking station and maintenance assembly**
 - › Drying fan assembly
 - › Air heating module
 - › Water heating module
 - › Docking station pump(s)
 - › Docking station solenoid valve(s)
- › **Sealing and mechanical fastening assembly**
 - › Sealing components (O-rings, lip seals, membranes, silicone seals, etc.)

Vulnerable parts

Parts exposed to a high rate of accidental user breakage.

- › **Washing assembly**
 - › Liquid tank closure component(s)

Consumable or maintenance parts

Consumable parts are those parts that need to be replaced more or less frequently, depending on the pattern of deterioration over the product's lifetime. Maintenance parts require regular servicing to keep the product in optimum working order.

- › **Washing assembly**
 - › Textile/microfibre cleaning pad(s)
 - › Cleaning roller(s) (textile or microfibre)
 - › Squeegees (wiper seals, squeegees, scraper blades)
- › **Dry debris vacuuming assembly (where applicable)**
 - › Suction motor inlet filtration (pre-filter, fine filter, HEPA filter or equivalent)
 - › Dry debris collection roller(s)
 - › Dry debris container
 - › Side brush(es)
- › **Washing assembly**
 - › Water tanks (clean water and dirty water)
 - › Debris separator (strainer)
 - › Liquid circuit filter(s) and strainer(s)
- › **Docking station and maintenance assembly**
 - › Docking station dust container
 - › Docking station clean water tank

- › Docking station dirty water tank
- › Cleaning tray, basin or washing area for the cleaning pads/roller

VI. CLASS OF REPARABILITY CRITERIA

Class system

The criteria in the "Repairability" family use a system of classes to prioritize the level of requirement for each type of part.

These classes range from A to E.

Class A represents best practice in reparability. The lower classes (B, C, up to D or E) reflect a decreasing level of relevance of practices, but should always be considered in relation to market practices.

The definition of classes is the subject of a study for each repository, in order to identify best market practices.

Disassembly depth of parts

The dismantling step count starts when the safety conditions for the user are met. A step is an operation leading to the removal of a part or a tool change. Example:

- › Remove cover by sliding with hand = 1 step
- › Remove cover by unscrewing 4 Phillips screws = 1 step
- › Remove cover by unscrewing 2 Phillips and 2 Torx screws = 2 steps

VII. EXPOSURE TO EXOGENOUS FAILURES

Definition

An exogenous failure refers to a defect or problem in the manufactured product that occurs due to external factors or conditions beyond the control of the manufacturer or producer.

As opposed to an endogenous failure, which is linked to internal problems (design, manufacturing, quality), an exogenous failure is generally the result of unforeseeable external circumstances (e.g. extreme environmental conditions, transport accidents, inappropriate handling by the end-user, component failures from third-party suppliers, etc.).

Managing exogenous failures in product manufacturing may involve implementing quality control measures, rigorous testing, supply chain management, warranties and return policies to deal with problems that may arise due to these external factors.

Exogenous failure criteria

User risk:

Reflects the ability to respect conditions of use in the face of the weight of the constraints of use.

Associated levels:

- **Low:** the user scrupulously respects the product's rules of use, particularly for quality and safety reasons.
- **Medium:** the user generally respects the product's rules of use
- **High:** the user rarely respects the product's rules of use

Product handling:

Reflects the possibility of false handling, shocks, falls.

Associated levels :

- **Low:** Not handled
- **Medium:** Handling without moving or dismantling
- **High:** Handling with moving or dismantling

Weather exposure:

Refers to exposure to rain, hail, frost, wind, sand, lightning, dust, salt spray...

Associated levels:

- **Low:** No exposure (indoors)
- **Medium:** Indirect exposure (hold, station concourse)
- **High:** Direct exposure (outdoors)

Definition of the different phases

- **Storage / stowage:** This phase corresponds to the period during which the appliance is not actively in use, whether it is off the docking station, parked on its dock or stored for an extended period. It may involve the presence of residual water

in the tanks or internal circuits, as well as prolonged exposure to storage conditions liable to affect the battery, seals, electrical contacts or sensors.

- **Standby:** The appliance is in a low-power state, generally positioned on its docking station or available for a subsequent cycle. It maintains certain active functions, such as connectivity, scheduling, mapping, start command detection or exchanges with the application, without performing an active cleaning task.
- **Charging:** The appliance is positioned on its docking station in order to recharge the battery. This phase includes alignment of the robot with the charging contacts and, depending on the model, maintenance in connected standby mode.
- **Preparation for washing:** This phase corresponds to the operations carried out before the cleaning cycle: filling the clean water tank, adding detergent solution where applicable, fitting the cleaning pads or rollers, and preparing the area to be cleaned.
- **Autonomous washing with or without combined vacuuming:** The appliance cleans indoor hard floors through motorised movement, distribution of water or detergent solution, and mechanical action of the cleaning pads or rollers. Depending on the model, it may also vacuum dry debris either simultaneously with or alternately to washing, thereby using the suction turbine, brushes, dust container and filtration elements, in addition to the navigation system, sensors, drive components and hydraulic circuit.
- **Automated maintenance at the docking station:** This phase concerns models used with an advanced docking station that automatically performs certain maintenance operations: emptying, washing of the cleaning pads or rollers, clean and dirty water management, water heating or drying of the cleaning elements.
- **Manual emptying and cleaning:** This phase covers operations performed by the user on tanks, cleaning pads, rollers, any filters, containers, seals, access flaps and contact areas. Its purpose is to maintain washing performance, vacuuming performance where applicable, and sealing performance.
- **Periodic maintenance and replacement of consumables:** This phase corresponds to the replacement of wear parts such as cleaning pads, rollers, any filters, any brushes, seals or cleaning accessories. It requires compliance with the specified replacement intervals and the use of compatible parts.

Phase	User risk	Product handling	Weather exposure	Overall risk
Storage / stowage	High	Low	Low	Medium
Standby	Low	Low	Low	Low
Charging	Low	Low	Low	Low
Preparation for	Medium	Medium	Low	Medium

washing				
Autonomous washing	Medium	Medium	Low	Medium
Automated maintenance at the docking station	Medium	High	Low	Medium
Manual emptying and cleaning	High	High	Low	Medium
Periodic maintenance and replacement of consumables	High	High	Low	Medium

Assessment of the overall risk of exogenous failure:

MEDIUM

This product category is subject to a moderate risk of exogenous failures. This level of risk is explained by its limited exposure to environmental conditions, as the product is intended for indoor domestic use, but also by its significant sensitivity to user errors, inadequate maintenance, repeated handling with a risk of drops, and the presence of water or detergent solution within the appliance and its docking station. The main exogenous failure risks are as follows:

- **Storage / stowage:**
 - Risk of deep battery discharge due to prolonged improper storage.
 - Risk of residual water remaining in the tanks, hydraulic circuit or cleaning elements, potentially leading to unpleasant odours, limescale deposits, contamination or ageing of the seals.
 - Risk of deterioration of electrical contacts, sensors or sealing components due to storage in damp or dusty conditions.
- **Standby:**
 - Limited risk associated with the prolonged operation of active functions such as connectivity, scheduling or mapping.
- **Charging:**
 - Risk of the robot falling while returning to or docking with the charging station if its path is obstructed.
- **Preparation for washing:**
 - Risk associated with the use of a non-recommended or incorrectly dosed detergent, which may damage the hydraulic circuit, seals or cleaning elements.
 - Risk of incorrect filling, improper installation of the cleaning pads or rollers, or inadequate preparation of the area to be cleaned.
 - Risk of dropping the tanks.
- **Autonomous washing with or without combined vacuuming:**
 - Risk of impacts, blockages or falls caused by obstacles, thresholds, cables, rugs or unsuitable floor surfaces.

- › Risk of passing over liquids, soils or debris outside the intended operating conditions, which may clog, contaminate or damage the cleaning elements, hydraulic circuit or, depending on the model, the suction motor assembly, brushes and filtration system.
- › **Automated maintenance at the docking station:**
 - › Risk of maintenance failure caused by empty, full, incorrectly positioned or insufficiently cleaned tanks.
 - › Risk of contamination, blockage, water stagnation, unpleasant odours or loss of sealing in the pipes, nozzles, washing area, drainage circuits or drying system.
- › **Manual emptying and cleaning:**
 - › Risk of dropping components, incorrect reassembly or seal loss during emptying and cleaning operations.
 - › Risk of damage to cleaning pads, rollers, filters, sensors or electrical contacts resulting from non-recommended cleaning methods, or accumulation of dirt due to insufficient maintenance.
- › **Periodic maintenance and replacement of consumables:**
 - › Risk of reduced performance if consumables are not replaced at the recommended intervals.
 - › Risk associated with the use of incompatible parts or incorrect reassembly, potentially resulting in leaks, abnormal noise, blockages, reduced cleaning performance or loss of sealing.

VIII. LABEL CRITERIA

Reliability
Conception

1. Stress resistance

T0 Criteria

The producer identifies the functions of the product and its components, as well as the associated critical use constraints. He demonstrates sustainable design choices, optimized by reliability and/or repairability strategies.

Mode of proof : General mode of proof supplemented by a set of data appropriate to the sub-criteria, including the application of product-related test standards: (This list of proof methods is representative but not exhaustive. It is not required to have all these modes of proof in order to comply with the criteria; they are merely indications)

- *In-warranty and out-of-warranty failure rates: The product must demonstrate failure rates below the industry average.*
- *Accelerated life testing. As the duration of the test is limited, scientific and robust projection calculations (acceleration factor) are used to extrapolate the results to the product's maximum total lifetime, demonstrating resistance to stress above the market sector average.*
- *The methodologies used can be based on general standards, on mandatory standards linked to safety directives and including elements of resistance to stress in use, or on voluntary standards.*
 - *EN 45552: General method for assessing the durability of energy-related products*
 - *EN 60721 : Classification of environmental conditions*
 - *IEC 60605 : Reliability testing of equipment*
 - *IEC 61123 : Reliability testing - Compliance test plans for pass rate*
 - *EN 61124 : Reliability testing - Compliance test plans for constant failure rate and constant failure intensity*
 - *EN 61649: Weibull analysis*
 - *EN 62506: Accelerated product test methods.*
- *Instruments used for testing: all instruments used for testing must be calibrated and a valid calibration report must be available. Calibration must be carried out prior to testing. Calibrations must be traceable to national standards.*

The principle of equivalence of forms of evidence

The standards, test protocols, and technical references mentioned in this criterion constitute recognized frameworks for assessing the product's resistance to the identified stresses. As such, they are consistent with the methodological principles defined by standard EN 45552 regarding the assessment of product durability and reliability.

However, these references are not exclusive. The manufacturer may use any other national or international standard (ISO, EN, IEC, ASTM, or equivalent) provided that it allows for a relevant assessment of the same stress, the same function, or the same part of the product,

with an equivalent level of requirement, reproducibility, and robustness, and unless the level of evidence specifically associated with the criterion is designated as “Mandatory.”

Similarly, strict application of the explicitly cited standards is not mandatory if the manufacturer is able to demonstrate the product’s compliance using internal test protocols. In accordance with the principles of EN 45552, these protocols must be documented, reproducible, traceable, and based on evidence-based evaluation methods. They must demonstrate a level of methodological rigor and coverage of constraints equivalent to that of existing normative standards.

This demonstration can be supplemented by analyzing data from field experience (after-sales service, CRM, ERP), particularly through statistical analyses of failure rates, failure frequencies, failure modes, or observed service life. This data must be structured, sufficiently representative, and integrated into a documented reliability monitoring process.

❖ **Resistance to mechanical stress**

- Resistance of the product to drops and impacts on a hard surface (concrete, tiled flooring) without any impairment of the product's functional performance.
 - Resistance of removable tanks to a series of drop tests (clean water tank, dirty water tank, detergent tank, dust separator or dust container):
 - Empty tanks: Resistance to a series of six drops in six different orientations from a height of 80 cm
 - Filled tanks: Resistance to a series of three drops in six different orientations from a height of 40 cm
 - Resistance of the removable battery pack to a series of six drops in six different orientations from a height of 80 cm
 - Resistance of the robot to two series of six drops from a minimum height of 45 cm in six different orientations (top face, bottom face, front face, rear face, left side and right side)

Operational-type evidence: (Priority)

- *Drop test report in accordance with the conditions specified in IEC 60068-2-31 or EN 62262.*
- Resistance of the top face of the robot to at least three impacts with a severity equivalent to IK07, applied to the most vulnerable areas (LiDAR, tank, battery, etc.) without any impairment of the product's essential functions.

Operational-type evidence: (Priority)

- *Test report in accordance with IEC 62262 / IEC 60068-2-75, or an equivalent test protocol, specifying the impacted areas, the impact energy and the functional test results after testing.*
- Prevention of accidental falls through cliff detection technology under different lighting and load conditions.

Operational-type evidence: (Priority)

- › Drop test report in accordance with the conditions specified in IEC 62849:2016, Clauses 9.1 to 9.3, confirming the absence of falls or wheel overhang at an edge (clean water tank filled to $\geq 90\%$).

Commitment- and process-type evidence: (Secondary)

- › Technical specification of the robot and evidence or demonstration of anti-fall technology
- › Resistance to a series of repeated low-intensity impacts
 - $\geq 100,000$ frontal impacts of at least 30 N for products relying on physical contact with obstacles for navigation; or, for products equipped with obstacle-detection and avoidance systems, successful completion of an accelerated endurance test representative of ≥ 8 years of intensive use
 - ≥ 500 cycles of repeated low-intensity impacts on the cleaning head (thresholds, door frames, walls and furniture legs)

Operational-type evidence: (Priority)

- › Robot test report in accordance with the conditions specified in EN 62885-6, Clause 6.5 - Impact resistance test.
- › Robustness of the product against accidental crushing due to being stepped on, while maintaining its nominal functionality
 - Resistance to a progressively applied force of 60 N on three different non-sensitive areas of the top face of the robot
 - Resistance to a progressively applied force of 40N on sensitive areas (LiDAR, tank access flap) of the top face of the robot
 - Resistance to a progressively applied force of 40N on the access ramp of the docking station

Operational-type evidence: (Priority)

- › Vertical load test report demonstrating compliance with the test conditions specified in IEC 62368-1 for the static force test on the enclosure.
- › Resistance of the hydraulic system (heating system, water pump and flow meter) to wear, with a minimum operating lifetime of 800 hours without failure.

Operational-type evidence: (Priority)

- › Functional endurance test report for the hydraulic circuit and heating system in accordance with IEC 60335-2-41, carried out under representative operating conditions defined in IEC 62885-6, Clause 4.8, including measurements of flow rate, pressure and temperature before and after testing.

Commitment- and process-type evidence: (Secondary)

- › Technical specifications for the water pump and heating system.
- › Resistance of the suction motor(s) and electric motor(s) to wear under a representative cleaning load, meeting at least one of the following four conditions:
 - › $\geq 3,000$ operating hours without failure, or successful completion of an accelerated endurance test representative of ≥ 8 years of intensive use, with no functional failure or abnormal degradation affecting product performance.

- Operation of the docking station's suction motor for at least 3,000 robot dust container emptying cycles without failure
- Warranty covering the suction motor, the electric motors or the entire product for a minimum of seven years.
- Availability of a repair service including replacement of the suction motor at a price below 30% of the product's recommended retail price (incl. VAT).
- Availability of the motors (suction and rotary brush motor(s)) as individual spare parts, without requiring replacement of a larger sub-assembly.

Operational-type evidence: (Priority)

- *Test report in accordance with the test conditions specified in IEC 62885-6 for wet floor cleaning appliances and, where the product incorporates a vacuuming function, IEC 60335-2-2 (with the dirty water tank and/or dust container filled to 50% of its nominal usable capacity).*

Commitment- and process-type evidence: (Secondary)

- *Technical specifications for the suction motor and the rotary brush electric motor(s)*
- *Terms and conditions specifying the manufacturer's warranty*
- *After-sales service policy detailing repair service packages or spare parts pricing*
- Resistance of the mobility system to wear
 - Robustness of the drive system, including wheels, transmission system, wheel rotation sensors and electric motors, for a cumulative travel distance of at least 1,600 km, without failure or functional degradation
 - Resistance of the wheel suspension mechanisms to 85,000 vertical travel cycles over an obstacle of at least 5 mm in height

Operational-type evidence: (Priority)

- *Test report in accordance with the test conditions specified in IEC 62885-6 for wet floor cleaning appliances and, where the product incorporates a vacuuming function, IEC 60335-2-2 for vacuum cleaners with water suction (with the dirty water tank and/or dust container filled to 50% of its nominal usable capacity).*
- Resistance to wear of components subject to repeated movement and robustness of control modules:
 - Resistance to contact closing cycles of at least 40,000 cycles for momentary actuation switching systems (push-button type)
 - Power button with resistance to contact closing cycles of at least 40,000 cycles

Operational-type evidence: (Priority)

- *Test report in accordance with IEC 61058-1, "Switches for appliances – Part 1: General requirements", or ASTM F1778-07*
- *Accelerated endurance test report (HALT/HASS or equivalent method), based on a documented test protocol correlated with real-world use.*
- Resistance of locking mechanisms to wear caused by repeated handling, while maintaining their mechanical properties and nominal functionality.
 - Locking system for the water tanks (clean and dirty) resistant to:
 - $\geq 3,200$ cycles for onboard tanks where the robot is not equipped with a docking station providing automatic water management.

- ≥ 600 cycles for onboard tanks where the robot is equipped with a docking station providing automatic water management.
 - $\geq 3,200$ cycles for the docking station water tanks providing automatic water management.
 - $\geq 1,000$ cycles for removable detergent tanks (docking station or robot).
- Tank closure systems (e.g. caps, valves) resistant to:
 - $\geq 3,200$ opening/closing cycles where the robot is not equipped with a docking station providing automatic water management.
 - ≥ 600 opening/closing cycles where the robot is equipped with a docking station providing automatic water management.
 - $\geq 3,200$ opening/closing cycles for the docking station water tanks providing automatic water management.
 - $\geq 1,000$ opening/closing cycles for detergent tanks (docking station or robot).
- Locking system for the cleaning roller or cleaning brush resistant to:
 - $\geq 1,000$ cleaning roller removal/insertion cycles where the robot is not equipped with a docking station providing automatic water management.
 - ≥ 300 cleaning roller removal/insertion cycles where the robot is equipped with a docking station providing automatic cleaning and drying of the cleaning roller.
 - ≥ 300 side rotary brush removal/insertion cycles.
 - Filter locking system resistant to at least 300 removal/insertion cycles.

Operational-type evidence: (Priority)

- *Cycling test report based on a documented test protocol reproducing normal removal/insertion and opening/closing operations, followed by verification of watertightness, moisture resistance, leakage current and dielectric strength in accordance with the applicable requirements of IEC 60335-1, IEC 60335-2-10 and, where applicable, IEC 60335-2-2.*
- Robustness of connections between electromechanical components.
 - Resistance of the robot/docking station charging connector to at least 9,000 mating/unmating cycles
 - Resistance of the docking station power connector to at least 300 power cord insertion/removal cycles

Operational-type evidence: (Priority)

- *Test report in accordance with IEC 61058-1, Switches for appliances, or an accelerated wear/lifetime test report*
- *Test report on the mating/unmating cycle endurance of the charging connector and electromechanical connectors in accordance with IEC 60512-9-1:2010 or EIA-364-09D.*

Commitment- and process-type evidence: (Secondary)

- *Technical specifications for the charging connectors and electromechanical connectors.*

- Resistance of extension mechanisms to wear (wheels, mop, cleaning roller, side brush)
 - Washing module (mop, cleaning roller) resistant to at least 80,000 extension/retraction cycles
 - Side brush resistant to at least 80,000 extension/retraction cycles
 - Obstacle-climbing system resistant to at least 40,000 extension/retraction cycles

Operational-type evidence: (Priority)

- *Functional endurance test report (number of cycles completed, stroke, forces applied, pre- and post-test functional checks) for lateral offset mechanisms, carried out in accordance with a documented protocol based on representative conditions of use defined in accordance with IEC 62885-6 and/or EN IEC 62849.*
- Resistance of the heating module to wear, while retaining at least 90% of its nominal technical characteristics after 3,000 cycles.

Operational-type evidence: (Priority)

- *Test report demonstrating that the performance of the drying system, integrated into the product or the complete docking station, is maintained after 3,000 drying cycles of a duration equivalent to that of the marketed product (test room temperature: 23 ± 5 °C; relative humidity: 45–75%). The report shall specify the test conditions, acceptance criteria and results obtained.*

Commitment- and process-type evidence: (Secondary)

- *Supplier test reports for the heating module tested as a standalone component, together with its technical specification, including its nominal operating conditions, thermal limits, safety criteria and lifetime requirements.*

❖ **Resistance to thermal stress**

- **Complementary** - Resistance of flexible components to hot water.
 - Hoses and seals in contact with hot water resistant to at least 500 hours of moist heat ageing
 - Hoses and seals in contact with hot water resistant to hot air thermal ageing for 168 hours at a minimum temperature of 70 °C

Operational-type evidence: (Priority)

- *Test report carried out on assembled components or representative interfaces in accordance with ISO 188, at the maximum operating temperature declared by the manufacturer, but not lower than 60 °C.*
- *Test report carried out in accordance with ISO 188, demonstrating that the nominal specifications are maintained.*
- Resistance to overheating.
 - Protection of heat-sensitive components (triac and capacitor) through an effective thermal design and/or temperature management and heat dissipation solutions.
 - Thermal isolation and/or preventive shutdown
 - Use of heat sinks
 - and/or use of a passive or fan-assisted cooling system

Operational-type evidence: (Priority)

- *Temperature rise test report in accordance with IEC 60335-2-10, specifying the heat-sensitive components monitored (triacs, capacitors, electronic board, battery, motor, charger, pump and heating system), together with the maximum temperatures recorded and their comparison with the permissible limits for those components.*
- *Documented demonstration of the product's thermal design, identifying heat-sensitive components, heat sources, thermal dissipation or thermal isolation solutions, as well as overheating protection measures.*
- **Active thermal protection of critical components.**
 - Thermal sensors to preserve product integrity in the event of a sudden temperature rise
 - Suction motor and cleaning roller motor(s) protected against overheating, overload, stalling and blockages by thermal, current-sensing or electromechanical protection integrated into the motor or control system
 - Battery protection during intensive use through the Battery Management System (BMS) and power management

Operational-type evidence: (Priority)

- *Test report under limit operating conditions, carried out in accordance with the applicable requirements of IEC 60335-1 and IEC 60335-2-10, including motor overload, roller blockage, suction obstruction, water flow failure and intensive battery use, demonstrating the correct activation of thermal, current-sensing or electronic protection mechanisms.*
- *Visual or documentary evidence demonstrating the presence of thermal protection devices and power management systems.*

❖ **Resistance to electrical stress**

- Resistance to overvoltage and mains power supply fluctuations.
 - Protection of electrical and electronic components against overvoltage and mains power supply fluctuations by means of appropriate protective devices
 - Protection of electrical and electronic components that are accessible to, or handled by, the user against electrostatic discharge (ESD)

Operational-type evidence: (Secondary)

- *EMC immunity test report in accordance with EN IEC 55014-2, covering the applicable tests for electrostatic discharge, electrical fast transients, surges, voltage dips and short interruptions.*
- *Test report in accordance with the applicable electrostatic discharge and electrical immunity standards IEC 61000-4-2, IEC 61000-4-4, IEC 61000-4-5 and IEC 61000-4-11, where the relevant tests are explicitly applicable to the product.*

Commitment- and process-type evidence: (Priority)

- *EU Declaration of Conformity, CE technical file or certificate of conformity demonstrating compliance with the applicable requirements of the EMC Directive 2014/30/EU, the Low Voltage Directive 2014/35/EU and, where applicable, the Radio Equipment Directive (RED) 2014/53/EU.*
- *Electrical schematic, bill of materials for the protection components, technical data sheets for the protection devices (fuse, varistor, TVS diode, EOS protection circuit,*

input filter, power supply protection or equivalent), together with justification of their sizing in relation to the permissible voltage and current ratings.

- Battery retaining at least 90% of its residual capacity after 600 charge/discharge cycles.

Operational-type evidence: (Priority)

- *Battery cycling test report in accordance with IEC 61960-3 and IEC 62885-4, Surface cleaning appliances – Part 4: Cordless dry vacuum cleaners for household or similar use – Methods for measuring performance*
- *Test report on the complete appliance demonstrating the retention of operating autonomy or in-use performance after battery ageing, with performance measurements carried out in accordance with the test conditions specified in IEC 62885-6.*

Commitment- and process-type evidence: (Secondary)

- *Technical specification for the battery pack, specifying the nominal capacity, cell chemistry, declared cycle life, charging and discharging conditions, and the Battery Management System (BMS) protection thresholds.*

❖ **Resistance to sealing stress**

- Resistance to the ingress of water or particulate matter into sensitive components (electrical contacts, connectors, electronic boards, suction motor and electric motors).
 - Sealing of components located in areas exposed to the risk of contact with water or moisture, providing a minimum protection rating of IPX4 or equivalent
 - Sealing of components located in areas exposed to dust or dry debris, providing a minimum protection rating of IP5X or equivalent
 - Sealing of components located in areas exposed to fine dust, providing a minimum protection rating of IP6X or equivalent
 - Sealing of components located in areas exposed to both dust or dry debris and the risk of contact with water or moisture, providing a minimum protection rating of IP54 or equivalent
 - Product architecture providing separation between wet zones and electrical zones
 - Positioning outside foreseeable water paths
 - Compartmentalisation
 - Sealing barrier
 - Drain, deflector or equivalent solution.

Operational-type evidence: (Priority)

- *Test report in accordance with IEC 60529 / EN 60529, demonstrating the claimed IP rating for the relevant component locations.*
- **Complementary** - Resistance to pressure
 - Resistance of hydraulic sub-assemblies (hoses, fittings, seals and valves) to 1.5 times the declared maximum operating pressure for at least 6 hours at the maximum water temperature delivered.

Operational-type evidence: (Priority)

- *Hydraulic circuit pressure tightness test report, carried out in accordance with ISO 1402 or an equivalent method, on the complete appliance or a representative sub-assembly assembled in its final configuration, demonstrating the absence of leaks, seepage, pressure loss, disconnection, deformation or loss of sealing.*

❖ **Resistance to corrosion and chemicals**

- Resistance of components exposed to moisture to corrosion
 - Metallic or conductive components exposed to liquids and moisture resistant to at least 168 hours of damp heat exposure.

Operational-type evidence: (Priority)

- *Test report in accordance with IEC 60068-2-78 or IEC 60068-2-30, including visual, mechanical and electrical inspections after testing, demonstrating the absence of functional corrosion, seizure, loss of locking, loss of electrical continuity, intermittent electrical contact or loss of functionality.*

Commitment- and process-type evidence:(Secondary)

- *Material specifications and anti-corrosion treatments, or justification for the use of stainless, polymeric or protected conductive materials.*
- **Complementary** - Resistance of components to dirty water exposure.
 - Robustness of components (return ducts, separator, seals, squeegees and tank) when subjected to prolonged contact with dirty water for an exposure period of at least 168 hours.

Operational-type evidence: (Priority)

- *Test report using the soils, liquids and test conditions applicable under IEC 62885-6, followed by cleaning in accordance with the instruction manual and an inspection demonstrating the absence of persistent abnormal odours, irreversible deformation or clogging, loss of sealing or loss of functionality.*

Commitment- and process-type evidence: (Secondary)

- *Maintenance instructions.*
- *Material specifications for the tanks, seals, squeegees and ducts.*
- *Availability of seals, valves, squeegees and tanks as individual spare parts.*
- Resistance to chemicals
 - Resistance of components in contact with water, with retention of nominal mechanical properties after 72 hours of exposure to the following products:
 - Sodium hypochlorite-based chlorine solution, prepared at 5% v/v in water;
 - Non-chlorine disinfectant solution based on quaternary ammonium compounds or equivalent biocides, prepared at 10% v/v in water;
 - Surfactant-based floor cleaning solution, prepared at 5% v/v in water;
 - Acid descaling solution based on citric acid or lactic acid, prepared in accordance with the chemical manufacturer's recommended instructions for use;
 - Cleaning solution recommended by, or compatible with, the robot manufacturer, prepared at the maximum concentration recommended by the manufacturer.

Operational-type evidence: (Priority)

- *Chemical compatibility test report in accordance with ISO 175 for plastics, ISO 1817 for elastomers, and ISO 22088 for stressed plastic components. The test shall include exposure of the relevant components for a minimum of 72 hours at 40 °C and 93% relative humidity.*

- Resistance to limescale build-up.
 - Resistance of the hydraulic system to the risk of limescale build-up through at least one of the following solutions:
 - Maintenance indicator with a descaling programme (maintenance function)
 - Anti-limescale filter, filtration cartridge or equivalent limescale reduction system

or

- Resistance of the product to limescale accumulation and scale formation, with no more than a 10% reduction in its initial functional performance after 400 hours of operation.

Operational-type evidence: (Priority)

- *Functional test report demonstrating activation of the maintenance indicator and proper execution of the descaling or maintenance programme.*
- *Visual or documentary evidence demonstrating the presence of anti-limescale protection devices.*
- *Functional test report demonstrating that, after 400 hours of operation or 150,000 cleaning cycles, the product's nominal characteristics and cleaning performance retain at least 90% of their initial level, in accordance with IEC 62885-6, Clause 5.1.*
- **Complementary** - Resistance of the product's external surfaces to routine cleaning with common household cleaning products, without aesthetic or functional degradation.

Operational-type evidence: (Priority)

- *Test report demonstrating the resistance of accessible external surfaces to water, 14° household vinegar and 70% household alcohol.*

❖ **Resistance to UV radiation stress**

- **Complementary** - Resistance of the visible external surfaces of the robot and docking station to four cycles consisting of 8 hours of UV exposure followed by 4 hours of condensation, with:
 - Colour variation $\Delta E \leq 3$ for the main visible parts (top surface of the robot, optical sensor cover, outer trim ring, external surface of the docking station)
 - Colour variation $\Delta E \leq 5$ for secondary visible parts.

Operational-type evidence: (Priority)

- *Test report in accordance with ISO 4892-3 or an equivalent protocol: UVA-340 lamp, irradiance of 0.76 W/(m²·nm) at 340 nm, cycles of 8 hours UV exposure at 60 ± 3 °C followed by 4 hours condensation at 50 ± 3 °C, with a minimum of four cycles.*

Production

2. Production and supply chain

T0 Criteria

The manufacturer has processes in place to control and maintain a consistently high level of manufacturing and assembly quality throughout the production phase, whether these processes are carried out in-house or outsourced.

- ❖ The manufacture of the critical subsystems of the product identified below shall be carried out exclusively at sites operating a certified quality management system, whether manufacturing is performed in-house or outsourced:
 - Manufacturing site(s) involved in the production of electronic boards – ISO 9001
 - Manufacturing site(s) involved in the production of LiDAR navigation systems – ISO 9001
 - Manufacturing site(s) involved in the production of electric motors and suction turbines – ISO 9001
 - Manufacturing site(s) involved in the production of batteries – ISO 9001
 - Manufacturing site(s) involved in the production of active hydraulic systems (pumps, solenoid valves and heating modules) – ISO 9001

Operational-type evidence: (Secondary)

- *Quality audit report (≤ 24 months old) for a site or supplier involved in the manufacture of a critical subsystem, including identified deviations and corrective actions.*
- *Production control plan and production records (end-of-line tests or batch inspections) demonstrating the compliance and traceability of critical subsystems.*

Commitment- and process-type evidence: (Mandatory)

- *For companies with ≥ 250 employees, annual quality control of the site and the production chain, with ISO 9001 certification issued by an accredited third-party inspection body.*
- *For companies with ≤ 250 employees, demonstration of compliance with the principles of ISO 9001 through verification of quality procedures or by equivalence with other certifications.*
- *For subsystems identified as PSRs, ISO 9001 certification issued by an accredited third-party inspection body is required. By way of derogation, and solely for subcontractors employing ≤ 50 employees or for developments carried out in accordance with strict manufacturer specifications, a documented demonstration of quality control may be accepted under the conditions defined above.*

3. Logistics

T0 Criteria

The manufacturer reduces risks to the reliability of components and assemblies through efficient quality processes for managing supply, packaging, storage, handling and transport conditions.

- ❖ Inventory control and management
 - The condition of products in stock and processable materials is regularly monitored, with dedicated processes to check and estimate unloading time, the date of manufacture and mode of transport (unique identifier).

- › Periodic inventories are carried out, and in the event of non-compliance, a reminder is systematically sent out. The conformity of items and materials in stock is clearly identified, and non-compliant products are placed in dedicated areas.
- › Storage conditions for articles and materials are measured and controlled continuously or periodically, with specifications and control limits validated by an independent authority.

Operational-type evidence: (Priority)

- › *ERP extracts or goods receipt records indicating manufacturing dates, transport and unloading times.*
- › *Periodic inventory reports and non-conformity records with follow-up of corrective actions.*
- › *Photographs or layout plans of areas dedicated to non-compliant products.*
- › *Environmental measurement reports and calibration/maintenance certificates for monitoring sensors.*

Commitment- and process-type evidence: (Secondary)

- › *Written procedure for stock management and monitoring of transformable materials, including unique product identification (labels, barcodes, QR codes) and traceability of manufacturing dates, transport and unloading times.*
- › *Internal policy providing for periodic inventories and systematic actions in the event of non-compliance (supplier follow-up, product segregation).*
- › *Documented specifications for storage conditions (temperature, humidity, etc.), validated by an independent body or certification body (e.g. ISO 9001).*

❖ **Handling and transport procedures**

- › Specific handling procedures are defined and controlled to avoid any deterioration of the product during delivery, handling and transport.
- › Handling, storage, packaging and preservation conditions are codified, including considerations of shelf life, sensitivity to stress, and product hazard.

Operational-type evidence: (Priority)

- › *Quality control reports and records carried out during packaging, storage and transport.*
- › *Packaging samples (photographs where applicable), including protective elements, pictograms and handling instructions.*
- › *Certificates or external audits validating compliance of handling and transport procedures.*
- › *Transport traceability: delivery notes, logistics tracking records, evidence of compliance with the defined conditions.*

Commitment- and process-type evidence: (Secondary)

- › *Documented internal procedures describing handling and transport rules, including handling practices, protective equipment, precautions and staff responsibilities.*
- › *Instruction sheets displayed in logistics areas and staff training records (classroom training or validated e-learning).*
- › *Written specifications relating to packaging, storage and preservation conditions (shelf life, stress tolerance, specific risks), included in technical data sheets or supplier manuals.*

- *ISO 9001 certification or equivalent to formalise and validate handling and transport procedures.*

❖ Product traceability and protection

- Exhaustive traceability makes it possible to identify and know the history of the product, including the components and documentation associated with its life cycle.
- Genuine conformity checks on finished products are carried out before they are put into storage, and are formally described and validated by an independent authority.

Operational-type evidence: (Priority)

- *Inventory and stock control records, including monitoring of storage conditions (temperature, humidity, duration).*
- *Evidence of segregation and handling of non-compliant products.*
- *Extracts from traceability systems (ERP, WMS, batch/serial identifiers).*
- *Findings from logistics audits or inspections.*

Commitment- and process-type evidence: (Secondary)

- *Procedures, specifications and instructions relating to storage, packaging, handling and transport conditions.*
 - *Associated control methods and control plans for logistics flows.*

Quality control

4. Reliability plan

T0 Criteria

The producer provides a history of product versions and identifies the changes implemented to improve product durability.

❖ The manufacturer is able to demonstrate the following points:

- Identification and monitoring of failures by the technical departments of the manufacturer or its subsidiaries, with supporting statistics
- Documented reporting of failures according to structured and systematic processes to central departments (Technical/Quality/R&D)
- Handling and processing of reports by R&D departments, with concrete modifications made to products to constantly improve their reliability and durability.
- Tracking of modifications made, and for major modifications involving the product's primary function : statistical measurement of their impact to attest to the effectiveness of the improvements made.

Operational-type evidence: (Priority)

- *Extracts or screenshots from monitoring systems used by the manufacturer (after-sales service tools, ticketing databases, tracking dashboards, quality or R&D tools).*
- *Operational documents demonstrating product version updates (bills of materials, version histories, change notices).*
- *Evidence demonstrating the effective consideration of field feedback in technical activities (review minutes, technical decisions, action plans).*

Commitment- and process-type evidence: (Secondary)

- *Formalised procedure for the failure reporting and processing system.*
- *Method for managing product changes and versions, including the organisation of product improvement governance (roles, responsibilities and decision-making bodies).*

5. Breakthrough technology

T0 Criteria

The manufacturer provides information on the share of breakthrough technology embodied in the product, and identifies the functions associated with it. He demonstrates the reliability of this technology, all the more so if it concerns a primary function. This applies to both hardware and software innovations.

Operational-type evidence: (Priority)

- *Reliability test reports carried out under real or representative conditions (functional tests, accelerated tests, technical validations, certificates or validations issued by independent third-party laboratories).*
- *Evidence derived from initial operation (after-sales service feedback, customer feedback, pilot phases), where the technology has already been deployed.*
- *Data from field feedback (after-sales service, customer feedback, pilot phases), including failure monitoring and the technical corrective actions implemented.*

Commitment- and process-type evidence: (Secondary)

- *Technical documentation demonstrating the integration of the breakthrough technology into the product architecture and associated functions.*
- *Safety analysis demonstrating that risks related to this technology have been taken into account during design and qualification (hardware and/or software).*

6. Breakdown rate

T1 Criteria

The producer tracks actual failure rates and/or indicators by product part in order to monitor product reliability at least until the last unit of the model concerned has been put on the market.

❖ Particular attention will be paid to failures in the following parts:

- **Electronic failure:**
 - Failure of the electronic control board
 - Failure of the onboard navigation system
 - Short circuit (electronic board, component or printed circuit board)
 - Failure of the control system
- **Hydraulic / fluid handling failure:**
 - Failure of the water distribution pump
 - Blocked or malfunctioning spray system
 - Blocked pipes, hoses or dirty water ducts
 - Loss of sealing affecting the distribution or recovery of liquids
- **Drive and cleaning system failure:**

- Failure of the drive motor for the mechanical cleaning module (cleaning roller or mop)
- **Vacuum system failure (where applicable):**
 - Failure of the suction motor assembly
 - Abnormal loss of suction
 - Obstruction of the suction circuit
- **Battery or charging system failure:**
 - Rapid loss of battery runtime
 - Failure of the Battery Management System (BMS) board
 - Charging failure

Operational-type evidence: (Priority)

- *Extracts or summaries from the manufacturer's internal systems (after-sales service, CRM, ERP, quality tools) presenting:*
 - *Identification of the subsystems that contribute most significantly to failures.*
 - *Their frequency or occurrence over time, by model and period.*

Commitment- and process-type evidence: (Secondary)

- *Internal procedures documenting the monitoring of failures by subsystem or product part, including frequency and data collection methodology.*
- *Analysis and reporting protocols defining key reliability indicators (MTBF, return rate, warranty rate) and alert thresholds, together with action processes in the event of deviation.*
- *Formalised commitment to maintain data monitoring until the end of the product's commercial lifetime.*
- *ISO 9001 certification or equivalent governing the collection, analysis and reporting of reliability data.*

User information

7. Product identification

T0 Criteria

The producer uses a method that allows unequivocal identification of the product and its version by interested parties in order to maximize maintenance and failure management processes.

Operational-type evidence: (Priority)

- *Unique marking enabling the product and its version to be identified unambiguously and its history to be used:*
 - *physical or digital markings (label, nameplate, engraving, QR code, etc.) associated with an actual product*
 - *elements demonstrating effective access to this identifier (such as an after-sales service portal, repairer extranet, distributor interface, online documentation database) by interested parties (end users, repairers, technical services, distributors)*

- *extracts from internal systems (after-sales service, CRM, ERP) linking this identifier to the product history (failures, repairs, updates)*

Commitment- and process-type evidence: (Secondary)

- *CE technical file*

8. Completeness of usage information

T0 Criteria

The manufacturer publishes a [manual](#) detailing the product's use and care instructions, and provides the user with a maintenance plan. This information, which is also available online, must be exhaustive and relevant in order to reduce exogenous failure rates and encourage responsible use.

- ❖ The manufacturer clearly informs the user how to properly maintain his product, providing the following information:
 - Battery charging information
 - Robot maintenance
 - Routine cleaning of the appliance

Operational-type evidence: (Priority)

- *User and maintenance instructions for the product (physical and/or digital format) with the relevant excerpts clearly highlighted*
- *Live demonstration of access to the information*

Commitment- and process-type evidence: (Secondary)

- *Documented procedure ensuring the updating and dissemination of user instructions and maintenance plans (paper and/or online formats) applicable to the certified model.*
- *Internal validation of maintenance and energy efficiency content (e.g. technical review or quality approval) prior to publication*

9. Usage information format

T1 Criteria

The manufacturer publishes a clear, simple and accessible user and maintenance [manual](#) (font size, vocabulary, language and print quality), so that it can be easily understood by end-users.

- ❖ Instructions on how to replace the battery must be available to anyone, free of charge, online for 10 years.

Operational-type evidence: (Priority)

- *User and maintenance instructions for the product (physical and/or digital format)*
- *Live demonstration of access to the information*

Commitment- and process-type evidence: (Secondary)

- *Internal guidelines or rules for drafting instructions (readability, language, accessibility, format), applicable to the certified product*

10. Prolonged immobilization

T0 Criteria

The manufacturer identifies the risks of failure associated with prolonged product downtime. He informs the end user of the conditions of use necessary to prevent these risks.

- ❖ Applicable: Product family sensitive to non-use in the event of prolonged immobilization: risk of battery degradation.
 - Risk of limescale build-up (blockage of the hydraulic circuit and spray system)
 - Risk of deep battery discharge

Operational-type evidence: (Priority)

- *User and maintenance instructions for the product (physical and/or digital format) with the relevant excerpts clearly highlighted*
- *Live demonstration of access to the information*

Commitment- and process-type evidence: (Secondary)

- *Internal procedure for identifying risks related to conditions of use and non-use, integrated into the maintenance plan drafting process.*

Repairability

For all criteria in the **Repairability** section:

Commitment- and process-type evidence: (Secondary)

- *Regulatory repairability index*
- *Repairability score based on a normative repairability methodology*

Technical repairability

For all criteria 11 to 16:

Operational-type evidence: (Priority)

- *Disassembly of a product representative of the marketed model carried out in real time during the audit.*
- *Provision of a complete and continuous disassembly video of the product making it possible*
 - *to clearly identify the product and its version*
 - *to continuously follow the main disassembly steps*
 - *to observe the required tools, fastening points and critical operations*

11. Disassembly of parts

T0 Criteria

The disassembly depth is adapted to the category of product parts and the disassembly time is consistent with the type of profile normally capable of carrying out the process.

- Class A: ≤ 3 steps and less than 5 minutes
- Class B: ≤ 5 steps and less than 10 minutes
- Class C: ≤ 10 steps and less than 15 minutes
- Class D: > 10 steps and/or more than 15 minutes

Types of parts	Class
Consumable	A
Vulnerable	B
Critical	C

Mode of proof

12. Part fasteners and connectors

T0 Criteria

Fasteners and connectors have removability and reusability characteristics appropriate to the category of product parts. A system is in place for locating these non-visible fasteners.

- Class A : Removable and reusable
- Class B : Removable but non reusable
- Class C : Neither removable nor reusable

Types of parts	Class
Consumable	A
Vulnerable	A
Critical	B

- ❖ Fastenings of the various priority parts of the product that fulfil both a mechanical and an electrical function shall be removable and reusable (Class A, EN 45554). Where the fastening system cannot be reused, it shall be supplied with the replacement part in order to enable resolution of the failure or maintenance scenario.
- ❖ Battery fasteners are removable and reusable, or are supplied with the new battery. More generally, in the event that the fastening system cannot be reused, it must be supplied with the replacement part to enable the failure or maintenance scenario to be resolved.

Mode of proof

13. Tools

T0 Criteria

The tools required for repair and/or disassembly must be suitable for the category of product parts.

- Class A: repairs feasible without the use of tools, with tools supplied or with [General-purpose tools](#)
- Class B: repairs feasible with tools specific to the product family
- Class C: repairs feasible with other commercially available tools
- Class D: repairs feasible with proprietary tools
- Class E: repair not feasible with any existing tool

Types of parts	Class
Consumable	A
Vulnerable	A
Critical	A

- ❖ Tolerance allowed for proprietary tools supplied or loaned on request, at no extra cost, with spare part.
- ❖ No more than three different tools are required for disassembly and reassembly of the priority components.
- ❖ The battery is removable. It is considered removable when it can be removed individually from the equipment, without tools or with the help of common commercially available tools, or with tools supplied free of charge with the equipment or battery.

Mode of proof

14. Working environment

T0 Criteria

Product-specific repair scenarios are carried out in a working environment adapted to the product part category.

- Class A: use environment
- Class B: workshop environment
- Class C: production environment

Types of parts	Class
Consumable	A
Vulnerable	A
Critical	A

15. Competence level

T1 Criteria

The level of technical skill required to carry out a repair is consistent with the category of parties involved.

- Class A: Novice skills
- Class B: Generalist skills
- Class C: Expert skills
- Class D: Manufacturer or approved expert
- Class E: Impossible to achieve with existing skills

Types of parts	Class
Consumable	A
Vulnerable	A
Critical	B

- ❖ In particular, the battery is replaceable by end-users with novice repair skills.

Mode of proof

16. Spare parts interface

T0 Criteria

The various parts of the product and their connection interfaces are standardized to meet the reparability expectations of the product family.

- Class A: Standard part with standard interface
- Class B: Standard or proprietary part with standard interface
- Class C: Proprietary part with non-standard interface

Types of parts	Class
Consumable	B
Vulnerable	B
Critical	B

- ❖ Part pairing practices are prohibited.
- ❖ [Replacement parts](#) need to be compatible from a technological specification perspective to function properly and it must not play a role if the part is new or reused and if it is from the original manufacturer or a 3rd party.

Mode of proof

Organizational reparability

17. Spare parts availability time

T0 Criteria

The availability time for spare parts is at least equal to the expected service life of the product category and its individual parts. The availability period is measured from the time the last unit of the model concerned is put on the market.

- Class A: Long-term availability (13 years)
- Class B: Medium-term availability (6 to 10 years)
- Class C: Short-term availability (2 to 5 years)

Types of parts	Class
Consumable	A
Vulnerable	A
Critical	A

- ❖ In the event that a replacement part is not available from the manufacturer or his distribution network, the manufacturer shall clearly provide the user, via the documentation made available to him, with the information and/or characteristics of the

parts enabling him to use instead an adaptable or compatible replacement part available on the market for a period at least equal to that specified in the above table.

Operational-type evidence: (Secondary)

- Table listing spare parts, their guaranteed supply period and the end-of-availability date.
- Extract from the after-sales service policy or contractual documentation specifying the period of access to spare parts.
- History or stock management records demonstrating the effective availability of parts after the end of commercialisation of the model.
- Examples of spare parts orders delivered several years after the product was placed on the market.

Commitment- and process-type evidence: (Mandatory)

- Formalised contractual commitment (general terms and conditions of sale or equivalent contractual documentation) specifying the minimum period of availability of spare parts.
- Description of the spare parts management system, including:
 - management of part references and bills of materials;
 - storage arrangements, make-to-order manufacturing or supplier sourcing methods;
 - principles of substitution or equivalence in the event of a part being discontinued.

18. Accessibility of spare parts to target audiences

T1 Criteria

The producer ensures the availability of spare parts for the target groups normally suited to the category of parts.

- Class A: Accessible to end users
- Class B: Accessible to independent repair service providers
- Class C: Accessible to service providers approved by the manufacturer
- Class D: Accessible only to the manufacturer

Types of parts	Class
Consumable	A
Vulnerable	A
Critical	A

- ❖ The spare parts and the procedure for ordering them shall be publicly available on the free access website of the manufacturer, until the end of the period of availability of these spare parts.

Operational-type evidence: (Priority)

- Demonstration of the ordering journey on the customer side (end user or repairer), in the form of a documented real-life case: part identification, access to ordering, validation and confirmation

- › *Examples of actual transactions (invoices, purchase orders or sales confirmations) demonstrating effective access to parts by authorised users in accordance with the declared accessibility class*
- › *Anonymised extracts from spare parts sales tracking systems demonstrating the diversity of customers and continuity of access over time*

Commitment- and process-type evidence: (Secondary)

- › *Formalised contractual commitment (general terms and conditions of sale or equivalent contractual documentation) specifying the minimum period of availability of spare parts*
- › *Description of the spare parts management system, including:*
 - › *management of part references and bills of materials;*
 - › *storage arrangements, make-to-order manufacturing or supplier sourcing methods;*
 - › *principles of substitution or equivalence in the event of a part being discontinued*

19. Terms and conditions for the sale of spare parts

T1 Criteria

The manufacturer details the terms of sale of its spare parts. They reflect the product nomenclature and are not sold as a group, unless justified by coherent and verifiable design, calibration and/or economic reasons.

❖ Particular attention will be paid to items in the following categories:

- › Replacement of the cleaning rollers
- › Battery replacement
- › Replacement of electronic boards

Operational-type evidence: (Priority)

- › *Demonstration of the ordering journey on the customer side (end user or repairer), in the form of a documented real-life case: part identification, access to ordering, validation and confirmation*
- › *Examples of actual transactions (invoices, purchase orders or sales confirmations) demonstrating effective access to parts by authorised users in accordance with the declared accessibility class*
- › *Anonymised extracts from spare parts sales tracking systems demonstrating the diversity of customers and continuity of access over time.*

Commitment- and process-type evidence: (Secondary)

- › *Internal policy, charter or contractual document specifying:*
 - › *the categories of parts*
 - › *the authorised target groups*
 - › *any applicable restrictions*
- › *After-sales service procedure and associated system describing the conditions for access, ordering, validation, delivery and traceability of spare parts according to the user profile*
- › *Public commitment or information published on the manufacturer's website describing the spare parts accessibility policy*

20. Spare parts prices

T1 Criteria

The value of a spare part may not exceed a maximum percentage of the recommended selling price excluding VAT. A tolerance is allowed for parts whose PRU exceeds the specified percentage.

- ❖ Maximum percentage of the [price](#) of one of the parts in relation to the price of the product : 25%.
- ❖ The manufacturer studies and clearly proposes to the user, through the information medium of his choice, repair scenarios enabling repair costs to be limited to 30%, including VAT, potential shipping costs, spare part and working time of repairer. These scenarios apply in the event of the failure of a single part.

Operational-type evidence: (Mandatory)

- *Evidence demonstrating, based on real cases, compliance with the spare parts pricing policy, such as:*
 - *parts sold individually with a reference and public price, ensuring compliance with the price cap set out in the criterion.*
 - *bundled sales where applicable, together with their technical justification;*
 - *repair scenarios proposed to the user demonstrating compliance with the maximum repair cost threshold set out in the criterion (including parts, labour, VAT and any applicable fees).*

Commitment- and process-type evidence: (Secondary)

- *Rules for setting and capping spare parts prices, including compliance with the threshold defined under the criterion and the associated tolerance conditions.*
- *Terms and conditions for the marketing of spare parts (individual or bundled sales), including the technical justifications in the event of bundled sales;*
- *Correspondence between the product components and the parts or sub-assemblies effectively made available on the market through:*
 - *after-sales service procedures;*
 - *the pricing policy;*
 - *the spare parts catalogue or bill of materials (BOM).*

21. Shipping costs for spare parts

T1 Criteria

The producer delivers the spare parts at the actual cost of shipping and preparation, or offers alternative solutions that reduce the cost of receiving the parts.

Operational-type evidence: (Priority)

- *Visual inspection and real-time demonstration of the order and fee billing process during the documentary or on-site audit, based on documented real cases of spare parts orders showing:*
 - *the preparation and shipping fees charged,*
 - *their consistency with the actual costs applied (carrier, shipping method),*
- *and/or demonstration of the order process (online or via customer service):*
 - *transparency of fees before confirmation,*

- and options offered to reduce delivery costs (consolidation, pick-up points, local collection, etc.).

Commitment- and process-type evidence: (Secondary)

- Rules for calculating and invoicing preparation and delivery charges for spare parts;
- and/or the alternative solutions offered to reduce delivery costs (consolidation, pick-up point, on-site collection, etc.).

22. Spare parts delivery times

T1 Criteria

The manufacturer demonstrates its ability to supply spare parts to interested parties within 5 working days.

Operational-type evidence: (Priority)

- Documented real cases of spare parts orders indicating the order date and the shipping or receipt date, demonstrating effective compliance with the ≤ 5 working days timeframe;
- and/or anonymised extracts from logistics tracking systems (after-sales service, ERP, carrier) showing the delivery times observed over a representative period.

Commitment- and process-type evidence: (Secondary)

- Sales contracts, general terms and conditions or after-sales service conditions specifying spare parts delivery times (≤ 5 working days) and the associated arrangements.

23. Documentation of failure scenarios

T1 Criteria

The manufacturer makes available relevant information and instructions for resolving failure scenarios and/or implementing the maintenance plan.

These are also adapted to the product category and target audience groups. The minimum duration of information availability is specified below.

- Class A = Accessible to all without restriction
- Class B = Accessible to independent repair service providers
- Class C = Accessible to repair service providers authorised by the manufacturer
- Class D = Accessible to the manufacturer only

Documentation	Class	Time to availability
Disassembly diagrams, reassembly if necessary or exploded views	A	10 years
Wiring and connection diagrams	A	10 years
Circuit diagrams or Electronic board diagrams	B	10 years
Instructions on how to replace the battery	B	10 years
Technical service manual for troubleshooting failure scenarios	A	10 ans

Documentation	Class	Time to availability
List of the repair and test equipment required	A	10 ans
Component and diagnostic information (such as minimum and maximum reference values for measurements)	B	10 ans
Error and diagnostic codes	A	10 ans
Software instructions, including reset procedures	B	10 ans
Access to incidents reported and logged by the equipment	B	10 ans
Technical service bulletins	B	10 ans
Instructions on how to contact customer service, including relevant contact details	A	10 ans
Spare parts pricing information	A	10 ans

Operational-type evidence: (Priority)

- Documented real-life case of access to documentation relating to a failure or maintenance scenario, from the perspective of a given target audience (end user, independent or authorised repairer), demonstrating:
 - effective accessibility of the required information
 - the level of access consistent with the declared class (A to D)
 - availability of the documents for the required minimum period (time-stamping, version control or archiving)

Commitment- and process-type evidence: (Secondary)

- Formalised documentation system describing:
 - the types of documents made available (failure scenarios, maintenance, diagnostics)
 - their level of access according to target audiences (Classes A to D)
 - the associated minimum period of availability (10 years)
- Identification of the official channels for accessing the documentation as website, after-sales service area, repairer portal, application, QR code or equivalent digital medium)

24. Support for fault diagnosis

T0 Criteria

The producer communicates information and/or deploys diagnostic support mechanisms to help identify failure scenarios.

- Class A = Intuitive interface
- Class B = Coded interface with public reference table
- Class C = publicly accessible hardware/software interface
- Class D = Proprietary interface
- Class E = Impossible, whatever the type of interface

❖ Class A :

Diagnostic support system with intuitive or coded interface and public access to the

reference table.

OR

The sales website of the product's manufacturer or distribution partners features a fault-tree diagnostic interface.

Operational-type evidence: (Priority)

- Documented real-life case, or demonstration carried out during the audit, illustrating an actual failure diagnosis scenario from the perspective of the relevant target audience, showing:
 - the type of diagnostic interface made available (intuitive, coded, hardware/software-based, proprietary)
 - the effective accessibility of this interface in accordance with the claimed class (A to E)
 - the information provided enabling identification of the failure scenario (codes, messages, diagnostic tree, software interface, etc.)

Commitment- and process-type evidence: (Secondary)

- Documentation describing the claimed diagnostic support system, specifying:
 - the declared class (A to E)
 - the target audiences concerned
 - the functional scope of the system (types of failures covered)

Scalability

25. Reset settings and passwords

T0 Criteria

In the event of repair or transfer to a third party, the product's user data management processes enable secure, high-performance reuse.

- Class A = Integrated reset
- Class B = External reset
- Class C = Service reset
- Class D = No reset

- ❖ Class A : Factory settings can be restored via a built-in function.

Operational-type evidence: (Priority)

- Concrete case demonstrated during the audit attesting to the ability (or inability) to reset the product in a repair or transfer context, showing the reset method implemented and the effective return to a state enabling reuse by a third party, in accordance with the claimed class (A to D).

Commitment- and process-type evidence: (Secondary)

- Documentation describing the user data management and product reset process, specifying the claimed class, the conditions for accessing the reset function and the scope of the data concerned.

26. Software

T0 Criteria

The manufacturer ensures that the original performance of its product is maintained when updating the operating system and/or firmware, and differentiates between evolutionary and [corrective updates](#). Users are informed of the consequences of updates, and their consent is required.

- ❖ The minimum availability time for updates is 8 years for products equipped with [IoT](#) functionalities.

Operational-type evidence: (Secondary)

- *Elements demonstrating the effective implementation of similar update policies on previous or equivalent products from the manufacturer, such as:*
 - *software update history (dates, corrective or evolutionary nature)*
 - *examples of user communications relating to updates*
 - *records demonstrating compliance with user consent and the absence of performance degradation on products already placed on the market*

Commitment- and process-type evidence: (Mandatory)

- *Contractual commitment or formalised policy of the manufacturer describing the software update strategy, specifying:*
 - *the distinction between corrective and evolutionary updates*
 - *the rules guaranteeing the maintenance of original performance*
 - *the arrangements for informing users and collecting their consent*
 - *the minimum period of availability of updates (8 years for products incorporating IoT functionalities)*

Quality of after-sales service

27. Internal failure resolution policy

T1 Criteria

In the event of product failure, the manufacturer pursues a policy of repair or reconditioning rather than replacement, unless repair is more expensive than replacement, taking into account the wishes of users.

Operational-type evidence: (Priority)

- *Factual evidence derived from after-sales service activities, directly or via the network, such as:*
 - *indicators or statistics showing the proportion of products repaired or refurbished compared with products replaced*
 - *examples of failure cases handled by the manufacturer or by distributors/repairers illustrating a decision to repair or refurbish*
 - *documented cases comparing repair and replacement costs, demonstrating the consistency of decisions taken with the defined policy*

Commitment- and process-type evidence: (Secondary)

- *Internal after-sales service policy or formalised contractual clauses with distributors/repairers describing:*

- the priority given to repair or refurbishment in the event of failure
- the situations justifying replacement (repair impossible or economically unfavourable)
- explicit consideration of the user's wishes in the decision-making process
- where applicable, the requirements imposed on the distribution or repair network (contracts, charters, after-sales service instructions) regarding the application of this policy

28. Service contact

T1 Criteria

The producer demonstrates that the opening of an after-sales service file does not exceed 2 working days and that the average time taken to resolve the file encourages repairs.

Operational-type evidence: (Priority)

- Consultation of after-sales service / CRM / sales administration systems, making it possible to verify:
 - the time taken to open after-sales service cases
 - average processing and resolution times
- Extracts or summaries from these systems (dashboards, exports, sample cases), showing:
 - the actual chronology of cases (creation, processing, closure)
 - effective handling of repair scenarios

Commitment- and process-type evidence: (Secondary)

- Formalised after-sales service procedure specifying target timeframes for opening and processing cases, as well as repair-oriented handling arrangements.

29. Return services

T0 Criteria

The manufacturer provides end-users with return services adapted to the product category and consistent with its distribution network, regardless of the status of warranties.

- Class A = Complete return options
- Class B = Basic return options
- Class C = No return option

- ❖ Class B: Basic return service with minimum return conditions by post or distribution/collection point

Operational-type evidence: (Priority)

- Demonstration of the effective operation of a return service accessible to the end user, which may include:
 - web pages, customer portals or information materials describing return options
 - demonstration of the user journey (return request, options offered)
 - examples of returns actually carried out (return labels, confirmations, logistics flows)
- Verification of the consistency of the return service with:

- the product category
- the distribution network (postal return, point of sale, collection point, etc.)
- the absence of any condition linked to warranty status

Commitment- and process-type evidence: (Secondary)

- General terms and conditions of sale, after-sales service policy or equivalent documentation describing return arrangements.
- Description of the logistics system for managing returns (in-house or outsourced).

30. Return condition

T0 Criteria

The return of the original packaging cannot be demanded for the repair of the product, as long as it is packaged and protected as much as it could have been at the time of purchase.

Operational-type evidence: (Priority)

- Documented real cases of after-sales service files or returns demonstrating acceptance of products for repair without the original packaging (return labels, after-sales service confirmations, parcel photographs).
- Information materials actually used by customers (return instructions, after-sales service emails, web pages, FAQs, after-sales service guides) specifying accepted packaging conditions, with no requirement for original packaging.

Commitment- and process-type evidence: (Secondary)

- General terms and conditions of sale (GTCs) or equivalent contractual documentation explicitly stating that original packaging is not required for acceptance for repair.
- Internal procedure defining the minimum accepted packaging and protection conditions.

31. Useful product

T1 Criteria

In its network, and for product categories considered "highly useful", the manufacturer minimizes the repair process time until the product is returned to the end-user.

❖ Not applicable

Operational-type evidence: (Priority)

- Data derived from after-sales service and logistics systems (extracts, dashboards or sample cases) making it possible to observe actual repair and product return lead times;
- Where applicable, demonstration of the implementation of concrete measures to reduce downtime, such as:
 - prioritisation of repairs,
 - standard exchange,
 - loan or provision of a replacement product,
 - accelerated logistics flows.

Commitment- and process-type evidence: (Secondary)

- *Description of specific arrangements and commitments relating to high-utility products (after-sales service organisation, continuity of use, information communicated to users).*

32. Warranty time

T0 Criteria

The warranty period with presumed anteriority of defect may not be less than 24 months.

❖ Minimum two-year warranty covering:

- Docking station assembly
- Battery assembly: battery

Operational-type evidence: (Secondary)

- *Documented cases from after-sales service records showing acceptance of defects for up to 24 months without proof of defect origin, including in markets with weaker local regulations.*

Commitment- and process-type evidence: (Mandatory)

- *General terms and conditions of sale (GTCs) or equivalent contractual documents, applicable either:*
 - *to the least favourable markets,*
 - *or to an international warranty, and stating a warranty period of at least 24 months with a presumption that the defect existed throughout this period.*
 - *Where applicable, an international warranty, group after-sales policy, or equivalent commitment setting a common coverage standard, regardless of local regulations.*

33. Warranty exclusions

T0 Criteria

In its general warranty conditions, the manufacturer does not introduce any abusive exclusion(s) with regard to the normal use of the product.

❖ Examples of abusive exclusions identified:

- Surface micro-scratches
- Dust residue
- Oxidation marks

Operational-type evidence: (Secondary)

- *Documented real cases with after-sales service files or extracts from after-sales service records demonstrating the reasons for refusal of warranty coverage.*

Commitment- and process-type evidence: (Mandatory)

- *General terms and conditions of sale (GTCs) or equivalent contractual documents detailing warranty conditions and warranty exclusions.*

Lifecycle

Sustainability

Commitment- and process-type evidence:

- *Type I environmental label (according to ISO 14024)*

34. Health, safety and environmental protection

T0 Criteria

With regard to human health, the safety of people and installations, and environmental protection, the manufacturer proves that it is taking action at a level that complies at least with the requirements of European directives 2011/65/EU and (EC) No 1907/2006 on the restriction of the use of certain hazardous substances in equipment, and/or action to preserve the ecosystems that are most affected.

Operational-type evidence: (Secondary)

- *Analytical testing in cases where documentary declarations are absent or insufficient.*

Commitment- and process-type evidence: (Mandatory)

- *Technical file / CE technical documentation demonstrating effective compliance with RoHS and REACH requirements for the audited product.*
- *EU Declaration of Conformity associated with the product and its version.*
- *Where applicable, records or declarations in relevant European regulatory databases (e.g. SCIP – ECHA, where the presence of substances of very high concern makes it applicable).*
- *For products not placed on the European market, demonstration of equivalent compliance with RoHS and REACH requirements through analyses, tests or supplier declarations.*

- ❖ For large companies (workforce > 5,000 employees), the main site(s) involved in the production of the product hold(s) certification to an international environmental management standard.

Operational-type evidence: (Non applicable)

Commitment- and process-type evidence: (Mandatory)

- *ISO 14001 certification or EMAS registration, issued by an accredited third-party inspection or verification body, covering the main site(s) involved in the production of the product.*
- ❖ In order to reduce the impact of the manufacturing phase, the manufacturer implements at least two of the following three characteristics:
 - The site responsible for battery cell production holds third-party quality certification related to environmental management, such as ISO 14001, regardless of the size of the company.
 - The site responsible for the plastics processing phase holds third-party quality certification related to environmental management, such as ISO 14001, regardless of the size of the company.
 - Metal parts, are made from recycled materials at least up to:
 - 17% for steel
 - 28% for stainless steel
 - 80% for aluminium.

Operational-type evidence: (Not applicable)

Commitment- and process-type evidence: (Mandatory)

- Valid ISO 14001 (or equivalent) certification
 - Material declarations demonstrating a recycled content (material data sheets, supplier certificates or mass balance calculations).
- ❖ Life Cycle Assessment (LCA) : The characteristics of the product and the manufacturer's practices result in a minimum **class C** among the classes listed below.

Requirements	Classes					
	A	B	C	D	E	F
The life cycle assessment (LCA) is subject to a critical review of the analysis by a competent and independent third party.	x					
The LCA is carried out on the specific product reference(s).	x	x				
The LCA is carried out by extrapolation from a reference representative of the product family	x	x	x			
A structured estimation of the main impact hotspots of the product family is carried out for prioritisation purposes, based on secondary data from recognised sources (e.g. Base Carbone, ADEME, Ecoinvent).	x	x	x	x		
A documented awareness-raising process is implemented for company teams involved in product-related decisions, in order to identify the main environmental impact issues and levers for the product family, with records of actions retained.	x	x	x	x	x	
No LCA-type analysis or equivalent is carried out, nor any study to robustly estimate the main impact hotspots.						x

Operational-type evidence: (Priority)

- **Class A:** Full LCA report carried out on the relevant product reference(s), accompanied by an independent critical review conducted by a competent third party.
- **Class B:** LCA report carried out on the relevant product reference(s), with no requirement for an independent critical review.
- **Class C:** LCA report carried out by extrapolation from a reference representative of the product family, including a description of the scope, assumptions and data sources used.
- **Class D:** Structured estimation of the main environmental impact hotspots of the product family, based on secondary data from recognised sources (e.g. Base Carbone, ADEME, Ecoinvent or equivalent).
- **Class E:** Documented internal awareness-raising activities for teams involved in product-related decisions, focusing on the main environmental impact issues and levers for the product family, with records of actions retained.

Commitment- and process-type evidence: (Secondary)

- Internal procedure or commitment describing the environmental assessment approach (LCA or equivalent estimation), its integration into product-related decisions, and the retention of associated deliverables.

- ❖ **Complementary - Fair mined material and/or recycled material:** The product characteristics and the manufacturer's practices ensure, as a minimum, a Class C rating for metals and a Class A rating for plastics, according to the classifications defined below:

- Class A : 40% minimum of weight
- Class B : 35% minimum of weight
- Class C : 30% minimum of weight
- Class D : 25% minimum of weight
- Class E : 20% minimum of weight
- Class F : <20% minimum of weight

Operational-type evidence: (Priority)

- *Documented mass calculation demonstrating the share of the product's total weight derived from recycled and/or fair materials, making it possible to identify the class achieved (A to F).*
- *Technical data sheets or material certificates, supplier declarations, demonstrating:*
 - *the recycled content*
 - *and/or the fair origin of the materials concerned (e.g. FSC, Fairmined, Fairtrade, RMAP or other relevant equivalent depending on the material).*
- *Associated documentary traceability (bills of materials, purchasing records, delivery notes or equivalents) linking the certified materials to the audited product.*

Commitment- and process-type evidence: (Secondary)

- *Internal system for monitoring and consolidating recycled and/or fair material rates per product, supporting the mass calculations carried out.*
- *Certificate attesting to the recycled content of the materials used in manufacturing,*
- *in accordance with standard EN 15343:2008, Recyclclass, UL 2809, Plastica Seconda Vita,*
- *IPC/LNE Part 2, or an equivalent method;*
- *Calculation of the recycled content in the product in accordance with a recognized standard such as EN 45557*

- ❖ The batteries comply with the limit values of EU regulation 2023/1542.

Operational-type evidence: (Priority)

- *Compliance documentation (e.g. CE file, conformity statement, material composition sheet) confirming that the batteries meet the hazardous substance limit values of EU Regulation 2023/1542.*
- *Test reports from accredited laboratories confirming compliance with substance restriction thresholds (e.g. mercury, cadmium, lead).*
- *Audit-based verification that the batteries placed on the market correspond to the declared compliant references (traceability of battery models and specifications).*

Commitment- and process-type evidence: (Secondary)

- *Internal process to monitor regulatory updates related to EU Regulation 2023/1542 and substance restriction requirements.*
- *Procedure to validate battery compliance before market placement, including supplier qualification and review of supporting evidence.*

- *Supplier contractual commitments ensuring continued compliance with EU hazardous substance limit values.*
- ❖ **Complementary** - At least 30% of the product's components have an identical design to those used in other products from the same manufacturer, as well as in products of the same performance category and generation.

Operational-type evidence: (Priority)

- *Bill of materials (BOM) for the audited product, identifying components shared with other products of the same category and generation.*
- *Component cross-reference table demonstrating:*
 - *identical references or designs*
 - *their reuse across several models*
 - *the calculation of the percentage of shared components ($\geq 30\%$)*
- *Associated technical documents (drawings, internal references, design files) demonstrating the identical design of the components concerned.*

Commitment- and process-type evidence: (Secondary)

- *Description of the product architecture and of the platform or standardisation approach implemented by the manufacturer.*
- *Internal design rules promoting the reuse of components across products within the same range or generation.*

35. Energy and/or environmental performance

T0 Criteria

To reduce the impact of energy consumption or pollution emissions, the manufacturer demonstrates the environmental and/or energy performance of its products.

It proves that it is taking action at a level that complies, as a minimum, with the prerogatives of European directives and/or regulations :

- (EU) 2009/125/EC (including its implementing measures) on the eco-design of energy-related products
- (EU) 2017/1369 (including delegated regulations) on the energy labeling of products if the product claiming the LONGTIME® label is concerned
- ESPR - The Ecodesign for Sustainable Products Regulation (EU) 2024/1781

Operational-type evidence: (Mandatory)

- *Product regulatory documentation*
 - *technical file / CE technical documentation*
 - *associated declarations of conformity*
 - *required regulatory registrations where applicable (e.g. EPREL database for the products concerned)*
- *For products not placed on the European market, evidence demonstrating the application of equivalent requirements, including in particular:*
 - *test or measurement reports*
 - *technical or assessment reports*
 - *applicable regulatory certificates for the markets concerned*

Commitment- and process-type evidence: (Secondary)

- › Documented internal system making it possible to identify, for each product and market, the applicable regulatory requirements relating to energy and/or environmental performance.

- ❖ **Complementary** - The product achieves a functional cleaning performance, expressed as the Cleaning Efficiency (CE) coefficient, for each cleaning task as follows:

Test soil	Maximum CE threshold
Coffee	CE ≤ 6
IKW test soil	CE ≤ 8
Tartar/remoulade sauce	CE ≤ 15
Mustard	CE ≤ 20

Operational-type evidence: (Priority)

- › Test report in accordance with IEC 62885-6, Clause 5 – Wet hard floor cleaning tests.

- ❖ Dust pick-up performance on hard floors

- › Dust pick-up performance on hard floors with crevices shall be greater than 1.07
- › Dust re-emission rate shall be less than 0.1%

Operational-type evidence: (Priority)

- › Test report based on EN 60312-1. Ecodesign measurements assessed by the inspection body appointed during the audit and supplemented by the documentation and technical specifications referred to in Article 12(5) of Regulation (EU) 2017/1369, available in the European Commission's product compliance database.

- ❖ Electrical appliances, when not in use, have maximum power consumption levels equivalent to:

- › Maximum 0.5 watt in standby mode (without information display)
- › Maximum 1 watt when information is displayed (time, water temperature, error code)
- › Maximum 2 watts in IoT mode

Operational-type evidence: (Mandatory)

- › - Consultation of the product's regulatory technical specifications, recorded in the European product database relating to compliance, and testing in accordance with the thresholds required by Regulation (EU) 2023/826.
- › Verification of the consistency of the declared energy data (operating modes, standby, off mode, time-controlled active functions) with the devices integrated into the product.
- › Where applicable, test reports or internal/external measurements used by the manufacturer to establish the declared consumption values.

Commitment- and process-type evidence: (Secondary)

- › Internal technical specification describing the integrated energy management functions (automatic switch-off, deep standby, mains switch, deactivation of keep-warm functions) and the targeted consumption thresholds.

- ❖ **Complementary** - The appliances have an [annual energy consumption](#) of:
 - **AE ≤ 65 kWh/year** for robot vacuum cleaners with an active docking station.
 - **AE ≤ 35 kWh/year** for robots without an active docking function other than recharging.

Operational-type evidence: (Priority)

- *Test reports or instrumented measurements carried out in accordance with the standard applicable to the product family, if applicable, making it possible to determine the declared energy class and the reference annual energy consumption.*
- *.Registration of the product in the European EPREL database with consistency of the data.*
- *Associated technical documentation (product information sheets, technical data sheets) used for regulatory registration.*
- *Where applicable, third-party test, audit or inspection reports confirming the conformity of the declared data.*

Commitment- and process-type evidence: (Secondary)

- *Internal energy validation procedure describing the tests carried out prior to placing the product on the market and the process for validating energy performance.*
- *Manufacturer's commitment to maintain energy compliance across all versions or variants within the same product family.*
- *Regulatory technical documentation established in accordance with Article 12(5) of Regulation (EU) 2017/1369.*

- ❖ At maximum continuous power, excluding temporary operating modes (such as Boost or Turbo), the robot shall not exceed a sound power level of 68 dB(A) on hard floors.

Operational-type evidence: (Priority)

- *Noise emission test report in accordance with the test conditions specified in EN 60704-2-1.*

- ❖ **Complementary** - Automatic return of the robot to its docking station, with correct alignment and charging engagement within 5 minutes or less, for at least 9 successful returns out of 10.

Operational-type evidence: (Priority)

- *Test report for the "return to docking station" function in accordance with IEC 62849:2025, Clause 7.2. A return is considered successful when the robot is connected to the docking station and able to initiate the charging process.*

- ❖ The manufacturer clearly informs the user of the usage scenario(s) enabling maximum reduction of the appliance's energy consumption and explains the differences in consumption between the various operating modes (ready-to-use, deep standby, complete switch-off, etc.).

Operational-type evidence: (Priority)

- *Audit verification of user documentation and/or publicly accessible information materials (instructions, website, product interface) to confirm the effective presence of information relating to energy management.*

Commitment- and process-type evidence: (Secondary)

- *Documented procedure governing the drafting and validation of user information relating to energy management and operating modes.*
- ❖ Each final assembly plant involved in the manufacture of the product and whose annual energy consumption exceeds 1 GWh:
 - Holds ISO 50001 certification
 - or
 - Implements a greenhouse gas (GHG) emissions reduction strategy enabling a reduction of at least 35% in absolute Scope 1 and 2 emissions by 2030 and deploys concrete measures relating to energy efficiency, energy sobriety and the use of renewable energy.

Operational-type evidence: (Secondary)

Option 2 – Climate pathway

- *Substantiating evidence demonstrating the deployment of measures relating to:*
 - *improved energy efficiency*
 - *energy sobriety*
 - *and/or the use of renewable energy*

Commitment- and process-type evidence: (Priority)

Option 1 – Energy management:

- *Valid ISO 50001 certification, issued by an accredited third-party inspection body, covering the relevant final assembly sites.*

Option 2 – Climate pathway

- *GHG inventory covering Scopes 1, 2 and 3, compliant with ISO 14064 (e.g. Bilan Carbone®, GHG Protocol), less than 3 years old.*
- *Written and formalised commitment by the manufacturer targeting a reduction of at least 35% in absolute Scope 1 and 2 emissions by 2030, covering the sites concerned.*
- *Where regulations already require the disclosure of Scope 1 and 2 GHG emissions, the manufacturer demonstrates an additional voluntary commitment to environmental transparency by documenting—at a minimum, in qualitative or partial terms—its main Scope 3 emissions related to the product or its life cycle through a public disclosure that includes, at a minimum, a partial numerical estimate or a well-reasoned qualitative analysis of the most significant sources.*

36. Equipment end-of-life management

T0 Criteria

As part of the management of end-of-life equipment, the manufacturer proves that it deploys actions for the collection, recovery and effective treatment of used products according to a level of requirement that complies at least with the prerogatives of European directives 2012/19/EU of July 4, 2012 on waste prevention and treatment depending on the target product group.

- ❖ The product's characteristics and the manufacturer's practices ensure a minimum Class B rating:

Requirements	Metals	Plastics
--------------	--------	----------

Separability	For parts weighing more than 25 g, the metals are separated to facilitate recycling, particularly for materials intended for different end-of-life processing methods.	Parts weighing more than 25 g do not contain any metal inserts or fasteners that are molded, hot-inserted, ultrasonically bonded, or glued, and cannot be separated by detaching them from the plastic part or using commonly available tools.
Coating	Metal parts weighing more than 25 g do not contain any adhesives, coatings, paint, or finishes that are incompatible with recycling.	Parts weighing more than 100 g must not contain any adhesives, coatings, paint, or finishes that are incompatible with recycling. Post-consumer recycled materials and printed circuit boards are exempt.
Alloys	Data on the alloys used is available.	Parts weighing more than 25 g are made of a single resin or a combination of resins that are compatible with recycling and can be separated by hand or using a common tool from other plastic parts weighing more than 25 g that are not compatible for co-recycling.

- Class A: All criteria are met
- Class B: 2 criteria are met
- Class C: 1 criterion is met
- Class D: None of the criteria are met

Operational evidence (priority)

- *Product bill of materials or consolidated technical data sheet, which identifies:*
 - *Plastic parts weighing more than 25 g and more than 100 g,*
 - *Whether or not they contain inserts, adhesives, or surface treatments,*
 - *The type of resins used.*
- *Findings from the audit (visual inspection and/or targeted disassembly of a representative product) confirming:*
 - *The effective separability of the plastic parts in question,*
 - *The absence of components that are incompatible with recycling, where required.*

Evidence related to commitments and processes (secondary)

- *A design rule or formal commitment by the manufacturer, applicable to the audited model, that includes:*
 - *Limiting the use of inserts, adhesives, and surface treatments on plastic parts,*
 - *Prioritizing the use of single-component resins or those compatible with recycling,*
 - *Documented management of any exceptions for technical, regulatory, or safety reasons.*

- ❖ **Complementary** - The use of black plastics containing carbon black is prohibited, unless an optical detection solution compatible with existing sorting systems is demonstrated.

OR

The manufacturer makes available online, free of charge and accessible to all user profiles, the information required for dismantling:

- Sequence of dismantling steps;
- Tools or technologies required;
- Location and indicative weight of critical components targeted by Directive 2012/19/EU (Annex VII, point 1).
- No access restriction for a period equivalent to that defined for Class A in [Criterion 17](#) Spare parts availability period.

Operational-type evidence: (Priority)

- Material certificates or declarations relating to the plastics used (e.g. material data sheets, supplier certificates, test results or validation of compatibility with existing optical sorting systems).
or
- Online dismantling information, free of charge and without restriction (e.g. manual, technical sheet, video tutorial), covering the elements required by Directive 2012/19/EU (Annex VII, point 1), with evidence of effective accessibility (links, screenshots).

Commitment- and process-type evidence: (Secondary)

- Written commitment guaranteeing that dismantling information remains available online for a period at least equivalent to that defined for Class A of Criterion 17 - Spare parts availability period.

❖ **Complementary - Information for consumers:**

- The product shall include a pictogram or a clear indication concerning its end-of-life and disposal.
- The manufacturer shall provide practical advice to consumers on any dismantling steps required prior to recycling.
- Claims regarding recyclability shall be substantiated by treatment streams available at industrial scale.

Operational-type evidence: (Priority)

- *Audit finding confirming the presence of a pictogram or disposal-related indication on the product, the packaging or an associated medium.*
- *User instructions or information materials (brochures, website, tutorials) describing best practices and, where applicable, the preliminary operations required prior to recycling (e.g. removal of a component, draining).*
- *Documented evidence demonstrating that environmental claims are based on existing industrial treatment streams (e.g. EPR references, sectoral or supplier documentation).*

Commitment- and process-type evidence: (Secondary)

- *Internal procedure for validating recyclability claims and the supporting justification.*
- *Certificate of membership in an Extended Producer Responsibility (EPR) scheme or documented partnerships with collection/recycling stakeholders.*
- *Process for regularly updating consumer information materials and end-of-life guidance.*
- *Training and awareness-raising actions for relevant teams regarding end-of-life and disposal requirements.*

- ❖ **Complementary** - Identification of the materials of product parts that are mainly plastic and weigh more than 5 grams.

Operational-type evidence: (Priority)

- *Marking or identification of plastic components > 5 g, in accordance with ISO 11469 and ISO 1043-1/-2/-3/-4.*
- *Associated material documentation (material data sheets, bills of materials, internal databases) indicating:*
 - *the polymer type*
 - *the corresponding standardised classification*
- *Verification during the audit through visual inspection of components and/or consultation of technical documentation.*

Commitment- and process-type evidence: (Secondary)

- *Internal procedure governing end-of-life communication and recyclability claims, including verification of the existence of industrial treatment streams prior to publication.*
- ❖ Extended Producer Responsibility (EPR) and reuse, refurbishment and/or recycling of parts and products : the characteristics of the product and the manufacturer's practices result in a minimum **class B** among the classes listed below.

Class A	For the main markets (> 10% of sales of certified product) where certified products are sold, the brand owner provides a take back scheme which demonstrably promotes and puts into practice reuse and/or refurbishment of parts and products, as opposed to recycling only, while being legally compliant with applicable EPR regulations
Class B	For all markets where certified products are sold and where EPR regulations apply, the brand owner participates in accredited EPR schemes or provides a reuse/recycling scheme which fulfills the requirements to be exempted from participation in EPR schemes. In all markets without EPR regulations, the brand owner provides voluntarily a take back possibility involving accredited reuse/recycling facilities
Class C	For all markets where certified products are sold and where EPR regulations apply, the manufacturer participates in accredited EPR schemes or operates a reuse/recycling scheme which fulfills the requirements to be exempted from participation in EPR schemes (legal compliance)

- ❖ The manufacturer must demonstrate annually that:
 - At least 80% of all certified products sold are covered by product take-back schemes.
 - At least 40% of first-tier reuse and recycling facilities used by non-EPR take-back schemes (Extended Producer Responsibility) are certified against R2, e-Stewards, WEEELABEX, EN 50625 or equivalent standards.

Operational-type evidence: (Priority)

- › *Certificates, contracts or supporting documents demonstrating participation in accredited EPR schemes, where applicable.*
- › *Factual evidence of implementation demonstrating the effective deployment of take-back arrangements (e.g. active contracts with compliance schemes, agreements with partners, evidence of treated flows).*
- › *Monitoring elements demonstrating effective coverage of the markets concerned (e.g. scope tables, annual summaries or equivalents).*
- › *As supporting evidence, information materials accessible to users presenting take-back, reuse or recycling options.*

Commitment- and process-type evidence: (Secondary)

- › *Formalised internal system (policy, specifications, procedure or equivalent) defining:*
 - › *the EPR compliance strategy*
 - › *the principles for implementing take-back, reuse, refurbishment or recycling schemes*
 - › *the scope of the markets concerned*

37. Packaging management

T1 Criteria

As part of the fight against waste production, the manufacturer is making efforts to eliminate the proportion of non-recyclable plastic waste from its packaging through:

- ❖ In accordance with Regulation (EU) 2025/40 on packaging and packaging waste, the manufacturer assesses the recyclability of the product's packaging using a performance class system equivalent to classes A, B or C as set out in the PPWR.

The manufacturer must demonstrate that the packaging achieves a minimum recyclability equivalent to Class A.

Product packaging	Mass Recyclability
Class A	≥ 95%
Class B	≥ 80% and < 95%
Class C	≥ 70% and < 80%
Class D	< 70%

- ❖ In accordance with Regulation (EU) 2025/40 (PPWR), the manufacturer demonstrates that the product packaging is designed to keep its weight and volume to the absolute minimum required to fulfil its intended functions: product protection, transport, storage, safety, regulatory information and damage prevention.
- ❖ Manual separability of packaging components that are non-recoverable and non-reusable and weigh more than 25 grams into a single material component
- ❖ Plastics used for product packaging shall not contain halogenated polymers

- ❖ Product packaging must not contain:
 - lead (Pb)
 - cadmium (Cd),
 - mercury (Hg)
 - hexavalent chromium (Cr6)
 - halogens bound to organic substances for plastic materials

Operational-type evidence: (Priority)

- *Packaging composition and mass calculation, including:

 - total mass and breakdown by material;
 - identification and mass of non-recyclable and/or non-reusable components;
 - demonstration that $\geq 95\%$ of the total weight is recycled, recyclable and/or reusable.*
- *Material technical data sheets, declarations of conformity or supplier certificates for packaging plastics.*
- *Where applicable, results of composition analyses carried out by a laboratory or a third-party body.*
- *Where the packaging-to-product weight ratio appears high for the type of product in question, the manufacturer must provide a technical justification or a plan to reduce it.*

Commitment- and process-type evidence: (Secondary)

- *Packaging specifications or internal procedure incorporating requirements for the elimination of non-recoverable plastics.*
- *Internal system for monitoring packaging composition and mass per product.*

38. Control of aesthetic and marketing obsolescence

The manufacturer develops product design and marketing practices that encourage the extension of the products' service life.

❖ **Complementary - Minimum Class C**

- The criterion is assessed but is not discriminating in the audit results.

Class	Product renewal frequency (PRF)	Inter-generational comparison	SOE (Aesthetic Obsolescence Score)	Compatibility (accessories / consumables / software)
A	PRF ≤ 1 model / 2 years	Public & quantified	$1 \leq \text{SOE} < 2$	Extended compatibility across ≥ 2 generations, bi-directional (upward and downward)
B	PRF ≤ 1 model / year	End users, partially quantified	$2 \leq \text{SOE} < 4$	Extended compatibility across ≥ 2 generations, one-way (upward or downward)
C	PRF ≤ 1 model / year	Not systematic	$4 \leq \text{SOE} < 6$	Partial compatibility across ≥ 2 generations, mono- or bi-directional depending on the elements concerned

D	PRF > 1 model / year	Absent / not substantiated	$6 \leq \text{SOE} < 9$	Limited compatibility (< 2 generations), mono- or bi-directional, not systematically demonstrated
E	PRF > 2 models per year (with no major functional evolution)	No structured comparison	$9 \leq \text{SOE} \leq 12$	No compatibility
F	Not assessed / Not verifiable	NA / NV	NA / NV	NA / NV

Operational-type evidence: (Priority)

- History (product versioning) of marketed models, making it possible to establish the renewal frequency.
- Aesthetic obsolescence risk score.
- Technical comparisons between generations.
- Documentation or demonstration of compatibility of accessories, consumables and software across generations.
- Declarative or aggregated elements relating to the product marketing budget.
- Examples of marketing communications making it possible to assess the overall promotional stance.

Commitment- and process-type evidence: (Secondary)

- Formalised internal system (product, design or marketing policy, or equivalent) governing:
 - the model renewal pace
 - inter-generational compatibility principles
 - marketing practices related to product launch and replacement

IX. TERMS, DEFINITIONS, CLARIFICATIONS

Depending on the sector, specific definitions for different product categories (parts, functions, etc.) may be added to the recurring definitions below.

Actual failure

Failure that is effectively linked to a malfunction of the product and not to an exogenous problem (e.g. unpowered socket, incorrectly connected power cable, poorly locked lid, etc.).

Adaptable or compatible spare part

These are parts that can be adapted to several models and brands of the same product, more or less faithful copies of original parts that are not manufactured to the original manufacturer's specifications and are not sold in the original manufacturers' packaging.

After-sales service file

An After Sales Service File is a record documenting the handling of a customer request or issue following the purchase of a product. It includes all relevant information about the customer interaction, the issue reported, steps taken to resolve it, and any communication between the customer and the company. In cases where customer support teams manage the initial contact, the file may be passed on to the after-sales service team for further handling when needed, ensuring that all necessary actions are taken to resolve the issue.

The response time for handling such requests does not exceed an average of duration described in [criteria 29](#). There may be flexibility for periods of high demand (e.g., during product launches or holidays) that are justifiable in relation to market practices.

An automated email confirming receipt of the request is not considered sufficient for compliance to [criteria 29](#).

AMDEC / FMEA

Tools for Failure Mode and Effect Analysis / Analyse des Modes de Défaillance, de leurs Effets et de leur Criticité.

Breakthrough technology

A technology that introduces a major advance over existing solutions or practices. It is distinguished by its significant impact on performance, functionality or efficiency, and can change standards or redefine an industry. Unlike incremental improvements, a breakthrough technology often disrupts the market or the field of application, offering substantial benefits or opening up new possibilities. This can apply to both hardware and software innovations.

Circular economy part (CEP)

PIEC are second-hand goods within the meaning of art. L. 321-1 of the French Commercial Code, and cannot be universally defined, but are defined on a case-by-case, sector-by-sector basis.

For the time being, CEIPs are defined in consumer law for the following sectors: automobiles, household appliances, electronics, motorized DIY and gardening tools, sports and leisure equipment and motorized personal transport devices.

For household electrical and electronic equipment, art. R. 224-30 code de la consommation states: "For the application of article L. 224-109, parts from the circular economy are understood to be components and elements resulting from an operation of preparation with a view to their reuse" where article 541.1.1 defines "preparation with a view to reuse" as any operation of control, cleaning or repair with a view to recovery by which substances, materials or products that have become waste are prepared in such a way as to be reused without any further operation.

Competence level

Solving a failure scenario may require skills such as the ability to identify and locate the failure, access the affected area in the product, handle the appropriate tools, and manage any risks associated with the product, the environment and the operator. Depending on the level of technical skill required to carry out the repair, several levels are defined:

- **Novice:** When no specific repair experience or qualifications are required to carry out the failure scenario resolution process.
- **Generalist:** When the resolution of a scenario is not achievable by a novice, but can be achieved by a person with general knowledge of basic repair techniques and necessary safety measures
- **Expert:** When a scenario cannot be solved by a novice or generalist, but can be solved by people with specific expertise or experience related to the product group in question.
- **Manufacturer:** When the resolution of a scenario is not feasible by a novice, generalist or expert, but can be performed by the manufacturer or a person specifically trained and accredited by the manufacturer.
- **Unfeasible:** When a scenario cannot be solved by any of the defined profiles.

Compostable packaging

Container designed with materials capable of decomposing naturally under the action of micro-organisms present in the composter to become a natural or organic component of the substrate.

Corrective update :

A corrective software update is a modification or set of modifications made to a software or operating system or functionality in order to correct defects, errors or malfunctions identified after it has been put into service. These corrections aim to restore or improve the correct operation of the product or system without introducing major new functionalities. It may include corrections relating to :

- Technical errors (bugs) in software
- Design errors or user biases
- Security flaws identified after deployment

This type of update is often distinct from an evolutionary update (which adds functionality) or a preventive update (which aims to anticipate future problems).

Criticality

The criticality of a failure refers to the importance or impact of this failure on the correct operation of a product. It is assessed on the basis of the severity of the consequences the failure could have, particularly in terms of safety/costs, and the frequency of occurrence.

Data management process

Refers to the set of practices and procedures put in place by an organization to collect, store, process, protect and manage the personal information of individuals using their products.

Disassembly depth

Corresponds to the sum of the steps required to access each part individually and to separate it from the equipment, with a view to its replacement.

Electrodomestic

Product powered by electrical energy and intended for domestic use only.

EOS

An acronym for Electrical Overstress, meaning an undesirable state of electrical overload that could lead to product damage or failure.

Expected service life

Period during which the user expects the product to perform as intended. This expected lifetime is defined on the basis of scientific literature and/or consumer surveys. When the data is not available or is insufficiently robust, the expected lifetime is defined by the author of the standard, based on the expertise of the LONGTIME® teams and its network.

Experienced tools

Tools that require skill to use and whose cost can be a barrier (torque wrench, soldering iron, etc.).

External source parts

Parts external to the manufacturer's production facility, sourced from an identified supplier.

Fair Mined Material

Fair Mined Material refers to raw materials used in the device for which the manufacturer can credibly demonstrate active efforts to improve at least one of the following aspects during the extraction stage: working conditions, workers' income, or environmental protection. This means that the manufacturer is committed to ethical practices by ensuring better labor conditions, fair compensation for workers, and/or implementing measures to minimize environmental impact in the sourcing of these materials.

Full Material Declarations

Full Material Declarations (FMD) in the context of a Product Life Cycle Assessment (LCA) refer to comprehensive and detailed disclosures of all materials and substances used in a product. This includes a complete list of every material, chemical, and component that makes up the product, along with relevant information about their quantities, sources, and potential environmental or health impacts.

General-purpose tools

Common, general-purpose tools available to the general public in standard distribution and as specified in the EN 45554 tool list: screwdrivers (slotted head, cross-head, 6-lobe internal screws), wrenches (hexagon socket, combination wrenches), pliers (universal, half-round nose, diagonal cutting, multi-socket, vice, for stripping and crimping terminals), pry bar, tweezers, steel-headed hammer, universal knife (cutting pliers with retractable blade), multimeter, voltage tester, soldering iron, glue gun, magnifying glass.

High-utility product

A product that is used very frequently and which, in the event of failure, causes a significant disruption to day-to-day management: refrigerator, washing machine, boiler/water heater, telephone, computer, hob, etc.

HS

Out of order; corresponds to the end of the functional state.

IOT

Internet of Things; this function refers to the ability to connect a product to the Internet for additional remote control and/or regulation functions.

Manual

Comprehensive guide or instructional resource that provides detailed information on how to use, operate, maintain, or assemble a product, system, or process. It can take various forms, including printed booklets, digital documents (such as PDFs), illustrated tutorials, or video instructions. Its purpose is to offer clear, step-by-step guidance to users, ensuring they can correctly and efficiently engage with the product or service it accompanies.

No use

Corresponds to a state of non-operation of the device.

Non-recyclable packaging

Packaging that cannot be effectively recovered, recycled or reused after use.

Non-recoverable packaging

Refers to a type of packaging that cannot be effectively recovered, recycled or reused after use.

O.S

Operating System is a set of programs that direct the use of a computer's resources by application software.

Permanent assembly

This is an assembly of components forming a single part or component of a product, which cannot be disassembled without destroying or altering its intended use.

To remove the connection between two assemblies or parts, it is necessary to deform, degrade or destroy at least one of the parts forming the assembly. Examples: welding, crimping, clinching, stamping, gluing and adhesives.

Primary data or information

Information directly measured or collected by the professional in one or more installations representative of the professional's activities.

Product/part unit cost price (PRU)

Understood as the sum of the price of the parts making up a product/of the components of a part.

Professional tools

Tools requiring special knowledge or conditions of use, and whose acquisition cost represents an investment.

Professional user

Means any natural or legal person, to whom a product has been made available for use in the course of their industrial or professional activities

Proprietary tool

A specific tool, not commercially available, belonging exclusively to one party or company, by virtue of which its use by another party (end user, customer, repairer) involves copyright, a license and/or a cost.

PSR

"Product Specific Requirement, corresponds to the criterion specifications applicable to the types of equipment specified within the scope of the standard.

Reconditioned part

A second-hand product or spare part, within the meaning of Article L. 321-1 of the French Commercial Code, may be qualified as a "reconditioned product" or be accompanied by the term "reconditioned", provided the following conditions are met:

- The product or spare part has undergone tests on all its functionalities in order to establish that it complies with legal safety requirements and the use to which the consumer can legitimately expect it to be put.
- If necessary, the product or spare part has undergone one or more operations to restore its functionality. This intervention includes the deletion of all data recorded or stored in connection with a previous use or a previous user, before the product or part changes ownership."

Recyclable material or product

A recyclable material or product is one whose characteristics allow it to be diverted from the waste stream through available collection and processing systems, enabling its reintegration as raw material or a new product (based on ISO 14021).

A recycled material or product is manufactured entirely or partially from materials that have been recovered after initial use and subjected to a transformation process—mechanical, chemical, or other—to be reintroduced into the production chain.

Recycling excludes the direct reuse of products or components without prior transformation and aims to reduce the consumption of virgin raw materials.

Regular maintenance

Maintenance recommended by the manufacturer to keep the product in optimum working order.

Removable fastener

Corresponds to an original fastening system which can be removed during disassembly without damaging the product, but which cannot be reused during reassembly (e.g. plastic clamp, rivet).

Replacement or spare part

A replacement part is a separate part intended to replace a defective or degraded part having the same or a similar function of a good in operation; (Source: Annexes to the European Regulations laying down ecodesign requirements in accordance with Directive 2009/125/EC).

Return conditions for a repair process

- Complete returns conditions: special arrangements are in place to encourage the return of the product for a repair process, whether to the manufacturer, a partner or a repairer: free shipping, home pick-up, free replacement product during the repair process, free repair. These special arrangements are available both under warranty and out-of-warranty.
- Basic return conditions: users wishing to repair their product have the option of returning it for repair, but there are no special arrangements in place to facilitate this process (charges, etc.).
- No return solution: the end-user has no way of returning the product to the manufacturer or one of its partners for repair.

Reusable packaging

Container designed to be used over and over again, reducing the need for disposable packaging.

Reusable fastener

Corresponds to an original fastening system removed during disassembly without altering the product, and which can be reused during reassembly (e.g. screws, clips).

Reused parts

To date, there is no official definition of "re-use parts", but a definition of "re-use" provided in Article L. 541-1-1 of the French Environment Code, which defines it as follows:

Reuse: "an operation by which products or components that are not waste, are used again for a use identical to that for which they were designed".

Selling price of a spare part

Deduction of delivery costs: The principle adopted is to calculate without including transport or delivery costs. If these costs are included in the pricing of the general sales conditions, it is the responsibility of the producer or importer to deduct them for the calculation of the ratio. Specifically, for the price of spare parts, two methods are possible for deducting transport or delivery costs: individually for each part on list 2 or as a flat rate (in absolute value or as a percentage). The same applies to the price of new equipment.

Spare part(s) included in a set: If one or more parts are included in a set offered for sale or any other inseparable sub-assembly of parts, the price of the relevant part is the price of that sub-assembly.

Parts not managed by the producer or importer: If parts from list 2 are not managed by the producer or importer, the price of the parts to be considered is the price listed in the supplier's general sales conditions at the time of the index calculation.

Product options with the same reference: If options are offered for the same reference and do not affect the technical characteristics, then the price ratio calculation should be based on the price of the spare parts and the price of the most common version of the product concerned.

[Criterion](#) 20 is established by calculating the ratio between: the ex-tax price of the spare part and the ex-tax price of the relevant equipment model, where each price is understood as the ex-tax price from the current price list at the time of the certification process and listed in the general sales conditions of the manufacturer or importer, or in any other relevant contractual document if not available.

If a manufacturer or importer has, for the parts or equipment concerned, several price lists depending on the different categories of distributors or sellers, the prices used for the index calculation are those from the price list that accounted for the highest share of the manufacturer's or importer's turnover for the type of parts or equipment concerned during the last closed fiscal year.

Serialization

Practice by which the manufacturer limits the use of spare parts to only those original parts that it approves, in particular by means of software.

Example: associating the serial numbers of a product's components with the product's overall serial number.

Spare part

A spare part is a distinct part that is an integral part of a product, essential to fulfill its primary function. It is not supposed to be replaced as part of normal use of the product, but may be replaced following accidental damage, long-term wear and tear, premature wear due to incorrect use or maintenance, or misplacement. In such cases, the spare part is exchanged for a replacement part.

Spare parts interface

Refers to the way in which parts connect or integrate with the existing components of a product. Depending on the type of part and the type of interface used to connect them, a classification is established: A standard part is a component, a part, manufactured to recognized specifications and standards, commonly used and compatible with various products or systems.

- **Standard part with standard interface:** Designates a standard part, manufactured according to recognized specifications and standards, commonly used and compatible with various products or systems, and whose connection or interaction with other components, devices or systems is based on standardized or widely used and accepted specifications.
- **Standard part with proprietary interface:** Refers to a standard part, manufactured according to recognized specifications and standards, commonly used and compatible with various products or systems, and whose connection or interaction with other components, devices or systems is based on specifications specific to a particular manufacturer or company.
- **Proprietary part with non-standard interface:** Refers to a non-standard part, exclusive to a product or company, usually produced in-house or under license. This type of part may have unique specifications that make it incompatible with other products or brands. In addition, it may be designed with a specific connection to other components, devices or systems, also based on specifications specific to a particular manufacturer or company.

Step (disassembly)

Operation leading to part removal or tool change.

Sub-assembly

A set of inseparably connected components that form a block and perform a function. The sub-assembly may be separate from the product.

Example: Soldered motor and electronic board

Usage stress

This corresponds to the forces applied to the part.

Used parts

Used goods are goods which, at any stage of production or distribution, have come into the possession of a person for his or her own use, by the effect of any act for valuable consideration or free of charge, or have undergone alterations which do not allow them to be offered for sale as new (Source: Article L321-1 of the French Commercial Code).

Waste

Any substance or object, or more generally any movable asset, which the holder discards or intends or is required to discard. (Source: Directive n°2008/98/CE of November 19, 2008 on waste)

Working environment

When solving failure scenarios, a number of different working environments can be identified.

- **Operating environment:** Corresponds to the environment in which the product is used and does not express any specific requirements relating to the working environment for the resolution of failure scenarios.
- **Workshop environment:** Corresponds to an environment which does not require a production environment (class C), but where failure resolution scenarios cannot be carried out in the operating environment.
- **Production environment:** Corresponds to an environment necessary for the resolution of failure scenarios which is comparable to that in which the product was manufactured.

X. BIBLIOGRAPHICAL RESOURCES

This paragraph lists the main bibliographical resources used to draw up the sector reference guide, which are likely to evolve according to the target product groups.

Cross-cutting European legislation

- Directive 2011/65/EU – Restriction of the use of certain hazardous substances in electrical and electronic equipment – RoHS.
- Regulation (EC) No 1907/2006 – Registration, Evaluation, Authorisation and Restriction of Chemicals – REACH.
- Directive 2012/19/EU – Waste Electrical and Electronic Equipment – WEEE.
- Directive 2014/30/EU – Electromagnetic compatibility – EMC.
- Directive 2014/35/EU – Electrical equipment designed for use within certain voltage limits – Low Voltage Directive (LVD).
- Directive 2014/53/EU – Radio equipment – RED.
- Directive 2009/125/EC – Ecodesign of energy-related products.
- Regulation (EU) 2017/1369 – Framework for energy labelling.
- Regulation (EU) 2023/826 – Ecodesign requirements relating to energy consumption in off-mode, standby mode and network-connected standby mode.
- Regulation (EU) 2023/1542 – Batteries and waste batteries.
- Regulation (EU) 2024/1781 – Ecodesign of sustainable products – ESPR.
- Directive 94/62/EC – Packaging and packaging waste.
- Regulation (EU) 2025/40 – Packaging and packaging waste – PPWR.

General safety standards for electrical and domestic appliances

- EN 60335-1 – Household and similar electrical appliances – Safety – Part 1: General requirements.
- EN IEC 60335-2-2 – Household and similar electrical appliances – Safety – Part 2-2: Particular requirements for vacuum cleaners and wet vacuum cleaners.
- EN IEC 60335-2-10 – Household and similar electrical appliances – Safety – Part 2-10: Particular requirements for floor-care machines and wet cleaning machines.
- EN IEC 60335-2-29 – Household and similar electrical appliances – Safety – Part 2-29: Specific requirements for battery chargers.
- IEC 62368-1 – Audio/video equipment, information and communication technology – Safety – Part 1: Safety requirements.
- EN 60384-14 – Fixed capacitors used in electronic equipment – Fixed capacitors for noise suppression and connection to the power supply.

Normes spécifique produit

- EN IEC 62849 – Methods for assessing the performance of robots for domestic and similar use.

- IEC 62885-4 – Floor cleaning appliances – Part 4: Cordless vacuum cleaners for domestic and similar uses – Methods for measuring performance.
- IEC 62885-6 – Floor cleaning machines – Part 6: Wet cleaning machines for hard floors – Methods for measuring performance.
- IEC/ASTM 62885-7 – Floor cleaning appliances – Part 7: Dry cleaning robots for domestic or similar use – Methods for measuring performance.
- EN 60312-1 – Domestic vacuum cleaners – Part 1: Dry vacuum cleaners – Methods for measuring performance.
- EN 60704-2-1 – Household and similar electrical appliances – Test code for the determination of airborne noise – Particular requirements for vacuum cleaners.

Normes de durabilité, réparabilité et écoconception

- EN 45552 – General method for assessing the durability of energy-related products.
- EN 45554 – General methods for assessing the reparability, reusability and upgradeability of energy-related products.
- ISO 14024 – Environmental labelling and declarations – Type I environmental labelling – Principles and procedures.
- Mechanical standards, drops, impacts, connectors and endurance
- IEC 60068-2-31 – Environmental testing – Drop and overturn tests.
- IEC 60068-2-75 – Environmental testing – Hammer tests / impact tests.
- EN 62262 – Degrees of protection provided by enclosures against external mechanical impacts – IK code.
- IEC 61058-1 – Switches for household appliances and similar equipment – Part 1: General requirements.
- ASTM F1778-07 - Standard Test Method for Evaluating Electrical Switch Life and Endurance.
- IEC 60320-1 - Appliance couplers for household and similar general purposes - Part 1: General requirements.
- IEC 60512-9-1 – Connectors for electronic equipment – Tests and measurements – Mechanical endurance tests.
- EIA-364-09D - Durability Test Procedure for Electrical Connectors and Sockets.

Environmental standards: temperature, humidity, corrosion, UV

- IEC 60068-2-30 – Environmental testing – Cyclic humid heat.
- IEC 60068-2-38 – Environmental testing – Combined temperature and humidity cyclic test.
- IEC 60068-2-78 – Environmental testing – Humid heat, continuous test.
- ISO 4892-3 – Plastics – Methods of exposure to laboratory light sources – UV fluorescent lamps.
- Standards for materials, plastics, elastomers and chemicals

- ISO 188 – Vulcanised or thermoplastic rubber – Tests for accelerated ageing and heat resistance.
- ISO 175 – Plastics – Determination of the effects of immersion in liquid chemicals.
- ISO 1817 – Vulcanised or thermoplastic rubber – Determination of the effect of liquids.
- ISO 22088 – Plastics – Determination of stress cracking in a given environment.
- ISO 11469 – Plastics – Generic identification and marking of plastic products.
- ISO 1043-1 – Plastics – Symbols and abbreviated terms – Base polymers and special characteristics.
- ISO 1043-2 – Plastics – Symbols and abbreviated terms – Fillers and reinforcing materials.
- ISO 1043-3 – Plastics – Symbols and abbreviated terms – Plasticisers.
- ISO 1043-4 – Plastics – Symbols and abbreviated terms – Flame retardants.

Standards for watertightness, water, dust and pressure

- EN IEC 60529 – Degrees of protection provided by enclosures – IP code.
- ISO 1402 – Rubber and plastic pipes and hoses – Hydrostatic tests.
- EMC standards, power surges and mains fluctuations
- EN IEC 55014-2 – Electromagnetic compatibility – Requirements for household appliances, power tools and similar equipment – Immunity.
- IEC 61000-4-2 – Electromagnetic compatibility – Immunity tests for electrostatic discharges.
- IEC 61000-4-4 – Electromagnetic compatibility – Immunity tests for fast electrical transients in bursts.
- IEC 61000-4-5 – Electromagnetic compatibility – Immunity tests for surge currents and overvoltages.
- IEC 61000-4-11 – Electromagnetic compatibility – Immunity tests for voltage dips, short interruptions and voltage variations.
- Battery standards
- IEC 61960-3 – Lithium-ion accumulators for portable applications – Prismatic and cylindrical lithium cells and batteries.
- Quality standards, production, traceability and reliability
- ISO 9001 – Quality management systems – Requirements.
- ISO 10007 – Quality management – Guidelines for configuration management.
- IEC 60300-1 – Operational safety management – Guidelines for management and implementation.
- IEC 60300-3-1 – Operational safety management – Application guide

Techniques for analysing operational safety.

- IEC 60812 – Failure Mode and Effects Analysis – FMEA.
- IEC 61025 – Fault Tree Analysis.

- ISO/IEC 15459 – Automatic identification and data capture techniques – Unique identification.
- ISO/IEC 18004 – Information technology – QR code specification.
- ISO 31000 – Risk management – Guidelines.

Standards for environmental management, energy, LCA and climate

- ISO 14001 – Environmental management systems – Requirements and guidelines.
- EMAS – European Eco-Management and Audit Scheme.
- ISO 14040 – Environmental management – Life cycle assessment – Principles and framework.
- ISO 14044 – Environmental management – Life cycle assessment – Requirements and guidelines.
- ISO 50001 – Energy management systems – Requirements and guidelines for implementation.
- ISO 14064 – Greenhouse gases – Quantification and reporting of GHG emissions and removals.
- GHG Protocol – A framework for accounting for and reporting greenhouse gas emissions.
- Bilan Carbone® – A method for accounting for greenhouse gas emissions.
- ADEME Carbone® Database – Emission factor database.
- Ecoinvent – Life-cycle inventory database.

Guidelines on end-of-life management, reuse and recycling

- EN 50625 - Exigences relatives à la collecte, à la logistique et au traitement des déchets d'équipements électriques et électroniques.
- WEEELABEX - Référentiel relatif au traitement des déchets d'équipements électriques et électroniques.
- R2 - Responsible Recycling Standard.
- e-Stewards - Référentiel de certification des installations de recyclage responsable des équipements électroniques.
- Référentiels matières responsables
- FSC - Forest Stewardship Council.
- Fairmined - Standard relatif à l'extraction responsable de minerais.
- Fairtrade - Certification d'origine équitable.
- RMAP - Responsible Minerals Assurance Process.
- Bases et dispositifs réglementaires
- SCIP - Base de données ECHA relative aux substances extrêmement préoccupantes dans les articles.
- ECHA - Agence européenne des produits chimiques.
- EPREL - European Product Registry for Energy Labelling.

Accelerated reliability testing methods

- HALT / HASS - Highly Accelerated Life Test / Highly Accelerated Stress Screening.

XI. TECHNICAL JUSTIFICATION(S)

▸ Functional unit – Robot washer

The functional unit adopted is: "to provide autonomous wet cleaning of indoor hard floors in a dwelling, based on five one-hour cleaning tasks per week over a period of eight years, corresponding to 2,080 operating hours."

This functional unit reflects the service provided by the robot washer through a representative use scenario combining calendar lifetime, intensity of use and active operating time. It is consistent with the principles of Life Cycle Assessment (LCA), which structure the assessment around a functional unit, a reference flow and a use scenario.

The eight-year service life has been selected by analogy with domestic vacuum cleaners, a closely related product category in terms of floor maintenance. ADEME's work on extending product lifetimes assumes that a household uses 1.25 vacuum cleaners over a ten-year period, corresponding to an average service life of eight years. Expressing the functional unit in operating hours is particularly appropriate for robot washers, whose energy and resource consumption depends on cleaning time, navigation, return to the docking station, battery charging, docking station standby losses and, where applicable, automated functions such as dust emptying, washing and drying of the cleaning elements.

This approach is consistent with ADEME's modelling of autonomous or intermittently operated appliances, for which use scenarios combine operating time, standby operation, specific energy consumption and associated consumables. Where reliable data are available, the assessment may also be expressed in terms of cumulative cleaned floor area to better reflect differences in cleaning efficiency or surface coverage between models, without affecting the primary functional unit adopted for this specification.

Calculation of Annual Energy Consumption

Annual energy consumption (AE) :

- $AE = 87 \times 260 \times 0.001 \times SE_{robot} + ((Mh \times 8026) / 1000)$
 - 87 is the standard dwelling floor area to be cleaned, in m²
 - 260 is the standard number of annual cleaning cycles, corresponding to five cleaning tasks per week
 - 0.001 is the conversion factor from Wh to kWh
 - SE_{robot} is the robot's specific energy consumption, in Wh/m², during the test
 - Mh is the average energy consumption in maintenance / standby mode on the docking station, in W
 - 8026 is the annual number of hours spent in maintenance / standby mode on the docking station

Specific energy consumption of the robot (SE_{robot})

‣ **S_{Erobot} = E_{cycle} ÷ S_{test}**

- **E_{cycle}** is the energy consumed from the mains by the complete robot + docking station system for one complete standardised cleaning cycle, in Wh/cycle
- **S_{test}** is the area actually cleaned during the test cycle, in m²
- **S_{Erobot}** expresses the cycle energy consumption in relation to the area actually cleaned, allowing products to be compared independently of their battery capacity or operating time

Definition of the standardised cleaning cycle

The **standardised cleaning cycle** is carried out in the default or recommended automatic mode. It starts with a fully charged robot and ends only once the system has returned to its initial state.

The cycle includes:

- departure from the docking station
- cleaning of the test area
- autonomous navigation
- return to the docking station
- docking station functions associated with the cycle
- recharging to the same state of charge as at the start of the test

The cycle shall use the cleaning functions claimed by the product. For robots with both vacuuming and washing functions, the test shall include effective activation of both functions.

Minimum discharge during the test

The **standardised cleaning cycle** shall result in significant battery discharge, with the state of charge before recharging being **less than or equal to 20%**, unless a technical impossibility is documented.

This requirement ensures that a representative recharge is measured and prevents a cycle that is too short or insufficiently demanding from underestimating the actual energy consumption of the system.

Docking station functions included in E_{cycle}

Docking station functions performed after return to the dock are included in **E_{cycle}** when they form part of the normal use cycle:

- automatic emptying of the dust collector
- emptying or management of dirty water
- washing of the mops
- drying
- water refilling
- equivalent functions

These functions are included whether they are triggered automatically or manually as part of normal use.

Measurement of maintenance / standby mode

Mh is measured separately when the robot is on its docking station, fully charged, inactive and ready to operate.

Active charging and post-cleaning functions already included in **Ecycle** shall not be included in **Mh**, in order to avoid double counting.

XII. VERSION UPDATE

Implemented in 2025, the LONGTIME V2 base reference system is scheduled to be valid for 5 years before its next revision in 2030, with the exception of minor changes.

Version number	Date of release	Summary of action	Editor
Standard Robot Vacuum and Mop V2.1	07/2026	Publication of the final version of the V2.1 guidance document	F.Preguesuelo
Standard Robot Vacuum and Mop V2.1	05/2026	Consultation version of the V2.1 reference document	F.Preguesuelo
Standard Robot Vacuum and Mop V2.1	03/2026	Launch of the V2.1 drafting process	F.Preguesuelo

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