

# Joint Research Centre

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# **Standardisation of material efficiency aspects**

## **JRC B.5**

### **31 October 2018**

# Content

- Scope and timeline of JTC10 activities
- Durability
- Reparability, upgradability and reusability
- Other deliverables

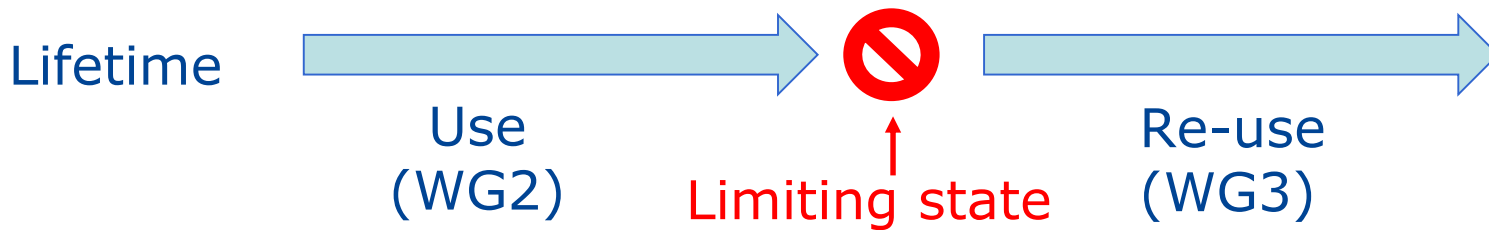
## Scope

- Mandate 543 → CEN/CENELEC JTC10 'Energy-related products – Material Efficiency Aspects for Eco-design'
- Developing general std methods on material efficiency aspects of ErP under ED:
  - WG1: Terminology
  - **WG2: Durability**
  - **WG3: Reparability, upgradability and reusability**
  - WG4: Ability to Remanufacture
  - WG5: Recyclability, recoverability and recycled content (incl. CRM)
  - WG6: Provision of info (incl. CRM)

## Timeline:

- KOM in Sep 2016
- NWIP in Spring 2017
- 1<sup>st</sup> draft in Autumn 2017
- new drafts in 2018
- Planned publications: end of 2019 / 2020
- Followed by vertical implementation

## Extending the lifetime of products



To overcome technical and market barriers:

- 1. Durability strategy:** postponing the limiting state
- 2. Upgradability strategy:** enhancing the functionality of a product
- 3. Reparability strategy:** restoring the functionality of a product after a fault

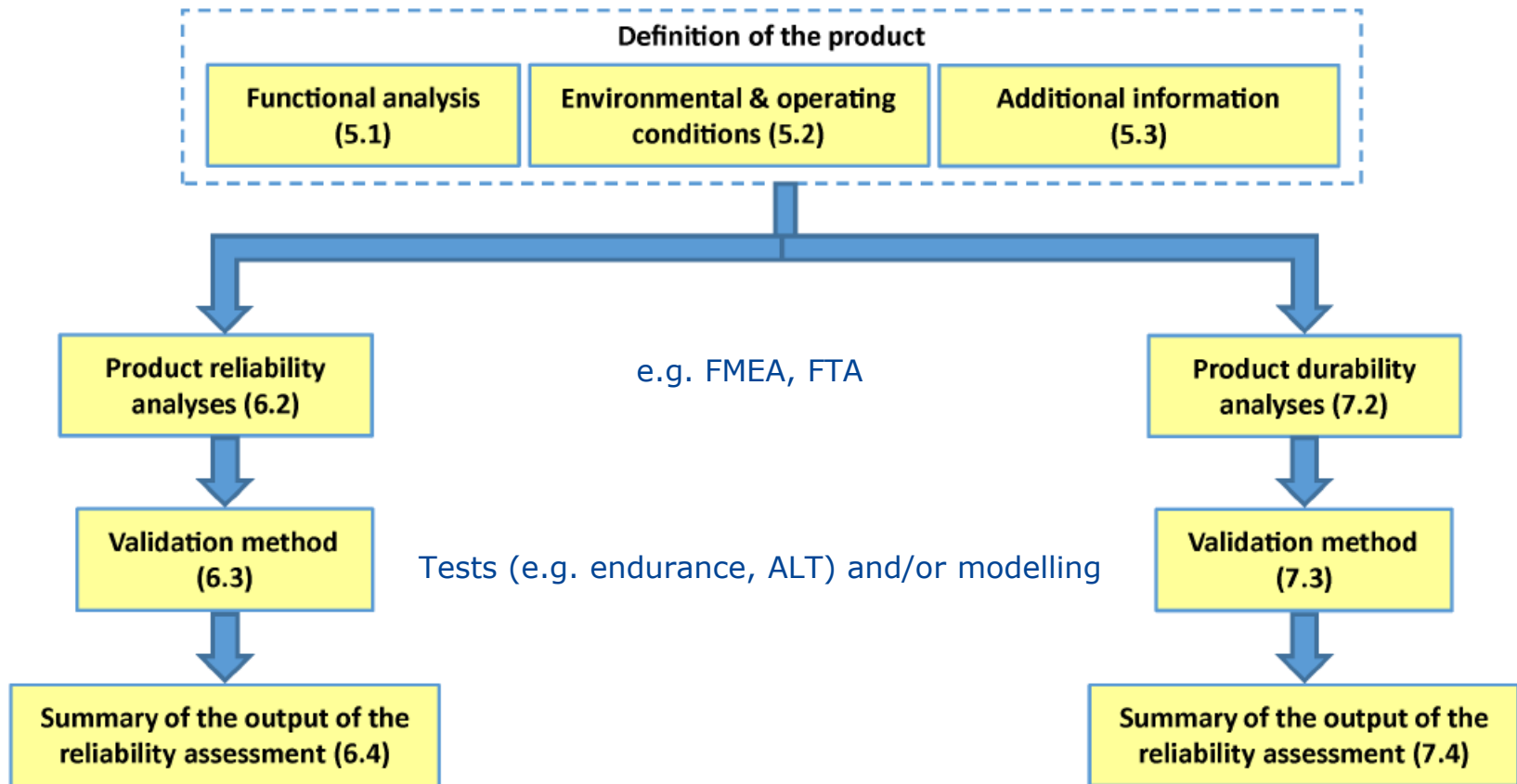
## WG2: durability

**Deliverable:** PrEN 45552 General method for the assessment of the durability of energy-related products

Scope:

- 1. Durability** = ability to function as required, under defined conditions of use, maintenance and repair, until a final limiting state is reached
- 2. Reliability** = probability that a product functions as required under given conditions, including maintenance, for a given duration without failure (other parameters: MTTF, MTTFE, MTBF)

**Status:** public enquiry, expected publication in March 2020



- Failures
- Reliability metrics (e.g. MTTF)

- Failure mechanisms
- Resistance to stresses,
- Functionality over lifetime,
- Maintenance and repair needs



## **WG3: reparability, reusability, upgradability**

**Deliverable:** PrEN 45554 General methods for the assessment of the ability to repair, re-use and upgrade energy-related products

### **Scope:**

- 1. re-use** = operation by which products or parts that are not waste are used for the same purpose for which they were conceived by another user
- 2. repair** = process of returning a faulty product to a condition where it can fulfil its intended use
- 3. upgrade** = process to enhance the functionality, performance, capacity or aesthetics of a product

**Status:** public enquiry, expected publication in March 2020

## Key elements of prEN 45554:

- **Disassembly** = process whereby a product is taken apart in such a way that it could subsequently be reassembled and made operational
- **(Priority) part** = hardware, firmware or software constituent of a product (which is relevant for RRU of a specific product group, e.g. based on analysis of failure/upgrade frequencies)
- Product-related parameters and **parameters** related to manufacturers' support **influencing RRU**
- Possible **classification and rating criteria** for such parameters
- **Quantitative assessment methods**

## Parameters of PrEN 45554 :

- Disassembly depth;
- Fasteners;
- Tools;
- Working environment;
- Skill level;
- Diagnostic support and interface;
- Availability of spare parts;
- Types and availability of information;
- Return models;
- Data transfer and deletion
- **Disassemblability index** (Giudice and Kassem, End-of-life impact reduction through analysis and redistribution of disassembly depth: A case study in electronic device redesign, 2009)
- **Time for disassembly** (Peeters J.R. et al., eDIM: further development of the method to assess the ease of disassembly and reassembly of products — Application to notebook computers, EUR 28758 EN, Publications Office of the European Union, Luxembourg, 2018, ISBN 978-814 92-79-73189-1, doi:10.2760/864982, JRC107773)

## Other deliverables (1):

### WG1

- TR 45550 - Definitions related to material efficiency (March-July 2020)
- TR 45551 - Guide on how to use generic material efficiency standards when writing energy related product specific standardization deliverables (March-July 2020)

### WG4

- EN 45553 - General method for the assessment of the ability to re-manufacture energy related products (March 2020)
- EN 45556 - General method for assessing the proportion of re-used components in energy related product (October-November 2019)

Definitions of remanufacturing and refurbishment under discussion

## Other deliverables (2):

### WG5

- EN 45555 - General methods for assessing the recyclability and recoverability of energy related products (November 2019)
- EN 45557 - General method for assessing the proportion of recycled material content in energy related products (February 2020)

Product design, EOL scenarios, mass-based indices:

$$R_{cyc} = \frac{\sum_{k=1}^n (m_k \cdot R_{cyc,k})}{m_{tot}} \cdot 100 \%$$

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### WG6

- EN 45558 - General method to declare the use of critical raw materials in energy related products (March-April 2019)
- EN 45559 - Methods for providing information relating to material efficiency aspects of energy related products (March-April 2019)

IEC TR 62474.1 - Material declaration for products of and for the electrotechnical industry – Part 1: Guidance for the implementation of IEC 62474

Table A.1 — Material efficiency communication matrix for a vacuum cleaner

Material Efficiency Topic	Material Efficiency Content	Data Sensitivity Level	Target Audience	Means of Communication	Media
Product durability	Assessment of the durability of the hose and motor	Level 3 (confidential)	– Market surveillance authorities	– Technical file	– Manufacturer archives
Product durability	Title or reference to the assessment of the durability of the hose and motor	Level 1 (public)	– Consumer – Professionals – Market surveillance authorities	– Technical documentation – Free access website – Instructions manual	– Manufacturer archives – Online – In the package
Product durability and/or Ability to repair, reuse, upgrade	Non-destructive disassembly for maintenance purposes, especially hose, suction inlet, motor, casing and cable	Level 2 (restricted)	– Professionals – Market surveillance authorities	– Technical documentation – A part for professionals of the free access website	– Manufacturer archives – Online
Ability to repair, reuse, upgrade	Information relevant for dismantling, in particular in relation to the motor and any batteries	Level 2 (restricted)	– Professionals – Market surveillance authorities	– Technical documentation – A part for professionals of the free access website	– Manufacturer archives – Online
Recyclability and recoverability	Information relevant for recycling and recovery	Level 2 (restricted)	– Professionals – Market surveillance authorities	– Technical documentation – A part for professionals of the free access website	– Manufacturer archives – Online
Recyclability and recoverability	Information relevant for disposal at end-of-life	Level 1 (public)	– Consumers	– Instructions manual – Aggregated websites with restricted access	In/on package

**Thanks for your attention**