Rijkswaterstaat
Ministerie van Infrastructuur en Waterstaat

Future proof design

Use less resources for a livable planet

Mireille Reijme

February 5th 2025

Circulaire Economie en Afval

Knowledge and implementation of CE policy

What:
Accelerating the transition to a circular economy in the Netherlands on behalf of the Ministry infrastructure and Water Management.

Who:
60 colleagues with expertise in:

- Policy: CE, waste, transitions
- Instruments: CMP, EPR, legislation and regulations, monitoring,
- Circular Design
- Behavioural science
- Practice: product chains, productgroups, firm network with other other governments, companies and NGO’s

How:

- Advice on effective CE policy
- Stimulation programmes for companies and governments
- Making regulations accessible
- Building networks

www.afvalcirculair.nl

Why Circular Economy

"Say when",
Liam Houlihan

"ik had tog nog geen plannen voor de toekomst"
Manouk Hasebos

Livable earth also for future generations

[National Circular Economy Programme 2023-2030 | Report | Government.nl]

National Circular Economy Programme

2023-2030

r

For a clean and competitive Europe

It is essential to reduce pressure on our finite natural resources.

Decouple economic growth:

Growth without increasing environmental impact will ensure prosperity and wellbeing for humanity

Many nature and environmental problems arise from the way we use of raw materials

Circular design can contribute to four major social challenges:

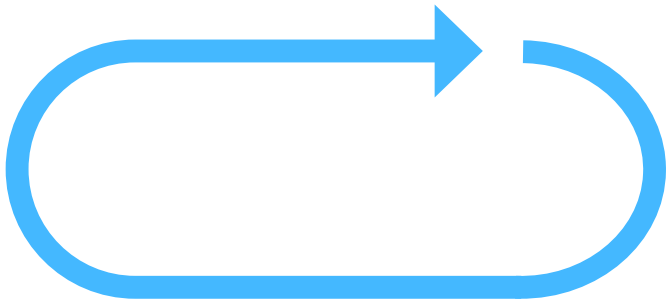
1. Combating climate change
2, cleaner (living) environment
3. Restoring biodiversity
4. Security of supply of raw materials

Circular design is key!

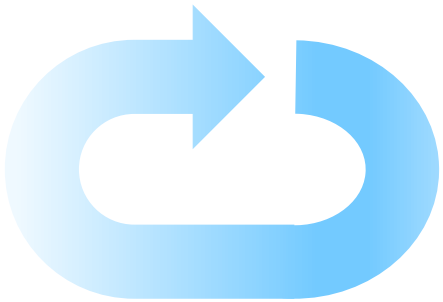
Circular design of products-services combinations creates and retains value in the economic, ecological and social areas.

animation Circular Design

Core strategies

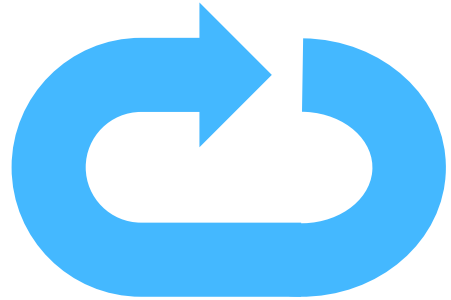


Narrow the loop
use less resources



Substitution
Use of sustainable produced material

Extend the lifespan

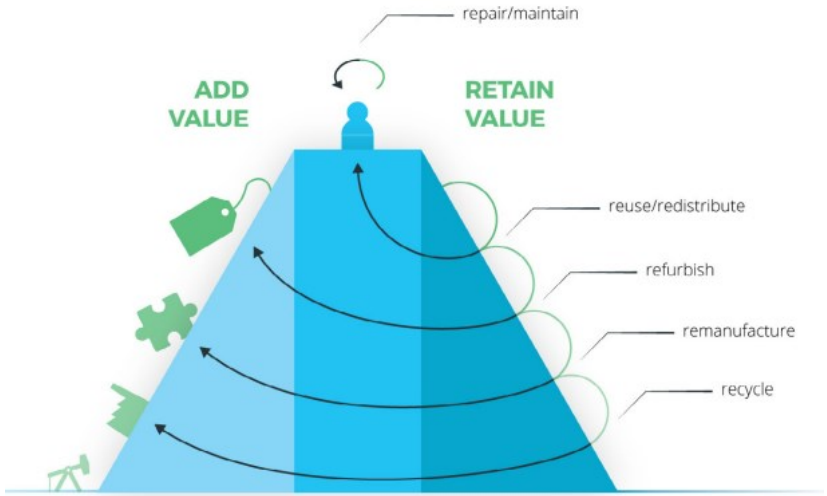


Close the loop

Animatie Circulair Ontwerpen NL - Afval Circulair

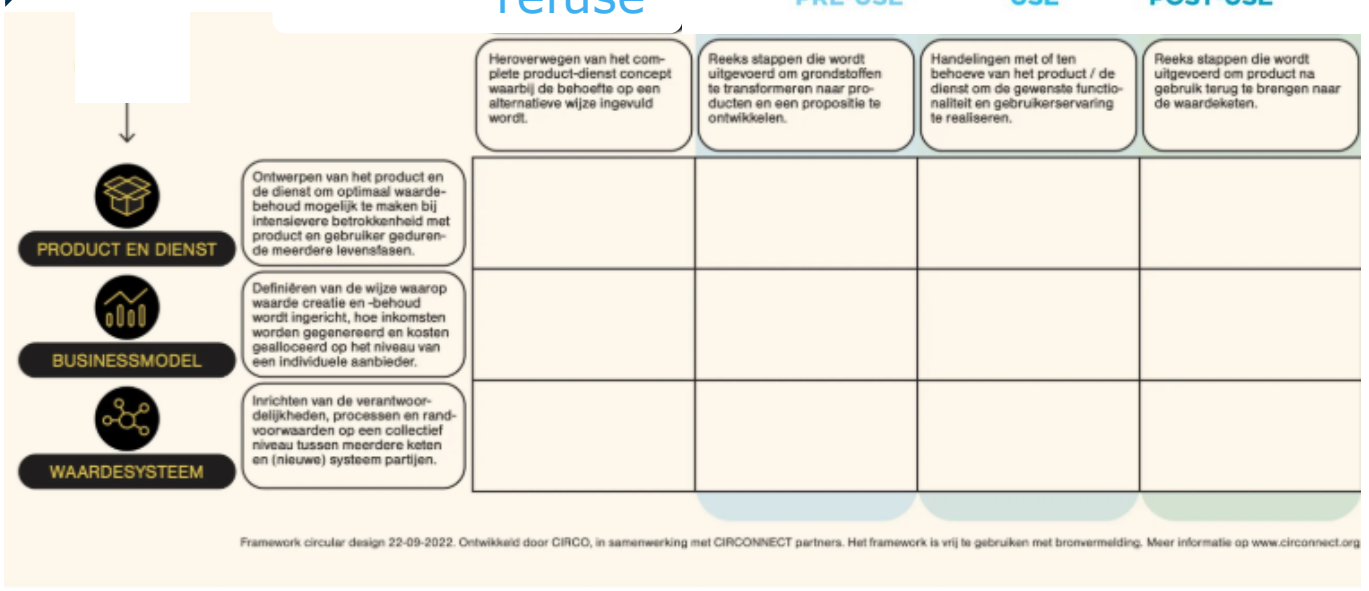
Where to start: https://www.circonnect.org/en

[Framework Circular Design - Circonnect]

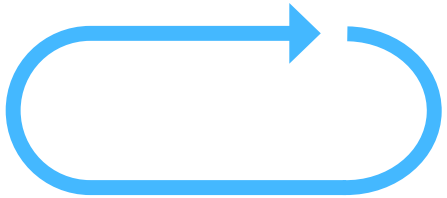


Design focus

Design dimensions



Narrow the loop by Refuse & Rethink



Get rid of products or materials that you do not actually need. Make a product redundant by abandoning its function, or by delivering it with a radically different product.

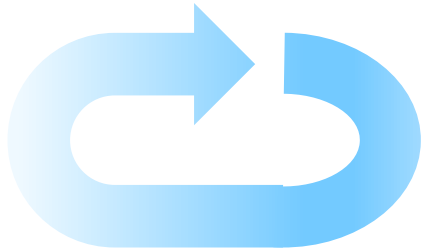
Retrospective knowledge session Refuse & Rethink – Circonnect

Intensify product use (for example by sharing products via platforms or multifunctional products)

Webinar - Van bezit naar gebruik: Hoe overtuigen we de gebruiker

Verdienmodellen - Afval Circulair (PaaS)

Make products more sustainable



https://www.circonnect.org/product-dienst/materiaalkeuze-en-impact/

Self assesment tool for lifecycle analysis

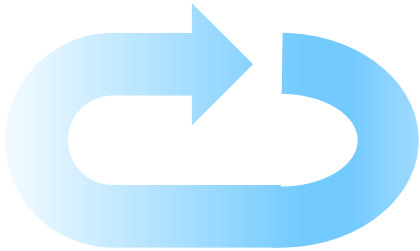
Safe by Design ZZS Tool

Milieu Impact Tool

EU legislation and regulation offers:

- Level playing field
- Motivation (ESPR, CRMA, battery directive)
- Reliable data and transparancy (productpasport CSRD)
- Reparability (easy, spare parts, modulair)

Battery Regulation

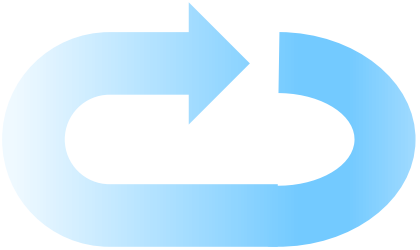


the first European legislation that considers the full life cycle of batteries, including sourcing, manufacturing, use, and recycling, all in a single law.

- Rules include safety, sustainability and labelling requirements to
- promote a circular economy
- improve the functioning of the internal market for batteries and ensure fairer competition

(10 juli 2023)

Future design of Batteries

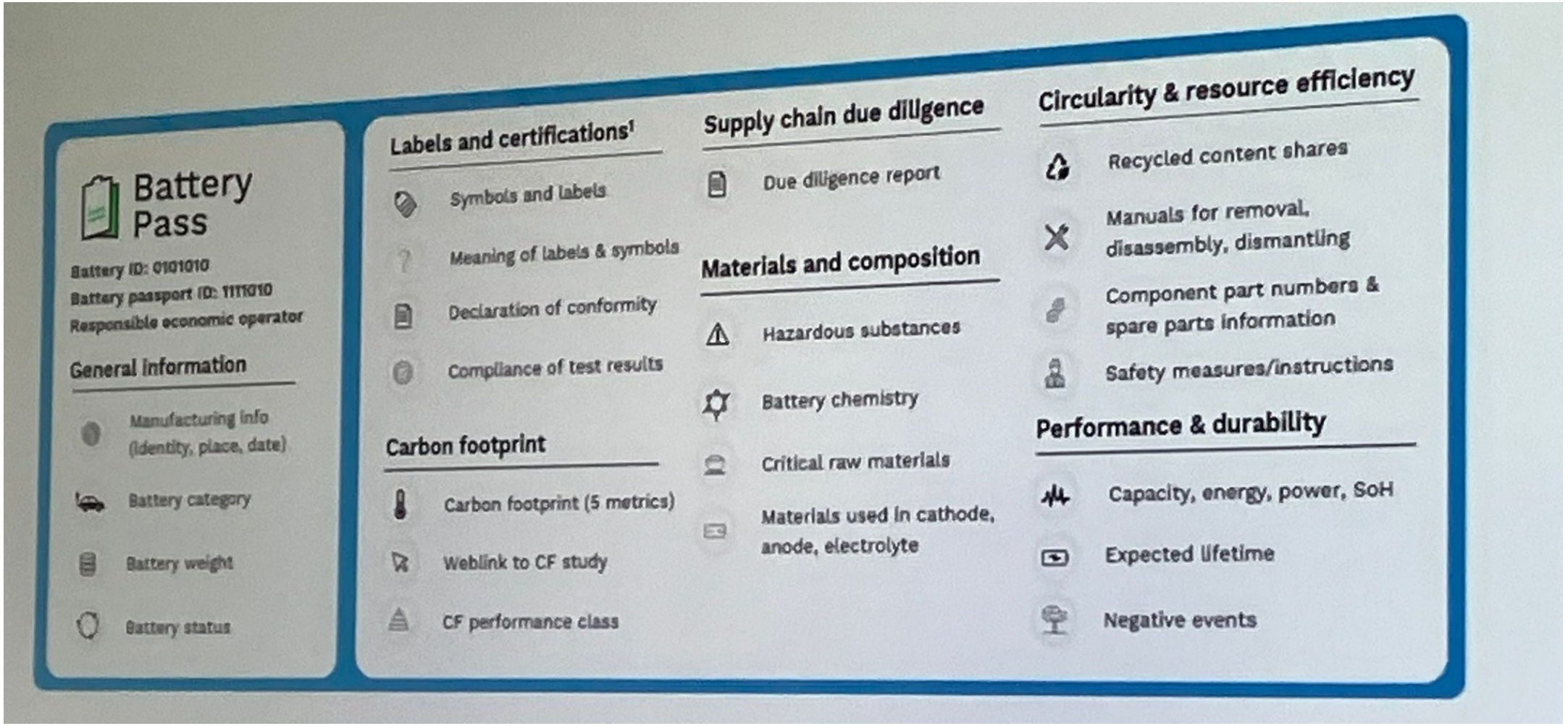


- **low carbon footprint**
- **Restriction** of **hazardous substances**
- fewer raw materials needed from outside the European Union
- (EU)portable batteries that can be **removed and replaced** in devices by 2027
- batteries for light vehicles can be **replaced** by an independent professional
- use of recycled materials **minimum recycled content** for industrial batteries, starter, lighting and ignition batteries and EV batteries — 16% for cobalt, 85% for lead, 6% for lithium and 6% for nickel from 18 August 2031

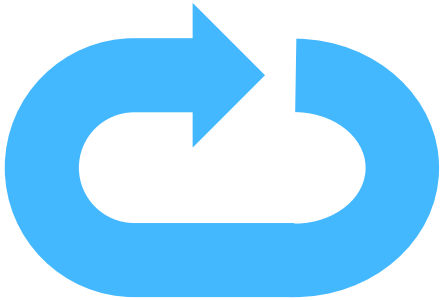
Future design batteries (continued)

- Battery Regulation focuses on repair and repurposing of batteries, thus **extending their lifespan**
- Information and labelling on matters such as battery components and recycled content are **mandatory a QR code** and, for batteries for light vehicles, industrial and EV batteries, a "**battery passport**" and CE marking are mandatory. The labelling requirements will apply from 2026 and the QR code from 2027
- are **collected, reused and recycled**

Battery Pass can look like…



CRMA Critical Raw Material Act



Covers all stadia of the European valuechain

- Setting benchmarks by 2030 for domestic capacities:
- The Act sets these benchmarks along the strategic raw materials value chain and for the diversification of the EU supplies
- at least 10% of the EU's annual consumption for extraction
- at least 40% of the EU's annual consumption for processing
- at least 25% of the EU's annual consumption for recycling
- no more than 65% of the EU's annual consumption from a single third country

Ecodesign for Sustainable Products Regulation

ESPR (video)

Framework directive to set ecodesign requirements for products when placed on the market or put into service, to:

- improve the environmental sustainability of products to

- make sustainable products the norm

- reduce carbon and environmental footprint over their life cycle

- ensure free movement within the internal market

Performance requirements: such as

- Reusability and Repairability,
- the presence of substances of concern and other contaminants that reduce recycling possibilities,
- minimum share of recycled content
- environmental impact (e.g., carbon and environmental footprint)
- ease of repairability
- durability

Information requirements

Information requirements **shall** include:

- requirements related to the **product passport**
- requirements related to substances of concern

And **may** include information:

- on performance product parameters including a repairability score, a carbon or environmental footprint
- on installation, use, maintenance, repair
- on disassembly, reuse, refurbishment, recycling
- to influence sustainable product choices

Horizontal requirements

ESPR also enforces

- Digital Product Passport (DPP)
- Public accessible webportal
- Green Public Procurement (GPP) requirements
- Prevent destruction of unsold consumer products

Unsold textiles and footwear : 19 juli 2026

product scope: ESPR workingplan april 2025

Iron & steel,

aluminium,

textiles (garments and footwear),

furniture (including mattresses),

tyres,

detergents,

Paints

lubricants,

chemicals,

energy-related products

ICT products,

other electronics.

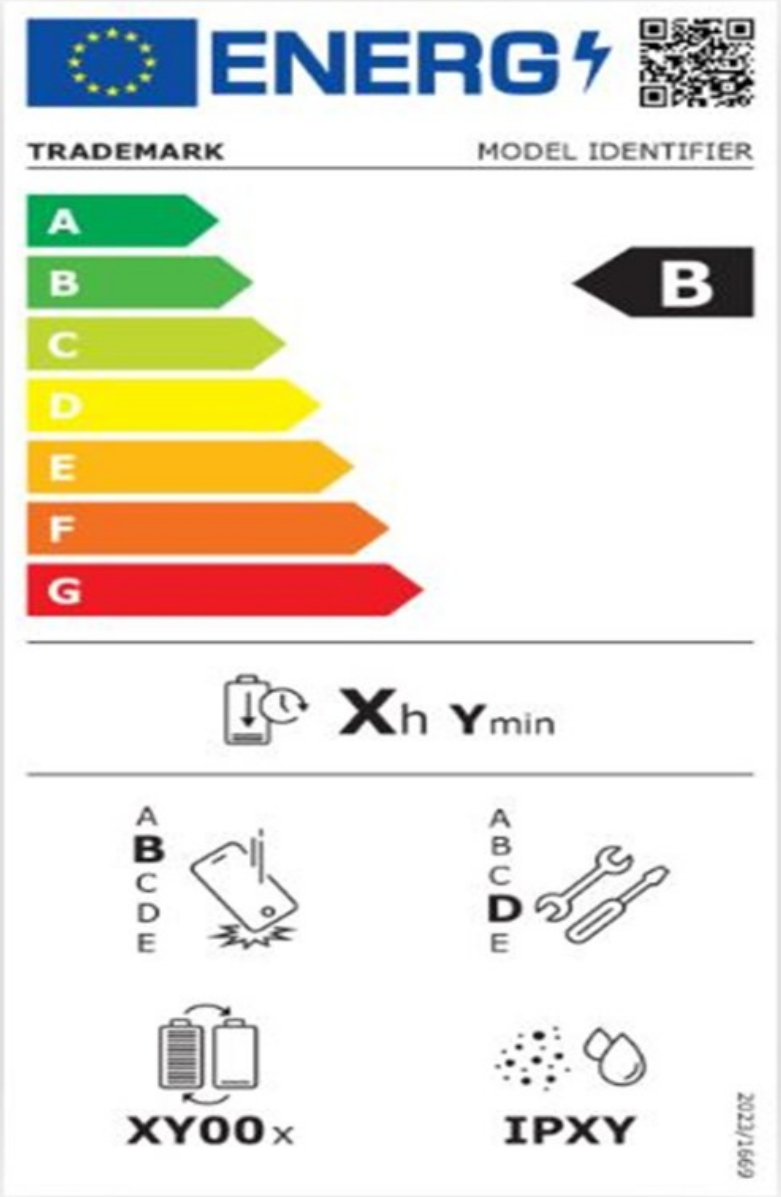
Products still covered by the Ecodesign Directive 2009/125/EC and Regulation (EU) 2017/1369.

https://energy-efficient-products.ec.europa.eu/product-list_en

Updatesmade on:

- Smart phones en tablets
- Dryers (ecodesign
- Local space heaters
- Ventilatoren (ecodesign (EU) 2024/1834)

Smart phones & tablets



Energy labelling and ecodesign requirements
20 June 2025

- resistance to accidental drops /scratches

- protection from dust and water

- sufficiently durable batteries

- rules on disassembly and repair

- critical spare parts available

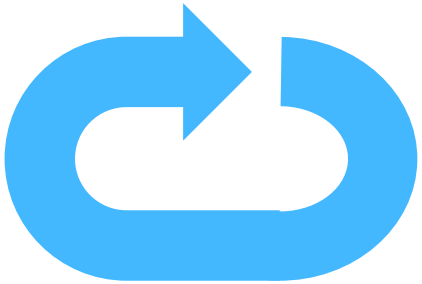
- availability of operating system upgrades

- access for professional repairers to any software or firmware

New EU legislation & rules

- Product requirements and services are focussed on value retainment
- Complete lifecycle of products is important
- Soon new requirements will be introduced and more to come

Make products recyclable



Design for Recycling (DfR) of electrical and electronic equipment (EEE) and how to design for circular plastics,

metals and CRMs (critical raw materials)

MOOC: Designing Electronics for Recycling in a Circular Economy | TU Delft Online

Right to Repair : extend the lifespan

Measures to promote and facilitate repair and reuse to prevent premature disposal of repairable goods

Directive on repair of goods - European Commission

- Manufacturer has to repair a product for a reasonable price and within a reasonable timeframe after the legal guarantee period
- Access to spare parts, tools and repair information for consumers
- Incentives to opt for repair, such as repair vouchers and funds
- Online platforms will assist consumers in finding local repair services and shops selling refurbished goods

Product overview table

Circular Filter PvE Tool

- With the Circular Filter PvE Tool, you firmly anchor circularity in the Programme of Requirements (PvE) of your product. This tool ensures that you can seamlessly integrate circularity into your product design, instead of adding it as a separate checklist. With the circular filter, you assess the requirements that your product must meet, making the principles of the circular economy tangible and making it easier to integrate them into the design process.

Circular chain cooperation

CESI Supply Tool Circular Economy & Smart Industry

discover as a supplier the possibilities for more circular chain collaboration.

Ketensamenwerking Tool

you quickly get a good picture of the success factors and obstacles of chain collaboration.

Ecodesign standards related to material efficiency

- TR 45550 Material Efficiency terminology
- EN 45552 Method to assess durability
- EN 45553 Method to assess remanufacturability
- EN 45554 Method to assess ability to repair, reuse, upgrade
- EN 45555 Method to assess recyclability and recoverability
- EN 45556 Method to assess proportion of reused components
- EN 45557 Method to assess proportion of recycled content
- EN 45558 Declaration of use of CRMs
- EN 45559 Communication of Material Efficiency aspects

Webinar circular design standards

- Eliminating waste from products should be prioritized during product designs and redesigns
- 4 strategies to retain and recover value of materials
- ‘**Priority part**’ is a key concept in circular design
- ‘**Easy dis- and reassembly**’ is likely to be used in all strategies to maintain or recover value of products
- Recycling is likely to apply to all products at some point in time of their life
- Renewable content: bring bio-based materials back to the biosphere in safe manner ‘

Circular design is stimulated:

- Ecodesign for sustainable product regulations (**ESPR**) ESPR
- Extended Product Responsibility (**EPR**) Producentenverantwoordelijkheid
- **Right to repair** products under Ecodesign like washingmachines, vacuumcleaners, smartphones (juni 2025) What's my Right to Repair? - Right to Repair Europe
- Green product procurement (**GPP)** Home - Circularandfairictpact
- Digitaal Product Paspoort (**DPP**)
- Material efficiency aspects for Ecodesign JTC10 CEN-CENELEC
- **Method to achieve Circular Design of products** (prEN 45560:2022)
- Circular Textiles Chain CEN/TC 248/WG 39

Prepare yourself, stay ahead and innovate

- How to fulfill **needs with less**?
- What is needed to ensure that **access** to products becomes **easy, logical and affordable**?
- (Future) **relevant services**:
  inventory, valuation, covering risks, return logistics, service, maintenance, storage, etc

I wish you a lot of creativity with circular design!

Questions?

Mireille.reijme@rws.nl

Interesting links

- Circulair ontwerp
- Animatie circulair ontwerp
- MOOC Design for Recycling
- Producentenverantwoordelijkheid
- Circulair in de regio
- www.Circonnect.org
- www.afvalcirculair.nl
- Nationaal Programma Circulaire Economie