



GENELEC.

Standardization in a Circular Economy – Closing the Loop

A closer look into the standards
for batteries and plastics



FOREWORD

A Circular Economy is a system that aims to eliminate waste, reduce resource use and increase the value of materials. The transition towards a Circular Economy offers a unique opportunity to generate innovative, sustainable and competitive advantages for European businesses and consumers. Standardization can facilitate the delivery of this.

CEN and CENELEC are working on supporting European Industry in their transition to a fully functioning Circular Economy. CEN and CENELEC have also recently highlighted how standards aid progress towards European

and international policies, such as the UN Sustainable Development Goals, with the declaration “Standards Build Trust”.

Standards help to implement the sustainable use of resources and energy while protecting consumers, workers and the environment.

This objective can be best reached by closing resource loops and maintaining the value and quality of materials all along the cycle. This brochure provides two concrete examples of CEN and CENELEC Technical Committees dedicated to facilitating the transition to a Circular Economy.





How do standards help batteries become more Circular?

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Batteries form an essential part of everyday life in areas such as telecommunications and transportation. They are important components of electrical devices that modern society relies upon, to function smoothly. Standardization in the field of Circular Economy helps batteries maintain their quality and produce less waste. CENELEC Technical Committees are committed to providing these deliverables, and in particular the CENELEC Technical Committee 21X on Secondary Cells and Batteries (CLC/TC 21X).

CENELEC TC 21X 'Secondary Cells and Batteries':

CLC/TC 21X supports the International Electrotechnical Commission (IEC) activities by working with IEC counterpart IEC/TC 21 and implementing IEC documents into CENELEC standards. They focus on electrochemical power sources, such as lithium, nickel, cadmium and nickel metal hybrid cells and batteries for portable use.

Notably, the CLC/TC 21X is looking to develop European standards for Electric Vehicle batteries. This Technical Committee will soon be involved on the standardization of the so-called "second life" Lithium ion batteries. CLC/

Frankfurt Agreement:

The Frankfurt Agreement is a document signed by CENELEC and IEC in 2016. Close to 80% of CENELEC standards and identical to or based on IEC publications.

TC 21X and its international counterpart, IEC/TC 21, will contribute to the Circular Economy objectives by standardizing technical performances, associated qualification tests of cells, modules, batteries and safety risk consideration for their "second life" after Electric Vehicle.

The aim is to prepare product standards, methods of testing and associated Codes of Practice, in order to consider Environmental Requirements (EC Rules). These standards will be proposed to IEC, in accordance with the Frankfurt Agreement.



Standard in the spotlight:

EN 62660-1:2019 - Secondary lithium ion cells for the propulsion of electric road vehicles. Part 1 – Performance Testing

For example, this European standard specifies the performance and life testing of used batteries in Electric Vehicles and Hybrid Vehicles. It stipulates the test procedure

for lithium-ion cells for vehicle powering usage, such as: capacity, power density, energy density, storage life and cycle life. This Performance Testing helps batteries maintain their

quality, which is indispensable for securing a basic level of performance and obtaining essential data on cells to maintain value throughout the chain.



Structure of CLC/TC 21X

CLC/TC 21X is composed of one Subcommittee and five Working Groups, each focusing on different topic. A Subcommittee (SC) or Working Group (WG) is established by a Technical Committee, to undertake a specific short-term task within a target date.

Structure of CENELEC TC 21X

Label	Title
Working Groups	
WG 01	Safety requirements on batteries and battery installations
WG 03	Starter batteries EN 50342 - General requirements
WG 05	Li Batteries: General Requirements Group EN 50604
WG 06	Secondary batteries for industrial applications, general requirements

The future of batteries in the Circular Economy

CENELEC is expecting to intensify its cooperation with the European Commission as a possible standardization

request for batteries is expected. Once this request is received, CLC/TC 21X will be working towards European

standards, as a voluntary tool, for stakeholders to comply with the European Batteries Directive (2006/66/EC).





“ CLC/TC21X will soon be involved in standardization activities on the so-called “second life” lithium-ion batteries. These activities will be based around technical performances, associated qualification tests of cells/modules/batteries and safety risk consideration for their “second life” after Electric Vehicle duty. CLC/TC 21X, and its international counterpart, IEC TC 21, are committed to contribute to the Circular Economy objectives by standardizing the re-use of Lithium batteries for different applications. ”

Jean-Paul DOUADY,

Chair of CENELEC TC 21X and Consultant for Exide Technologies





How do Standards help the use of plastics become more Circular?

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Plastics in their various forms and products, are important parts of our lives and economies. However, today's consumption cycle of plastics usually revolves around production, use and discard. Incorporating a circular approach will help maximise economic and environmental benefits, which are not captured effectively at the moment. CEN Technical Committees are committed to providing these deliverables, and in particular the CEN Technical Committee 249 on 'Plastics' (CEN/TC 249).

CEN TC/249 'Plastics'


CEN/TC 249 is responsible for standardization in the plastics domain, touching upon terminology, test methods, specifications, classifications and designation systems. In addition, it works on environmental aspects and joining systems and techniques of plastics, plastic-based materials, semi-finished products and products namely thermoplastics, thermosets, degradable plastics, bio-based polymers, thermoplastic elastomers, composites, reinforcement products for plastics, and recycles.

Given the diversity of plastic monomers and products, the structure of CEN/TC 249 comprises 13 working groups, established by the Technical Committee to undertake a specific short-term task within a target date.



Structure of CEN/TC 249 'Plastics'

CEN/TC 249/WG 11	Plastics recycling
CEN/TC 249/WG 13	Wood Plastics Composites (WPC)
CEN/TC 249/WG 16	Welding of thermoplastics
CEN/TC 249/WG 19	Light exposure
CEN/TC 249/WG 2	Plastics warning devices for underground cables and pipelines
CEN/TC 249/WG 21	Profiles for windows and doors
CEN/TC 249/WG 22	Wallcovering panels for building applications
CEN/TC 249/WG 24	Environmental aspects
CEN/TC 249/WG 25	Static thermoplastic tanks for above ground storage of fuel
CEN/TC 249/WG 4	Decorative laminated sheets based on thermosetting resins
CEN/TC 249/WG 5	Thermoplastic profiles for building applications
CEN/TC 249/WG 7	Thermoplastic films for use in agriculture
CEN/TC 249/WG 9	Bio-based and biodegradable plastics

Details on the scope and deliverables of the working groups can be found here 



Multiple deliverables of CEN/TC 249 support the circular economy by addressing recycled plastics. These include for example:

1. Sample preparation (CEN/TS 16011:2013), sampling procedures for testing plastics waste and recyclates (CEN/TS 16010:2013)
2. Standards on characterization of polystyrene (EN 15342:2007), polyethylene (EN 15344:2007), polypropylene (EN 15345:2007), poly-vinyl chloride (EN 15346:2014), poly-ethylene terephthalate (EN 15348:2014) recyclates and plastics wastes (EN 15347:2007)
3. EN 15343:2007, which deals with traceability, assessment of conformity and recycled content
4. CEN/TS 16861:2015, which deals with determination of selected marker compounds in food grade recycled polyethylene terephthalate (PET)

The work of CEN TC/249 is enhanced by close collaboration with liaisons organisations:

- European Environmental Citizens' Organisation for Standardisation (ECOS)
- European Plastics Converters (EuPC)
- European Recycling Industries Confederation (EuRIC)
- European Federation of Waste Management and Environmental Services (FEAD)
- Plastics Europe
- Plastics Recyclers Europe



Future plastics standardization activities supporting a Circular Economy

The future standardization activities of CEN/TC 249 could continue supporting the transition towards a circular use of plastics in the following ways:

- 1.** Revision of standards with limitations to use of recycled materials
- 2.** Standards which include calculation of recycling content and rates and subsequent labelling
- 3.** Standards focussing on quality criteria and test methods for plastics offered for recycling and minimum qualities of recyclates (hygienic, contaminants, physical, etc.)
- 4.** Guidance on biodegradable and compostable plastics
- 5.** Review of standards for definition and labelling of compostable and biodegradable plastics





“ The emerging circular economy will require entirely new networking and collaborations in the value chains to be set up, involving not only new technologies, but also new hand-off points between players. Seamless integration across multiple players is a key to success. Due to the global nature of these value chains, European and international standardisation play a vital role in this endeavour, e.g. in areas such as product design, mechanical and chemical recycling of plastic wastes as well as innovative fields such as the use of secondary and renewable raw materials. ”

Dr. Eric W. Bischof,

VP Corporate Sustainability, Covestro Deutschland AG.

Eric is chair of ISO/TC 61/SC 14.





“Plastics in the circular economy offers an opportunity to put this material into an ecological and social perspective. Reducing plastic use, applying ecodesign principles to plastics and products, and tackling the thousands of chemicals in the material are key priorities for a clean and healthy Circular Economy. Coupled with actions to ensure longer use of products and to drive remanufacturing, upgrading and reuse before recycling, the Circular Economy can drive transformational change in what and how we produce and consume.”

Doreen Fedrigo,

Head of Circular Economy Policy, ECOS.

ECOS is an environmental societal stakeholder,
liaison organisation of CEN/TC 249.



ABOUT

CEN (European Committee for Standardization) and CENELEC (European Committee for Electrotechnical Standardization) are recognized by the European Union (EU) and the European Free Trade Association (EFTA) as European Standardization Organizations responsible for developing standards at European level, as per the EU Regulation 1025/2012. The members of CEN and CENELEC are the National Standardization Bodies and National Electrotechnical Committees of 34 European countries. European Standards (ENs) and other standardization deliverables adopted by CEN and CENELEC, are accepted and recognized in all these countries. European Standards (ENs) contribute to enhancing safety, improving quality, facilitating cross-border trade and strengthening the European Single Market. They are developed through a process of collaboration among experts nominated by business and industry, research institutes, consumer and environmental organizations, trade unions and other stakeholders. CEN and CENELEC work to promote the international alignment of standards in the framework of technical cooperation agreements with ISO (International Organization for Standardization) and the IEC (International Electrotechnical Commission).

** Number of full members in May 2020*

HOW TO GET INVOLVED

Participation in the standardization process allows stakeholders to have a say on the content of draft standards and enables them to be better informed about developments in standards relevant to their area of interest or sector of activity. Companies, public bodies and other (national) organizations, wishing to participate in CEN activities should contact the CEN Member (National Standardization Body - NSB) or CENELEC Member (National Committee - NC) in their country. By contacting the NSB or NC, these organizations can either participate in the national mirror committee responsible for providing input to the relevant Technical Committee (TC) at European level, or be put forward by their NSB/NC to be an active member of a European Standardization Committee/Working Group.

