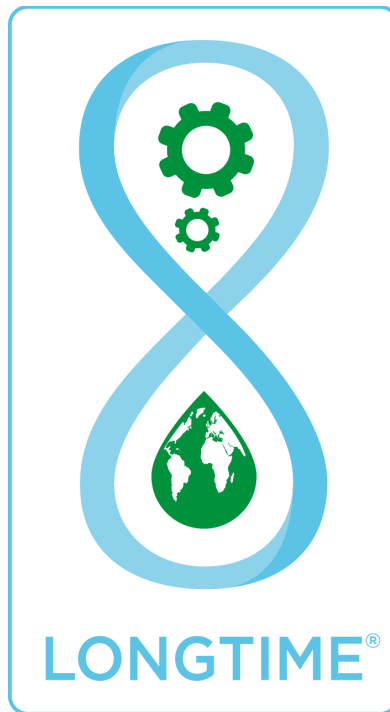




Certification PSR

ELECTRIC PRUNING SHEARS

Any full or partial reproduction or representation made without the consent of the author or their successors or assigns is unlawful under the French Intellectual Property Code (Article L. 122-4) and constitutes an infringement punishable under the French Criminal Code. Only copies or reproductions strictly reserved for the private use of the person making the copy and not intended for collective use, as well as analyses and short quotations justified by the critical, educational or informational nature of the work in which they are incorporated, are permitted (Article L. 122-5), subject to compliance with Articles L. 122-10 to L. 122-12 of the same Code concerning reproduction by reprographic means. The LONGTIME® logo, name and certification standard are protected by trademark registrations filed with the French National Institute of Industrial Property (INPI): Nos. 4380472 and 4380317.

Summary

I. INTRODUCTION

- Vision of LONGTIME®
- Label objectives
- Fields of application
- Organization of the certification PSR
- Control system
- Standards and regulations

II. DEFINITION OF THE PRODUCT SCOPE

- Product scope
- Outside the product scope

III. NOMENCLATURE OF PARTS

IV. ACCESSIBILITY scale

V. ELIGIBILITY

- Candidate commitment

VI. Label criteria

Environmental performance and/or energy mandate

- PR.1. Protection of health, safety and environment
- PR.2. Energy and/or environmental performance
- PR.3. End of life management of equipment

Conception

- I.1.1. State of the art and technical solutions
- I.1.2. Production
- I.1.3. Consumable parts and accessories
- I.1.4. Security elements
- I.1.5. Vulnerable parts
- I.1.6. Non usage
- I.1.7. Unproven technology
- I.1.8. External source parts
- I.1.9. Reliability plan
- I.1.10. sub-assembly

Scalability

- I.2.1. Software

Traceability

- I.3.1. Study and failure rate
- I.3.2. Identification number

Disassembly

- II.1.1. Product packaging
- II.1.2. Access to functional parts
- II.1.3. Access to priority parts
- II.1.4. Sub-assembly connectors (internal parts)

- II.1.5. Batteries
- II.1.6. Disassembly tools

Documentation

- II.2.1. Exploded diagram
- II.2.2. Exploded diagram
- II.2.3. Fault code
- II.2.4. Repair Manual
- II.2.5. Troubleshooting software packages

Spare parts

- II.3.1. Nomenclature
- II.3.2. Availability time
- II.3.3. Supply time
- II.3.4. Price of spare parts
- II.3.5. Price of delivery costs

After-sales service under warranty

- II.4.1. Contact du SAV
- II.4.2. Support
- II.4.3. Repair policy

Out-of-warranty after-sales service

- II.5.1. After-sales service network

Free long-term warranty

- III.1.1. Warranty time
- III.1.2. Warranty conditions (beyond the legal conformity period)
- III.1.3. Disclaimer of warranty
- III.1.4. Assignment of Warranty
- III.1.5. Original package

Use and care instructions

- III.2.1. Usage information provided
- III.2.2. Usage information provided
- III.2.3. Access to information

VII. TERMS AND DEFINITIONS

VIII. THANKS

IX. BIBLIOGRAPHICAL RESOURCES

I. INTRODUCTION

Drawing on the standards of the NF EN 45550 series, and in line with NF EN 45552 and NF EN 45554, the LONGTIME® sector-specific standards specify requirements relating to the assessment of robustness, reliability and repairability for the associated product family.

All qualitative, semi-quantitative and quantitative data are derived from a research and consultation process, as required by the applicable standards, and take into account bibliographic references (scientific studies, regulations, standards, etc.) as well as input from all relevant stakeholders, namely: economic operators placing products on the market (manufacturers, importers and distributors), their suppliers and/or subcontractors, product experts (repairers, installers and professional testers), spare parts professionals, refurbishers, consumers, consumer associations, environmental organisations, and any other stakeholders able to contribute relevant added value, subject to the availability of networks and information.

The definition of prerequisites relating to quality, energy thresholds, pollutant emission thresholds, the classification of parts, and the definition of thresholds for accessibility scales are based on the analysis of the consultations conducted and on consideration of the best available ecodesign practices on the market.

Vision of LONGTIME®

This project is part of a dynamic of societal movement with the desire to move ahead of regulations. This label is made by citizens, for citizens. It provides certainty that the product carrying the label is manufactured for long-term use, as desired by 80% of consumers, and that it is economically repairable.

LONGTIME® is a simple, strong and effective tool, created to inform the consumer actor concerned about the overall impact of their purchases, but also the consumer wishing to acquire a product with a fair longevity/price ratio. It also tends to bring to the forefront manufacturers keen to offer products with an optimized lifespan.

Label objectives

This approach involves encouraging different consumption, therefore aiming to produce differently. Almost all citizens want a transformation of the consumer society with a real change in the technical-economic paradigm in order to consume better and more sustainably.

The ecological interest is of course major, on a global scale we have increased our consumption of raw materials in just a few decades to now exceed 60 billion tonnes per year. The label influences the preservation of planetary resources, through better use of them and the reduction of waste.

Intuitively, therefore, obtaining a good with an optimized lifespan promotes reasoned use of our planet's resources, reduces overconsumption and allows us to move away from disposable

items and waste. It is not a question of looking for “immortal” products but of fighting against the too short lifespan of products.

Extending the service life of electric secateurs by a few years can reduce life-cycle impact indicator results for impact categories primarily driven by production stages prior to use. For other impact categories, the benefits of extending service life will largely depend on the energy efficiency of the replacement product.

Fields of application

The label is applicable to different product families as long as there is an assembly of parts. LONGTIME® tends to cover domestic, electronic, portable power appliances, furniture, leisure equipment, professional equipment, etc. The range of products is therefore very vast but excludes automobiles, textile products (excluding leather goods), food, cosmetics and chemicals.

Organization of the certification PSR

The criteria are broken down into several categories and the presentation of the criteria follows the following diagram:

Criteria category

The criteria are grouped into 11 main categories

Criterion number and name

Each criterion has an identification number in I.X.X format and a name allowing its theme to be defined.

Requirement level (KO/Major/Minor)

See table below

TRANSVERSE CRITERION

Criterion applicable to all product categories

❖ Spécification ou Product Specific Requirement (PSR)

Specific criterion whose scope is adapted to the product category of the framework.

Means of proof

Details of the means of proof required and/or relevant for the evaluation of the criterion and its PSRs

A level of requirement is assigned to each label criterion according to the classification indicated in the table below:

KO	These criteria must be respected to qualify for labeling after the initial audit (year N).
Major	These criteria must be respected at least 80% during the audit. They will lead to the implementation of corrective actions to reach 100% by year N+1.
Minor	These criteria must be respected at least 50% during the audit. They will lead to the implementation of corrective actions to reach 80% by year N+1 and 100% by year N+2.

Control system

The assessment of compliance with the benchmark criteria is carried out by an approved and independent inspection body.

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

More details on the control system in the labeling process available on the [LONGTIME® labeling conditions online](#).

Standards and regulations

The standards or regulations cited in the reference system use the most recent versions and/or equivalences published in the official journal of the European Union.

II. DEFINITION OF THE PRODUCT SCOPE

The “Electric Secateurs” standard covers secateurs equipped with a battery-powered electric motor.

Electric secateurs are powered pruning tools designed to make cutting branches and stems easier. They use an electric motor to drive the cutting blades. Unlike traditional manual secateurs, which require manual force to cut, electric secateurs enable faster cutting with less physical effort from the user.

Product scope

- Professional cordless secateurs with an external battery
- Professional cordless secateurs with an integrated battery

Outside the product scope

- Manual secateurs
- Telescopic secateurs
- Non-professional electric secateurs
- Pneumatic secateurs

Throughout the remainder of this standard, battery-powered secateurs are referred to as electric secateurs.

III. TERMS AND DEFINITIONS

Depending on sectoral standards, definitions specific to different product categories (parts, functions, etc.) can be added to the recurring definitions below.

AMDEC / FMEA

Tools allowing the Analysis of Failure Modes, their Effects and their Criticality / Failure Mode and Effect Analysis.

Permanent assembly

It is a set of components forming a single piece or part of a product and cannot be dismantled without destruction or alteration of the use for which it is intended.

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, bonding and adhesives.

Constraint of use

It corresponds to the forces which apply to the part.

Criticality

The criticality of a failure refers to the importance or impact of this failure on the proper functioning of a product. It is evaluated according to the severity of the consequences that the failure could cause, particularly in terms of safety/costs, and the frequency of occurrence.

Actual failure

Failure which is actually linked to a malfunction of the product and not to an exogenous problem. (e.g. power outlet not powered, power cable not properly connected, lid not properly locked, etc.)

Expected lifespan

Period during which the user expects their product to perform as intended.

Seasonal energy efficiency for space heating

The ratio (Ns), expressed as a %, between the space heating demand for a designated heating season, covered by a heating device, and the annual energy consumption required to meet this demand.

Household appliances

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

Compostable packaging

Container designed with materials capable of decomposing naturally under the action of microorganisms present in the composter to become a natural or organic element of the substrate.

Reusable packaging

Container designed to be used multiple times, reducing the need for disposable packaging.

Non-recoverable packaging

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

Regular maintenance

Maintenance recommended by the manufacturer to keep the product in optimal operating condition.

Working environment

When resolving failure scenarios, several working environments may be listed.

EOS

Acronym for Electrical Overstress reflecting a state of undesirable electrical overload likely to lead to damage or failure of the product.

Step (disassembly)

Operation leading to the removal of a part or a tool change.

Reusable attachment

Corresponds to an original fixing system removed during disassembly without altering the product and which is reusable during reassembly (e.g. screws, clips).

Removable attachment

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

HS

Out of service ; corresponds to exiting the functional state.

Spare parts interface

Refers to how parts connect or integrate with 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 according to recognized specifications and standards, commonly used and compatible with various products or systems.

IOT

Internet of Things or internet of objects; This function corresponds to the fact of being able to connect your product to the internet in order to obtain additional remote control and/or regulation functionalities.

Competence level

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

Non usage

It corresponds to a non-operating state of the device.

O.S

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

“General public” tools

Common tools, for general use, available to the general public in traditional distribution and as specified in the EN 45554 standard tools list: screwdriver (slotted head screw, cruciform, 6 internal lobes, wrench (hexagon socket screw, mixed), pliers (universal, half-round nose, diagonal cutting, power strip, vice, for stripping and crimping terminals), pry bar, tweezers, hammer with steel head, utility knife (cutting pliers with retractable blade), multimeter, voltage tester , soldering iron, glue gun, magnifying glass.

“Experienced Audience” tools

Tools requiring skills to use and whose cost can represent a barrier (torque wrench, soldering iron, etc.).

“Professional” tools

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

Proprietary tool

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

External source parts

Parts external to the manufacturer's production body, coming from an identified supplier.

Unit cost price “PRU” of a product/part

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

“Great utility” product

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

Disassembly depth

Corresponds to the sum of the steps allowing individual access to each part and detaching it from the equipment, with a view to its replacement.

Data management process

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

PSR

“Product Specific Requirement” corresponds to the criterion specifications applicable to the types of equipment specified within the scope of the framework.

Serialization

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

Example: associate the serial numbers of the components of a product with the overall serial number of the product.

Subset

Set of connected components inseparable from each other which form a block and provide a function. The subassembly can be separated from the product.

Example: Motor and welded electronic card

Disruptive technology

Technology whose operation brings an innovation or a major technological advance compared to previous ones and whose reliability has not yet been fully proven over time.

IV. NOMENCLATURE OF PARTS

List of parts representative of the target product group but not-exhaustive.

- **Machine body assembly**
 - Housing
 - Handle
 - Guard
 - Trigger and control assembly
 - Trigger spring
 - Trigger
 - Trigger PCB

- **Electrical and electronic assembly**
 - Power supply board or module
 - Battery management board or module
 - Power boards or modules
 - Filter boards or modules
 - Sensor-based control boards or modules (infrared, capacitive, etc.)
 - Communication module
 - Electronic safety mechanism
 - Battery connector
 - Battery (integrated or external): cell array and BMS board
 - Indicator lights (LEDs, etc.)
 - Ribbon cable
- **Cutting head assembly**
 - Blade/counter-blade pivot pin
 - Blade
 - Counter-blade
 - Nut and retaining screw for the blade and counter-blade assembly
 - Stop
 - Toothed nut
- **Electric motor assembly**
 - Rotor
 - Stator
 - End shield
 - Gearbox
 - Bearing
- Drive system assembly
 - Ball screw and nut
 - Spring
 - Link
 - Gear system
- Mechanical joint sealing and stabilisation assembly (rigid, flexible)
 - Sealing components (O-rings, rings, lip seals, silicone, cylinder, piston)
 - Fastening components (screws, bolts, circlips, washers, etc.)
 - Stabilising components (springs, spacers, bushings, bearings, etc.)

V. ACCESSIBILITY SCALE

The accessibility scale has 3 levels and aggregates data related to repairability; notably :

- The dismantling depth of the part in number of steps

- Dismantling time in minutes
- The level of skill required to complete the task
- The tools needed for the process

A	≤ 3 steps ≤ 10 mins any user consumer tools
B	≤ 10 steps ≤ 15 mins experienced user or repairer general public tools, experienced public tools
C	≤ 15 steps ≤ 20 mins experienced user or repairer general public tools, experienced public tools, professional tools

The scales indicated in the table above are orders of magnitude not to be exceeded but these thresholds can be limited more precisely in the criteria calling for accessibility scales.

If all the relevant safety instructions are followed, the dismantling process starts when the product is connected to the gas cylinder.

VI. 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)

Phase	User risk	Système mobility	Product handling	Weather exposure	Overall risk
Inactivity	Medium	Low	Low	Low	Low
Coupe	High	Medium	Medium	High	High
Charge	Medium	Low	Medium	Low	Medium
Nettoyage	Medium	Low	Medium	Low	Medium
Maintenance	Medium	Low	Medium	Low	Medium

Assessment of the overall risk of exogenous failure:

HIGH

The main risks of failure caused by external factors for this product category include:

- Unsuitable cutting conditions (excessive branch diameter, motor overload, etc.)
- Exposure to adverse weather, particularly rain, with a risk of water ingress
- Dropping or mishandling the tool during cleaning
- Failure to comply with battery storage requirements
- Failure to comply with charging requirements (unsuitable charger, excessive charging time, etc.)

This product category is subject to a significant risk of failure caused by external factors. Electric secateurs must therefore be tested accordingly to assess their robustness under the stresses encountered during use.

These reliability aspects are described in Chapter 1.1.1, State of the Art and Technical Solutions.

Particular attention must also be paid to manuals covering product care, maintenance and/or repair, as described in Chapter II.2.4, Repair Manual.

VII. ELIGIBILITY

Candidate commitment

The candidate's eligibility in a quality certification process must be consistent with their existing values and strategies.

The company has not been accused or found responsible (information/material evidence, subpoena), of ethical violation, of commercial practices clearly contrary to quality and ethics (practice of planned obsolescence, industrial espionage, fraud -tax) or major environmental impact over the last 10 years where considerable and appropriate efforts have been put in place to: repair the damage caused, prevent it from happening again, reduce their impacts.

The manufacturer has all the necessary rights over the products and is the sole holder of property rights of any kind over the products, including in particular the designs, patents and trademarks relating thereto.

The products are not subject to any dispute of any nature whatsoever from any third party.

The products are not likely to harm public order or good morals, to provoke protests from third parties, or to contravene the legal provisions in force.

For the marketing of the products, the manufacturer agrees to its obligations and strictly complies with all legal provisions (directives, regulations, standards, laws) relating to the protection of human health, safety and the protection of the environment prevailing in the geographic areas of product distribution and in relation to its product categories. For the European Economic Area, products must therefore obey European legislation and be in compliance with the "CE" marking for the products concerned.

VIII. LABEL CRITERIA

Environmental performance and/or energy mandate

PR.1. Protection of health, safety and environment

Criterion Prerequisites

Within the framework of respect for human health, the safety of people, installations and protection of the environment, the producer proves that he deploys actions according to a level of requirements compliant at least with the prerogatives of the European directives 2011/65/EU and (EC) No 1907/2006 relating to the limitation of the use of certain dangerous substances in electrical and electronic equipment where necessary.

Method of proof: For products distributed in geographical areas potentially covered by regulatory prerogatives establishing requirements similar to the European market in terms of limiting the use of certain dangerous substances in the EEA, proof of compliance with these regulatory requirements will be used. method of proof in compliance with the PSR of this criterion if necessary.

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

Method of proof: ISO 14001 certification issued by an accredited third-party certification body.

PR.2. Energy and/or environmental performance

Criterion Prerequisites

As part of reducing the impacts linked to energy consumption or pollution emissions, the producer demonstrates the environmental and/or energy performance of its products. It proves that it deploys actions according to a level of requirements consistent, at a minimum, with the prerogatives of the European (EU) directives and/or regulations 2009/125/EC (including its implementing measures) on the ecodesign of energy-related products and (EU) 2017/1369 (including delegated regulations) on energy labeling of products if the product claiming the LONGTIME® label is concerned.

Method of proof: For products distributed in geographical areas potentially covered by regulatory prerogatives establishing requirements in terms of energy efficiency, eco-design and energy display similar to the European market, proof of compliance with these requirements regulatory requirements will serve as a method of proof in compliance with the PSR of this criterion if necessary.

- ❖ The manufacturer shall clearly inform the user of the operating scenarios that minimise the energy consumption of the juicing appliance and, where relevant, explain the differences in power consumption between the various operating modes (e.g. ready-to-use, deep standby, complete shutdown).

Method of proof: Ecodesign measures shall be assessed by the appointed Certification Body during the audit and supplemented by the technical specifications available in the product database for compliance purposes, including the technical documentation referred to in Article 12(5) of Regulation (EU) 2017/1369.

PR.3. End of life management of equipment

Criterion Prerequisites

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

Method of proof: In geographic distribution areas covered by regulatory prerogatives establishing product collection and recycling requirements, proof of compliance with these regulatory requirements will serve as a mode of proof in compliance with the PSRs of this criterion if necessary.

Conception

I.1.1. State of the art and technical solutions

Criterion KO

The manufacturer identifies and records in a technical sheet the constraints on the use of the product and its different parts. It justifies reliable and qualitative design choices and technical solutions with regard to these constraints.

- *CE marking database*
- *Type file*
- *Supplier quality data (technical specification sheet, iso 9001:2015, certification, etc.)*
- *Test data (external/internal) for qualification, performance, ageing, wear, endurance, resistance to limit conditions.*
- *Any documentation/software to support compliance, such as :*
 - *Internal product data sheet*
 - *Functional analysis tool*
 - *Design study (operation, materials, usage constraints)*
 - *Performance and endurance tests*
 - *Phase and qualification testing*
 - *Study of failure rates*
 - *Quality commitment (commercial guarantee)*
- *Application of product-related test standards:*
 - *EN 60335-2-15:2016 (Household and similar electrical appliances – Safety – Part 2-15: Particular requirements for appliances for heating liquids).*
 - *EN 62841-1 (Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety – General requirements).*
 - *EN 60068-2-38:2009 (Resistance of components to temperature and humidity).*

❖ General resistance to operating and environmental conditions

- Protection of internal parts against external factors (leaves, pollen, dust, sap, water, etc.)
 - Protection of electrical and electronic components
 - Appropriate dimensioning and selection of materials for environmental stresses
 - Product design and/or selection of sealed or resistant components (sealed compartment, stainless steel bearings, conformal coating, etc.)
 - Humidity, rain and corrosion: the tool's primary function is maintained during use in the rain
- Demonstrated durability of ferrous and non-ferrous materials under outdoor climatic conditions, particularly for the housing, handle, cutting head and battery
 - Dry heat
 - UV radiation
 - Materials known to resist corrosion and humidity
- Durability and resistance of protective and finishing coatings on ferrous materials
 - Galvanising
 - Electrophoretic coating
 - Powder coating (primer and topcoat)
 - Passivation
 - Zinc plating

❖ Body and housing durability

- › Resistance of housings and external covers to impacts
 - › Selection of robust materials with enhanced impact resistance (hard plastic or another robust material). Body made from material resistant to stresses encountered during use
 - › Material dimensioning and/or product design (bumpers) intended to withstand impacts
 - › The appliance withstands 1-joule impacts applied to vulnerable points of the enclosure under the conditions described in IEC 60068-2-75:1997. Impact protection rating IK04 according to IEC 62262
 - › The appliance shows no malfunction after two sets of three drops from a height of 1 metre onto a concrete surface
 - › Handle material providing a secure grip to minimise the risk of dropping the tool
- › Resistance of housings and external covers to outdoor environmental conditions
 - › Transparent or coloured covers are treated with a UV-resistant agent to prevent fading, yellowing or loss of transparency, particularly where indicator LEDs must remain visible to the user

Method of proof: Assessment by the appointed conformity assessment body during the on-site audit. Material specifications; impact, drop, puncture and corrosion resistance tests.

❖ Motor assembly durability

- › Protection against excessive torque through cut-off or limitation when the current measured by the battery is outside the permitted limits
- › Robustness of the motor's mechanical joints and/or electrical connections and those of its electronic boards
- › **Resistance to stresses:**
- › Resistance to thermal stresses:
 - › Thermal sensors that preserve product integrity in the event of a sudden temperature rise. Short response time appropriate to extreme operating scenarios
 - › Thermal protection of the rotor provided by fuses, thermal-magnetic circuit breakers and/or overload relays
- › Resistance to electrical stresses:
 - › Voltage variation at the motor terminals not exceeding 10%
- › Resistance to mechanical stresses:
 - › Resistance of keys, conductors and winding insulation to vibration
 - › Where brushes are present, their wear must not limit the product's service life
- › Resistance and protection of the electric motor against external factors (plant debris, sap, water, etc.)

Method of proof: Assessment by the appointed conformity assessment body during the on-site audit.

Material specifications, resistance tests and tests under limiting conditions (continuous operating time, electrical input characteristics such as voltage range).

❖ Blade durability

- Resistance of the blade to outdoor environmental conditions
 - Selection of materials and fasteners known to resist corrosion
 - Corrosion-resistant fasteners
- Enhanced blade resistance to operating conditions, particularly vibration and mechanical forces (tension, torsion, impacts, friction)
 - Robustness of the blade fastening system, taking account of the risk of loosening
 - Resistance to wear and friction through treatment processes applied to the counter-blade and blade
 - Use of alloy steel to improve wear resistance
- Blade dimensioning appropriate to the maximum cutting diameter and limiting conditions
 - Blade thickness appropriate to the specified cutting diameters
 - Anti-jamming system (torque limiter or cutting direction reversal)

Method of proof: Characterisation of processes and coatings through technical data, wear and ageing tests, cutting quality tests under limiting conditions (large branch diameters, worn blades), and vibration tests.

❖ Battery durability

- Reliable monitoring and management of cell operating status through the BMS board
 - Management and optimisation of cell temperature and resistance
 - Cell balancing management
 - Effective deep-discharge management
- Efficient energy management and retention of efficiency
 - Retention of at least 80% of battery charge capacity after 1,000 cycles
- Reliability of the casing and connectors
 - Robustness of battery-to-tool connectors
- Resistance of cells to operating conditions
 - Optimised electrical connections between cells, appropriate to battery sizing and mechanical stresses
 - Optimisation of the balance between ventilation and sealing
- A system for recording faults and battery state of health to facilitate diagnosis and subsequent action

Method of proof: Assessment by the appointed conformity assessment body during the on-site audit. Application of product-related test standards, for example: IEC 61508 (functional safety of electrical/electronic/programmable electronic systems), IEC 61960-3 (lithium secondary batteries for portable applications), IEC 61960 (test methodologies).

❖ Electronic component durability

- Resistance of components to operating conditions
- Reliability of position sensors (Hall-effect sensors recommended)
- Thermal management (ventilation and cooling) and effective protection of components against overheating (airflow, spacing, heat sinks, etc.)
- Sealing of electrical and electronic contacts through product design or design features compatible with repairability objectives
- Robustness of control modules, with high resistance to repeated operation

Method of proof: Characterisation of parts and processes through technical data, wear and ageing tests.

- ❖ Management of failures caused by external factors
 - Protection of the tool during continuous or intermittent storage
 - Design features that facilitate storage
 - Protective accessory supplied for transport

Method of proof: Assessment by the appointed conformity assessment body during the on-site audit. Material specifications, resistance and wear tests, design review.

- ❖ Specific measures promoting repairability:
 - Serialisation practices that prevent or restrict the replacement of parts are prohibited
 - Failure diagnosis interfaces shall be intuitive and facilitate fault identification

Method of proof: Visual inspection and real-time demonstration to the appointed Certification Body during the on-site audit.

I.1.2. Production

Major criterion

The manufacturer has processes enabling it to control and maintain constant quality of manufacturing and assembly in production.

- ❖ The main site(s) involved in the production of the product shall hold certification to an international quality management standard.
- ❖ Individual functional testing of 100% of electric motors after assembly, verifying that the current draw does not exceed a maximum limit appropriate to the product's intended use.

Method of proof: Compliance with the principles of ISO 9001 shall be demonstrated through verification of the applicable quality procedures or through equivalent requirements covered by other certifications. For companies with more than 250 employees, ISO 9001 certification issued by an accredited third-party certification body is required.

I.1.3. Consumable parts and accessories

Major criterion

Consumable parts, accessories and parts requiring regular maintenance comply with accessibility scale A.

- ❖ Accessibility scale limited to 3 steps and 10 minutes

Consumable parts : parts intended to be replaced, subject to wear during use of the device.

- **Cutting head assembly**
 - Blade

Accessory parts:

- Holster for attachment to the adjustable belt
- Adjustable belt
- Conductive safety gloves
- Armband
- Sharpening stone

Maintenance parts

- **Cutting head assembly**
 - Counter-blade

Method of proof: Visual inspection and real-time demonstration to the inspection body mandated during the on-site audit.

I.1.4. Security elements

Criterion KO

The replacement and/or rearming of product and/or user safety elements is provided by the manufacturer. These elements respect accessibility scale B.

These are all the active and passive parts necessary to protect against risks associated with the use of the product.

- ❖ Accessibility scale limited to 10 steps and 15 minutes
 - **Electrical and electronic assembly**
 - Electronic safety mechanism

Method of proof: Visual inspection and real-time demonstration to the inspection body mandated during the on-site audit.

I.1.5. Vulnerable parts

Criterion KO

Vulnerable parts include parts exposed to a high rate of accidental user breakage. The replacement of these parts complies with accessibility scale B.

- ❖ Accessibility scale limited to 10 steps and 15 minutes
 - **Not identified according to the definition set out in the LONGTIME® standard.**

Method of proof: Visual inspection and real-time demonstration to the inspection body mandated during the on-site audit.

I.1.6. Non usage

Minor criterion

The manufacturer identifies the consequences of non-use of the product and must inform the consumer in the recommendations for use of the minimum use necessary for the proper functioning of the product.

- ❖ Applicable: Risk of deep battery discharge. Period after which non-use is considered prolonged: 2 years. The battery must alert the operator when the period of non-use becomes critical to maintaining its performance.

I.1.7. Unproven technology

Criterion KO

The manufacturer provides information on the unproven technology in its product. It must provide the means implemented to guarantee its reliability or ensure that the normal use of the product does not depend on this technology.

- ❖ IOT Function

Method of proof: Real-time demonstration to the inspection body mandated during the on-site audit.

I.1.8. External source parts

Minor criterion

The manufacturer records external source parts purchased and/or subprocessed. It must provide information relating to their origin and quality.

I.1.9. Reliability plan

Minor criterion

The manufacturer provides its own FMEA, FMEA or internal audit and identifies the changes implemented to improve the reliability and/or reparability of the product. Corrections or improvements already made to the product are indicated.

- ❖ Establishment of a critical threshold: If the frequency of a particular failure type reaches or exceeds 1%, based on after-sales service feedback, specific actions are implemented.
- ❖ Collection and processing of usage data, including the number of cuts, charging cycles and typical working patterns, with the data used to improve product reliability.
- ❖ Failure rates recorded through after-sales service throughout the tool's service life, both within and outside the warranty period.

I.1.10. sub-assembly

Major criterion

The product design must only use subassemblies on technical justification or proof of reliability. Without technical justification, the subassemblies must be subject to a standard reconditioning and/or exchange route where the manufacturer demonstrates the economic interest for the user.

Scalability

I.2.1. Software

Major criterion

The manufacturer ensures that the original performance of its product is maintained during OS updates. without a time limit. The manufacturer identifies and records the means it uses to monitor the maintenance of these post-upgrade performances.

- ❖ ...

Traceability

I.3.1. Study and failure rate

Minor criterion

The manufacturer provides breakdown rates and/or indicators enabling the reliability of the product to be monitored at least until the last unit of the model concerned is placed on the market.

❖ Particular attention will be paid to the following failures:

- Trigger and control assembly failure
 - Trigger
 - Trigger PCB
 - Obstructed optical sensor
- Electrical and electronic assembly failure
 - Main PCB
 - Battery (integrated or external) failure (deep discharge, etc.)
- Electric motor assembly and drive system failure
 - Rotor failure
 - Stator failure
 - End shield failure
 - Gearbox failure
 - Bearing failure
- Cutting head assembly failure
 - Blade/counter-blade pivot pin failure
 - Counter-blade failure
 - Nut and retaining screw for the blade and counter-blade assembly
 - Damaged blade
 - Misaligned blade
 - Loose blade

I.3.2. Identification number

Minor criterion

The manufacturer uses an identification number or method on each product.

Method of proof: In geographic distribution areas covered by regulatory pre-rotations establishing identification requirements, proof of compliance with these regulatory requirements will serve as a mode of proof in compliance with the PSRs of this criterion if necessary.

Disassembly

II.1.1. Product housing

Criterion KO

Brings together all the product's covering parts (cover type) to protect the internal components from the outside.

The body of the product is removable and allows access to internal elements while respecting

accessibility scale B. Permanent assemblies are prohibited unless the nature or use of the product justifies it.

❖ Accessibility scale limited to 5 steps and 10 minutes

▸ **Machine body assembly**

- Housing
- Handle
- Guard

Method of proof: Visual inspection and real-time demonstration to the inspection body mandated during the on-site audit.

II.1.2. Access to functional parts

Major criterion

Parts related to the operation or use of the product.

Access to functional parts cannot exceed accessibility scale C.

❖ Accessibility scale limited to 15 steps and 20 minutes

▸ **Mechanical joint sealing and stabilisation assembly (rigid, flexible)**

- Sealing components (O-rings, rings, lip seals, silicone)
- Fastening components (screws, bolts, circlips, washers, etc.)
- Stabilising components (springs, spacers, bushings, bearings, etc.)

▸ **Electrical and electronic assembly**

- Switch, selector switch
- Indicator lights (LEDs, etc.)
- Communication module

Method of proof: Visual inspection and real-time demonstration to the inspection body mandated during the on-site audit.

II.1.3. Access to priority parts

Major criterion

Functional parts but characterized by proven criticality in the event of a malfunction or breakdown (sometimes called critical parts).

Access to priority rooms complies with accessibility scale B or has been the subject of a reliability plan.

❖ Accessibility scale limited to 10 steps and 15 minutes

▸ **Trigger and control assembly**

- Trigger spring

- Trigger
- Trigger PCB
- **Electrical and electronic assembly**
 - Power supply board or module
 - Battery management board or module
 - Power boards or modules
 - Filter boards or modules
 - Sensor-based control boards or modules (infrared, capacitive, etc.)
 - Battery (integrated or external)
 - Battery connector
 - Ribbon cable
- **Cutting head assembly**
 - Blade/counter-blade pivot pin
 - Nut and retaining screw for the blade and counter-blade assembly
 - Stop
 - Toothed nut
- **Electric motor assembly and drive system**
 - Rotor
 - Stator
 - End shield
 - Gearbox
 - Bearing
- **Drive system assembly**
 - Ball screw and nut
 - Spring
 - Link
 - Gear system

- ❖ The fixings of the different priority parts of the product having both a function must be removable and reusable (Class A standard EN 45554)

In the event that the fixing system cannot be reused, it must be supplied with the replacement part to allow resolution of the failure or maintenance scenario.

Method of proof: Visual inspection and real-time demonstration to the inspection body mandated during the on-site audit.

II.1.4. Sub-assembly connectors (internal parts)

Major criterion

The connectors of the replacement subassemblies must not interfere with the repair of the product.

- ❖ All connector fixing elements must be at least removable (class B standard EN 45554).

Method of proof: Visual inspection and real-time demonstration to the inspection body mandated during the on-site audit.

II.1.5. Batteries

Criterion KO

The manufacturer provides a solution for replacing the batteries of autonomously operating devices.

- ❖ Applicable

II.1.6. Disassembly tools

Major criterion

Disassembly of the product does not require a proprietary tool, apart from regulatory justification.

- ❖ No regulatory justification identified
- ❖ [List of tools in accordance with the list in table A2 of standard EN 45554](#) and supplemented with basic tools specific to the target product group
 - Bearing and/or bushing puller for electric motors or transmission systems
 - Seal puller
 - Ball screw puller
- ❖ Tolerance allowed for proprietary tools provided on request at no cost additional with the spare part.

Method of proof: Visual inspection and real-time demonstration to the inspection body mandated during the on-site audit.

Documentation

II.2.1. Exploded diagram

Major criterion

The manufacturer makes available to users, directly or indirectly via its partners or its network, diagram(s) or exploded view(s) of the product as well as a nomenclature of the parts and subassemblies of the product.

II.2.2. Exploded diagram

Minor criterion

The manufacturer references and delivers more specific exploded views to help identify and name a part.

II.2.3. Fault code

Major criterion

User and repairer fault codes must be present in the respective documentation and/or accessible on the manufacturer's website.

II.2.4. Repair Manual

Minor criterion

The manufacturer makes the information necessary for repairing the product accessible to repairers OR must justify economically viable alternatives for the end user.

- ❖ All documents necessary for resolving failure scenarios must be exhaustive and accessible (Class A Table A.10 of standard EN 45554) for all professionals in the sector and as a priority:
 - A disassembly diagram or exploded view
 - A technical instruction manual for resolving failure scenarios
 - A list of necessary repair and testing equipment
 - Component and diagnostic information (such as theoretical minimum and maximum values for measurements)
 - Wiring and connection diagrams
 - Error and diagnostic codes (including manufacturer-specific codes, if applicable)
 - Instructions for installing relevant software and firmware, including reset software
 - Information on how to access data relating to failure incidents if they are recorded in the product
- ❖ Blade or pivot pin replacement: the procedure is complete and illustrated.
- ❖ Tightening torques are specified in the maintenance manual.
- ❖ Lubrication and sharpening intervals are specified in the maintenance manual.
- ❖ Blade lubrication, sharpening and tightening procedures are described in detail.

Method of proof: Visual inspection and real-time demonstration to the mandated inspection body during the documentary audit or on-site audit.

II.2.5. Troubleshooting software packages

Minor criterion

The fault diagnosis software packages must be free of rights after the full warranty period with regard to the end date of manufacture of the product.

Spare parts

II.3.1. Nomenclature

Major criterion

All spare parts or subassemblies are uniquely named and coded to facilitate identification and ordering of parts.

II.3.2. Availability time

Criterion KO

The manufacturer commits in its General Terms and Conditions or via commercial communication to the availability of spare parts or replacement parts for the product for a minimum of 5 to 10 years from the placing on the market of the last unit of the model concerned. The minimum availability time required is determined in the sectoral appendix.

- ❖ Availability of spare parts 10 years minimum (Class A - Long-term accessibility; Table A9 according to standard EN 45554)

Method of proof: Mode of proof: Demonstration to the mandated inspection body during the documentary audit or on-site audit (general conditions of sale).

II.3.3. Supply time

Minor criterion

For functional parts or sub-assembly, the manufacturer has a minimum reserve to meet the probability of demand for said part OR justification for a procurement process within identical deadlines.

II.3.4. Price of spare parts

Major criterion

The terms and conditions for purchasing spare parts are detailed (average price, distribution network, etc.). The manufacturer makes every effort to limit the total price of functional parts to the maximum recommended selling price excluding tax of the product. The value of one of these functional parts cannot exceed the set percentage of the maximum recommended selling price excluding tax of the product.

- ❖ Percentage set at 25%. A tolerance is allowed for parts whose PRU would exceed 25%.

- ❖ All replacement parts must be accessible.

Method of proof: Visual inspection and real-time demonstration to the mandated inspection body during the documentary audit or on-site audit.

II.3.5. Price of delivery costs

Minor criterion

The manufacturer delivers the spare parts at actual shipping and preparation costs or offers alternative solutions reducing the cost of receiving the spare parts.

After-sales service under warranty

II.4.1. Contact du SAV

Minor criterion

The maximum time for opening an after-sales service file must not exceed 2 working days.

II.4.2. Support

Major criterion

The manufacturer provides the end user with an after-sales service network in line with its direct distribution network.

II.4.3. Repair policy

Major criterion

Repair must take precedence over replacement.

Out-of-warranty after-sales service

II.5.1. After-sales service network

Minor criterion

The user is provided with the means to facilitate the repair of his product outside of warranty. To support the product to be repaired, the manufacturer must provide the user with the benefit of its distribution and repair network.

Free long-term warranty

III.1.1. Warranty time

Criterion KO

The warranty period with presumption of prior history of the defect is determined in the sectoral annex. This time cannot be less than 24 months.

- ❖ 24 months minimum

Method of proof: Demonstration to the mandated inspection body during the documentary audit or on-site audit (general conditions of sale).

III.1.2. Warranty conditions (beyond the legal conformity period)

Major criterion

For product categories considered to be “highly useful”, the manufacturer provides for the provision of a replacement item to the user during the period of downtime of the product for repair.

- ❖ Product considered of much use
-

III.1.3. Disclaimer of warranty

Major criterion

The warranty exclusions must not be excessive with regard to the normal conditions of use of the product. They will be defined in the sectoral annex.

- ❖ No unfair warranty exclusions identified
- ❖ When the time required to restore the product to working order exceeds 2 hours, the manufacturer encourages its service network to commit to providing loan equipment.

Method of proof: Demonstration to the mandated inspection body during the documentary audit or on-site audit (general conditions of sale).

III.1.4. Assignment of Warranty

Major criterion

The manufacturer sets up a transferable guarantee system.

III.1.5. Original package

Minor criterion

Return of the original packaging cannot be required for warranty coverage.

Use and care instructions

III.2.1. Usage information provided

Major criterion

The manufacturer delivers with the product a notice with advice on use and maintenance of the product. This information must be exhaustive and relevant in order to reduce the exogenous failure rate.

- ❖ The manufacturer clearly makes the user aware, via the instructions and/or its website, of responsible use of the device.
 - Maintenance with particular emphasis on the concept and importance of descaling
 - Use
 - Valorization of consumables
 - Repair

Method of proof: Visual inspection and real-time demonstration to the mandated inspection body during the documentary audit or on-site audit (physical and/or digital instructions for use).

III.2.2. Usage information provided

Major criterion

The use and maintenance advice booklet is clear, simple and accessible (adapted font size, vocabulary, language and print quality), so as to be easily understandable by end users.

III.2.3. Access to information

Minor criterion

Information relating to the use and maintenance of the property must be available in digital version on simple request or freely accessible on the manufacturer's website.

IX. THANKS

The Ethikis cooperative company, responsible for drafting this standard, would like to thank the various stakeholders who took part in our study and particularly the ecosystem and the product certification experts in this product category. Thank you also to the consumers who took the time to respond to our survey.

Editorial manager: Florent Preguesuelo - florent@ethikis.com

X. BIBLIOGRAPHICAL RESOURCES

- › ADEME. J. Lhotellier, RDC Environment. December 2019. Modelling and environmental assessment of consumer products and equipment – Report. 180 pages.
- › ADEME. F. Michel, J. R. Dulbecco and J. Lhotellier, RDC Environment. April 2020. Environmental and economic assessment of extending the service life of consumer products and equipment at the scale of a French household – Report. 27 pages.
- › NF EN 60335-1 COMPIL 15 Household and similar electrical appliances – Safety – Part 1: General requirements
- › DIRECTIVE 2009/125/EC of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products
- › DIRECTIVE 2011/65/EU of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment
- › DIRECTIVE 2012/19/EU of 4 July 2012 on waste electrical and electronic equipment (WEEE)
- › REGULATION (EU) 2019/1781 of 1 October 2019 laying down ecodesign requirements for electric motors and variable speed drives
- › ISO – International Organization for Standardization