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Deadline**2018-12-05****SUBJECT****CEN-CLC/BTWG 11 'Sustainable Chemicals'****Adoption of the final report of the specific agreement under EC Ancillary Action on 'Sustainable Chemicals from Primary and Secondary Raw Materials with the objective of identifying and prioritizing needs'****BACKGROUND**

In September 2016, the CEN and CENELEC Technical Boards established CEN-CLC/BTWG 11 'Sustainable Chemicals' in response to an ancillary action from the EC Sustainable Chemicals from Primary and Secondary Raw Materials with the objective of identifying and prioritizing needs whose secretariat was assigned to NEN.

The objective of this activity is to map, identify and prioritise standardisation needs in support of (sustainable) chemicals from primary and secondary raw materials by mapping existing or ongoing standardisation work, including work by industry and other organisations in this area at national, European and international level.

CEN-CLC/BTWG 11 started its activity by dividing the participants in five task groups (one of which was disbanded later on) to analyse over 1100 standardisation initiatives. After a series of web and in-person meetings, preliminary outcomes and recommendations were developed. This work was then presented to different stakeholders during a dedicated [Workshop on Sustainable Chemicals](#), in May 2018 with the objective of receiving feedback and validation from participating stakeholders. The feedback was then incorporated in the final report.

With the release and approval of the final report by the CEN and CENELEC Technical Boards, CEN-CLC/BTWG 11 will have completed its tasks.

Since the report has been developed in response to an ancillary action funded under the specific agreement SA/CEN/GROW/EFTA/000/2017-05 by the EC, NEN proposes to disband the CEN-CLC/BTWG 11 after the end of the specific agreement i.e. February 2019. A proposal for disbandment will be made to the CEN and CENELEC Technical Boards by means of a separate document after this date.

PROPOSAL(S)

BT,

- noting the report of CEN-CLC/BTWG 11 'Sustainable Chemicals' on 'Identification of Potential Needs of Standardisation for Sustainable Chemicals from Primary and Secondary Raw Materials Related to the Circular Economy Action Plan'
- approved the report as in Annex 1 to BT N 11370 and BT161/DG11092/DV.

2018-11-09 – PK

Final Report

Identification of Potential Needs of Standardisation for
'Sustainable Chemicals' from Primary and Secondary Raw
Materials Related to the Circular Economy Action Plan

Prepared for:

European Commission/DG Internal Market, Industry, Entrepreneurship
and SMEs

Reference:

SA/CEN/GROW/EFTA/000/2017-05 Rev2

Prepared by:

CEN-CLC/BTWG 11 'Sustainable Chemicals'

of which the secretariat was held by the Netherlands Standardisation
Institute

Period:

21 December 2016 – 21 December 2018

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1 Executive Summary

In response to the European Commission's Ancillary Action [8] on the 'Identification of potential needs of standardization for 'sustainable chemicals' from primary and secondary raw materials related to the circular economy action plan', CEN and CENELEC set up the working group CEN-CLC/BTWG 11 'Sustainable Chemicals' for the execution of the activities. This action falls within the scope of the European Commission's Circular Economy Action Plan.

This report on 'sustainable chemicals' describes the mapping of existing standards and other relevant initiatives with potential relevance to 'sustainable chemicals' from primary and secondary raw materials. These include biomass, recycling of various materials, LCA, product design, materials specifications and communication requirements. Other relevant initiatives include mechanisms initiated by industry or NGOs, or other policy mechanisms establishing criteria such as ecolabels. The report provides an element of analysis of key initiatives to show what exists and approaches which have been taken and identifies gaps, which could be filled through revision of existing standards or development of new European standards.

The CEN-CLC/BTWG 11 concluded to set a wide scope for the action and to avoid formulating a strict definition of 'sustainable chemicals'. The broad scope allowed the inclusion of a greater number of initiatives into the mapping exercise. This approach is in line with the description and concept that was provided by the EC in the ancillary action. For the purpose of this action 'sustainable chemicals' shall refer to the full lifecycle of chemicals and assess for each stage how standardisation can contribute to better sustainability. This project covers both the technical cycle (where products and materials are re-used, repaired or recycled to become new products and materials) and the biological cycle (where biomass is harvested and turned into products which can then be either cascaded into new products or biodegraded, in the latter case the biodegraded material becomes nutrients for new biomass to grow, thus closing this cycle. See e.g. the circular economy system diagram – the EllenMacArthur Foundation.¹

The conclusions and recommendations of the report come from the identification of over 1100 existing standardisation initiatives at national, European and international levels as well as codes of practice, schemes and guides. These initiatives were analysed by the experts of the working group with the aim of uncovering possible gaps and suggesting ways for closing them.

Following the execution of the work CEN-CLC/BTWG 11 recommends the following:

- Sustainability criteria for other feedstock as has been done for biomass
- In the absence of end-of-waste criteria, a standard for a minimum quality (hygienic, impurities, contaminants, physical and mechanical characteristics) of plastics for recycling and plastic granulates
- Standardised methodology for calculating recycled content
- Standard with criteria on properties of relevance for End-of-Waste such as the thresholds of contaminants
- Standards on responsible design to enable the separation of recyclable components (e.g. multi-layer packaging)

Considering the findings of the analysis of existing standards and other initiatives on chemicals, the following research areas are identified:

- Research on the extraction approaches to remove unwanted substances from recycled plastics, and on mechanical and chemical recycling to facilitate the circularity of plastics and materials
- Research on (a) the detection and sorting systems, (b) recycling approaches for functionalized / mixed or reinforced plastics, (c) repairing and/or compatibilization of recyclates and (d) extraction techniques to recover chemical substances in plastics
- Research on promoting products that are designed to be easily refurbished, remanufactured, reused, recycled, biodegraded safely
- Research into what extent product additives hamper recycling of materials

¹ <https://www.ellenmacarthurfoundation.org/circular-economy/interactive-diagram> and page 7 of this report.

- Creation of a mechanism at CEN/CENELEC to identify standards that exclude recycled material

The available relevant standards and initiatives for 'sustainable chemicals' are available in Annex D.

2 Project Background

2.1 'Sustainable chemicals' in relation to the Circular Economy

The work described in this report is the result of an ancillary action initiated by the European Commission. This action, in the field of 'sustainable chemicals' from primary and secondary raw materials, relates to various aspects of the European Commission's Circular Economy strategy, the objective of which is to boost Europe's global competitiveness, foster sustainable economic growth and generate new jobs. The transition to a more circular economy, where the value of products, materials and resources is maintained in the economy for as long as possible, and the generation of waste minimised, is an essential contribution to the EU's efforts to develop a sustainable, low carbon, resource efficient and competitive economy [1].

'Sustainable chemicals' and the products made thereof are important factors towards a more sustainable society and economy. This requires chemicals, products and materials that are of high quality and avoid contaminants as much as possible to allow the optimisation of re-use and recycling. The shift towards 'sustainable chemicals' will require diversification of chemical feedstock, better sustainability through new forms of industrial symbiosis, mainstreaming of ecodesign approaches and the reduction of the ecological footprint of chemicals, products and materials, creation of new markets for secondary raw materials, greater uptake of the use of secondary raw materials in products and in general better consumer information.²

Currently, there is a lack of knowledge and overview of the existing standardization documents in relation to 'sustainable chemicals', hence the need for this ancillary action.

2.2 Objective

The overall objective of this ancillary action is to map, identify and prioritise standardisation needs in support of 'sustainable chemicals' from primary and secondary raw materials related to the Circular Economy Action Plan. Existing and/or ongoing standardization work and related initiatives including work by industry, public authorities or NGOs and other organisations in this area at national, European and international levels are included in the mapping exercise. The result of the mapping exercise is the identification and prioritization of standardization plus pre-and co-normative research needs, in relation to 'sustainable chemicals' from secondary raw materials.

2.3 The role of standardisation

(European) standardisation supports national and European legislation by filling in legal requirements and/or gaps. But most of the standards are voluntary market agreements. Standards are tools that set out specifications and other technical information and solutions on various kinds of products, materials, services and processes. Standards provide a basis for mutual understanding among individuals, businesses, public authorities and other kinds of organizations. They facilitate communication, commerce, trade, measurement/testing, control and manufacturing.

European standardisation – having harmonized requirements throughout the EU - is a key instrument for consolidating the Single Market and facilitating cross-border trade – within Europe and with the rest of the world. It is a valuable tool for strengthening the competitiveness of European companies, thereby creating the conditions for economic growth. Standardisation performs a key role in supporting progress towards the efficient use of resources in a cyclical and sustainable manner.

Standardisation in Europe is delivered through recognised bodies, each dealing with a defined scope of activities:

² https://ec.europa.eu/growth/content/workshop-sustainable-circular-economy-new-opportunities-raw-materials-chemicals-and-water-0_it

CEN, the European Committee for Standardisation, deals with standardisation relating to products, materials, services and processes not covered by the more specialised remits of CENELEC and ETSI. CEN also mirrors the work of the International Organisation for Standardisation (ISO).

CENELEC, the European Committee for Electrotechnical Standardisation, is responsible for standardisation in the fields of electricity, electronics and associated technologies. CENELEC also mirrors the work of the International Electrotechnical Committee (IEC); the body responsible for international standardisation in this field.

In Europe, currently over 16.600 standards are maintained through CEN, with some 33% of these being identical to ISO publications³. A further 7.000 (approximately) are maintained via CENELEC, with around 78% of these being based on, or identical to, IEC publications⁴.

2.4 'Sustainable Chemicals'

The goal behind this project is to move to more 'sustainable chemicals'. The EU has no official definition for 'sustainable chemicals', and the experts working on this project used existing definitions as guidance for the work. The OECD was one such sources, in particular its definition of sustainable chemistry:

Sustainable chemistry is a scientific concept that seeks to improve the efficiency with which natural resources are used to meet human needs for chemical products and services. Sustainable chemistry encompasses the design, manufacture and use of efficient, effective, safe and more environmentally benign chemical products and processes.

The principles of green chemistry⁵ and green engineering⁶ are also basis from which the search for standards started. The project is however not limited to these principles as they do not include all social aspects of sustainable development. The CEN-CLC/BTWG 11 concluded to set a wide scope for the action and to avoid formulating a strict definition of 'sustainable chemicals'. The broad scope allowed the inclusion of a greater number of initiatives into the mapping exercise. This approach is in line with the description and concept that was provided by the EC. For the purpose of this action 'sustainable chemicals' shall refer to the full lifecycle of chemicals and assess for each stage how standardisation can contribute to better sustainability.

The concept of "sustainable" in this report deviates from the standardized definition of sustainability and sustainable development in e.g. ISO 26000:2010 *Guidance on social responsibility* (Annex D, p7). Those definitions are in line with the widely accepted Brundtland definition⁷ of sustainable development, stating among others that future generations shall be able to fulfil their needs, thus excluding the use of finite materials. There is also no generally agreed definition of the concepts "sustainable" and "not sustainable". Rather, sustainability is the end goal that you are working towards, and not something that can be expected to be achieved. Therefore, the experts agreed that it would be more correct to discuss chemicals fulfilling certain sustainability criteria. As there are currently no agreed set of criteria to be used the CEN-CLC/BTWG 11 for the purpose of this report has focussed mainly on recycling and other end of life options, as well as different tools to increase recycling. A recommendation for further work will be to develop a full set of sustainability criteria.

Most importantly, this project addresses products that have a strong connection with the circular economy. As the circular model builds upon economic, natural and social capital it was deemed important to cover all three aspects

³ CEN-CENELEC Quarterly Statistical Pack 2017 Q4

⁴ CEN-CENELEC Quarterly Statistical Pack 2017 Q4

⁵ Anastas, P.T., Warner, J.C. *Green Chemistry: Theory and Practice*, Oxford University Press: New York, 1998, p.30.

⁶ Anastas, P.T. and Zimmerman, J.B., "Design through the Twelve Principles of Green Engineering", *Env. Sci. and Tech.*, 37, 5, 94A-101A, 2003

⁷ <https://www.iisd.org/topic/sustainable-development>

(environmental, economic and social)⁸. With this in mind, and following the content of the ancillary action, this report considers the full life cycle of chemicals and all aspects relevant to sustainability as described in §2.5.

Fertilising products and their components materials were excluded from the scope as work is currently underway to support the revision of the EU Fertilisers Regulation to take into account secondary materials. The European Commission prepared a draft mandate to CEN to accompany the implementation of the future Fertilising Products Regulation.

2.5 Lifecycle of ‘Sustainable Chemicals’

For the purpose of this ancillary action, the concept of ‘sustainable chemicals’ encompasses the full circle, from feedstock from primary or secondary raw materials to production, products, labelling, use and finally recycling (or end-of-life management). This project covers both the technical cycle (where products and materials are re-used, repaired or recycled to become new products and materials) and the biological cycle (where biomass is harvested and turned into products which can then be either cascaded into new products or biodegraded, in the latter case the biodegraded material becomes nutrients for new biomass to grow, thus closing this cycle). These dual cycles are illustrated in the figure below; “the circular economy system diagram” by the EllenMacArthur Foundation.

⁸ <https://www.ellenmacarthurfoundation.org/circular-economy>

OUTLINE OF A CIRCULAR ECONOMY

PRINCIPLE

1

Preserve and enhance natural capital by controlling finite stocks and balancing renewable resource flows
 ReSOLVE levers: regenerate, virtualise, exchange



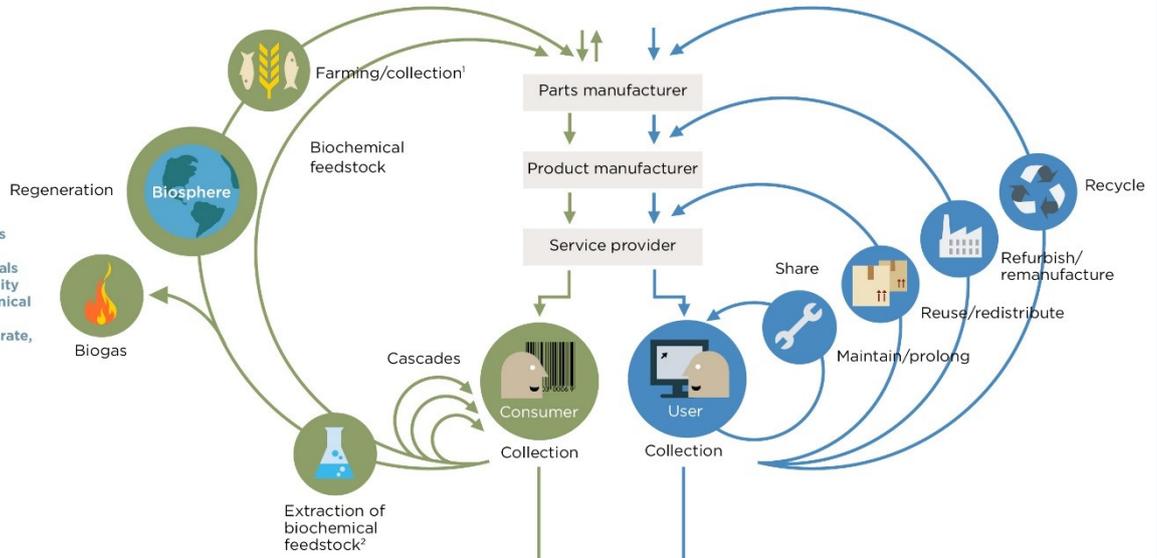
Renewables flow management

Stock management

PRINCIPLE

2

Optimise resource yields by circulating products, components and materials in use at the highest utility at all times in both technical and biological cycles
 ReSOLVE levers: regenerate, share, optimise, loop



PRINCIPLE

3

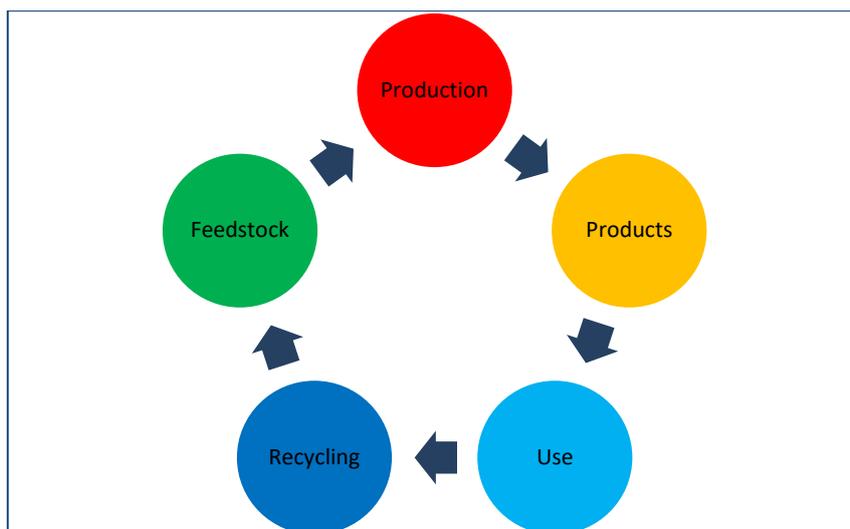
Foster system effectiveness by revealing and designing out negative externalities
 All ReSOLVE levers

Minimise systematic leakage and negative externalities

1. Hunting and fishing
 2. Can take both post-harvest and post-consumer waste as an input
 Source: Ellen MacArthur Foundation, SUN, and McKinsey Center for Business and Environment; Drawing from Braungart & McDonough, Cradle to Cradle (C2C).

SOURCE: the EllenMacArthur Foundation

For this ancillary action, the full cycle includes the assessment for each stage of the life cycle on how standardisation can contribute to sustainability and supports efforts in resource efficiency and circular economy. The figure shown below was provided by the European Commission with the ancillary action.



SOURCE: EC, the Sustainable Circular Economy

This mapping exercise is based upon the full life cycle of chemicals as in the figure above. On top of this framework the working group added several other elements important for the transition to more ‘sustainable chemicals’. These other elements are for example information about substances of concern (REACH) in products and waste, which is directly linked to labelling and quality aspects of secondary raw materials.

3 Method development

3.1 CEN-CLC/BTWG 11 ‘Sustainable Chemicals’

The general approach on the execution of this project was developed by the members of CEN-CLC/BTWG 11 and agreed on with the European Commission (=WP1) [7]. The working group had been established in response to the request for ancillary action as a joint activity of both European Standardization Organizations (CEN and CENELEC). Both organizations made a call for experts within their members to involve all countries and experts.

The members of the CEN-CLC/BTWG 11 are stakeholders and experts in the field of chemicals, products, and/or waste. See Annex A for the complete list of the members. The members are knowledgeable about standards and initiatives available in the field. The working group was responsible for completing the overview of existing national, European and international standards and other initiatives. A call for action was done by NEN to different stakeholders (companies, organizations, associations, research projects) to either participate in the working group or to take part in the workshop where the preliminary results would be discussed. See Annex B for the list of stakeholders that were contacted during the course of this project.

3.2 Mapping of Standards and Initiatives

An initial mapping was done through a library search executed by NEN. This library search was executed based upon the ICS (International Classification for Standards) code list. This initial mapping included standards from CEN, ISO and several European national standardization bodies. This mapping considers on-going pre- and co-normative research and development work such as the H2020-projects and the work listed in the ancillary action as prepared by the Commission. The standardisation-related work of relevant European Technology Platforms (ETPs) were also included. The mapping considered existing, on-going and/or planned activities by international standards bodies such as ISO, IEC, CEN, CENELEC and other organisations in non-EU countries, including USA, Japan, China, and Brazil.

After this initial search, the members of CEN-CLC/BTWG 11 were asked to identify and add standards/initiatives to the long list of identified standards. A further reach out was conducted to other CEN/CENELEC, ISO/IEC and

ASTM Technical Committees for input. Their secretaries were contacted through the CEN-CENELEC Management Centre. Input was received from China, Brazil, and ASTM.

The fields covered by the complete mapping effort are widespread in terms of applications (chemical substances are used in a vast range of different applications and finished product standards often define standards for chemical substances used upstream), types of chemical substances (from bio-based materials, minerals, pharmaceuticals and Nano-materials), challenges (source, contaminants, performance, social) and types of criteria (standards, testing, purchasing criteria). As is mentioned above, the area covered by 'sustainable chemicals' is extensive, it is therefore assumed that not all relevant standards, initiatives and related information were identified and assessed.

During the execution of the project, additional initiatives were added to the list of standards including:

- Ecolabels (parts related to sustainability): EU Ecolabel, Nordic Swan, etc.;
- National standardization initiatives: BSI report on Resource Management and the circular Economy [4];
- Specific material sustainability initiatives: Roundtable for Sustainable Palm Oil, Bonsucro Production Standard, Cradle2Cradle;
- 'Sustainable chemicals': Responsible Care, Green screen;
- EU-SCOT-Project for CO₂ and gaseous industrial effluents [5].

The final list of mapped standards and other initiatives contains over 1100 initiatives (see Annex D).

3.3 Task Groups

To increase the efficiency of the mapping and assessment of the standards and initiatives, five task groups were established. The scope of the five task groups was based upon the different stages of the production chain. The categorization of the stages of the production chain results from the Annex 1 of the ancillary action [8].

Several members reached out beyond those participating in the working group to experts in the field to provide additional expertise to the task groups. Each task group was responsible for the results within its category. See Annex C for the division of the working group members among the task groups.

The following task groups (TG) were established:

TG 1. Raw materials

This task group focused on mapping standards and other initiatives concerning both primary and secondary raw materials. It addressed the following subjects:

- Biomass quality & sustainability indicators, assessment & thresholds including LCA approaches,
- Biomass carriers (e.g. bio-oil, pyrolysis oil, biochar) quality & sustainability indicators, assessment & thresholds including LCA approaches,
- Gaseous effluents including CO₂ quality & sustainability indicators, assessment & thresholds including LCA approaches,
- Recyclate (e.g. plastics, tyres, minerals) quality & sustainability indicators, assessment & thresholds including LCA approaches,
- Secondary raw material (SRM) quality and sustainability indicators, assessment & thresholds including LCA approaches,
- Quality and sustainability of minerals as SRMs for coatings, pigments, batteries, etc. production,
- Contaminants: Identification, quantification, actions upstream and downstream to reduce levels.

TG 2. Production/Design

This task group was concerned with the way materials/chemical substances perform in regard to circular economy. It addressed the following areas:

- Quality & capability of processes including controlling of emissions to air, water and soil (relevant BATs – BREFs & IED),
- Secondary raw materials use efficiency,

- Water use efficiency,
- Energy use efficiency,
- Land use efficiency,
- Sustainability indicators, assessment approaches & thresholds for processes including LCA approach(es).

TG 3. Production/Processes

Task group 3 addressed the way that secondary materials are used in processes. It covered the following areas:

- Biodegradability measurements (test methodology, testing scheme and acceptance criteria),
- Ecotoxicity measurements (test methodology, testing scheme and acceptance criteria),
- Anaerobic digestion measurements (test methodology, testing scheme and acceptance criteria),
- Compostability measurements (test methodology, testing scheme and acceptance criteria),
- Polymers mechanical, thermal and chemical functionality (including isolation properties, migration barriers to gasses, weather ability, transparency, adhesion to other materials/surfaces),
- Sustainability indicators, assessment approaches & thresholds for products including LCA approach(es).

TG 4. Consumption/Labelling

The Consumption/Labelling task group covered the following areas:

- Claims on 'sustainable chemicals' such as sustainability including verification & specification approaches,
- Tools for business-to-business (B2B) communication,
- Tools for business-to-consumer (B2C) communication,
- Analytical methods to verify the conformity of, e.g., labelled pigments, coatings, batteries, etc. related to the Raw Materials Initiative Activities,
- Collection approaches (including test methodology, testing scheme and acceptance criteria).

TG 5. Recycling/End of Life/Waste Management

This task group focused on initiatives in the area of recycling/end of life; the issues that are relevant for bringing the used chemical substances back into the loop. It covered the following:

- Sorting approaches (including test methodology, testing scheme and acceptance criteria),
- Quality of Secondary Raw Materials – "closing the loop".

3.4 Assessment of the initiatives

The task groups allocated relevant initiatives from the long list of standards to their specific areas of focus. The first selection of standards and other initiatives by the task groups was executed based on title and scope. On average, task groups identified around 350 relevant initiatives. Based on this first selection, the task group did an overarching assessment based on this selection. Some standards and initiatives were analysed a bit more in detail. The task groups identified within the selected initiatives:

- standards in need of an update
- gaps – areas with missing standards
- proposals to close the identified gaps.

The working group discussed the findings per task group and linked these findings where there was relevance between task groups. All findings were brought into one report and further discussed within the working group as well as with external stakeholders at a stakeholder event held in spring 2018 (see §5).

4 Results of the analysis of standards and initiatives

4.1 General

The task groups did an overarching analysis of the mapped standards. In some cases, the area to be covered is so widespread that it was impossible to go into the same level of detail for each subject covered by the scope. As a result, some parts of the analysis are more detailed than other parts. The intermediate results of the task groups were discussed at an open workshop and further developed during meetings with CEN-CLC/BTWG 11.

4.2 TG 1 Raw Materials/Feedstock

Just under 400 standards and initiatives were identified of potential relevance to raw materials (primary or secondary). See Annex D for the selected standards and initiatives.

Highlights of the analysis:

- There is an element of overlap between initiatives relating to materials and those to product-related aspects and end-of-life management as delineated in this project.
- There are a significant number of biomass-related initiatives (whether specifically addressing biofuels or solid recovered fuels or more generally bio-based products): 50 initiatives in total were identified excluding sustainable forest management (11 identified). Task group 2 on design-related aspects identified 28 such initiatives.
- Secondary raw materials initiatives address aggregates and building materials, packaging, recycled materials such as plastics and metals, materials for recycled paper, and materials from end-of-life tyres and reclaimed rubber.
- Most of the relevant standards/initiatives are test methods (e.g. content not leaching beyond a given threshold) for waste, tyres, plastics, paints and varnishes, and metal ores.
- A limited number of (national) standards are available for the quality of organic waste.

Different types of feedstock can be distinguished as a basis for raw materials. These are primary feedstock materials such as biomass (e.g. wood, plants and algae⁹), metals, bio-based material collected from primary production processes and CO₂ but also, secondary feedstock materials like recycled plastics, recycled nutrients, etc. Several of these materials are considered in more depth below. The analysis serves to provide some concrete elements from existing initiatives relating to specific feedstocks, to gain a better understanding of whether and how sustainability issues are addressed.

4.2.1 Primary Raw Materials

Many initiatives address specific materials that make up for components of specific products such as aggregates, biomass, concrete, minerals, plastics, wood/timber and wood composites. Other initiatives (mostly standards) address various ingredients in 'extenders for paints', or pigments, and for the most part these are ISO standards on specifications and test methods. There are also initiatives addressing specific chemicals such as hydrogen peroxide for industrial use, lead sulphide concentrates, rubber compounding ingredients, manganese ores and concentrates, zinc sulphide concentrates, and other sulphide concentrates (copper, or copper, lead and zinc). Most of these are also ISO standards setting out determination of content of a specific ingredient and specific property test methods.

The analysis that follows below focuses on some key materials where particularly relevant initiatives exist that could be of wider interest on 'sustainable chemicals' and primary and secondary raw materials.

Biomass

As a feedstock, biomass is wide ranging and there are initiatives addressing biomass more generally; specific

⁹ European standardisation work on algae started in CEN/TC 454 'Algae and algae products, NEN has the secretariat.

feedstock materials such as rubber, wood and wood composites as well as forest management; or specific applications mostly relating to bioenergy but also including bio-lubricants, palm oil and timber.

A range of initiatives explicitly address sustainability aspects of biomass and bio-based materials. See for example EN 16214 series on *Sustainability criteria for the production of biofuels and liquid biomass for energy applications - Principles, criteria, indicators and verifiers* (Annex D, p19). A small number of primary raw materials are addressed in initiatives dealing specifically with sustainability aspects. By far, the most prolific are bio-based products, including different types of biomass production as well as specific products such as bio-lubricants and bioenergy (including biofuels, bioliquids and solid fuels).

EN 16751:2016 *Bio-based products – Sustainability criteria* (Annex D, p19) and ISO 13065:2015 *Sustainability criteria for bioenergy* (Annex D, p26) both have a similar approach. They set principles, criteria and indicators covering all three pillars of sustainability on a general level. During both these projects, the experts found that it was not possible to be more specific with a scope as wide that includes all kinds of biomass production globally. There are large differences between the varied types of biomass production (e.g. forestry, agriculture and algae production), and wide varieties between different climatic zones and social and cultural contexts, making it virtually impossible to pinpoint the most important aspects without risking causing trade barriers. Instead, a risk-based approach was chosen. The fact that these standards do not contain thresholds prevents products from being assessed according to specific criteria. However, the experts agreed that the setting of threshold values regarding sustainability is a question for politicians and legislators, not for standardisers. The EN 16214-series on sustainability criteria for the production of biofuels and bioliquids for energy applications (see Annex D, p11), address the requirements set out in the EU Renewable Energy Directive (2009/28/EC), including the thresholds therein, intending to be of help when implementing this Directive. However, these standards (as well as the Directive itself) only cover parts of the environmental pillar (and no aspects in the social and economic pillars), and, they do not extend to biomass for bio-based products. The Renewable Energy Directive 2009/28/EC (RED) allows compliance with the RED to be shown through assessment from a recognized voluntary scheme. There are currently 14 approved schemes. Among these are both large international schemes such as ISCC, RSB and Bonsucro and smaller, regional ones.

ISCC, International Sustainability and Carbon Certification, covers all types of biomass production. Although the scheme was originally created to show compliance with the RED, a new validation ISCC-Plus uses the RED criteria to validate all types of biomass and bio-based products. RSB, Roundtable of Sustainable Biomaterials, has a specific branch for validation against the RED, but now also has extended beyond biomass for bioenergy to all types of bio-based materials. Bonsucro validates sugarcane and products and fuels made from it. It was formerly called BSI (Better Sugarcane Initiative). There also exists a Dutch national standard, NTA 8080¹⁰ (Annex D, p41), which is applicable to biomass for both energy and products.

Palm Oil

Several initiatives focus specifically on palm oil and its sustainable supply and production. An example of a specific initiative is the Roundtable for Sustainable Palm Oil (RSPO) (Annex D, p44). Palm oil producers are validated through verification of the production process to the RSPO Principles & Criteria (P&C). Supply chain actors are audited against the RSPO Supply Chain Certification Standard. RSPO NEXT is a voluntary add-on standard to the P&C and focuses on the production phase. It includes requirements on no deforestation, no fire, no peat, and on greenhouse gases, human rights and transparency.

Wood and forest management

A cluster of initiatives address forest management and wood-based products. The two largest ones are the Forest Stewardship Council (FSC) and the Programme for the Endorsement of Forest Certification schemes (PEFC)

¹⁰ NTA 8080-1:2015 Sustainability criteria for biomass for energy purposes and biobased products – Part 1: Sustainability requirements

(Annex D, p43). There are also some Brazilian national standards (published by ABNT, Associação Brasileira de Normas Técnicas), which appear to implement PEFC's standards.

FSC International has set ten core principles for its work, addressing among others the legality of logging and trading, biodiversity, human rights including indigenous peoples' rights, and the social and economic wellbeing of both workers and the local communities. These are further detailed in the international standard, which then is implemented into national FSC standards, transferring the international requirements to the local context.

PEFC International endorses national schemes through a bottom-up approach. Some countries' schemes are simply named PEFC Sweden or PEFC Russia, whereas in the United States there are two PEFC schemes; SFI (Sustainable Forestry Initiative) for large forest owners and ATFS (the American Tree Farm System) for small family forest landowners. They have an international benchmark standard, which covers similar topics as FSC, including biodiversity, maintenance of ecosystems, workers' rights, indigenous peoples' rights etc.

Chain of Custody

Both the FSC and the PEFC systems also have Chain of Custody (CoC) Certification as a requirement for passing the information regarding the wood and wood-based products down the value chain, linking it to its origin. The main aims are eliminating illegal or unlawful logging practices as well as avoiding double counting of certified raw material. There is also an ISO standard under development on this: ISO 38200 (Annex D, p32) *Chain of custody for wood and wood-based products*, expected to be published November 2018. ISO also has initiated an activity around a much wider CoC standard; ISO 22095 under ISO/PC 308.

4.2.2 Secondary Raw Materials

Over 130 initiatives were found that addressed secondary raw materials or could be applied to both primary and secondary raw materials. These ranged from aggregates and building materials, to recycled materials (such as metals, paper, plastics, rubber/tyres and nutrients such as sludge) and packaging. Some of these are considered in more detail below. See Annex J "Subjects that are related to 'Sustainable Chemicals' but out of scope" for some further information on secondary metals.

Plastics

Plastics deserve quite some consideration due to their complexity and the various sustainability questions they raise, to such an extent that the European Commission has developed a Plastic Strategy¹¹. Standards addressing plastics do so from several angles. See Annex K, Plastics for an overview of standards related to plastics. The largest share of standards set out characterisation of specific types of recycled plastics. The vast majority of these are EN or Italian (UNI) national standards (Annex D, p49-50). The UNI standards set out requirements and test methods for a range of plastic and polymer types for general or specific purposes, for example, expanded polystyrene from industrial residues or from post-consumer for general purposes. Specific end uses include as aggregate for mortar or cement, for injection moulding, as well as for non-final product use such as reducing processes in blast furnaces, for conversion into liquid and/or gas fuel, and for chemical recycling. UNI has also produced a series of standards on requirements and test methods for 'recycled plastic materials from recovery of durable goods to end of life' for specific plastics, such as polypropylene and polystyrene.

The European standard EN 15343:2007¹² (Annex D, p17) addresses plastics recycling traceability and assessment of conformity and recycled content. It thereby provides support to key circular economy considerations such as sourcing and quantified recycled content. In addition to this standard it is important to check if certain chemical substances are contained within the recycled materials. Legislation exists to limit certain substances in products (e.g. substances of very high concern in REACH, and specific hazardous substances in RoHS), but the current

¹¹ <http://ec.europa.eu/environment/circular-economy/pdf/plastics-strategy-brochure.pdf>

¹² EN15343, *Plastics - Recycled Plastics - Plastics recycling traceability and assessment of conformity and recycled content*

situation shows that some product manufacturers wishing to use recycled materials such as plastics have corporate approaches that are choosing to go beyond legislation. An example of such a standard is CEN/TS 16861:2015 (Annex D, p11) on recycled plastics and determination of selected marker compounds in food-grade recycled PET. An American (ASTM) standard (D7209) on 'waste reduction, resource recovery, and use of recycled polymeric materials and products' was withdrawn in 2015 due to time limits but could similarly provide insights on various aspects of recycled plastics including separation of products by classes, quality assurance, designing for recycling, certification and percentages of recycled products, and waste reduction.

To obtain the required quality of secondary plastics, the intake of used materials should be improved as well as the production process adapted to the quality of the input material. This requires quality criteria and test methods for plastics and rubbers that are offered for recycling.

For some products, their production involves the inclusion of additives such as stabilisers, flame retardants, colourants, etc. to provide a function to the final product. It is already known that some of these additives as well as "legacy substances" that are now restricted can be challenging for recycling. This requires attention in terms of standards, technologies and testing to ensure recycled materials from such streams can be effectively and safely used with minimum impact on the environment and human health. Provision of information on, and access to the list of, substances in products is a topic of political discussion at the time of writing this report, and follow-up activities could involve methods of identification of multiple substances in products, the depolluting of products before recycling, and the design of products and solutions (non-product service provision such as servitising, leasing of products, etc.) avoiding restricted substances at the design phase.

Packaging is addressed in several standardisation initiatives. EN 13427 until EN 13432 (Annex D, p15) deal with the essential requirements for placing packaging on the market. The set of standards cover the manufacturing and composition (design) of packaging including presence of substances hazardous to the environment, the reusability and the recoverability of packaging (including material recycling and biodegradation). Technical reports supporting the standards deals with "requirements for substances and materials to prevent a sustained impediment to recycling" (covering cardboard, glass, metals (aluminium and steel), paper, plastic and wood) as well as a standard for calculating recycling rates". A similar set of ISO standards exist (ISO 18601-18606) (Annex D, p29).

Example of another initiative is a Russian standard (GOST R 53754) (Annex D, p23) on *Resources saving - Packaging - Definitions and methods of calculation of efficiency of the recycling packaging as a secondary material resource*. A European standard, EN 643 *Standard Grades of Paper and Board for Recycling* (Annex D, p20) exists. Examples of other initiatives addressing recycled paper include an Austrian standard (ÖNORM S 2080-1) (Annex D, p43) on quality requirements for secondary raw materials, 'Part 1' deals with paper. The German ecolabel Blaue Engel includes basic criteria on recycled paper (RAL-UZ-14) (Annex D, p45).

Rubber is addressed by a small number of standards (See Annex K for an overview of standards related to rubber). Natural rubber is harvested mainly in the form of latex from rubber trees. Synthetic rubber is any artificial elastomer. These are mainly polymers synthesized from petroleum by-products. Currently, there are no process or quality standards available for the recycling and use of secondary rubber and sustainable sourcing criteria are missing as well. Only 'evaluation procedures' exist, and CEN standards relate specifically to materials produced from end-of-life tyres (Annex D, p51-51). ISO standards are broader in the sense that they address reclaimed rubber, for example from products containing mainly natural rubber or reclaimed isobutene-isoprene rubber. These are however still 'evaluation procedures'. A Russian standard (GOST 8407) (Annex D, p23) sets out specifications on reused tyres and inner-tubes, and an American standard (ASTM D5644) (Annex D, p7) provides test methods for rubber compounding materials to determine particle size distribution. No standards that provide specifications or limitations on the input material use have been identified.

Aggregates or use of industrial by-products are featured in several national standards (Brazilian, French, German, UK) as well as CEN standards, for their use in specific applications such as civil engineering, landscaping or road construction, airfields and 'other trafficked' areas. There are also standards characterized for their use with more generic materials such as mortar, unbound mixtures, and hydraulically bound resources. Explicit

requirements on recycled aggregates can be found in DIN 4226-100 (Annex D, p12), with specifies requirements for recycled aggregates and for evaluation of conformity. This includes a quality control system for use in factory production control.

4.3 TG 2 Production/Design

Over 400 items in the list of 1100+ initiatives potentially concern production or design aspects of final products or of materials for making products (see Annex D).

The initiatives were divided further into the following classifications (with some elements of overlap): general design (general product initiatives, materials), LCA and chemical substances. Most of these initiatives are standards providing test methods for quality assurance or technical specifications (e.g. for paints and varnishes, and for metals).

Standards and initiatives around Fertilising products and their components materials were identified but not analysed due to that these subjects are of the future Fertilising Products Regulation.

4.3.1 General design

Approximately 100 initiatives (potentially) address design. This included horizontal and sector- or product- specific initiatives. Examples of initiatives around design are: Packaging requirements for substances and materials to prevent a sustained impediment to recycling, Responsible Care, Clean Production Action's, Chemical Footprint Project, the Cradle2Cradle approach, The Natural Step 'Framework for Strategic Sustainable Development'¹³, different ecolabel criteria (whether for the EU ecolabel or national or regional ones such as Germany's Blue Angel or the Nordic Swan), biofuels and wider bio-based products schemes, LCA initiatives, environmentally considerate lubricants, and environmentally conscious design for electrical and electronic products.

At EU level, a package of standards is being developed linked to the EU Ecodesign Directive (complete title in footnote) (a part of mandate M/543) (Annex D, p12-13). These standards will address material efficiency aspects of energy-using products, including the use of recycled raw material. These initiatives could provide interesting insights for future standardization work, whether in relation to specific materials, products or sectors. Some analysis was undertaken for a small number of sectoral initiatives, addressed below in the 'chemicals' section. In this section, analysis focuses on product-specific initiatives.

More **general product initiatives** (not specific to a sector or specific product) are very rare. Examples are Cradle2Cradle Certified Product Standard, ISO 14062:2002 (integrating environmental aspects into product design and development)(Annex D, p39), the ISO/IEC's Environmentally Conscious Design (ECD) for electrical and electronic products (currently being revised), VDI's recycling-oriented product development, and the EU's Product Environmental Footprint (PEF)¹⁴. An international standard related to product design (IEC/DIS 62959 – Environmentally conscious design (ECD) – Principles, requirements and guidance) is in the late stage of development (DIS voting). It is valid for all types of products and services and cover the full life-cycle of the product, including its End-of-life and recycling aspects. There are some product-specific standards and initiatives, which could be evaluated to see if there are requirements, guidance and practises which could be used for a wider scope of products and materials. These include: bio-based products and biofuels sustainability criteria, determination of bio-based carbon content of products, general method for assessing the proportion of re-used components in an energy-related product, environmentally conscious design for electrical and electronic products, guidance on material efficiency considerations, assessment and declaration of environmental performance of mechanical products, sustainability of construction works - core rules for the product category of construction products, carbon

¹³ <https://thenaturalstep.org/approach/>

¹⁴ 2013/179/EU: Commission Recommendation of 9 April 2013 on the use of common methods to measure and communicate the life cycle environmental performance of products and organisations: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32013H017916/07/2018SVHC>

footprint of products, and environmental aspects of aluminium products. Most of these product specific initiatives relate to CEN and/or CENELEC work and some of these initiatives relate to standardisation requests from the EC.

The Cradle2Cradle (C2C) concept was founded by William McDonough and Dr. Michael Braungart, who endowed a gift to the Cradle to Cradle Certified™ Product Standard to the Cradle to Cradle Products Innovation Institute, which has also produced a Recycled Content Materials Assessment Methodology and a Material Health Certificate Standard in support of the Product Standard. Analysis of these C2C initiatives¹⁵ was undertaken, and the following elements are highlighted as they are particularly relevant to this 'sustainable chemicals' project: The product standard has five components of product assessment: Material Health, Material Reutilisation, Renewable Energy and Carbon Management, Water Stewardship and Social Fairness. The certification levels (basic, bronze, silver, gold and platinum) differentiate between the level of achievement of the product in the five categories. The product certification programme scope applies to materials, sub-assemblies, and finished products. It sets out what is excluded, as well as what can be considered as part of the product (e.g. product packaging).

The Recycled Content Materials Assessment Methodology document describes the methodology used to assign a specific material assessment rating to recycled content materials subject to review in a finished product submitted for Cradle to Cradle certification. Since composition of recycled materials is variable and sometimes unknown, product assessment is executed according to this methodology. The separate Material Health Assessment Methodology assesses materials according to the specific materials' 'metabolism' (whether technical or biological nutrients) and chemical substances they contain. The Material Health Certificate Standard provides manufacturers with a trusted way to communicate their efforts to identify and replace chemical substances of concern in their products.

Separate analysis of a cluster of documents produced by IEC (or jointly with ISO) on the environmentally conscious design (ECD) of electrical and electronic products¹⁶ was undertaken. The analysis focussed on the identification of the approach taken and the level of detail provided. The original ECD document is currently under a voting procedure to see whether it should be retained, withdrawn, replaced or amended. ECD goes beyond material or chemical considerations. At the same time, the IEC is reflecting on how to integrate the circular economy into its work, potentially applying the ECD approach to a wide range of products. The analysis focussed more however on the material and chemical considerations. ECD fundamentals are made up of:

- lifecycle thinking (minimise overall adverse environmental impact of the product; identifying, qualifying and where possible quantifying the significant environmental aspects of the product; and considering trade-offs between environmental aspects and lifecycle stages);
- regulatory and stakeholders' requirements (including restrictions and obligations resulting from national and international regulations; technical standards and voluntary agreements)
- integration into management system (in line with procedures of the management system of the organisation, ECD process should be reviewed)

These fundamentals are partly elaborated into various product aspects, from durability (considering the product's longevity, serviceability; considering environmental improvements emerging from new technologies) and packaging (efficient material use and information about the take-back system), transport (distances during the production and distribution of the product including efficient determination of product volume and weight); reuse, recovery and recycling (considering opportunities to reduce material complexity, to make resource recovery and material recycling easier and to reuse sub-assemblies and components); and end-of-life management (considering the value of resources recoverable from products taken back, waste treatment processes and requirements, and their economic impact on the organisation).

¹⁵ These are the Cradle2Cradle Certified™ Product Standard Version 3.1 and the Cradle2Cradle Material Health Certificate Standard.

¹⁶ These documents were IEC 62430:2009 [Environmentally conscious design for electrical and electronic products](#); 111/463/CD (CD 2) IEC/ISO JWG ECD – 62959 ED1 Committee Draft (CD 2) [Environmentally Conscious Design – Principles, requirements and guidance](#); and IEC TR 62824:2016 [Guidance on material efficiency considerations in environmentally conscious design of electrical and electronic products](#)

Material aspects address:

- material efficiency: reducing environmental impact by minimal use of materials, use of low impact material, and/or recovered materials; IEC 62824:2016 (Annex D, p24) elaborates efficiency into material type, quantity, substitutability, recyclability and recoverability, renewable material and product durability.
- material composition: identifying substances contained in the product including purchased parts and materials, and reducing or avoiding use of hazardous substances;
- cleaner production and use: using cleaner production techniques, avoiding use of hazardous consumables and auxiliary materials;
- elaboration of the relationship between material efficiency and ECD since changing a product's design in relation to material efficiency can impact other environmental aspects and therefore the ECD process needs to be reconsidered in its entirety;

Other aspects addressed include energy efficiency (considering total energy use throughout the product's life cycle including use phase, check if environmental impact can be reduced, e.g. reduction of energy use, use of low impact energy resources).

Recent EU efforts relating to products include the Product Environmental Footprint which has developed a harmonised methodology for the calculation of the environmental footprint of products and organisations. Pilot tests were undertaken for agriculture, retail, construction, chemicals, ICT, food, and manufacturing (footwear, televisions, paper). The results of the testing were used for the development of the final technical guides. A set of standards are also under development as part of the EU's efforts focussed on integrating resource efficiency aspects into the Ecodesign Directive. The Mandate 543 includes a recycled content standard, but this is severely delayed at the moment (Annex D, p12).

4.3.2 Lifecycle Assessment

Approximately 50 initiatives include life cycle assessment, of which some are for specific products (e.g. packaging, bio-based products). Most of these initiatives are based on ISO 14040 (Annex D, p28) and ISO 14044 (Annex D, p28). There is for example an ETSI standard applying the ISO 14040 and 14044 to ICT equipment, networks and services. Other identified standards and initiatives are:

- Several International standards covering life cycle assessment for specific environmental impacts, such as ISO 14067 on Carbon Footprint of products (Annex D, p39) and ISO 14046 on Water Footprint (Annex D, p16).
- Ongoing work in the EU regarding the Commission's initiative on Product Environmental Footprints (PEF). Several pilot studies covering a diverse set of topics including pasta, T-shirts, intermediate paper products and batteries and accumulators¹⁷ are currently conducted.
- Another initiative is the IEEE 1517 for information technology on reuse processes as part of system and software lifecycle processes (Annex D, p24).

Comparing different LCA's is challenging due to the inherent flexibility of the methodology. The ISO 14044 standards has set specific requirements for comparative assertion. It is recommended to follow those requirements as far as necessary e.g. a comparison not disclosed to the public might not need an external panel review. In order to be able to compare between different LCAs, Product Category Rules are needed, specifying some general rules for how to calculate on a specific product, including system boundaries and choices made in the calculation.

4.3.3 Chemical substances

The analysis that follows is based on initiatives specifically addressing chemical substances, whether from a product-specific perspective, sectoral or more horizontal chemicals approaches.

¹⁷ http://ec.europa.eu/environment/eussd/smgp/ef_pilots.htm

Of the initiatives mentioned in the previous section on **product design**, two were also analysed for specific chemical substances' requirements which appeared in their recycled content approaches: the Cradle2Cradle Product Standard and the IEC Environmentally Conscious Design. Restricted substances were identical and ranged from the RoHS Directive substance list¹⁸ to halogenated polymers (PVC, PVDC, CPVC, polychloroprene, PTFE), PAHs, and PFOS/PFOA, amongst others.

On more **generic chemical substances approaches**, CEN has already produced some helpful guides on improving integration of environmental aspects into standards. The most recent, *Guide 16: Guide for addressing chemicals in standards for consumer-relevant products*¹⁹ provides support to Technical Committees on developing requirements in product standards to contribute to minimising the exposure of hazardous chemicals in products, which may constitute a health and environmental risk.

From the initiatives analysis, approximately seven initiatives address chemical substances' aspects in a broader sense, such as the chemical industry's Responsible Care, the cleaning products sector's AISE Charter for Sustainable Cleaning, Cradle2Cradle, CPA Green Screen and Clean Production Action Chemical Footprint Project²⁰.

Chemicals manufacturing-specific initiatives include: the chemical industry's Responsible Care, ASTM's standard practice for evaluating relative sustainability involving energy or chemicals from biomass (Annex D, p8), and IED BREFs (Common Waste Water and Waste Gas Treatment Management Systems in the Chemical Sector; Common Waste Gas Treatment in the Chemical Sector; Large Volume Inorganic Chemicals - Ammonia, Acids and Fertilisers; Large Volume Inorganic Chemicals - Solids and Other Industry; Manufacture of Organic Fine Chemicals; Production of Chlor-alkali; Production of Large Volume Organic Chemicals; Production of Polymers; Production of Speciality Inorganic Chemicals).

The global chemical industry's Responsible Care (RC) Global Charter is the industry's environmental, health and safety initiative launched in 2006 as part of the industry's efforts begun in 1985. The Charter is made up of nine elements, including committing to advancing sustainable development, continuously improving and reporting performance, enhancing management of chemical products worldwide (product stewardship), and addressing stakeholder expectations about chemical industry activities and products. Companies practicing Responsible Care submit KPI performance data on an annual basis to national associations of the countries in which they operate.

On environmental aspects, the European Chemical Industry Facts and Figures Report 2017²¹ provides performance details on:

- total greenhouse gas emissions,
- total emissions by gas,
- greenhouse gas emissions and production (including pharmaceuticals),
- greenhouse gas emissions per unit of energy consumption and per unit of production,
- fuel and power consumption (including pharmaceuticals),
- fuel and power consumption by source (including pharmaceuticals),
- energy intensity (energy input per unit of chemicals production (including pharmaceuticals),
- acidifying emissions,

¹⁸ Directive (EU) 2017/2102 of the European Parliament and of the Council of 15 November 2017 amending Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment. At the time of finalisation of this report, the RoHS restricted substance list is made up of the following substances: lead (Pb), Mercury (Hg), Cadmium (Cd), Hexavalent Chromium (Cr VI), Polybrominated Biphenyls (PBB), Polybrominated Diphenyl Ethers (PBDE), Bis(2-Ethylhexyl) phthalate (DEHP), Benzyl butyl phthalate (BBP), Dibutyl phthalate (DBP), and Diisobutyl phthalate (DIBP). More details on the Directive are available here: http://ec.europa.eu/environment/waste/rohs_eee/index_en.htm.

¹⁹ CEN Guide 16 and a background document providing information on policies and legislation can be found at: <https://www.cen.eu/work/areas/env/Pages/GuideChemicalsProducts.aspx>. A number of other CEN guides addressing environmental aspects can also be found at: <https://www.cen.eu/work/areas/env/Pages/default.aspx> under 'useful links and documents'.

²⁰ <https://www.chemicalfootprint.org/>

²¹ Available online at: <http://www.cefic.org/Facts-and-Figures/>

- non-methane volatile organic compounds emissions to air,
- emissions to water (COD or chemical oxygen demand),
- bio-based raw materials use by types (starch and sugar, vegetable oils, natural rubber, bioethanol for ETBE, bioethanol, animal fats, chemical pulp, glycerol, and others).

As it is a global initiative, no detailed targets or thresholds appear to have been set, whether at international, EU or national levels, although they might have been set at individual company level.

The finalised initiative delivered through the World Business Council for Sustainable Development (WBCSD) is the Framework for Portfolio Sustainability Assessments (PSAs)²². It was produced with considerable contribution from various companies in the chemicals sector. The Framework aims to provide a harmonised approach to what has to date been developed and implemented by individual companies. PSAs are tools to help companies steer their product portfolios towards better environmental, social and economic performance.

'Sustainable chemicals' can be produced from primary feedstock like biomass, or secondary feedstock like recycled plastics. One possibility for producing more 'sustainable chemicals' and products is the substitution of chemicals in products by other, more sustainable, ones. The availability of high-quality sustainable feedstock is the basis for the substitution. Innovation and the development of new molecules with less human health and environmental impacts but achieving the same functionality/application is also relevant. The Ministry of Infrastructure and Water Management in the Netherlands has taken the initiative to work on the Safe Chemicals Innovation Agenda - Towards a Research Agenda for Safe Chemicals, Materials and Products of which the results will come available by end of 2018. This agenda will focus on the functionality for which hazardous chemicals are being used and the ability to replace them when necessary or find another solution for the functionality.

The substitution challenge is to be addressed from two main points of view:

- Substitution of hazardous chemicals: the European Chemicals Agency (ECHA²³) is already providing guidance on how SMEs can substitute these substances. A list of potential candidates for substitution is being developed. Developing voluntary standards could help to spread those practices throughout industries.
- Substitution of Critical Raw Materials (see annex J, Subjects that are related to 'Sustainable Chemicals' but out of scope): This is one of the main issues highlighted in the Raw Material Strategy. Addressing the substitution of some Critical Raw Material would be fundamental for the future of the European economy, especially for their importance on new low carbon technologies.

4.4 TG 3 Production/Processes

After two meetings with TG 3 it was concluded that the subjects covered by TG 3 were also covered by the other TGs. The further analysis of the selected standards and initiatives was therefore performed by the other TGs. See Annex D for the selected standards and initiatives for this taskgroup.

4.5 TG 4 Consumption/Labelling

Out of the 1100+ standards the task group identified approx. 650 items concerning consumption and labelling. Most of the identified standards and initiatives focus on plastics, recycling and material content determination. See Annex D for the full overview. Several topics were looked further into more depth: the traceability (safety, liability and quality) aspect of chemicals substances with the current validation schemes in place, the end-of-waste criteria for secondary raw materials and communication throughout the value chain. These topics are further discussed in the below paragraphs.

²² World Business Council for Sustainable Development, 2017, Framework for Portfolio Sustainability Assessments (PSA), see <https://www.wbcd.org/Projects/Chemicals/Resources/Framework-for-portfolio-sustainability-assessments>

²³ <https://echa.europa.eu/>

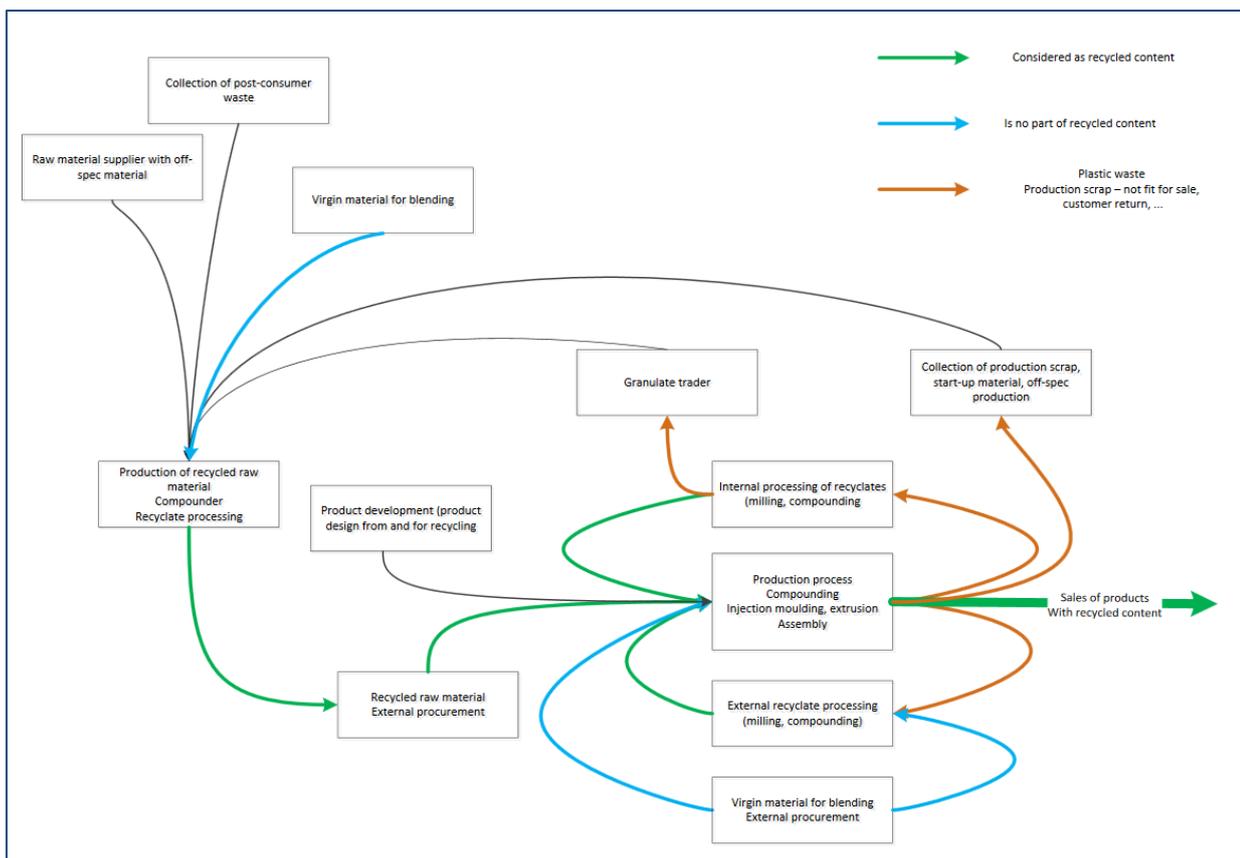
4.5.1 Traceability, safety, liability and quality

When it comes to products from secondary raw materials, a chain of custody system could help to justify claims. This would also improve the clarity regarding the physical presence of recycled material as well as quality management, and potentially also regarding safety and liability (what can be gained depends on which chain of custody model is chosen, since they are linked to different types of claims).

There are control systems in place in Europe on the recycled content. QA CER assures the quality system related to the recycling process and use of recycled materials. Both the recycled content and the quality of the end product are addressed in order to support the principle of sustainability²⁴. See the below figure for a Flowchart recycled content.

The QA-CER system applies to:

- Waste sorting and recycling companies of post-consumer waste from plastics, textiles or composites
- Plastic and textile processing companies and composite producers, applying post-industrial and post-consumer waste from plastics
- Assembling companies producing composite products from recycled plastic components or textiles



SOURCE: QA-CER

²⁴ www.qa-cer.be

The EuCertPlast Scheme²⁵ is an industry-created validation scheme focusing on traceability of plastic materials (throughout the entire recycling process and supply chain), and on the quality of recycled content in the end-product. The scheme aims to increase the transparency of the European plastics industry, and to integrate auditing schemes into a common one while allowing recyclers to fulfill REACH requirements and food contact compliance. The Scheme works according to EN 15343:2007 (Annex D, p17). The scheme was developed within a project co-financed by the European Commission under the Eco-Innovation Programme. Tools developed through the scheme include recycling guidelines, an on-line recyclability assessment tool, and work is currently underway on a quality management systems document. The standards and requirements examined during the EuCertPlast validation process are in line with those of the Blue Angel Eco-Label. For such schemes, it is very important that the certificates are issued by independent accredited organizations (ISO 17021) to assure credibility and impartiality. The validation system should be based on a management system (f.e. ISO 9001) to insure traceability of quality controls and applicable to the different steps of the value chain so quality of the end product and the services can be guaranteed.

EN 16785-2, *Bio-based products - Bio-based content - Part 2: Determination of the bio-based content using the material balance method* (Annex D, p20), covers the calculation of the physical bio-based content in a product. This standard could serve as the basis for a standard on recycled content in a product.

When mixing primary and secondary raw materials, there is a need to calculate the recycled content that can be allocated to a product to make a statement regarding that content. Calculations can also be done on the use of recycled material within an organisation (a production site). This can be done via either controlled blending or mass balance approach. However, more common ground and rules on the procedures, allocation and possible claims, especially regarding mass balance approach, are required. If a product consists of several materials, it is advisable to take into account the density of materials so as not to disadvantage lighter materials. Therefore, we recommend developing (a) calculation method(s) for recycled content.

Draft European Standards from CEN-CLC/JTC 10 'Energy-related products - Material Efficiency Aspects for Ecodesign' that are developed in response to a standardisation request from the European Commission (M/543), provide another example. These standards could be supported by the development of validation or control schemes for content fraction of recycled materials in products. An example is the "General method for assessing the proportion of recycled material content in energy related products"(Annex D, p13).

ISO has started work on a generic Chain of custody standard for all kinds of products. This standard is still quite early in its development process (CD ballot will be held at the end of 2018), but it is likely that it will be quite overarching and potentially need so product or sector specific adoption.

4.5.2 Secondary raw materials – especially plastics

Plastics are a major constituent of the total amount of EU generated waste. When waste is recycled and thereby turned into End-of-Waste it enters the material loop again. These materials are then in the scope of the REACH/CLP regulation²⁶. There are several European and international standards for plastics, but none of them are fit for End-of-Waste. There exist no criteria regarding plastic waste that is turned into products. Appropriate regulation should be developed to tackle this issue. Criteria to be considered include all four aspects: traceability, quality, safety and liability.

²⁵ See www.eucertplast.eu

²⁶ REACH is the Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorization and Restriction of Chemicals. It came into force on 1 June 2007. CLP stands for the Regulation (EC) No 1272/2008 on the Classification, Labeling and Packaging of substances and mixtures. CLP introduces the United Nations globally harmonized system (UN GHS) for classification and labeling of chemicals into Europe. CLP entered into force on 20th January 2009. REACH & CLP are two independent pieces of chemical legislation in EU

It is recommended that more consistent rules are developed between chemical substances/mixtures and waste classifications. Further relevant chemical legislation like REACH Annex XIV, RoHS, Stockholm Convention etc. should also apply to End of Waste. Two examples are polymers with restricted phthalates or restricted brominated flame retardants.²⁷ A starting point could be the existing ECHA Guidance on Waste and Recovered Substances²⁸, which specifies that “*whenever required, they (the recovery operators) need to either prepare SDSs themselves or agree with the owners of existing SDSs on using those SDSs...*”. The creation of an SDS will be based both on the REACH regulation and the CLP regulation for the classification, labelling and packaging information of the substance/material.

The standards on plastic waste, i.e. EN 15347 (Annex D, p18) are non-compulsory on the environmental properties, for which they do not provide specific guidance. The current standards on recyclates, which in principle should better fit the characteristics of an End-of-Waste material by having undergone recovery operations, are also very open and generic on the properties of relevance for end-of-waste, such as the content of contaminants.

4.5.3 Communication in the supply chain

The IEC/TC 111 *Environmental standardization for electrical and electronic products and systems* is working on standards related to the recycled content. However, these standards primarily consider the recycled content as such and not the chemical composition of the recycled content. According to EN 15343:2007 (Annex D, p17) the recyclers have two options. Either their input control or sorting equipment guarantee that contaminants do not enter the recycling process, or the recyclers must use a qualified process in which the pollution and/or mixed materials are removed to such levels that they do not affect the intended application for the recycled material. Some standards address the safety of certain chemical substances present in products, such as industry declarable chemical substances or restricted chemical substances lists. Ecolabels such as Oeko-tex, TCO and several standards define the low halogen content labels.

An option to solve challenges related to liability is to not only trace the chemicals but also list them (after testing) to guarantee that the supply of recycled materials is safe. Ideally the full material declaration following the material through its phases could be a way to communicate the chemical content. Therefore, a need exists for standards regarding providing information along the value chain (such as that found in the SDS). The basis could be the following report that has been prepared for the European commission: “Scientific and technical support for collecting information on and reviewing available tools to track hazardous substances in articles with a view to improve the implementation and enforcement of Article 33 of REACH”²⁹.

With the above-mentioned standards and labels, the B2B and B2C communication is crucial. In the CEN/TC 411 *Bio-based products*, standards have been developed both for B2B and B2C communication³⁰. These are however not widely known and used yet in the market but there is a large potential in them. This result from research projects as InnProBio³¹ and STAR4BBI³² in the bio-based economy.

²⁷ “Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions; on the implementation of the circular economy package; options to address the interface between chemical, product and waste legislation – COM(2018) 32 final;

²⁸ “ECHA Guidance on waste and recovered substances, version 2, May 2010”

²⁹ <https://publications.europa.eu/en/publication-detail/-/publication/58f951af-809b-11e7-b5c6-01aa75ed71a1/language-en/format-PDF>

³⁰ EN 16848 Bio-based products - Requirements for Business to Business communication of characteristics using a Data Sheet and EN 16935 Bio-based products - Requirements for Business-to-Consumer communication and claims

³¹ <http://innprobio.innovation-procurement.org/home/>

³² <http://www.biobasedeconomy.eu/projects/star4bbi/>

4.6 TG 5 Recycling - End of life/waste management

The analysis was limited to plastics as this is the major constituent of the total amount of EU generated waste³³. See Annex D for the selected standards and initiatives. Further in this report shall 'Recycling' mean the reprocessing in a production process of the waste materials for the original purpose or for other purposes including organic recycling but excluding energy recovery.

After the initial mapping, some standards were identified that literally block a move toward a circular economy. The following examples of European standards that have been further analysed are:

- EN 1519 (Annex D, p17): Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure. Polyethylene (PE). Specifications for pipes, fittings and the system
- EN 1566 (Annex D, p18). Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure. Chlorinated poly(vinyl chloride) (PVC-C). Specification for pipes, fittings and the system

In both these standards, recycled material is excluded: stating the following:

"Reprocessable and recyclable material: In addition to virgin material the use of own reprocessable material obtained during the production and testing of products conforming to this standard is permitted. External reprocessable or recyclable material shall not be used".

Exclusion can occur due to logical reasons, for instance due to the strength/quality of a recycled material. Reasons for the exclusion are however not given in both standards. To give an insight, it is recommended to map the standards where recycled material is excluded, and thereby also map the reasons for the exclusion of these materials. A next step would be to modify these standards. In order to avoid unnecessary obstacles to use recycled raw material, CEN Guides 4 (Guide for addressing environmental issues in product standards) and 16 (Guide for addressing chemicals in standards for consumer-relevant products) should be updated to mention this. Also, a recommendation should be given to CEN/BT to instruct relevant TCs to include this check when revising existing standards as well as in the systematic review. Further, a mechanism at CEN/CENELEC will be used to give companies and experts the possibility to report instances where standards are felt to have unnecessary obstacles in place or that exclude recycled material.

A different aspect and possible barrier of recyclability is that standards for the risk and performance assessment are not always in line with the requests of the final product. For instance, to stimulate the use of recycled material in the final product, the performance requirements should not cause a hurdle in the sub products, looking to the end product. EU waste legislation has an impact on the reintegration of materials into new products or processes once they have ended their first life or have gone through another lifecycle in a product. The 2008 Waste Framework Directive (WFD) introduced the status of 'by-product' into waste management, exempting such products from stricter waste legislation as a means of supporting the recycling or reuse of a larger range of products or materials than individual waste stream legislation has focused on³⁴. The WFD also introduced 'End-of-Waste' status and the development of (EU harmonised or national) criteria setting out pollutant limit values.

Companies selling **electrical and electronic goods** in the European Union must conform to the EU legislation for electrical and electronic equipment (EEE). The two most important directives are: The Waste Electrical and Electronic Equipment Directive (WEEE), which sets out the responsibilities of EEE producers for the collection and recycling of their products at the end of their lifecycle. The Restriction of Hazardous Substances Directive (RoHS), which restricts the use of certain hazardous substances (such as lead, mercury, cadmium, hexavalent chromium

³³ https://www.plasticseurope.org/application/files/5715/1717/4180/Plastics_the_facts_2017_FINAL_for_website_one_page.pdf

³⁴ During the course of this project the Waste Framework Directive 2018 was published. See https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2018.150.01.0109.01.ENG

and some polybrominated flame retardants) in EEE. Stakeholders may benefit from the knowledge of the existence of such standards and initiatives since it must be documented that the substances in the recycled material do not exceed permitted levels of restricted substances or REACH SVHC's. The list of test standards can be found in Annex H. It was decided not to assess the test methods in detail as these were specific to material and product groups.

Harmonized End-of-Waste criteria are essential to ensure a level playing field and a coherent market across European Member States. Confidence in secondary raw materials (SRMs) compared to virgin materials should be built to increase the proportion of SRMs in European production. Standardised procedures and test methods on waste conditioning, could lead to more certain results on the quality of the secondary raw materials. As an example, the implementation of the regulation on End-of-Waste criteria for metal scrap has relied heavily on a set of developed standards. In the case of plastics, the Joint Research Centre noted that, although a wide range of standards already exist "none of the international existing standards and technical specifications fit the purpose of End-of-Waste". As mentioned before, the standards on plastic waste i.e. ISO 15347 (Annex D, p18) do not provide specific guidance and are non-compulsory on the environmental properties. The standards on recyclates, which in principle should better fit the characteristics of an End-of-Waste material by having undergone recovery operations, are also very open and generic on the properties of relevance for end-of-waste, such as the content of contaminants. Without set criteria for turning plastic waste into products, the uptake of the market is challenged. To obtain the required quality of secondary plastics, the intake of used materials should be improved, as well as the production process that should be adapted to the quality of the input material. This requires quality criteria and test methods for plastics that are offered for recycling.

The choice of materials and the number of different types of materials is a key element of product (eco)design. The EU's Plastics Strategy aims to reduce consumption of plastic. While some producers will continue to make products containing plastic, mechanical recycling can be made easier by reducing the number of polymers used and limiting these to the polymers that are already accepted in recycling processes. Stimulating research into mechanical and chemical recycling could also facilitate better end-of-life management of products. This could extend to research on (a) detection and sorting systems; (b) recycling technologies for functionalized / mixed or reinforced plastics, (c) repairing and/or compatibilization of recyclates and (d) extraction techniques to recover the chemical substances of plastics. This research should be paralleled with standard developments concerning test methods, process management systems and guidance documents on the best practices discovered. In general more waste is collected, to deal with this waste, more and better recycling facilities have to be set up alongside a standardized system for separate collection and sorting of waste throughout the EU.

Recycling of biowaste is another topic that needs further research. Separate collection and high-quality recycling of bio-waste is needed according to the European Compost Network (ECN). Bio-waste is the largest fraction of Europe's municipal waste stream (comprising, on average, 37% by weight. Across the European Union, somewhere between 118 and 138 million tonnes of bio-waste arise annually [1], of which currently only about 25% (equivalent to 30 million tonnes per annum [M tpa]) is effectively recycled into high-quality compost and digestate³⁵. Large differences exist in the provision of separate collection and treatment capacity for bio-waste across Europe. Countries such as Austria, Switzerland, Germany, the Netherlands, Flanders (Belgium), Sweden and Norway, have relied upon separate bio-waste collection and treatment systems for over 15 years, whilst other countries, the UK, Italy, Finland, Ireland, Slovenia, Estonia and France, have made significant advances during this period. On the other hand, considerable potential for expansion remains in the remaining Member States: Bulgaria, Greece, Croatia, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Slovakia, Spain, Czech Republic, Hungary and Cyprus. Harmonised European quality standards for compost and anaerobic digestate are needed to secure the quality of recycled bio-waste.

³⁵ "Bio-Waste Recycling in Europe Against the Backdrop of the Circular Economy Package"- See <https://www.compostnetwork.info/download/bio-waste-recycling-europe-backdrop-circular-economy-package/>

Organic recycling shall mean the aerobic (composting) or anaerobic (biomethanization) treatment, under controlled conditions and using micro-organisms, of the biodegradable parts of packaging waste, which produces stabilized organic residues or methane. Landfill shall not be considered a form of organic recycling. In Europe any packaging must be recoverable, i.e. designed for recovery after commercial life in agreement with the essential requirements of Directive 94/62/EC. Recovery includes recycling of materials (plastics, paper, aluminium, etc.) and energy recovery. In particular, organic recycling (e.g. composting and AD) is a recovery option for packaging compatible with this type of recovery. The assumption of compliance with the essential requirements of 94/62/EC is provided by the harmonised standard EN 13432 *Packaging - Requirements for packaging recoverable through composting and biodegradation - Test scheme and evaluation criteria for the final acceptance of packaging* (Annex D, p15) which includes the assessment of biodegradability, a prerequisite for organic recycling and not for littering, in agreement with the European legislation.

Biodegradation

When bio-based materials are biodegradable, they can be recovered by means of organic recycling based on biological processes, enabling biogenic circular routes where the biodegraded material becomes nutrients for new plants and trees which can then become new bio-based products and thus closing the loop. Landfilling, littering, and any uncontrolled treatment of biodegradable materials and chemicals is not part of the circular economy and it cannot be defined as waste recycling. Compatibility to home composting is of interest for some specific products, though. Biodegradation can be an attractive property for some products, but the communication of the product's degradability needs careful consideration as there can be negative knock-on behavioural effects from users, particularly increased littering due to the assumption that the discarded item will simply biodegrade into the ground. Beyond the negative behavioural effects of littering, biodegradable materials can contain contaminants not wanted in environmental media (particularly soil and water). Careful reflection on the promotion of design of products for biodegradability is important and depends on the product in question.

The KBBPPS: (Knowledge Based Bio-based Products' Pre-Standardization) report³⁶ concluded that biodegradability tests could be further harmonized to obtain comparable data. Most results of this research project were integrated into further standardization work of CEN, such as the bio-based content standards created within CEN/TC 411 Bio-based products. However, up to date there was no follow up on the need for harmonization of the biodegradation test. Biodegradability reaches however further than only bio-based products. Non bio-based products can also be biodegradable and not all bio-based products are biodegradable. There are several biodegradability tests available. Annex I gives an overview of these tests per matrix. The tables show that there are different standards available describing different tests for different matrices. The two ISO standards on biodegradability ISO 14851 (Annex D, p21), *Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium- Method by measuring the oxygen demand in a closed respirometer*; and ISO 14852 (Annex D, p21), *Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium- Method by analysis of evolved carbon dioxide*, are also part of this overview. Biodegradability of plastics in the marine environment is a topic that is widely discussed.

On ISO-level, standardization efforts for the requirements for biodegradation of plastics in marine environments are well underway. ISO 18830 (Annex D, p29) and ISO 19679 (Annex D, p29), for example, are two standards on the test methods for determining the aerobic biodegradation of non-floating plastic materials in a seawater/sediment interface, both of which have been published in 2016 and are also eligible on CEN-level. Additional draft standards, for example ISO/CD 22404 for the determination of aerobic biodegradation of non-floating materials in marine sediments and ISO/CD 22766 for the disintegration test of plastic materials in marine habitats under real field conditions are currently under development. The draft standard ISO/CD 22403 will include test methods and requirements of the inherent aerobic biodegradability and environmental safety³⁷.

³⁶ <http://www.biobasedeconomy.eu/projects/kbbpps-knowledge-based-bio-based-products-pre-standardization/>

³⁷ See: www.european-bioplastics.org/biodegradability-of-plastics-in-the-marine-environment/

Currently, there is no standard providing clear thresholds for the degradation of plastics in sea water. The US standard ASTM D7081 “Standard Specification for Non-Floating Biodegradable Plastics in the Marine Environment” has been withdrawn without replacement. However the test methods that were referred to are still in place, but do not offer any thresholds: ASTM D6691 “Standard Test Method for Determining Aerobic Biodegradation of Plastic Materials in the Marine Environment by a Defined Microbial Consortium or Natural Sea Water Inoculum” (Annex D, p8), ASTM D 6692 “Standard Test method for Determining the Biodegradability of Radiolabelled Polymeric Plastic Materials in Sea-water” (Annex D, p8) and ASTM D7473 “Standard Test Method for Weight Attrition of Plastic Materials in the Marine Environment by Open System Aquarium Incubations” (Annex D, p8). Other standards on this issue are OECD 306 “Biodegradability in sea water” (Annex D, p42) and ISO 16221 “Water quality – Guidance for determination of biodegradability in the marine environment” (Annex D, p28). Several standardisation projects are in progress at ISO level³⁸. See Annex K for detailed list.

The harmonization of the test methods/test conditions for different matrices will result in a level playing field between materials and products. In addition, it will provide a more comparable data for decision making. Recent information coming from environmental organisations and academics³⁹ are identifying chemicals issues in biodegradable plastics packaging, such as the use of biocides to prevent growth of mould, etc. The presence of chemicals is therefore also an area needing attention and consideration.

5 Workshop

A workshop to discuss the project results was organized as part of the ancillary action on 24 May 2018 in Brussels. The workshop was organised to involve a wider group of stakeholders in the assessment. The objective was to discuss the preliminary project results and analyses and thereby gather feedback from the participant on the results. Identified stakeholders during the length of the project were invited to participate in the workshop. Most members of CEN-CLC/BTWG 11 were present at the workshop. See Annex E for the programme of the workshop and Annex F for list of participants.

During the workshop, the taskgroup leaders presented the analyses of the subjects of the taskgroup together with preliminary recommendations. The results were there after discussed in a break-out session per taskgroup topic (see §4). See Annex G for the conclusions of the break-out sessions. For optimized exchanges a professional and expertized chairman was hired to support NEN in the workshop execution. The working group and NEN received some valuable feedback from the participants of the workshop. The conclusions of the workshop were used as further input in the research and report.

6 Conclusions and recommendations

This report inventories the available standards and other initiatives available to identify needs for future standardization and research to help the production, development and reuse of products made from ‘sustainable chemicals’. For the purpose of this report the CEN-CLC/BTWG 11 has focussed mainly on recycling and other end of life options, as well as different tools to increase recycling. A recommendation for further work will be to develop a full set of sustainability criteria for sustainability. §6.1 presents generic conclusions resulting from the analysis as well as the workshop. In §6.2 and 6.3 the recommendations and prioritisation per identified subject are presented.

6.1 General conclusions

One of the first conclusions of the action is that to debate on ‘sustainable chemicals’ needs, a clear definition of ‘sustainable chemicals’ is needed, and this remains a missing element in EU public policy. It might be more easily actionable (or correct) to discuss ‘sustainability criteria of chemicals’. While sustainability is the vision, the fulfilment of sustainability criteria is a way to move in that direction without setting unobtainable goals. As the term ‘sustainable chemicals’ is not captured in a precise definition and the ideas around sustainability and ‘sustainable

³⁸ See: https://docs.european-bioplastics.org/publications/fs/EUBP_FS_Standards.pdf

³⁹ The Food Packaging Forum, CHEM Trust, ChemSec, the University of Gothenburg and the Vrije Universiteit Amsterdam have analysed chemicals available in plastic packaging. See <http://www.chemtrust.org/hazardous-chemicals-plastic-packaging/>

chemicals' will change in the coming years as developments in society, technology and innovation continue, this report focuses on the initiatives that are of relevance for 'sustainable chemicals' at this moment. Product design tools analysed in this report can offer helpful starting points. Most important sustainability criteria may vary between different industry sectors. Further research is proposed to better define these sustainability criteria at sector or product level.

This report gives an overview on what is currently available, identifies gaps and recommends necessary steps to be taken in the transition to more 'sustainable chemicals'. In general, it can be concluded that many initiatives (1100+) potentially relevant for 'sustainable chemicals' are available. The mapping resulted in the identification of a large number of test methods for the determination of content of chemicals in environmental matrices (soil, waste, etc.) and products (construction products, rubber tyres, paints and varnishes, plastics, etc). For test methods determining the composition (quantitative determination of chemicals in the product) and the leaching behaviour (quantitative determination of the chemicals that could leach out of the product), the development of harmonized test methods over a range of matrices and products has an advantage in terms of efficiency, costs and reference in legislation. The reason for this is that one test method could be used for the whole product chain from raw material to product and waste. This to increase comparability of data and efficient testing. As an example, the testing of a potentially reusable waste can be done with an identical test for building products, thus preventing double testing. Such an approach could further stimulate the circular economy. Test methods encompassing the full life cycle of a product are therefore preferred to stimulate the circular economy and recycling of materials and products. (see section 4.2.2. Secondary raw materials)

For primary raw materials there are many standards and initiatives available of which many address specific materials that make up for components of specific products. To increase the use of secondary raw materials they must be made more attractive to producers, cost less than virgin materials and easier to use. This can be done by ensuring their quality, addressing contaminants, improving their safety and supporting actions on preparing for reuse and on recycling. To obtain the required quality of secondary plastics, the intake of used materials should be improved as well as the production process adapted to the quality of the input material. This requires quality criteria and test methods for materials that are offered for recycling (see section 4.2.2. Secondary raw materials). Mostly regionally there are initiatives that explicit specify requirements or test methods for certain recycled materials.

Approximately 100 initiatives were found that address design. This includes horizontal and sector- or product-specific initiatives. There are multiple initiatives dealing with the sustainability conscious design and specific material assessment rating to recycled content materials. The replacement of less-'sustainable chemicals' by more sustainable ones like renewable materials and secondary raw materials and by-products is an ongoing practice. EU product policies need to integrate elements of the ecodesign concept and criteria-based tools such as PEF and GPP as part of the purposeful evolution of sustainable development and 'sustainable chemicals'. From Integrated Product Policy to Sustainable Consumption and Production and now to the Circular Economy, several EU strategies have potentially addressed 'sustainable chemicals' and the circular economy requires that 'sustainable chemicals' be put at the heart of actions. This includes a harmonised sustainability criteria for chemicals approach which would be modifiable according to product groups as appropriate.

New criteria and guidance will need to be developed to improve the recyclability of materials and products to increase demand for recycled materials. Materials and products can be divided in pre-and post- consumer waste. Pre-consumer waste is typically clean, and the exact formulation is known. This helps to bring the materials back into the production cycle. Post-consumer waste can be contaminated with different types of chemical substances because of the use and the type of waste handling and collection. However, materials and products made of different materials may, if not possible to separate, be difficult to re-introduce in the same production cycle. Possibilities for use in other applications may still exist. Sustainability conscious design criteria for materials and products should be established, including criteria related to improved circularity (see section 4.3 Production/Design). Master batchers and compounders as well as converters of plastic materials look for security of delivery as well as guaranteed quality to fit secondary plastic granulates in their production processes. This can be achieved by a single market for recycled plastic granulates. European standards that describe the minimum quality of the secondary material (hygienic, impurities, contaminants, physical and mechanical characteristics) can

support this (see section 4.2.2. Secondary Raw Materials, plastics). An option is to have a European validation system for different qualities of recycled granular plastics. This could help the increase in confidence in this feedstock for both granulate producers, compounders, and consumers.

Especially for secondary materials it is important to ensure traceability, safety, liability and quality of chemical substances. Most of the identified standards and initiatives around assessment and validation focus on plastics, recycling and material content determination. There are several validation systems in place in Europe on the recycled content as well as two ISO standardisation works on the related subject chain of custody. There are currently no criteria regarding e.g. plastic waste that is turned into products. Criteria to be considered include aspects as: traceability, safety, liability and quality. There is a need for a standard with criteria on properties of relevance for End-of-Waste such as the thresholds of contaminants (see section 4.6 TG 5 Recycling - End of life/waste management). Harmonized End-of-Waste criteria are essential to ensure a level playing field and a coherent market across European Member States.

For recycling, the analysis was limited to plastics as this is the major constituent of the total amount of EU generated waste. The analysis resulted among other things in standards literally excluding the use of recyclates. As more 'waste' is collected, more and better recycling facilities have to be set up alongside a standardized system for separate collection and sorting of waste throughout the EU (see section 4.6 TG 5 Recycling - End of life/waste management). Confidence in secondary raw materials (SRMs) compared to virgin materials should be built to increase the proportion of SRMs in European production. Standardised procedures and test methods on waste conditioning, could lead to more certain results on the quality of the secondary raw materials (see section 4.6 TG 5 Recycling - End of life/waste management). The standards on recyclates, which in principle should better fit the characteristics of an End-of-Waste material by having undergone recovery operations, are also very open and generic on the properties of relevance for end-of-waste, such as the content of contaminants. Without set criteria for turning plastic waste into products, the uptake of the market is challenged. In order to obtain the required quality of secondary plastics, the intake of recycled materials should be improved, as well as the application which should indeed be adapted to the quality of the input material. This requires quality criteria and test methods for plastics that are offered for recycling.

The following paragraph gives recommendations for standardization and further research for identified subjects based upon the analysis and conclusions.

6.2 Recommendations

The recommendations are categorized per subject that has been analysed by the BTWG 11. The subjects are the following: primary raw materials (biomass and other feedstock), plastics, rubber, product design (general), assessment and validation and biodegradability.

Primary Raw Materials

Biomass

Pre-normative/Research

- Research into identification of thresholds for sustainability of biomass and how to integrate them in to mechanisms and analyse implications (see section 4.2,1 Primary raw materials, Biomass, p12)
“There are large differences between the varied types of biomass production (e.g. forestry, agriculture and algae production), and wide varieties between different climatic zones and social and cultural contexts, Further research to pinpoint the most important aspects without risking causing trade barriers is recommended”

Other feedstock

Standards and other standardisation deliverables⁴⁰

- Develop sustainability criteria for other feedstock as has been done for biomass (see Annex G “Results of the workshop”)
“Sustainability for biomass have been developed over the last years. Sustainability creiteria for other feedstock have not yet been developed”

Pre-normative/Research

- Research into identification of thresholds for sustainability of other feedstock and how to integrate them in to mechanisms and analyse implications

Product Design

Standards and other standardisation deliverables

- Standards on responsible design to enable the separation of recyclable components (e.g. multi-layer packaging) (section 4.3.1 General design)
“This may deal with design for recycling of products that are easier to dismantle, allowing for easier material separation”.
- Review and amend existing relevant standards to better include sustainability and circular economy criteria. – if deemed necessary. (section 4.3. Product/design)
“This may deal with materials used (their environmental impacts, origin, social aspects in their sourcing and production, secondary raw materials), the product’s circularity (repairability, reusability, manufacturability, recyclability), and other aspects such as chemical content, energy use in production”

Pre-normative/Research

- Research on promoting products that are designed to be easily refurbished, remanufactured, reused, recycled, biodegraded safely (section 4.3. Product/design)

Assessment and validation

Standards and other standardisation deliverables

- Standardised methodology for calculating recycled content (section 4.3.2 Traceability, safety, liability and quality)
“When mixing primary and secondary raw materials, there is a need to calculate the recycled content that can be allocated to a product to make a statement regarding that content. Calculations can also be done on the use of recycled material within an organisation (a production site). This can be done via either controlled blending or mass balance approach. However, more common ground and rules on the procedures, allocation and possible claims, especially regarding mass balance approach, are required. If a product consists of several materials, it is advisable to take into account the density of materials so as not to disadvantage lighter materials”
- A standard to measure substances in secondary raw materials other than plastic waste (especially legacy substances) (section 4.3.2 Traceability, safety, liability and quality)

Pre-normative/Research

- Research on the extraction approaches to remove unwanted substances from secondary raw materials, and on mechanical and chemical recycling to facilitate the circularity of materials (4.6 TG 5 Recycling - End of life/waste management)
“Stimulating research into mechanical and chemical recycling to also facilitate better end-of-life management of materials”
- Research into effective communication and consumer awareness of developed standards (section TG 4 Consumption/Labelling, Communication in the supply chain)
“B2B and B2C communication is crucial for the uptake of more sustainable products.”

⁴⁰ Whenever the word "standard" is used below, it may be necessary to first develop a technical specification (TS) or technical report (TR) as a first step. A standard is however the end goal.

- Research into an imposed recycled content for specific product group (Annex G, Conclusion of the Breakout session, Raw Materials)
“Research on where Imposed recycled content could possibly work for some products”
- Research on a sustainability scan for chemical products that would provide information on the sustainability performance over the entire life cycle of a chemical product

Recycling

Standards and other standardisation deliverables

- Standard with criteria on properties of relevance for End-of-Waste such as the thresholds of contaminants (4.6 TG 5 Recycling - End of life/waste management)
“Current standards on recyclates, which in principle should better fit the characteristics of an End-of-Waste material by having undergone recovery operations, are very open and generic on the properties of relevance for end-of-waste, such as the content of contaminants”
- Standardised procedures and test methods on waste conditioning (section 4.6 TG 5 Recycling - End of life/waste management)
“Procedures and test methods to secure the quality of the secondary raw materials”
- Evaluate and revise standards that exclude recycled materials (section 4.6 TG 5 Recycling - End of life/waste management)
“Exclusion can occur due to logical reasons, for instance due to the strength/quality of a recycled material. Reasons for the exclusion are however not given in both standards. To give an insight, it is recommended to map the standards where recycled material is excluded, and thereby also map the reasons for the exclusion of these materials”
- Standard on waste management (section 4.6 TG 5 Recycling - End of life/waste management)
“more and better recycling facilities have to be set up alongside a standardized system for separate collection and sorting of waste throughout the EU”
- Harmonised quality standards for compost and anaerobic digestate to secure the quality of recycled bio-waste (section 4.6 TG 5 Recycling - End of life/waste management)
“To reduce large differences that exist in the provision of separate collection and treatment capacity for bio-waste across Europe for growing bio-waste volumes”.

Pre-normative/Research

- Create a mechanism at CEN/CENELEC to identify standards that exclude recycled material (section 4.6: TG 5 Recycling - End of life/waste management)
“This mechanism at CEN/CENELEC would be used to give companies and experts the possibility to report instances where standards are felt to have unnecessary obstacles in place or that exclude recycled material”.
- Research into what extent product additives hamper recycling of materials (section 4.2.2 Secondary Raw Materials, Plastics)
“This research would focus on how to identify which additives are present to ensure that the additives are safe in recycling applications and to avoid addition of additives upstream which could pose problems for recycling in the future”
- Further research on worker exposure in relation to the collection of waste (risks etc) (Annex G, Conclusion of the Breakout session Production/Design)
“Sorting techniques, risks – given the big information losses when they are returned as wastes in this context scan or code needs to be made so that enough so that discarders, sorters, recyclers can know”
- Research on the assessment of overall environmental impact of ‘sustainable chemicals’
“To integrate aspects such as consumption of primary raw materials, water and energy, CO₂ emissions, and pollution of air, water and soil, land use, (eco)toxicity, biodiversity loss taking into account consequences for recyclability and impacts after recycling”

Specific chemistry products

Standards and other standardisation deliverables

- In the absence of end-of-waste criteria, the development of a standard for a minimum quality of plastics for recycling and plastic granulates (section 4.2.2. Secondary Raw Materials, plastics).
“A standard for a minimum quality (hygienic, impurities, contaminants, physical and mechanical characteristics) of plastics for recycling and plastic granulates”
- A standard to measure substances in plastic waste (especially legacy substances) (4.5.2 Secondary raw materials – especially plastics)
“The standards on plastic waste, i.e. EN 15347 (Annex D, p18) are non-compulsory on the environmental properties, for which they do not provide specific guidance”
- Standards with quality criteria and test methods for rubber that are offered for recycling (section 4.2.2. Secondary Raw Materials, Rubber)
“Standards with quality criteria and test methods including hygienic, impurities, contaminants, physical and mechanical characteristics for rubber that are offered for recycling”
- Standards with sustainable sourcing criteria for natural base products such as rubber (section 4.2.2. Secondary Raw Materials, Rubber)
“A standard that goes further than ‘evaluation of procedures’ “
- Standards with specifications or limitations on the input material use in rubber (section 4.2.2. Secondary Raw Materials, Rubber)

Pre-normative/Research

- Research on the extraction approaches to remove unwanted substances from recycled plastics and rubbers, and on mechanical and chemical recycling to facilitate the circularity of plastics (section 4.6 TG 5 Recycling - End of life/waste management)
“Stimulating research into mechanical and chemical recycling to also facilitate better end-of-life management of products”
- Research on (a) the detection and sorting systems, (b) recycling approaches for functionalized / mixed or reinforced plastics, (c) repairing and/or compatibilization of recyclates and (d) extraction techniques to recover chemical substances in plastics. (section 4.6 TG 5 Recycling - End of life/waste management)

6.3 Prioritisation of the recommendations

Based upon the analyses and the stakeholder workshop the working group proposes to have the following prioritisation of standardization and research.

	Standardisation	Research
i	Sustainability criteria for other feedstock as has been done for biomass	Research on the extraction approaches to remove unwanted substances from recycled plastics, and on mechanical and chemical recycling to facilitate the circularity of plastics and materials
ii	In the absence of end-of-waste criteria, a standard for a minimum quality (hygienic, impurities, contaminants, physical and mechanical characteristics) of plastics for recycling and plastic granulates	Research on (a) the detection and sorting systems, (b) recycling approaches for functionalized / mixed or reinforced plastics, (c) repairing and/or compatibilization of recyclates and (d) extraction techniques to recover chemical substances in plastics
iii	Standardised methodology for calculating recycled content	Research on promoting products that are designed to be easily refurbished, remanufactured, reused, recycled, biodegraded safely
iv	Standard with criteria on properties of relevance for End-of-Waste such as the thresholds of contaminants	Research into what extent product additives hamper recycling of materials
v	Standards on responsible design to enable the separation of recyclable components (e.g. multi-layer packaging)	Creation of a mechanism at CEN/CENELEC to identify standards that exclude recycled material

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- [4] British Standards Institute (BSI), Resource Management and the circular Economy, Waste prevention and the circular economy report, April/May 2014
<https://www.bsigroup.com/en-GB/standards/benefits-of-using-standards/becoming-more-sustainable-with-standards/Circular-Economy/>
- [5] EU-SCOT-Project for CO2 and gaseous industrial effluents, <http://www.scotproject.org>
- [6] SPIRE Sustainable Process Industry through Resource and Energy Efficiency <https://www.spire2030.eu/>
- [7] Report on WP 1
Identification of potential needs of standardisation for sustainable chemicals from primary and secondary raw materials related to the circular economy action plan Approach to be taken forward by CEN-CLC/BTWG 11
- [8] European commission Ares(2016)5104425, Outline - identification of potential needs of standardisation for sustainable chemicals from primary and secondary raw materials related to the circular economy action plan, 07/09/2016

8 Annexes

Annexes

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Annex A Members of CEN-CLC/BTWG 11

surname	ini	first name	title	company/ org/ liaison	country
Alwarsdotter	Y	Ylwa	Mrs.	SEKAB Biofuels & Chemicals and Chairman of SIS Technical Committee for biobased products	Sweden
Blume	R	Richard	Mr.	The Natural Step	Sweden
Börkey	P	Peter	Mr.	OECD	France
Bradley	K	Kevin	Mr.	BSEF	Belgium
Cascini	A	Alessandro	Mr.	UNI	Italy
Castelan	G	Guy	Mr.	Plastics Europe	France
Costenoble	O.	Ortwin	Mr.	NEN	Netherlands
Crepuy	M.	Mathilda	Mrs.	ECOS	Belgium
Dahlke	A	Anne	Mrs.	DIN	Germany
Del Cerro	C	Corinne	Mrs.	Afnor	France
Derycke	J	Jean-Luc	Mr.	NBN	Belgium
Erhel	C	Christophe	Mr.	AFG	France
Fedrico-Fazio	D	Doreen	Mrs.	ECOS	Belgium
Garnier	C	Christophe	Mr.	Schneider-electric	France
Grymonprez	W	Wim	Mr.	NBN	Belgium
Gustafsson	M	Maria	Mrs.	SIS	Sweden
Haglund	N	Nina	Mrs.		Sweden
Helms Rasmussen	M	Marie	Mrs.	DS	Denmark
Jong, de	M.	Micha	Mr.	NEN	Netherlands
Kamath	P	Padmaja	Mrs.	CEN	
Ketelhut	R.	Ralf	Mr.	DIN	Germany
Koopal	H	Heleen	Mrs.	BioMCN	Netherlands
Lauridsen	J.	Jesper	Mr.	Dansk Standard	Denmark
Leinala	E.	Eeva	Mrs.	OECD	France
Manoli	C.	Chiara	Mrs.	ECOFI	Belgium/France
van der Maten	T	Taco	Mr.	PANalytical B.V.	Netherlands
Moor, de	C	Camille	Mrs.	Eastman Chemical Company	Belgium
Polito	M.	Mattia	Mr.	ECO Standard	
Popescu	I	Ioana	Mrs.	ECOS	Belgium
Rijn, van	M.	Martijn	Mr.	NEN	Netherlands
Seeberg Hansen	T	Tine	Mrs.	DS	Denmark
Sitters	E	Eric	Mr.	BSEF	Netherlands
Taverne	J	Jean-Pierre	Mr.	EU Coordinator End-of-Life Tyres & Circular Economy	Belgium
Tekken			Mr.	DIN	Germany
Thornton	C	Chris	Mr.	ESPP	Belgium
Tincani	M.	Marco	Mr.	Plastics Europe	France
Stichnothe	H.	Heinz	Mr.	DIN	Germany
Valtanen	J	Jouni	Mr.	Kemesta	Finland
Vollmann	M	Marcelo	Mr.	Petrochemicals Europe	Belgium
Vrins	M.	Minique	Mrs.	NEN	Netherlands

Annex B Positive/negative replies organisations participating in the BTWG11/ workshop

Organisation	Contact details	Invitation sent	Response received	YES / NO	Representative
JRC	nicholas.dodd@ec.europa.eu	31-1-2017			mauro.codella
ANEC	Michela Vuerich (mvu@anec.eu)	31-1-2017	6-2-2017	NO	Steven Russel Workshop?
ECOS	Already member of the JWG11	n.a.	n.a.	n.a.	Mrs Doreen Fedrigo-Fazio, Mrs Marjolaine Blondeau, Mrs Ioana Popescu
ETUC	MIR ROCA (mmir@etuc.org)	31-1-2017	13-2-2017	NO	Via ECOS
SBS	Maria Edvardsson (maria.edvardsson@sbs-sme.eu)	31-1-2017			
NORMAPME	no website anymore				
CEFIC	Already member of the JWG11	n.a.	n.a.	n.a.	Mr Marcello Vollmann
ERRMA	j.tomkinson@nnfcc.co.uk (ERRMA president)	31-1-2017	1-2-2017	NO	
EuropaBio	a.borg@europabio.org	31-1-2017/20-4-2017		YES	
EFAR	efar@efar.be	31-1-2017			
European Bioplastics	f.de.bie@corbion.com (Bie, Francois de)	31-1-2017		YES	Christine, Barbara (secretariaat)
COPA-COGECA	mail@copa-cogeca.eu	31-1-2017			
Council of EU Municipalities & Regions	eva.banosdeguisasola@ccre-cemr.org	31-1-2017			
EUREAU	secretariat@eureau.org	31-1-2017			
EURO COOP	tivanov@eurocoop.coop (Todor Ivanov)	31-1-2017			
EBA	secretary@eba.eu.com	31-1-2017			
FEAD	info@fead.be (Nadine de Greef)	31-1-2017			
EFPPA	efpra@skypro.be/info@efpra.eu	31-1-2017	6-2-2017	NO	
ESPP	info@phosphorusplatform.eu/kimovandijk@phosphorusplatform.eu	31-1-2017	20-2-2017	YES	Mr Chris Thornton
ECOFI	kristen@prospero.ag (Kristen Sukalac)	31-1-2017	6-1-1900	YES	Mrs Kirsten Sukalac
EUROFEMA	info@eurofema.eu/bdw@dcm-info.com (Bart de Winter)	31-1-2017			
EUROSLAG	info@euroslag.org	31-1-2017			
EUBIA	eubia@eubia.org/Andrea.salimbeni@eubia.org	31-1-2017	31-1-2017		
FIR	info@fir-recycling.com	31-1-2017			
ERFO	geert.cuperus@erfo.info	31-1-2017			

Organisation	Contact details	Invitation sent	Response received	YES / NO	Representative
CEPI	s.lhote@cepi.org (Sylvain Lhote)	31-1-2017			
CEPF	emma.berglund@cepf-eu.org (emma Berglund)	31-1-2017			
Fertilizer Europe	jacob.hansen@fertilizerseurope.com (Jacob Hansen)	31-1-2017			Antoine Hoxha
CEWEP	info@cewep.eu	31-1-2017			
EU Compost Network	siebert@compostnetwork.info (Dr Stefanie Siebert)	31-1-2017			
Ellen MacArthur Foundation	info@ellenmacarthurfoundation.org	31-1-2017			
Circular Economy 100	Ellen MacArthur Foundation	31-1-2017			
Municipal Waste Europe	vanya.veras@municipalwasteurope.eu (Vanya Veras)	31-1-2017			
ECHA - European Chemicals Agency	executive-director@echa.europa.eu	31-1-2017	13-3-2017	Yes (workshop)	Mr Rémi Lefèvre (remi.lefevre@echa.europa.eu)
PRE Plastics Recyclers Europe	info@plasticsrecyclers.eu	31-1-2017			
Plastics Europe	info@plasticseurope.org	20-4-2017			
Umicore	staf.laget@eu.umicore.com	25-3-2017	11-4-2017	Yes (workshop)	
Eurometaux	eurometaux@eurometaux.be	20-4-2017			
Reststofunie/Aquaminerals	vanderkolk@aquaminerals.com	20-4-2017			
OECD	Peter.Borkey@oecd.org	20-4-2017			
EERA	secretariat@eera-recyclers.com	20-4-2017			
CEN Delegate Japan	tadashi.yamaguchi@tohatsu.co.jp	20-4-2017			Mr Tadashi Yamaguchi -
CEN Delegate Japan	hiroshi.ikeda@tohatsu.co.jp	20-4-2017			Mr Hiroshi Ikeda
CEN Delegate Japan	takuto.okuda@tohatsu.co.jp	20-4-2017			Mr Takuto Okuda
CEN/TC 249	huub.omloo@dsm.com	2-4-2018			Huub Omloo
ISO/TC 256	martin.reisinger@evonik.com	2-4-2018			Martin Reisinger
ISO/TC 28	andre.vanlinden@akzonobel.com	2-4-2018			Andre van Linden
ISO/TC 122	shiina@chiba-u.jp	2-4-2018			Mr. Takeo Shiina
ISO/TC 61	hubert.simon@vonroll.com	2-4-2018			Simon Hubert

Organisation	Contact details	Invitation sent	Response received	YES / NO	Representative
ISO/TC 45	zairossani@lgm.gov.my	2-4-2018			Zairossani Mohd Nor
CEN/TC 411	f.de.bie@corbion.com	2-4-2018			Francois de Bie
CEN/TC 165	werner.kristeller@stadt-frankfurt.de	2-4-2018			Werner Kristeller
CEN/TC 132	denis.chadefaux@constellium.com	2-4-2018			Denis Chadefaux
CEN/TC 209	guycrocq@yahoo.fr	2-4-2018			Guy Crocq
CEN/TC 444	frank.lame@deltares.nl	2-4-2018			Frank Lamé
CEN/TC 308	christophe.bonnin@veolia.com	2-4-2018			Christophe Bonnin
CEN/TC 309	c.arias@cec-footwearindustry.eu	2-4-2018			Castellano Arias
CEN/TC 154	j.simm@hrwallingford.com	2-4-2018			Jonathan Simm
CEN/TC 261	e.guichard@elipso.org	2-4-2018			Emmanuel Guichard
CEN/TC 227	bull-wasser@bast.de	2-4-2018			Rudi Bull-Wasser
IEC/TC 111	jb.prunier@ferrycapitain.fr	2-4-2018			Jean-Baptiste Prunier
CEN/TC 132	denis.chadefaux@constellium.com	2-4-2018			Denis Chadefaux
CEN/TC 292	frank.lame@deltares.nl	2-4-2018			Frank Lamé
CEN/TC 183	u.froehlingsdorf@ese.com	2-4-2018			Udo Fröhlingsdorf
CEN/TC 408	erik.buthker@pitpoint.nl	2-4-2018			Erik Buthker
CEN/TC 383	udodehaes@live.nl	2-4-2018			Udo de Haes
CEN/TC 350	ari.ilomaki@rakennusteollisuus.fi	2-4-2018			Ari Ilomäki
CEN/TC 306	jcailler@metaleurop.fr	2-4-2018			J. Caillerie
CEN/TC 343	mikko@mikehouse.fi	2-4-2018			Mikko Talola
CEN/TC 249	huub.omloo@dsm.com	2-4-2018			Huub Omloo
ISO/TC 275	christophe.bonnin@veolia.com	2-4-2018			Christoph Bonnin
ISO/TC 122	shiina@chiba-u.jp	2-4-2018			Takeo Shiina
ISO/TC 276	gent@dib.org	2-4-2018			Ricardo Gent
CEN/TC 366	c.clauzade@reevalu.com	2-4-2018			Catherine Clauzade
ISO/TC 102	nagano.a8b.kenichi@jp.nssmc.com	2-4-2018			Kenichi Nagano
ISO/TC 207	sheila.leggett@towerpeakconsultants.com	2-4-2018			Sheila Leggett
ISO/TC 298	laoma592@126.com	2-4-2018			Cunzhen Ma
ISO/TC 182	jpowell@geolabs.co.uk	2-4-2018			John Powell
ISO/TC 132	fengchao_78@sina.com	2-4-2018			Chao Feng
ISO/TC 54	montserrat.caparros@stanpa.com	2-4-2018			Montserrat Caparrós-Noya
ISO/TC 79	denis.chadefaux@constellium.com	2-4-2018			Denis Chadefaux
ISO/TC 33	krause@hs-koblenz.de	2-4-2018			Olaf Krause
ISO/TC 183	mark.odwyer@newcrest.com.au	2-4-2018			Mark O'Dwyer
ISO/TC 190	andreas.paetz@din.de	2-4-2018			Andreas Paetz
IEC/TC 56	mick.maghar@bsigroup.com	2-4-2018			Mick Maghar

Annex C Division over Task Groups

Taskgroup	1	2	3	4	5
Name	Raw material	Production /Design	Production /Processes	Consumption /Labelling	Recycling/End of life/Waste management
Ylwa Alwarsdotter			x	x	
Richard Blume			x	x	
Peter Börkey					x
Kevin Bradley				x	
Alessandro Cascini		x			x
Guy Castelan		x	x		
Mathilde Crépy	x				
Anne Dahlke					
Corinne Del Cerro					
Jean-Luc Derycke			x		x
Christophe Erhel	x				
Doreen Fedrigo-Fazio	x	x			
Christophe Garnier				x	
Wim Grymonprez			x		x
Maria Gustafsson	x	x	x	x	x
Nina Haglund					
Tine Seeberg Hansen				x	
Ralf Ketelhut		x			
Heleen Koopal			x		
Jesper Lauridsen					
Eeva Leinala		x			
Taco van der Maten	x	x			
Camile de Moor	x		x		
Mattia Polito	x				
Ioana Popescu			x		x
Marie Helms Rasmussen					x
Martina Schoennenbeck	x			x	
Eric Sitters	x				x
Heinz Stichnothe	x		x		
Jean Pierre Taverne				x	x
Chris Thornton	x				x
Marco Tincani		x		x	
Jouni Valtanen	x				
Marcelo Vollmann		x	x	x	
Chair of Taskgroup	Mattia Polito	Doreen Fedrigo-Fazio	Marcello Vollmann	Tine Seeberg Hansen	Wim Grymonprez
NEN contact	Minique Vrins	Minique Vrins	Minique Vrins	Minique Vrins	Minique Vrins

Annex D Long list of standards and initiatives

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
ABNT NBR 16290:2014	Reprocessed goods - General requirements			x		
ABNT NBR 16409:2015	Pig iron produced using charcoal - Guidance for sustainable production	x	x		x	
ABNT NBR 16457:2016	Reverse logistics of medicines for human use due and/or unused - Procedure					
ABNT NBR 16534:2016	Accommodations facilities - Indicators for Sustainability management system					
ABNT NBR 16725:2014	Chemical waste - Information about safety, health and environment - Waste safety data sheet (WSDS) and labelling					
ABNT NBR 16789:2014	Sustainable forest management - Guidance for implementation of ABNT NBR 14789	x			x	
ABNT NBR 17790:2014	Sustainable forest management - Chain of custody - Requirements for certification bodies that carry out certification in accordance with ABNT NBR 14790				x	
AC X30-030	Sustainable development and social responsibility - Guide for using ISO 26000:2010 in the agri-food sector				x	
AC X30-030	Sustainable development and social responsibility - Guide for using ISO 26000:2010 in the agri-food sector				x	
AISE Charter KPIs			x			
ALZ W 18	Aluminium in the packaging industry - Manufacture, use, recycling	x			x	
Annex XV report	Rubber granules evaluation				x	
ANSI A 138.1	Green Squared (SM): American National Standard Specifications for Sustainable Ceramic Tiles, Glass Tiles, and Tile Installation Materials					
ANSI Z 245.21	Equipment Technology and Operations for Wastes and Recyclable Materials - Stationary Compactors - Safety Requirements for Installation, Maintenance and Operation					
ANSI Z 245.51	Equipment Technology and Operations for Wastes and Recyclable Materials - Baling Equipment - Safety Requirements				x	
ANSI/AAMI ST 77	Containment devices for reusable medical device sterilization				x	
ANSI/ASABE S 596	Recycling Plastic Containers from Pesticides and Pesticide-Related Products	x		x	x	
ANSI/ASAE EP 403.3	Design of Anaerobic Lagoons for Animal Waste Management					
ANSI/IEEE 1517	Standard for Information Technology - System and Software Life Cycle Processes - Reuse Processes				x	
ANSI/NSF 245 (i4)	NSF/ANSI 245 wastewater treatment systems-nitrogen reduction					
API PUBL 302	Waste Minimization in the Petroleum Industry Source Reduction Recycle Treatment Disposal a Compendium of Practices					
AS 5810	DIN CERTO certification			x	x	
ASTM C1798	Standard Specification for Returned Fresh Concrete for Use in a New Batch of Ready-Mixed Concrete		x	x	x	
ASTM C890	Standard Practice for Minimum Structural Design Loading for Monolithic or Sectional Precast Concrete Water and Wastewater Structures					
ASTM D5603	Standard Classification for Rubber Compounding Materials — Recycled Vulcanizate Particulate Rubber			x	x	
ASTM D5644	Standard Test Methods for Rubber Compounding Materials — Determination of Particle Size Distribution of Recycled Vulcanizate Particulate Rubber		x	x	x	
ASTM D6046	Standard classification of hydraulic fluids for environmental impact	x	x			
ASTM D6311	Standard Guide for Generation of Environmental Data Related to Waste Management Activities: Selection and Optimization of Sampling Design	x				

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
ASTM D6842	Standard Guide for Designing Cost-Effective Sampling and Measurement Plans by Use of Estimated Uncertainty and Its Components in Waste Management Decision-Making					
ASTM D6866	Standard Test Methods for Determining the Biobased Content of Solid, Liquid, and Gaseous Samples Using Radiocarbon Analysis	x			x	
ASTM D6868	Standard Specification for Labelling of End Items that Incorporate Plastics and Polymers as Coatings or Additives with Paper and Other Substrates Designed to be Aerobically Composted in Municipal or Industrial Facilities			x	x	
ASTM D6954	Standard Guide for Exposing and Testing Plastics that Degrade in the Environment by a Combination of Oxidation and Biodegradation			x	x	
ASTM D7566	Standard Specification for Aviation Turbine Fuel Containing Synthesized Hydrocarbons		x	x		
ASTM D7662	Standard Test Method for Carbon Content in Carbon Black Feedstock Oils		x	x		
ASTM D7679	Standard Test Method for Sulfur Content in Carbon Black Feedstock Oils		x	x		
ASTM D7841-13	Standard Practice for Sustainable Laundry Best Management Practices					
ASTM D8013	Standard Guide for Establishing a Recycle Program for Roof Coverings Roofing Membrane and Shingle Materials				x	x
ASTM D8043	Standard Guide for Carbon Black — Shelf Life		x	x		
ASTM D975	Standard Specification for Diesel Fuel Oils	x	x			
ASTM E2150	Standard Classification for Life-Cycle Environmental Work Elements - Environmental Cost Element Structure				x	
ASTM E2728-11	Standard Guide for Water Stewardship in the Design, Construction, and Operation of Buildings		x			
ASTM E2746-11	Standard Specification for Evaluation and Selection of Communication and Marketing Materials for Environmentally Sustainable Meetings, Events, Trade Shows, and Conferences					
ASTM E2773-11	Standard Specification for Evaluation and Selection of Food and Beverage for Environmentally Sustainable Meetings, Events, Trade Shows, and Conferences			x	x	
ASTM E3027	Standard Guide for Making Sustainability-Related Chemical Selection Decisions in the Life-Cycle of Products	x		x	x	x
ASTM E3066	Standard Practice for Evaluating Relative Sustainability Involving Energy or Chemicals from Biomass	x	x	x		
ASTM E3072	Standard Terminology for Industrial Biotechnology			x		x
ASTM E3096-17	Standard Guide for Definition, Selection, and Organization of Key Performance Indicators for Environmental Aspects of Manufacturing Processes					
ASTM F2576	Standard Terminology Relating to Declarable Substances in Materials	x				
ASTM D6691	Standards Test Method for determining Aerobic Biodegradation of Plastic Materials in the marine environment by a defined microbial consortium or natural sea water Inoculum					
ASTM D6692	Standard Test method for Determining the Biodegradability of Radiolabelled Polymeric Plastic Materials in Sea water"					
ASTM D7473	Standard Test Method for Weight Attrition of Plastic Materials in the Marine Environment by Open System Aquarium Incubations".					
ASTM WK52051	New Guide for Recycling Considerations in Life-Cycle Assessment			x	x	x
B128.3-12	B128.3-12 - Performance of non-potable water reuse systems				x	
BIP 2102:2006	Environment management report - Focus on Waste Management	x				
BNQ 3869-911/2010	Recyclable Plastic Bags - Certification Program				x	
BNQ 9011-911/2007	Compostable Plastic Bags - Certification Program				x	

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
Bonsucro Standard	Bonsucro Production Standard (sugarcane production)	x		x	x	
BP X30-323-0	General principles for an environmental communication on mass market products : part 0 : general principles and methodological framework		x			
BP X30-323-0:2011	General principles for an environmental communication on mass market products - part 0: general principles and methodological framework			x	x	
BP X30-438	Waste - Guidance for good practices for geological, hydrogeological and geotechnical investigations on sites for waste storage facilities					
BP Z67-320	Good practice for green value creation through the green governance of eco-responsible information systems					
BS 6543:1985	Guide to use of industrial by-products and waste materials in building and civil engineering	x	x		x	
BS 8001:2017	Framework for implementing the principles of the circular economy in organizations - Guide		x			
BS 8595:2013	Code of practice for the selection of water reuse systems					
BS 8601:2013	Specification for subsoil and requirements for use	x	x			
BS 8905:2011	Framework for the assessment of the sustainable use of materials - Guidance		x		x	
CAN/CGSB-43.125-2003	Design and Manufacture of Packaging for the Transportation of Infectious Substances, Diagnostic Specimens, Biological Products or (Bio) Medical Waste					
CEN/TR 13097:2010	Characterization of sludges - Good practice for sludge utilisation in agriculture	x	x		x	
EN 13206	Plastics - Thermoplastic covering films for use in agriculture and horticulture					
CEN/TR 13688:2008	Packaging - Material recycling - Report on requirements for substances and materials to prevent a sustained impediment to recycling	x	x		x	
CEN/TR 13695-2:2004	Packaging - Requirements for measuring and verifying the four heavy metals and other dangerous substances present in packaging, and their release into the environment - Part 2 : requirements for measuring and verifying dangerous substances present in packaging, and their release into the environment		x	x	x	
CEN/TR 13767:2004	Characterization of sludges - Good practice for sludges incineration with and without grease and screenings				x	
CEN/TR 13910:2010	Packaging - Report on criteria and methodologies for life cycle analysis of packaging		x	x	x	
CEN/TR 13983:2003	Characterization of sludges - Good practice for sludge utilisation in land reclamation	x	x			
CEN/TR 14589:2003	Characterization of waste - State of the art document - Chromium VI speciation in solid matrices					
CEN/TR 14980:2004	Solid recovered fuels - Report on relative difference between biodegradable and biogenic fraction of SRF	x		x		
CEN/TR 15018:2005	Characterization of waste - Digestion of waste samples using alkali-fusion techniques			x		
CEN/TR 15126:2005	Characterization of sludges - Good practice for landfilling of sludges and sludges treatment residues					
CEN/TR 15214-3:2006	Characterization of sludges - Detection and enumeration of Escherichia coli in sludges, soils, soil improvers, growing media and bio-wastes - Part 3 : macromethod (Most Probable Number) in liquid medium	x		x		

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
CEN/TR 15215-2:2006	Characterization of sludges - Detection and enumeration of Salmonella spp. in sludges, soils, soil improvers, growing media and biowastes - Part 2 : liquid enrichment method in selenite-cystine medium followed by Rapport-Vassiliadis for semi-quantitative Most Probable Number (MPN) determination	x		x		
CEN/TR 15252:2006	Characterisation of sludges - Protocol for validating methods for physical properties of sludges					
CEN/TR 15310-1:2006	Characterization of waste - Sampling of waste materials - Part 1 : guidance on selection and application of criteria for sampling under various conditions				x	
CEN/TR 15310-2:2006	Characterization of waste - Sampling of waste materials - Part 2 : Guidance on sampling techniques				x	
CEN/TR 15310-3:2006	Characterization of waste - Sampling of waste materials - Part 3 : guidance on procedures for sub-sampling in the field				x	
CEN/TR 15310-4:2006	Characterization of waste - Sampling of waste materials - Part 4 : guidance on procedures for sample packaging, storage, preservation, transport and delivery				x	
CEN/TR 15310-5:2006	Characterization of waste - Sampling of waste materials - Part 5 : guidance on the process of defining the sampling plan				x	
CEN/TR 15351:2006	Plastics - Guide for vocabulary in the field of degradable and biodegradable polymers and plastic items	x			x	
CEN/TR 15441:2006	Solid recovered fuels - Guidelines on occupational health aspects					
CEN/TR 15463:2007	Characterisation of sludges - Physical consistency - Thixotropic behaviour and piling behaviour					
CEN/TR 15473:2007	Characterisation of sludges - Good practice for sludges drying	x				
CEN/TR 15508:2006	Key properties of solid recovered fuels to be used for establishing a classification system			x	x	
CEN/TR 15584:2007	Characterisation of sludges - Guide to risk assessment especially in relation to use and disposal of sludges					
CEN/TR 15809:2008	Characterisation of sludges - Hygienic aspects - Treatments					
CEN/TR 15809:2008	Characterisation of sludges - Hygienic aspects - Treatments					
CEN/TR 15822:2009	Plastics - Biodegradable plastics in or on the soil - Reuse, disposal and related environmental issues		x	x	x	
CEN/TR 16110:2010	Characterization of waste - Guidance on the use of ecotoxicity tests applied to waste				x	
CEN/TR 16130:2011	Characterization of waste - On-site verification				x	
CEN/TR 16208:2011	Biobased products-overview standards	x		x		
CEN/TR 16227:2011	Liquid petroleum products - Bio-lubricants - Recommendation for terminology and characterisation of bio-lubricants and bio-based lubricants	x	x	x		
CEN/TR 16363:2012	Characterization of waste - Kinetic testing for assessing acid generation potential of sulfidic waste from extractive industries				x	
CEN/TR 16456:2013	Characterization of sludges - Good practice for sludge dewatering					
CEN/TR 16721:2014	Bio-based products – Overview of methods to determine the bio-based content	x	x	x	x	
CEN/TR 16957:2016	Bio-based products - Guidelines for life Cycle Inventory for the end-of-life		x	x	x	
CEN/TS 13714:2013	Characterization of sludges - Sludge management in relation to use or disposal	x				

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
CEN/TS 14243:2010	Materials produced from end of life tyres - Specification of categories based on their dimension(s) and impurities and methods for determining their dimension(s) and impurities	x	x			
CEN/TS 14541:2013	Plastics pipes and fittings - Characteristics for utilisation of non-virgin PVC-U, PP and PE materials		x			
CEN/TS 15364:2006	Characterization of waste - Leaching behaviour tests - Acid and base neutralization capacity test					
CEN/TS 15406:2010	Solid recovered fuels - Determination of bridging properties of bulk material					
CEN/TS 15534-2:2007	Wood-plastics composites (WPC) - Part 2: Characterisation of WPC materials	x		x	x	
CEN/TS 15862:2012	Characterisation of waste - Compliance leaching test - One stage batch leaching test for monoliths at a fixed liquid to surface area ratio (L/A) for test portions with fixed minimum dimensions				x	
CEN/TS 15864:2012	Characterisation of waste - Leaching behaviour test for basic characterisation - Dynamic monolithic leaching test with continuous leachant renewal under conditions relevant for specified scenario(s)				x	
CEN/TS 16010:2013	Plastics - Recycled plastics - Sampling procedures for testing plastics waste and recyclates	x	x		x	
CEN/TS 16011:2013	Plastics - Recycled plastics - Sample preparation				x	
CEN/TS 16023:2013	Characterization of waste - Determination of gross calorific value and calculation of net calorific value					
CEN/TS 16137:2011	Plastics – Determination of bio-based carbon content	x	x	x	x	
CEN/TS 16214-2:2014	Sustainability criteria for the production of biofuels and bioliquids for energy applications - Principles, criteria, indicators and verifiers	x	x		x	
CEN/TS 16229:2011	Characterization of waste - Sampling and analysis of weak acid dissociable cyanide discharged into tailings ponds				x	
CEN/TS 16295:2012	Plastics - Declaration of the bio-based carbon content			x	x	
CEN/TS 16398:2012	Plastics - Template for reporting and communication of bio-based carbon content and recovery options of biopolymers and bioplastics - Data sheet		x	x	x	
CEN/TS 16660:2015	Characterisation of waste - Leaching behaviour test - Determination of the reducing character and the reducing capacity				x	
CEN/TS 16675:2014	Characterization of waste - Verification of the monolithic status of waste				x	
CEN/TS 16765:2015	LPG equipment and accessories- environmental considerations for CEN/TC 286 Standards	x	x		x	
CEN/TS 16766	Biosolvents - Requirements and test methods			x		
CEN/TS 16822:2015	Textiles and textile products - Self-declared environmental claims - Use of the terms				x	
CEN/TS 16861:2015	Plastics - Recycled plastics - Determination of selected marker compounds in food grade recycled polyethylene terephthalate (PET)		x		x	
CEN/TS 16916:2016	Materials obtained from end of life tyres - Determination of specific requirements for sampling and determination of moisture content using the oven-dry method	x			x	
CEN/TS 17045:2017	Materials obtained from end of life tyres - Quality criteria for the selection of whole tyres, for recovery and recycling processes	x			x	
CEN/TR 17219	Plastics - Biodegradable thermoplastic mulch films for use in agriculture and horticulture - Guide for the quantification of alteration of films					
prEN 17228	Plastics - Bio-based polymers, plastics, and plastic products - Terminology, characteristics and communication					
CIB biogas guidelines	Biogas done right	x				

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
CLC/TS 50625-3-1:2015	Collection, logistics and treatment requirements for WEEE - Part 3-1 : Specification for de-pollution - General					
Clean Production Action Chemicals Footprint Project	Chemical Footprint Project Survey Guidance Document and list of Chemicals of High Concern		x		x	
Composite Panel Association	Eco-Certified Composite (ECC) Sustainability Standard	x		x	x	
Conflict free-sourcing initiative	Responsible Minerals Assurance Process, Tin and Tantalum Standard	x			x	
COSMOS	COSMOS-standard Cosmetics organic and natural standard	x	x	x	x	
CR 12340:1996	Packaging - Recommendations for conducting life-cycle inventory analysis of packaging systems		x		x	
CR 13456:1999	Soil improvers and growing media - Labelling, specifications and product schedules	x			x	
CR 13504:2000	Packaging - Material recovery - Criteria for a minimum content of recycled material		x		x	
CR 13686:2001	Packaging - Optimization of energy recovery from packaging waste		x		x	
CR 13695-1:2000	Packaging - Requirements for measuring and verifying the four heavy metals and other dangerous substances present in packaging in their release into the environment - Part 1 : requirements for measuring and verifying the four heavy metals present in packaging		x		x	
CR 13846:2000	Recommendations to preserve and extend sludge utilisation and disposal routes	x			x	
CR 13910:2002	Packaging - Report on criteria and methodologies for life cycle analysis of packaging		x	x	x	
CR 14311:2002	Packaging - Marking and material identification system				x	
CR 1460:1994	Packaging - Energy recovery from used packaging				x	
Cradle to Cradle Certified™ Products Program	Certification Criteria	x	x	x	x	
Cradle2Cradle Certified™	Cradle2Cradle Certified™ Product Standard	x	x	x	x	
Cradle2Cradle Certified™	Colorant Assessment Methodology	x	x		x	
Cradle2Cradle Certified™	Biological Material Assessment Methodology	x	x		x	
Cradle2Cradle Certified™	Polymer Assessment Methodology	x	x		x	
Cradle2Cradle Certified™	Recycled Content Materials Assessment Methodology	x	x		x	
CWA 16379:2011	Fuels and biofuels - Pure plant oil fuel for diesel engine concepts - Requirements and test methods	x			x	
DEFRA Guidelines for UK Business - Environmental KPIs			x			
DIN 18035-7:2002-06	Sports Grounds Part 7: Synthetic Turf Areas, Determination of Environmental Compatibility	x				
DIN 4226-100	Aggregates for concrete and mortar - Part 100: Recycled aggregates	x		x		
DIN SPEC 33928:2011	Biobased products-overview standards			x	x	
DS/INF 101	Packaging - Energy recovery from used packaging				x	
Ecodesign Mandate, M/543	EN General method for the assessment of the durability of energy related products			x		
Ecodesign Mandate, M/543	EN General methods for assessing the recyclability and recoverability of energy related products			x	x	
Ecodesign Mandate, M/543	EN General method for assessing the proportion of re-used components in an energy related product		x	x		
Ecodesign Mandate, M/543	EN General method to declare the use of critical raw materials in energy related products	x		x	x	
Ecodesign Mandate, M/543	EN Methods for providing information relating to material efficiency aspects of energy related products		x	x		

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
Ecodesign Mandate, M/543	TR Definitions related to material efficiency				x	
Ecodesign Mandate, M/543	EN General method for the assessment of the ability to re-manufacture energy related products				x	
Ecodesign Mandate, M/543	General method for assessing the proportion of recycled material content in energy related products		x		x	
Ecodesign Mandate, M/543	Methode om Materiaal Efficiëntie te communiceren;				x	
ECOFYS Sustainable biomass EIAJ ED-7631	Low Indirect Impact Biofuel Certification Module	x		x	x	
EN 12255-1:2002	Marking method for recycle of semiconductor device packing magazines				x	
EN 12255-10:2000	Wastewater treatment plants - Part 1 : general construction principles					
EN 12255-11:2001	Wastewater treatment plants - Part 10 : safety principles					
EN 12255-12:2003	Wastewater treatment plants - Part 11 : general data required					
EN 12255-13:2002	Wastewater treatment plants - Part 12 : control and automation					
EN 12255-13:2002	Wastewater treatment plants - Part 13 : chemical treatment - Treatment of wastewater by precipitation/flocculation		x			
EN 12255-14:2003	Wastewater treatment plants - Part 14 : disinfection					
EN 12255-15:2003	Wastewater treatment plants - Part 15 : measurement of the oxygen transfer in clean water in aeration tanks of activated sludge plants					
EN 12255-16:2005	Wastewater treatment plants - Part 16 : physical (mechanical) filtration					
EN 12255-3:2000 ;EN 12255-3/AC:2000	Wastewater treatment plants - Part 3 : preliminary treatment					
EN 12255-4:2002	Wastewater treatment plants - Part 4 : primary settlement					
EN 12255-5:1999	Wastewater treatment plants - Part 5 : lagooning processes					
EN 12255-6:2002	Wastewater treatment plants - Part 6 : activated sludge process					
EN 12255-7:2002	Wastewater treatment plants - Part 7 : biological fixed-film reactors					
EN 12255-8:2001	Wastewater treatment plants - Part 8 : sludge treatment and storage					
EN 12255-8:2001	Wastewater treatment plants - Part 8 : sludge treatment and storage					
EN 12255-9:2002	Wastewater treatment plants - Part 9 : odour control and ventilation					
EN 12258-3:2003	Aluminium and aluminium alloys - Terms and definitions - Part 3 : scrap	x			x	
EN 12258-4:2004	Aluminium and aluminium alloys - Terms and definitions - Part 4 : residues of the aluminium industry			x		
EN 12441-3:2001	Zinc and zinc alloys - Chemical analysis - Part 3 : determination of lead, cadmium and copper - Flame atomic absorption spectrometric method		x		x	
EN 12441-6:2003	Zinc and zinc alloys - Chemical analysis - Part 6 : determination of aluminium and iron by atomic absorption spectrometry		x		x	
EN 12441-8:2004	Zinc and zinc alloys - Chemical analysis - Part 8 : determination of tin in secondary zinc - Flame atomic absorption spectrometric method		x		x	
EN 12457-1:2002	Characterization of waste - Leaching - Compliance test for leaching of granular waste materials and sludges - Part 1 : one stage batch test at a liquid to solid ratio of 2 l/kg for materials with high solid content and with particle size below 4mm (without or with size reduction)				x	

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
EN 12457-2:2002	Characterization of waste - Leaching - Compliance test for leaching of granular waste materials and sludges - Part 2 : one stage batch test at a liquid to solid ratio of 10 l/kg for materials with particle size below 4 mm (without or with size reduction)				x	
EN 12457-3:2002	Characterization of waste - Leaching - Compliance test for leaching of granular waste materials and sludges - Part 3 : two stage batch test at a liquid to solid ratio of 2 l/kg and 8 l/kg for materials with high solid content and with particle size below 4mm (without or with size reduction)				x	
EN 12457-4:2002	Characterization of waste - Leaching - Compliance test for leaching of granular waste materials and sludges - Part 4 : one stage batch test at a liquid to solid ratio of 10 l/kg for materials with particle size below 10 mm (without or with size reduction)				x	
EN 12461:1998	Biotechnology - Large scale process and production - Guidance for the handling, inactivating and testing of waste					
EN 12566-3+A2:2013	Small wastewater treatment systems for up to 50 PT - Part 3 : packaged and/or site assembled domestic wastewater treatment plants					
EN 12574-1:2017	Stationary waste containers - Part 1: Containers with a capacity up to 10000 l with flat or dome lid(s), for trunnion, double trunnion or pocket lifting device - Dimensions and design					
EN 12588:2006	Lead and lead alloys - Rolled lead sheet for building purposes	x		x		
EN 12620+A1:2008	Aggregates for concrete	x		x		
EN 12844:1998	Zinc and zinc alloys - Castings - Specifications		x		x	
EN 12861:1999	Copper and copper alloys - Scrap	x		x		
EN 12879:2000	Characterization of sludges - Determination of the loss on ignition of dry mass				x	
EN 12920+A1:2008	Characterization of waste - Methodology for the Determination of the leaching behaviour of waste under specified conditions				x	
EN 12940:2004	Footwear manufacturing wastes - Waste classification and management				x	
EN 13043:2002 ;EN 13043/AC:2004	Aggregates for bituminous mixtures and surface treatments for roads, airfields and other trafficked areas	x				
EN 13055-1:2002	Lightweight aggregates - Part 1 : lightweight aggregates for concrete, mortar, and grout	x				
EN 13055-2:2004	Lightweight aggregates - Part 2 : lightweight aggregates for bituminous mixtures and surface treatments and for unbound and bound applications	x				
EN 13137:2001	Characterization of waste - Determination of total organic carbon (TOC) in waste, sludges and sediments				x	
EN 13139:2002	Aggregates for mortar	x		x	x	
EN 13193:2000	Packaging - Packaging and the environment - Terminology			x	x	
EN 13242+A1:2007	Aggregates for unbound and hydraulically bound materials for use in civil engineering work and road construction	x	x		x	
EN 13249:2016	Geotextiles and geotextile-related products - Characteristics required for use in the construction of roads and other trafficked areas			x		
EN 13283:2002	Zinc and zinc alloys - Secondary zinc	x	x		x	
EN 13285:2010	Unbound mixtures - Specification	x	x		x	

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
EN 1329:	Kunststofleidingsystemen van ongeplastificeerd polyvinylchloride (PVC-U) - Afvoer van afvalwater in gebouwen (bij lage en bij hoge temperatuur);			x		
EN 13383-1:2002 ;EN 13383-1/AC:2004	Armourstone - Part 1 : specification				x	
EN 13427:2004	Packaging - Requirements for the use of European Standards in the field of packaging and packaging waste		x	x	x	X
EN 13428:2004	Packaging - Requirements specific to manufacturing and composition - Prevention by source reduction				x	X
EN 13429:2004	Packaging - Reuse				x	X
EN 13430:2004	Packaging - Requirements for packaging recoverable by material recycling			x	x	X
EN 13431:2004	Packaging - Requirements for packaging recoverable in the form of energy recovery, including specification of minimum inferior calorific value		x		x	X
EN 13432:2000	Packaging - Requirements for packaging recoverable through compositing and biodegradation - Test scheme and evaluation criteria for the final acceptance of packaging			x	x	X
EN 13437:2003	Packaging and material recycling - Criteria for recycling methods - Description of recycling processes and flow chart				x	X
EN 13439:2003	Packaging - Rate of energy recovery - Definition and method of calculation				x	X
EN 13440:2003	Packaging - Rate of recycling - Definition and method of calculation				x	X
EN 13592+A1:2007	Plastics sacks for household waste collection - Types, requirements and test methods		x		x	X
EN 13593:2003	Packaging - Paper sacks for household waste collection - Types, requirements and test methods		x		x	x
EN 13655	Plastics - Thermoplastic mulch films recoverable after use, for use in agriculture and horticulture					
EN 13656:2002	Characterization of waste - Microwave assisted digestion with hydrofluoric (HF), nitric (HNO ₃) and hydrochloric (HCl) acid mixture for subsequent determination of elements				x	
EN 13657:2002	Characterization of waste - Digestion for subsequent determination of aqua regia soluble portion of elements				x	
EN 13920-1:2003	Aluminium and aluminium alloys - Scrap - Part 1 : general requirements, sampling and tests	x	x		x	
EN 13920-10:2003	Aluminium and aluminium alloys - Scrap - Part 10 : scrap consisting of used aluminium beverage cans	x		x		
EN 13920-11:2003	Aluminium and aluminium alloys - Scrap - Part 11 : scrap consisting of aluminium-copper radiators	x			x	
EN 13920-12:2003	Aluminium and aluminium alloys - Scrap - Part 12 : turnings consisting of one single alloy	x			x	
EN 13920-13:2003	Aluminium and aluminium alloys - Scrap - Part 13 : mixed turnings consisting of two or more alloys	x			x	
EN 13920-14:2003	Aluminium and aluminium alloys - Scrap - Part 14 : scrap from post-consumer aluminium packagings	x			x	
EN 13920-15:2003	Aluminium and aluminium alloys - Scrap - Part 15 : decoated aluminium scrap from post-consumer aluminium packagings	x			x	
EN 13920-16:2003	Aluminium and aluminium alloys - Scrap - Part 16 : scrap consisting of skimmings, drosses, spills and metallics	x			x	

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
EN 13920-2:2003	Aluminium and aluminium alloys - Scrap - Part 2 : unalloyed aluminium scrap	x			x	
EN 13920-3:2003	Aluminium and aluminium alloys - Scrap - Part 3 : wire and cable scrap	x			x	
EN 13920-4:2003	Aluminium and aluminium alloys - Scrap - Part 4 : scrap consisting of one single wrought alloy	x			x	
EN 13920-5:2003	Aluminium and aluminium alloys - Scrap - Part 5 : scrap consisting of two or more wrought alloys of the same series	x			x	
EN 13920-6:2003	Aluminium and aluminium alloys - Scrap - Part 6 : scrap consisting of two or more wrought alloys	x			x	
EN 13920-7:2003	Aluminium and aluminium alloys - Scrap - Part 7 : scrap consisting of castings	x			x	
EN 13920-8:2003	Aluminium and aluminium alloys - Scrap - Part 8 : scrap consisting of non-ferrous materials from shredding processes destined to aluminium separation processes	x			x	
EN 13920-9:2003	Aluminium and aluminium alloys - Scrap - Part 9: scrap from aluminium separation processes of non-ferrous shredded materials	x			x	
EN 13965-2:2010	Characterization of waste - Terminology - Part 2: management related terms and definitions				x	
EN 1401:	Kunststofleidingsystemen van ongeplastificeerd polyvinylchloride (PVC-U) - Drukloze ondergrondse afvoer van afvalwater of vrij verval riool;			x		
EN 14039:2004	Characterization of waste - Determination of hydrocarbon content in the range of C10 to C40 by gas chromatography				x	
EN 14045:2003	Packaging - Evaluation of the desintegration of packaging materials in practical oriented tests under defined composting conditions			x	x	
EN 14046:2003	Packaging - Evaluation of the ultimate aerobic biodegradability of packaging materials under controlled composting conditions - Method by analysis of released carbon dioxide			x	x	
EN 14047:2002	Packaging - Determination of the ultimate aerobic biodegradability of packaging materials in an aqueous medium - Method by analysis of evolved carbon dioxide			x	x	
EN 14048:2002	Packaging - Determination of the ultimate aerobic biodegradability of packaging materials in an aqueous medium - Method by measuring the oxygen demand in a closed respirometer			x	x	
EN 14057:2003	Lead and lead alloys - Scraps - Terms and definitions	x			x	
EN 14182:2002	Packaging - Terminology - Basic terms and definitions				x	
EN 14267:2004 ;EN 14267/AC:2008	Irrigation techniques - Irrigation hydrants					
EN 14290:2004	Zinc and zinc alloys - Secondary raw material	x	x		x	
EN 14345:2004	Characterization of waste - Determination of hydrocarbon content by gravimetry				x	
EN 14346:2006	Characterization of waste - Calculation of dry matter by determination of dry residue and water content				x	
EN 14405:2017	Characterization of waste - Leaching behaviour test - Up-flow percolation test (under specified conditions)				x	

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
EN 14429:2015	Characterisation of waste - Leaching behaviour test - Influence of pH on leaching with initial acid/base addition				x	
EN 14582:2007	Characterisation of waste - Halogen and sulfur content - Oxygen combustion in closed systems and determination methods				x	
EN 14582:2016	Characterization of waste - Halogen and sulfur content - Oxygen combustion in closed systems and determination methods				x	
EN 14735:2005	Characterization of waste - Preparation of waste samples for ecotoxicity tests				x	
EN 14742:2015	Characterization of sludges - Laboratory chemical conditioning procedure				x	
EN 14899:2005	Characterisation of waste - Sampling of waste materials - Framework for the preparation and application of a sampling plan				x	
EN 14995:2006	Plastics - Evaluation of compostability - Test scheme and Specifications		x	x	x	
EN 14997:2015	Characterisation of waste - Leaching behaviour test - Influence of pH on leaching with continuous pH control				x	
EN 15002:2015	Characterization of waste - Preparation of test portions from the laboratory sample				x	
EN 15169:2007	Characterization of waste - Determination of loss on ignition in waste, sludge and sediments				x	
EN 1519:	Kunststofleidingsystemen van polyethyleen (PE) - Afvoer van afvalwater in gebouwen (bij lage en bij hoge temperatuur)			x		
EN 15192:2006	Characterization of waste and soil - Determination of chromium (VI) in solid material by alkaline digestion and ion chromatography with spectrophotometric detection				x	
EN 15216:2007	Characterization of waste - Determination of total dissolved solids (TDS) in water and eluates				x	
EN 15308:2016	Characterization of waste - Determination of selected polychlorinated biphenyls (PCB) in solid waste, by using capillary gas chromatography with electron capture or mass spectrometric detection				x	
EN 15309:2007	Characterization of waste and soil - Determination of elemental composition by X-ray fluorescence				x	
EN 15342:2007	Plastics - Recycled plastics - Characterization of polystyrene (PS) recyclates	x	x		x	
EN 15343:2007	Plastics - Recycled plastics - Plastics recycling traceability and assessment of conformity and recycled content	x			x	
EN 15344:2007	Plastics - Recycled plastics - Characterisation of Polyethylene (PE) recyclates	x	x		x	
EN 15345:2007	Plastics - Recycled Plastics - Characterisation of Polypropylene (PP) recyclates	x	x		x	
EN 15346:2014	Plastics - Recycled plastics - Characterisation of poly(vinyl chloride) (PVC) recyclates	x	x		x	

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
EN 15347:2007	Plastics - Recycled Plastics - Characterisation of plastics wastes		x	x	x	
EN 15348:2014	Plastics - Recycled plastics - Characterisation of poly(ethylene terephthalate) (PET) recyclates	x	x	x	x	
CEN/TR 15353	Plastics - Recycled plastics - Guidelines for the development of standards for recycled plastics			x	x	
EN 15357:2011	Solid recovered fuels - Terminology, definitions and descriptions					
EN 15358:2011	Solid recovered fuels - Quality management systems - Particular requirements for their application to the production of solid recovered fuels					
EN 15359:2011	Solid recovered fuels - Specifications and classes				x	
EN 15400:2011	Solid recovered fuels - Determination of calorific value		x			
EN 15402:2011	Solid recovered fuels - Determination of the content of volatile matter		x		x	
EN 15403:2011	Solid recovered fuels - Determination of ash content		x		x	
EN 15407:2011	Solid recovered fuels - Methods for the determination of carbon (C), hydrogen (H) and nitrogen (N) content		x		x	
EN 15408:2011	Solid recovered fuels - Methods for the determination of sulphur (S), chlorine (Cl), fluorine (F) and bromine (Br) content		x	x	x	
EN 15410:2011	Solid recovered fuels - Method for the determination of the content of major elements (Al, Ca, Fe, K, Mg, Na, P, Si, Ti)		x	x	x	
EN 15411:2011	Solid recovered fuels - Methods for the determination of the content of trace elements (As, Ba, Be, Cd, Co, Cr, Cu, Hg, Mo, Mn, Ni, Pb, Sb, Se, Ti, V and Zn)		x	x	x	
EN 15413:2011	Solid recovered fuels - Methods for the preparation of the test sample from the laboratory sample				x	
EN 15414-3:2011	Solid recovered fuels - Determination of moisture content using the oven dry method - Part 3 : moisture in general analysis sample				x	
EN 15415-1:2011	Solid recovered fuels - Determination of particle size distribution - Part 1 : screen method for small dimension particles					
EN 15415-2:2012	Solid recovered fuels - Determination of particle size distribution - Part 2 : maximum projected length method (manual) for large dimension particles					
EN 15415-3:2012	Solid recovered fuels - Determination of particle size distribution - Part 3 : method by image analysis for large dimension particles					
EN 15440:2011	Solid recovered fuels - Methods for the determination of biomass content		x		x	
EN 15442:2011	Solid recovered fuels - Methods for sampling					
EN 15443:2011	Solid recovered fuels - Methods for the preparation of the laboratory sample					
EN 15530:2008	Aluminium and aluminium alloys - Environmental aspects of aluminium products - General guidelines for their inclusion in standards		x		x	
EN 15590:2011	Solid recovered fuels - Determination of the current rate of aerobic microbial activity using the real dynamic respiration index					
EN 1566 series	Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure - Chlorinated poly(vinyl chloride) (PVC-C)			x		

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
EN 15804+A1:2013	Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products	x	x	x	x	
EN 15863:2015	Characterisation of waste - Leaching behaviour test for basic characterisation - Dynamic monolithic leaching test with periodic leachant renewal, under fixed conditions					
EN 15875:2011 ;EN 15875/AC:2012	Characterization of waste - Static test for determination of acid potential and neutralisation potential of sulfidic waste					
EN 15978:2011	Sustainability of construction works - Assessment of environmental performance of buildings - Calculation method		x		x	
EN 16123:2013	Characterization of waste - Guidance on selection and application of screening methods				x	
EN 16192:2011	Characterization of waste - Analysis of eluates				x	
EN 16214-1:2012	Sustainability criteria for the production of biofuels and liquid biomass for energy applications - Principles, criteria, indicators and verifiers - Part 1: Terminology	x	x		x	
EN 16214-3:2012	Sustainability criteria for the production of biofuels and bioliquids for energy applications - Principles, criteria, indicators and verifiers - Part 3: Biodiversity and environmental aspects related to nature protection purposes	x	x		x	
EN 16214-4:2013	Sustainability criteria for the production of biofuels and bioliquids for energy applications - Principles, criteria, indicators and verifiers - Part 4 : calculation methods of the greenhouse gas emission balance using a life cycle analysis approach	x	x		x	
EN 16323:2014	Glossary of wastewater engineering terms					
EN 16377:2013	Characterization of waste - Determination of brominated flame retardants (BFR) in solid waste				x	
EN 16424:2014	Characterization of waste - Screening methods for the element composition by portable X-ray fluorescence instruments				x	
EN 16457:2014	Characterization of waste - Framework for the preparation and application of a testing programme - Objectives, planning and report				x	
EN 16485:2014	Round and sawn timber - Environmental Product Declarations - Product category rules for wood and wood-based products for use in construction	x	x	x	x	
EN 16575:2014	Biobased products – Vocabulary	x		x	x	
EN 16640:2017	Determination of the bio-based carbon content of products using the radiocarbon method	x	x	x	x	
EN 16720-1:2016	Characterization of Sludges - Physical consistency - Part 1 : determination of flowability - Method by extrusion tube apparatus					
EN 16720-2:2014	Characterization of Sludges - Physical consistency - Part 2 : determination of solidity - Method by pocket cane shear apparatus					
EN 16723-1:2016	Natural gas and biomethane for use in transport and biomethane for injection in the natural gas network - Part 1: Specifications for biomethane for injection in the natural gas network	x			x	
EN 16723-2:2017	Natural gas and biomethane for use in transport and biomethane for injection in the natural gas network - Part 2: Automotive fuels specification	x			x	
EN 16751:2016	Bio-based products - Sustainability criteria	x	x	x	x	

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
EN 16760:2015	Biobased products - Life Cycle Assessment		x	x	x	
EN 16785:1:2016	Bio-based products - Bio-based content - Part 1: Determination of the bio-based content using the radiocarbon analysis and elemental analysis	x	x	x	x	
EN 16785-2:2018	Bio-based products - Bio-based content - Part 2: Determination of the bio-based content using the material balance method		x	x	x	
EN 16807:2016	Criteria and requirements of bio-lubricants and bio-based lubricants.	x	x	x		
EN 16848	Template for B2B reporting and communication of characteristics				x	
EN 16935:2017	Bio-based products - Requirements for Business-to-Consumer communication and claims				x	
prEN 17035	Surface Active Agents - Bio-based surfactants - Requirements and test methods					
EN 17098-1	Plastics - Barrier films for agricultural and horticultural soil disinfection by fumigation - Part 1: Specifications for barrier films					
EN 17098-2	: Plastics - Barrier films for agricultural and horticultural soil disinfection by fumigation - Part 2: Method for film permeability determination using a static technique					
EN 1744-1+A1:2012	Tests for chemical properties of aggregates - Part 1 : chemical analysis		x	x		
EN 1744-3:2002	Tests for chemical properties of aggregates - Part 3 : preparation of eluates by leaching of aggregates					
EN 1744-4:2005	Tests for chemical properties of aggregates - Part 4 : determination of water susceptibility of fillers for bituminous mixtures		x			
EN 1744-5:2006	Tests for chemical properties of aggregates - Part 5 : determination of acid soluble chloride salts		x			
EN 1744-6:2006	Tests for chemical properties of aggregates - Part 6 : determination of the influence of recycled aggregate extract on the initial setting time of cement		x			
EN 1744-7:2012	Tests for chemical properties of aggregates - Part 7 : determination of loss of ignition of Municipal Incinerator Bottom Ash Aggregate (MIBA Aggregate)					
EN 1744-8:2012	Tests for chemical properties of aggregates - Part 8 : sorting test to determine metal content of Municipal Incinerator Bottom Ash (MIBA) Aggregates					
EN 2955:1993	Aerospace series; recycling of titanium and titanium alloy scrap	x		x	x	
EN 50625-1:2014	Collection, logistic and treatment requirements for WEEE - Part 1 : general treatment requirements					
EN 50625-2-1:2014	Collection, logistics and treatment requirements for WEEE - Part 2-1 : treatment requirements for lamps					
EN 60480:2004	Guidelines for the checking and treatment of sulphur hexafluoride (SF6) taken from electrical equipment and specification for its re-use					
EN 62309:2004	Dependability of products containing reused parts - Requirements for functionality and test (IEC 62309:2004)		x		x	
EN 62430:2009	Environmentally conscious design for electrical and electronic products		x		x	
EN 643:2014	Paper and board - European list of standard grades of paper and board for recycling				x	

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
EN 840-1:2012	Mobile waste and recycling containers - Part 1: Containers with 2 wheels with a capacity up to 400 l for comb lifting devices - Dimensions and design		x			
EN 840-2:2012	Mobile waste and recycling containers - Part 2: Containers with 4 wheels with a capacity up to 1300 l with flat lid(s), for trunnion and/or comb lifting devices - Dimensions and design		x			
EN 840-3:2012	Mobile waste and recycling containers - Part 3: Containers with 4 wheels with a capacity up to 1300 l with dome lid(s), for trunnion and/or comb lifting devices - Dimensions and design		x			
EN 840-4:2012	Mobile waste and recycling containers - Part 4: Containers with 4 wheels with a capacity up to 1700 l with flat lid(s), for wide trunnion or BG- and/or wide comb lifting devices - Dimensions and design		x			
EN 933-11:2009	Tests for geometrical properties of aggregates - Part 11 : classification test for the constituents of coarse recycled aggregate					
EN IEC 62075:2012	Audio/video, information and communication technology equipment - Environmentally conscious design		x		x	
EN ISO 10707:1997	Water quality - Evaluation in an aqueous medium of the "ultimate" aerobic biodegradability of organic compounds - Method by analysis of biochemical oxygen demand (closed bottle test)			x		
EN ISO 14021: 2016	Environmental labels and declarations - Self-declared environmental claims (Type II environmental labelling) (ISO 14021:2016)			x	x	
EN ISO 14024:2000	Environmental labels and declarations - Type I environmental labelling - Principles and procedures (ISO 14024:1999)			x	x	
EN ISO 14593:2005	Water quality - Evaluation of ultimate aerobic biodegradability of organic compounds in aqueous medium - Method by analysis of inorganic carbon in sealed vessels (CO ₂ headspace test)			x		
EN ISO 14851:2004	Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium - Method by measuring the oxygen demand in a closed respirometer			x	x	
EN ISO 14852:2004	Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium - Method by analysis of evolved carbon dioxide			x	x	
EN ISO 14855-1:2012	Determination of the ultimate aerobic biodegradability of plastic materials under controlled composting conditions - Method by analysis of evolved carbon dioxide - Part 1 : general method			x	x	
EN ISO 14855-2:2009	Determination of the ultimate aerobic biodegradability of plastic materials under controlled composting conditions - Method by analysis of evolved carbon dioxide - Part 2 : gravimetric measurement of carbon dioxide evolved in a laboratory-scale test			x	x	
EN ISO 15663-1:2007	Petroleum and natural gas industries - Life cycle costing - Part 1: Methodology		x			
EN ISO 16103:2005	Packaging - Transport packages for dangerous goods - Recycled plastics material				x	
EN ISO 17402:2011	Soil quality - Requirements and guidance for the selection and application of methods for the assessment of bioavailability of contaminants in soil and soil materials		x			
EN ISO 17556:2012	Plastics - Determination of the ultimate aerobic biodegradability of plastic materials in soil by measuring the oxygen demand in a respirometer or the amount of carbon dioxide evolved			x	x	
EN ISO 20200:2005	Plastics - Determination of the degree of disintegration of plastic materials under simulated composting conditions in a laboratory-scale test			x	x	
prEN ISO 20706-1	Textiles - Qualitative and quantitative analysis of some bast fibres (flax, hemp, ramie) and their blends - Part 1: Fibre identification using microscopy methods					
prEN ISO 20136	Leather - Determination of degradability by micro-organisms					

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
EN ISO 643:2012	Steels - Micrographic determination of the apparent grain size					
prEN ISO 1833-18	Textiles - Quantitative chemical analysis - Part 18: Mixtures of silk with other protein fibres (method using sulfuric acid)					
EN ISO 7827:2013	Water quality - Evaluation of the "ready", "ultimate" aerobic biodegradability of organic compounds in an aqueous medium - Method by analysis of dissolved organic carbon (DOC)			x		
EN ISO 9408:1999	Water quality - Evaluation of ultimate aerobic biodegradability of organic compounds in aqueous medium by determination of oxygen demand in a closed respirometer			x		
EN ISO 9439:2000	Water quality - Evaluation of ultimate aerobic biodegradability of organic compounds in aqueous medium - Carbon dioxide evolution test			x		
EO100™	EO 100™ Standard for Responsible Energy	x	x			
European Biochar Foundation	European Biochar Certificate - Guidelines for a Sustainable Production of Biochar		x		x	
European Ecolabel for Lubricants	European Ecolabel for Lubricants	x	x	x	x	
FD P18-662	Aggregates - Guide for using standards NF EN 13383-1 and NF EN 13383-2					
FD P18-663	Aggregates - Methods of implantation for the NF EN standards specifying tests on aggregates					
FD X30-414	Household and related refuse - Characterization of a batch stemming from the selective collection of household refuse and comparable container glass refuse					
FD X30-433	Household and related refuse - Methods for characterizing a plastic hollow-bodied ball					
FD X30-434	Household and related refuse - Analysis of the composition of a bale of paper and board packaging from a waste sorting centre					
FD X30-457	Household and related refuse - Characterisation of objects mainly in aluminium stemming from the sorting of household and related waste		x			
FD X30-468	Household and related refuse - Analysis of the composition of a batch of newspapers, journals and magazines					
FD X30-494	Characterization of waste - Specification of elements present in waste				x	
FD X33-020	Drinking water treatment sludge - Good practices					
FD X33-040	Characterization of sludges - Enumeration and viability of parasite helminth eggs - Triple flotation technique					
FprCEN/TS 17188	Materials obtained from end of life tyres - Sampling method for granulates and powders stored in big-bags	x				
FprCEN/TS 17189	Materials obtained from end of life tyres (ELTs) - Determination of the true density of granulates - Method based on water pycnometry	x				
FSC-STD-01-001	FSC Principles and Criteria for Forest Stewardship				x	
FSC-STD-01-002	FSC Glossary of Terms				x	
FSC-STD-40-004	FSC Standard for Chain of Custody Certification				x	
GA P01-030	Environmental quality of buildings - Environmental management system for the contracting authority : construction activities, adaptation or administration of buildings - Framework for design and implementation of HQE approach		x			
GA U44-168	Guide for the interpretation of methods of characterization for organic matter in soil improvers (XP U 44-162 and XP U 44-163)	x		x		

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
GA U44-190	Application guidelines of the standard NF U44-095:2002 - Organic soil improvers - Composts containing substances essential to agriculture, stanning from water treatment	x	x			
GA X30-444	Household and related refuse - Constitution and characterisation, on entering sorting centres, of a sample out of a batch of selectively collected household and related refuse - Application guide of standard NF X30-437, March 2009					
GA X30-460	Environmental management systems - Guide for the application of ISO 14001 to landfills		x			
GA X30-471	Environmental management systems - ISO 14001 implementation guide for severage		x			
GB/T 27868 : 2011	Starch-based biodegradable resin	x				
Global G.A.P.	International independent certification system for Good Agricultural Practice (G.A.P.) http://www.globalgap.org/					
GOST 17.0.0.01	System of standards in nature protection and improving utilization of nature resources - General	x	x			
GOST 24038	Asbestos - polymer seal sheet materials - Method of test for compressibility and recoverability				x	
GOST 8407	Reused rubber raw materials - Tyres and inner-tubes - Specifications	x			x	
GOST R 17.4.3.07	Nature protection - Soils - Requirements for sewage sludge use for fertilization	x				
GOST R 52867	Management environmental - Life cycle assessment - Examples of application of GOST R ISO 14041 to goal and scope definition and inventory analyses					x
GOST R 53692	Resources saving - Waste treatment - Stages of technological cycle of waste					x
GOST R 53740	Resources saving - Packaging - Requirements specific to minimization, composition, manufacturing of package	x	x			x
GOST R 53741	Resources saving - Packaging - Requirements for packaging recoverable in the form of energy recovery		x			x
GOST R 53742	Resources saving - Packaging - Requirements for packaging recoverable by material recycling	x	x		x	
GOST R 53744	Resources saving - Packaging - Requirements for the use of European standards in the field of packaging and packaging waste		x			
GOST R 53754	Resources saving - Packaging - Definitions and methods of calculation of efficiency of the recycling packaging as a secondary material resources		x		x	x
GOST R 53756	Resources saving - Packaging - Criteria for recycling methods and description of recycling processes with registration flow chart		x			
GOST R 53759	Resources saving - Packaging - Reuse	x	x		x	x
GOST R 53791	Resources saving - Stages of technological cycle - General principles		x			x
GOST R 54193	Resources saving - Energy production - Guidance on implementing the best available techniques for improving energy efficiency in thermal energy generation		X			
GOST R 54199	Resources saving - Energy production - Guidance on implementing the best available techniques for improving energy efficiency in electricity generation		X			
GOST R 54200	Resources saving - Energy production - Guidance on implementing the best available techniques for improving energy efficiency in fuel combustion		X			
GOST R 54259	Resources saving - Waste management - Standard guide for waste reduction, resource recovery, and use of recycled polymeric materials and products		x		x	x
GOST R 54532	Resources saving - Waste treatment - Waste classification and management in footwear manufacturing		x		x	x
GOST R 54533	Resources saving - Waste management - Guidelines and methods for the recovery of plastics waste		x		x	
GOST R 55096	Resources saving - Best available techniques - Treatment of waste for producing secondary material resources	x	x		x	

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
GOST R 55097	Resources saving - Best available techniques - Treatment of waste for producing secondary energy resources	x	x		x	x
GOST R 55098	Resources saving - Best available techniques for the waste management in the lime industry - Aspects of good practice		x		x	
GOST R 55100	Resources saving - Best available techniques for the management of tailings and waste-rock in mining activities - Aspects of good practice					
Green Gold Label Program	GGLS2 - Agricultural Source Criteria	x			x	
Green Gold Label Program	GGLS5 - Forest Management Criteria	x			x	
Green Gold Label Program	GGLS8 – Greenhouse Gasses and Energy Balance Calculation Standard	x			x	
GRI (Global Reporting Initiative) - materials	GRI 301					
IEC 111/191/CD*CEI 111/191/CD*IEC/TS 62650*CEI/TS 62650 IEC 62474	End of life exchange for electrotechnical equipment between manufacturers and recyclers				x	
	Hazardous substances declaration				x	
IEC/PAS 62814:2012	Dependability of software products containing reusable components - Guidance for functionality and tests		x		x	
IEC/TR 62392	Suitability of typical electrical insulating material (EIM) for polymer recycling			x	x	
IEC/TR 62635:2012	Guidelines for end of life information provided by manufacturers and recyclers and for recyclability rate calculation of electrical and electronic equipment				x	
IEC/TR 62824:2016	Guidance on material efficiency considerations in environmentally conscious design of electrical and electronic products		x		x	
IEEE 1517	Information technology - System and software life cycle processes - Reuse processes		x		x	
International Biochar Initiative	Standardized Product Definition and Product Testing Guidelines for Biochar That Is Used in Soil (IBI Biochar Standards)		x			
International Sustainability & Carbon Certification	ISCC PLUS	x			x	
International Sustainability & Carbon Certification	ISCC EU	x			x	
International Sustainability & Carbon Certification (ISCC)	ISCC 201-3 GUIDANCE FOR THE CERTIFICATION OF BIOGAS AND BIOMETHANE	x			x	
ISO 10058-1:2008	Chemical analysis of magnesite and dolomite refractory products (alternative to the X-ray fluorescence method) - Part 1: Apparatus, reagents, dissolution and determination of gravimetric silica		x			
ISO 10058-2:2008	Chemical analysis of magnesite and dolomite refractory products (alternative to the X-ray fluorescence method) - Part 2: Wet chemical analysis		x			
ISO 10058-3:2008	Chemical analysis of magnesite and dolomite refractory products (alternative to the X-ray fluorescence method) - Part 3: Flame atomic absorption spectrophotometry (FAAS) and inductively coupled plasma atomic emission spectrometry (ICP-AES)		x			
ISO 10203:2017	Iron ores - Determination of calcium - Flame atomic absorption spectrometric method		x		x	
ISO 10204:2017	Iron ores - Determination of magnesium - Flame atomic absorption spectrometric method		x		x	
ISO 10251:2006	Copper, lead, zinc and nickel concentrates - Determination of mass loss of bulk material on drying		x		x	

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
ISO 10258:2015	Copper sulfide concentrates - Determination of copper content - Titrimetric methods		x		x	
ISO 10283:2007	Binders for paints and varnishes - Determination of monomeric diisocyanates in isocyanate resins		x		x	
ISO 10378:2016	Copper, lead and zinc sulfide concentrates - Determination of gold and silver - Fire assay gravimetric and flame atomic absorption spectrometric method		x		x	
ISO 1043-2:2011	Plastics - Symbols and abbreviated terms - Part 2: Fillers and reinforcing materials				x	
ISO 1043-3:2016	Plastics - Symbols and abbreviated terms - Part 3: Plasticizers				x	
ISO 1043-4:1998/Amd 1:2016	Code numbers				x	
ISO 10469:2006	Copper sulfide concentrates - Determination of copper - Electrogravimetric method		x		x	
ISO 10601:2007	Micaceous iron oxide pigments for paints - Specifications and test methods			x	x	
ISO 10638:2010	Rubber - Identification of antidegradants by gas chromatography/mass spectrometry				x	
ISO 10708	Water quality -- Evaluation in an aqueous medium of the ultimate aerobic biodegradability of organic compounds -- Determination of biochemical oxygen demand in a two-phase closed bottle test			x	x	
ISO 10835:2007	Direct reduced iron and hot briquetted iron - Sampling and sample preparation					
ISO 11234:1995	Rubber compounding ingredients - Carbon black (pelletized) - Determination of dust content		x		x	
ISO 11235:2016	Rubber compounding ingredients - Sulfenamide accelerators - Test methods		x			
ISO 11236:2017	Rubber compounding ingredients - p-Phenylenediamine (PPD) antidegradants - Test methods				x	
ISO 1124:1988	Rubber compounding ingredients - Carbon black shipment sampling procedures				x	
ISO 1125:2015	Rubber compounding ingredients - Carbon black - Determination of ash		x		x	
ISO 11256:2015	Iron ore pellets for shaft direct-reduction feedstocks - Determination of the clustering index		x		x	
ISO 11257:2015	Iron ores for shaft direct-reduction feedstocks - Determination of the low-temperature reduction-disintegration index and degree of metallization		x		x	
ISO 11258:2015	Iron ores for shaft direct-reduction feedstocks - Determination of the reducibility index, final degree of reduction and degree of metallization		x		x	
ISO 1126:2015	Rubber compounding ingredients - Carbon black - Determination of loss on heating		x		x	
ISO 11266:1994	Soil quality - Guidance on laboratory testing for biodegradation of organic chemicals in soil under aerobic conditions				x	
ISO 11323:2010	Iron ore and direct reduced iron - Vocabulary					
ISO 1138:2007	Rubber compounding ingredients - Carbon black - Determination of sulfur content				x	
ISO 1138:2007/Amd 1:2012	Clarification of digestion temperature in Subclause 3.4.5					
ISO 11441:1995	Lead sulfide concentrates - Determination of lead content - Back titration of EDTA after precipitation of lead sulfate		x		x	
ISO 11459:1997	Iron ores - Certified reference materials - Preparation and certification for use in chemical analysis	x			x	

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
ISO 11533:2009	Iron ores - Determination of cobalt - Flame atomic absorption spectrometric method		x		x	
ISO 11534:2006	Iron ores - Determination of tin - Flame atomic absorption spectrometric method		x		x	
ISO 11535:2006	Iron ores - Determination of various elements - Inductively coupled plasma atomic emission spectrometric method		x		x	
ISO 11536:2015	Iron ores - Determination of loss on ignition - Gravimetric method		x		x	
ISO 11650:1999	Performance of refrigerant recovery and/or recycling equipment					
ISO 11668:1997	Binders for paints and varnishes - Chlorinated polymerization resins - General methods of test			x		
ISO 11790:2017	Copper, lead, zinc and nickel concentrates - Guidelines for the inspection of mechanical sampling systems					
ISO 11794:2017	Copper, lead, zinc and nickel concentrates - Sampling of slurries					
ISO 11908:1996	Binders for paints and varnishes - Amino resins - General methods of test				x	
ISO 11909:2007	Binders for paints and varnishes - Polyisocyanate resins - General methods of test				x	
ISO 11932:1996	Activity measurements of solid materials considered for recycling, re-use, or disposal as non-radioactive waste		x		x	
ISO 1247:1974	Aluminium pigments for paints				x	
ISO 1248:2006	Iron oxide pigments - Specifications and methods of test					
ISO 1249:1974	Zinc chromate pigments - Basic zinc potassium chromate pigments and zinc tetrahydroxychromate pigments				x	
ISO 12739:2006	Zinc sulfide concentrates - Determination of zinc - Ion-exchange/EDTA titrimetric method		x			
ISO 12740:1998	Lead sulfide concentrates - Determination of silver and gold contents - Fire assay and flame atomic absorption spectrometric method using scorification or cupellation		x			
ISO 12742:2007	Copper, lead, and zinc sulfide concentrates - Determination of transportable moisture limits - Flow-table method					
ISO 12743:2006	Copper, lead, zinc and nickel concentrates - Sampling procedures for determination of metal and moisture content		x			
ISO 12744:2006	Copper, lead, zinc and nickel concentrates - Experimental methods for checking the precision of sampling					
ISO 12745:2008	Copper, lead and zinc ores and concentrates - Precision and bias of mass measurement techniques					
ISO 1304:2016	Rubber compounding ingredients - Carbon black - Determination of iodine adsorption number		x			
ISO 1306:1995	Rubber compounding ingredients - Carbon black (pelletized) - Determination of pour density		x			
ISO 13291:2006	Zinc sulfide concentrates - Determination of zinc - Solvent extraction and EDTA titrimetric method		x			
ISO 13292:2006	Copper, lead, zinc and nickel concentrates - Experimental methods for checking the bias of sampling					
ISO 13310:1997	Iron ores - Determination of zinc content - Flame atomic absorption spectrometric method		x		x	
ISO 13311:1997	Iron ores - Determination of lead content - Flame atomic absorption spectrometric method		x		x	
ISO 13312:2017	Iron ores - Determination of potassium - Flame atomic absorption spectrometric method		x		x	

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
ISO 13313:2017	Iron ores - Determination of sodium - Flame atomic absorption spectrometric method		x		x	
ISO 13315-1:2012	Environmental management for concrete and concrete structures - Part 1: General principles		x	x		
ISO 13543:2016	Copper, lead, zinc and nickel sulfide concentrates - Determination of mass of contained metal in a lot		x		x	
ISO 13545:2000	Lead sulfide concentrates - Determination of lead content - EDTA titration method after acid digestion		x		x	
ISO 13547-1:2014	Copper, lead, zinc and nickel sulfide concentrates - Determination of arsenic - Part 1: Iron hydroxide concentration and inductively coupled plasma atomic emission spectrometric method		x		x	
ISO 13547-2:2014	Copper, lead, zinc and nickel sulfide concentrates - Determination of arsenic - Part 2: Acid digestion and inductively coupled plasma atomic emission spectrometric method		x		x	
ISO 13632:2012	Binders for paints and varnishes - Rosin - Sampling and sample preparation for colour measurement					
ISO 13658:2000	Zinc sulfide concentrates - Determination of zinc content - Hydroxide precipitation and EDTA titrimetric method		x		x	
ISO 13885-1:2008	Binders for paints and varnishes - Gel permeation chromatography (GPC) - Part 1: Tetrahydrofuran (THF) as eluent					
ISO 13930:2015	Iron ores for blast furnace feedstocks - Determination of low-temperature reduction-disintegration indices by dynamic method					
ISO 14001:2015	Environmental Management Systems: Requirements with guidance for use		x			
ISO 14020:2002	Environmental labels and declarations - General principles				x	
ISO 14024:2004	Environmental labels and declarations - Type I environmental labelling - Principles and procedures				x	
ISO 14040	Environmental management - Life cycle assessment - Principles and framework		x	x	x	
ISO 14042:2000	Environmental management - Life cycle assessment - Life cycle impact assessment		x	x	x	
ISO 14043:2000	Environmental management - Life cycle assessment - Life cycle interpretation		x	x	x	
ISO 14044:2006	Environmental management - Life cycle assessment - Requirements and guidelines		x	x	x	
ISO 1435:1996	Rubber compounding ingredients - Carbon black (pelletized) - Determination of fines content		x		x	
ISO 1437:2017	Rubber compounding ingredients - Carbon black - Determination of sieve residue		x		x	
ISO 14446:1999	Binders for paints and varnishes - Determination of the viscosity of industrial cellulose nitrate solutions and classification of such solutions				x	
ISO 14592-1:2002	Water quality - Evaluation of the aerobic biodegradability of organic compounds at low concentrations - Part 1: Shake-flask batch test with surface water or surface water/sediment suspensions				x	
ISO 14680-1:2000	Paints and varnishes - Determination of pigment content - Part 1: Centrifuge method		x		x	
ISO 14680-2:2000	Paints and varnishes - Determination of pigment content - Part 2: Ashing method		x		x	
ISO 14680-3:2000	Paints and varnishes - Determination of pigment content - Part 3: Filtration method		x		x	
ISO 14853:2016	Plastics - Determination of the ultimate anaerobic biodegradation of plastic materials in an aqueous system - Method by measurement of biogas production				x	
ISO 14932:2012	Rubber compounding ingredients - Organic vulcanizing agents - Determination of organic peroxide content	x	x		x	

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
ISO 150:2006	Raw, refined and boiled linseed oil for paints and varnishes - Specifications and methods of test	x			x	
ISO 15038:1999	Plastics - Organic-perester crosslinking agents for unsaturated-polyester thermosetting materials - Determination of active-oxygen content	x				
ISO 15176:2002	Soil quality - Characterization of excavated soil and other soil materials intended for re-use		x			
ISO 15247:2015	Zinc sulfide concentrates - Determination of silver content - Acid dissolution and flame atomic absorption spectrometric method		x		x	
ISO 15248:1998	Zinc sulfide concentrates - Determination of silver and gold contents - Fire assay and flame atomic absorption spectrometric method using scorification or cupellation		x		x	
ISO 15249:1998	Zinc sulfide concentrates - Determination of gold content - Acid dissolution/solvent extraction/flame atomic absorption spectrometric method		x		x	
ISO 15270:2008	Plastics - Guidelines for the recovery and recycling of plastics waste		x		x	
ISO 15380:2016	Lubricants, industrial oils and related products - specifications for categories HETG, HEPG, HEES and HEPR	x	x	x		
ISO 15473:2002	Soil quality - Guidance on laboratory testing for biodegradation of organic chemicals in soil under anaerobic conditions				x	
ISO 15633:2015	Iron ores - Determination of nickel - Flame atomic absorption spectrometric method		x		x	
ISO 15634:2015	Iron ores - Determination of chromium content - Flame atomic absorption spectrometric method		x		x	
ISO 15715:2003	Binders for paints and varnishes - Determination of turbidity			x		
ISO 15825:2017	Rubber compounding ingredients - Carbon black - Determination of aggregate size distribution by disc centrifuge photosedimentometry				x	
ISO 15880:2000	Paints, varnishes and binders - Determination of MEQ value of water-based coating materials and binders			x		
ISO 15967:2007	Direct reduced iron - Determination of the tumble and abrasion indices of hot briquetted iron (HBI)				x	
ISO 15968:2016	Direct reduced iron - Determination of apparent density and water absorption of hot briquetted iron (HBI)				x	
ISO 16042:2007	Iron ores - Guidelines for the use of certified reference materials (CRMs)		x			
ISO 16075-1	Guidelines for Treated wastewater use for irrigation projects - Part 1 : the Basis of a reuse project for irrigation					
ISO 16075-2	Guidelines for treated wastewater use for irrigation projects - Part 2 : development of the project					
ISO 16075-3	Guidelines for treated wastewater use for irrigation projects - Part 3 : components of a reuse project for irrigation					
ISO 16221:2001	Water quality - Guidance for determination of biodegradability in the marine environment					x
ISO 16482-1:2013	Binders for paints and varnishes - Determination of the non-volatile-matter content of aqueous rosin-resin dispersions - Part 1: Oven method			x		
ISO 16482-2:2013	Binders for paints and varnishes - Determination of the non-volatile-matter content of aqueous rosin-resin dispersions - Part 2: Microwave method			x		
ISO 1658:2015	Natural rubber (NR) - Evaluation procedure		x			
ISO 16742:2014	Iron ores - Sampling of slurries					
ISO 16805:2003	Binders for paints and varnishes - Determination of glass transition temperature			x		

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
ISO 16878:2016	Iron ores - Determination of metallic iron content - Iron(III) chloride titrimetric method		x		x	
ISO 16929:2013	Plastics - Determination of the degree of disintegration of plastic materials under defined composting conditions in a pilot-scale test			x	x	
ISO 17422:2002	Plastics - Environmental aspects - General guidelines for their inclusion in standards		x		x	
ISO 1762:2015	Paper, board and pulps - Determination of residue (ash) on ignition at 525 °C				x	
ISO 17992:2013	Iron ores - Determination of arsenic content - Hydride generation atomic absorption spectrometric method		x		x	
ISO 18314-1:2015	Analytical colorimetry - Part 1: Practical colour measurement					
ISO 18314-2:2015	Analytical colorimetry - Part 2: Saunderson correction, solutions of the Kubelka-Munk equation, tinting strength, hiding power					
ISO 18314-3:2015	Analytical colorimetry - Part 3: Special indices					
ISO 18451-1:2015	Pigments, dyestuffs and extenders - Terminology - Part 1: General terms					
ISO 18451-2:2015	Pigments, dyestuffs and extenders - Terminology - Part 2: Classification of colouring materials according to colouristic and chemical aspects					
ISO 18473-1:2015	Functional pigments and extenders for special applications - Part 1: Nanoscale calcium carbonate for sealant application					
ISO 18473-2:2015	Functional pigments and extenders for special applications - Part 2: Nanoscale titanium dioxide for sunscreen application					
ISO 18601	Packaging and the environment - General requirements for the use of ISO standards in the field of packaging and the environment			x	x	
ISO 18602:2013	Packaging and the environment - Optimization of the packaging system				x	
ISO 18603	Packaging and the environment - Reuse			x	x	
ISO 18604:2013	Packaging and the environment - Material recycling	x		x	x	
ISO 18605:2013	Packaging and the environment - Energy recovery				x	
ISO 18606:2013	Packaging and the environment - Organic recycling			x	x	
ISO 18606:2013	Packaging and the environment - Organic recycling			x	x	
ISO 18830:2016	Plastics - Determination of aerobic biodegradation of non-floating plastic materials in a seawater/sandy sediment interface - Method by measuring the oxygen demand in closed respirometer			x	x	
ISO 18852:2015	Rubber compounding ingredients - Determination of multipoint nitrogen surface area (NSA) and statistical thickness surface area (STSA)				x	
ISO 19334:2010	Binders for paints and varnishes - Gum rosin - Gas-chromatographic analysis					
ISO 19679:2016	Plastics - Determination of aerobic biodegradation of non-floating plastic materials in a seawater/sediment interface - Method by analysis of evolved carbon dioxide		x	x	x	
ISO 197-5:1980	Copper and copper alloys - Terms and definitions - Part 5: Methods of processing and treatment					
ISO 19846:2017	Reclaimed rubber - Coding and classification system		x			
ISO 2040:1972	Strontium chromate pigments for paints				x	
ISO 2068:1972	Barium chromate pigments for paints				x	
ISO 21068-1:2016	Chemical analysis of silicon-carbide-containing raw materials and refractory products - Part 1: General information and sample preparation	x			x	
ISO 21068-2:2008	Chemical analysis of silicon-carbide-containing raw materials and refractory products - Part 2: Determination of lost on ignition, total carbon, free carbon and silicon carbide, total and free silica and total and free silicon		x		x	
ISO 21068-3:2008	Chemical analysis of silicon-carbide-containing raw materials and refractory products - Part 3: Determination of nitrogen, oxygen and metallic and oxidic constituents		x		x	

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
ISO 2114:2000	Plastics (polyester resins) and paints and varnishes (binders) - Determination of partial acid value and total acid value				x	
ISO 2144:2015	Paper, board and pulps - Determination of residue (ash) on ignition at 900 °C				x	
ISO 21869:2006	Rubber compounding ingredients - Magnesium oxide - Methods of test	x			x	
ISO 21870:2005	Rubber compounding ingredients - Carbon black - Determination of high-temperature loss on heating by thermogravimetry				x	
ISO 22628:2002	Road vehicles - Recyclability and recoverability - Calculation method			x	x	
ISO 22628:2002	Road vehicles - Recyclability and recoverability - Calculation method			x	x	
ISO 22682:2017	Iron ores - Determination of trace elements - Plasma spectrometric method		x		x	
ISO 23900-1:2015	Pigments and extenders - Methods of dispersion and assessment of dispersibility in plastics - Part 1: General introduction		x			
ISO 23900-2:2015	Pigments and extenders - Methods of dispersion and assessment of dispersibility in plastics - Part 2: Determination of colouristic properties and ease of dispersion in plasticized polyvinyl chloride by two-roll milling		x			
ISO 23900-3:2015	Pigments and extenders - Methods of dispersion and assessment of dispersibility in plastics - Part 3: Determination of colouristic properties and ease of dispersion of black and colour pigments in polyethylene by two-roll milling		x			
ISO 23900-4:2015	Pigments and extenders - Methods of dispersion and assessment of dispersibility in plastics - Part 4: Determination of colouristic properties and ease of dispersion of white pigments in polyethylene by two-roll milling		x			
ISO 23900-5:2015	Pigments and extenders - Methods of dispersion and assessment of dispersibility in plastics - Part 5: Determination by filter pressure value test		x			
ISO 23900-6:2015	Pigments and extenders - Methods of dispersion and assessment of dispersibility in plastics - Part 6: Determination by film test		x			
ISO 24511	Activities relating to drinking water and wastewater services - Guidelines for the management of wastewater utilities and for the assessment of wastewater services					
ISO 24512	Activities relating to drinking water and wastewater services - Guidelines for the management of drinking water utilities and for the assessment of drinking water services					
ISO 2495:1995	Iron blue pigments - Specifications and methods of test					
ISO 2596:2006	Iron ores - Determination of hygroscopic moisture in analytical samples - Gravimetric, Karl Fischer and mass-loss methods		x		x	
ISO 2597-1:2006	Iron ores - Determination of total iron content - Part 1: Titrimetric method after tin(II) chloride reduction		x		x	
ISO 2597-2:2015	Iron ores - Determination of total iron content - Part 2: Titrimetric methods after titanium(III) chloride reduction		x		x	
ISO 2598-1:1992	Iron ores - Determination of silicon content - Part 1: Gravimetric methods		x		x	
ISO 2598-2:1992	Iron ores - Determination of silicon content - Part 2: Reduced molybdosilicate spectrophotometric method		x		x	

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
ISO 2599:2003	Iron ores - Determination of phosphorus content - Titrimetric method		x		x	
ISO 276:2002	Binders for paints and varnishes - Linseed stand oil - Requirements and methods of test	x	x	x		
ISO 277:2002	Binders for paints and varnishes - Raw tung oil - Requirements and methods of test	x	x	x		
ISO 28343:2010	Rubber compounding ingredients - Process oils - Determination of glass transition temperature by DSC		x	x		
ISO 28641:2010	Rubber compounding ingredients - Organic chemicals - General test methods	x	x	x		
ISO 30003:2009	Ships and marine technology - Ship recycling management systems - Requirements for bodies providing audit and certification of ship recycling management				x	
ISO 3082:2017	Iron ores - Sampling and sample preparation procedures					
ISO 3084:1998	Iron ores - Experimental methods for evaluation of quality variation		x			
ISO 3085:2002	Iron ores - Experimental methods for checking the precision of sampling, sample preparation and measurement					
ISO 3086:2006	Iron ores - Experimental methods for checking the bias of sampling					
ISO 3087:2011	Iron ores - Determination of the moisture content of a lot		x		x	
ISO 310:1992	Manganese ores and concentrates - Determination of hygroscopic moisture content in analytical samples - Gravimetric method		x		x	
ISO 312:1986	Manganese ores - Determination of active oxygen content, expressed as manganese dioxide - Titrimetric method		x		x	
ISO 315:1984	Manganese ores and concentrates - Determination of nickel content - Dimethylglyoxime spectrometric method and flame atomic absorption spectrometric method		x		x	
ISO 317:1984	Manganese ores and concentrates - Determination of arsenic content - Spectrometric method		x		x	
ISO 320:1981	Manganese ores - Determination of sulphur content - Barium sulphate gravimetric methods and sulphur dioxide titrimetric method after combustion		x		x	
ISO 3251:2008	Paints, varnishes and plastics - Determination of non-volatile-matter content		x	x		
ISO 3262-1:1997	Extenders for paints - Specifications and methods of test - Part 1: Introduction and general test methods					
ISO 3262-10:2000	Extenders for paints - Specifications and methods of test - Part 10: Natural talc/chlorite in lamellar form		x			
ISO 3262-11:2000	Extenders for paints - Specifications and methods of test - Part 11: Natural talc, in lamellar form, containing carbonates		x			
ISO 3262-12:2001	Extenders for paints - Specifications and methods of test - Part 12: Muscovite-type mica					
ISO 3262-13:1997	Extenders for paints - Specifications and methods of test - Part 13: Natural quartz (ground)	x	x			
ISO 3262-14:2000	Extenders for paints - Specifications and methods of test - Part 14: Cristobalite	x	x			
ISO 3262-15:2000	Extenders for paints - Specifications and methods of test - Part 15: Vitreous silica	x	x			
ISO 3262-16:2000	Extenders for paints - Specifications and methods of test - Part 16: Aluminium hydroxides	x	x			
ISO 3262-17:2000	Extenders for paints - Specifications and methods of test - Part 17: Precipitated calcium silicate	x	x			
ISO 3262-18:2000	Extenders for paints - Specifications and methods of test - Part 18: Precipitated sodium aluminium silicate	x				
ISO 3262-19:2000	Extenders for paints - Specifications and methods of test - Part 19: Precipitated silica	x	x			

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
ISO 3262-2:1998	Extenders for paints - Specifications and methods of test - Part 2: Barytes (natural barium sulfate)	x	x			
ISO 3262-20:2000	Extenders for paints - Specifications and methods of test - Part 20: Fumed silica	x	x			
ISO 3262-21:2000	Extenders for paints - Specifications and methods of test - Part 21: Silica sand (unground natural quartz)	x	x			
ISO 3262-22:2001	Extenders for paints - Specifications and methods of test - Part 22: Flux-calcined kieselguhr	x	x			
ISO 3262-3:1998	Extenders for paints - Specifications and methods of test - Part 3: Blanc fixe	x	x			
ISO 3262-4:1998	Extenders for paints - Specifications and methods of test - Part 4: Whiting	x	x			
ISO 3262-5:1998	Extenders for paints - Specifications and methods of test - Part 5: Natural crystalline calcium carbonate	x	x			
ISO 3262-6:1998	Extenders for paints - Specifications and methods of test - Part 6: Precipitated calcium carbonate	x	x			
ISO 3262-7:1998	Extenders for paints - Specifications and methods of test - Part 7: Dolomite	x	x			
ISO 3262-8:1999	Extenders for paints - Specifications and methods of test - Part 8: Natural clay	x	x			
ISO 3262-9:1997	Extenders for paints - Specifications and methods of test - Part 9: Calcined clay	x	x			
ISO 3270:1984	Paints and varnishes and their raw materials - Temperatures and humidities for conditioning and testing	x	x			
ISO 3271:2015	Iron ores for blast furnace and direct reduction feedstocks - Determination of the tumble and abrasion indices		x		x	
ISO 3549:1995	Zinc dust pigments for paints - Specifications and test methods					
ISO 3681:1996	Binders for paints and varnishes - Determination of saponification value - Titrimetric method		x		x	
ISO 3711:1990	Lead chromate pigments and lead chromate-molybdate pigments - Specifications and methods of test		x			
ISO 3852:2007	Iron ores for blast furnace and direct reduction feedstocks - Determination of bulk density				x	
ISO 38200	Chain of custody for wood and wood-based products					
ISO 3858:2008	Rubber compounding ingredients - Carbon black - Determination of light transmittance of toluene extract		x		x	
ISO 4293:1982	Manganese ores and concentrates - Determination of phosphorus content - Extraction-molybdovanadate photometric method		x		x	
ISO 4295:1988	Manganese ores and concentrates - Determination of aluminium content - Photometric and gravimetric methods		x		x	
ISO 4296-1:1984	Manganese ores - Sampling - Part 1: Increment sampling					
ISO 4296-2:1983	Manganese ores - Sampling - Part 2: Preparation of samples					
ISO 4297:1978	Manganese ores and concentrates - Methods of chemical analysis - General instructions				x	
ISO 4298:1984	Manganese ores and concentrates - Determination of manganese content - Potentiometric method		x		x	
ISO 4299:1989	Manganese ores - Determination of moisture content		x		x	
ISO 4571:1981	Manganese ores and concentrates - Determination of potassium and sodium content - Flame atomic emission spectrometric method		x		x	
ISO 4619:1998	Driers for paints and varnishes					
ISO 4620:1986	Cadmium pigments - Specifications and methods of test				x	
ISO 4621:1986	Chrome oxide green pigments - Specifications and methods of test				x	
ISO 4625-1:2004	Binders for paints and varnishes - Determination of softening point - Part 1: Ring-and-ball method				x	

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
ISO 4625-2:2004	Binders for paints and varnishes - Determination of softening point - Part 2: Cup-and-ball method				x	
ISO 4626:1980	Volatile organic liquids - Determination of boiling range of organic solvents used as raw materials	x		x		
ISO 4629-1:2016	Binders for paints and varnishes - Determination of hydroxyl value - Part 1: Titrimetric method without using a catalyst				x	
ISO 4629-2:2016	Binders for paints and varnishes - Determination of hydroxyl value - Part 2: Titrimetric method using a catalyst				x	
ISO 4630:2015	Clear liquids - Estimation of colour by the Gardner colour scale					
ISO 4652:2012	Rubber compounding ingredients - Carbon black - Determination of specific surface area by nitrogen adsorption methods - Single-point procedures				x	
ISO 4656:2012	Rubber compounding ingredients - Carbon black - Determination of oil absorption number (OAN) and oil absorption number of compressed sample (COAN)				x	
ISO 4687-1:1992	Iron ores - Determination of phosphorus content - Part 1: Molybdenum blue spectrophotometric method		x		x	
ISO 4688-1:2006	Iron ores - Determination of aluminium - Part 1: Flame atomic absorption spectrometric method		x		x	
ISO 4689:1986	Iron ores - Determination of sulfur content - Barium sulfate gravimetric method		x		x	
ISO 4689-2:2017	Iron ores - Determination of sulfur content - Part 2: Combustion/titration method		x		x	
ISO 4689-3:2017	Iron ores - Determination of sulfur content - Part 3: Combustion/infrared method		x		x	
ISO 4691:2009	Iron ores - Determination of titanium - Diantiprylmethane spectrophotometric method		x		x	
ISO 4694:1987	Iron ores - Determination of fluorine content - Ion-selective electrode method		x		x	
ISO 4695:2015	Iron ores for blast furnace feedstocks - Determination of the reducibility by the rate of reduction index		x		x	
ISO 4696-1:2015	Iron ores for blast furnace feedstocks - Determination of low-temperature reduction-disintegration indices by static method - Part 1: Reduction with CO, CO ₂ , H ₂ and N ₂		x		x	
ISO 4696-2:2015	Iron ores for blast furnace feedstocks - Determination of low-temperature reduction-disintegration indices by static method - Part 2: Reduction with CO and N ₂		x		x	
ISO 4698:2007	Iron ore pellets for blast furnace feedstocks - Determination of the free-swelling index		x		x	
ISO 4700:2015	Iron ore pellets for blast furnace and direct reduction feedstocks - Determination of the crushing strength		x		x	
ISO 4701:2008	Iron ores and direct reduced iron - Determination of size distribution by sieving		x		x	
ISO 473:1982	Lithopone pigments for paints - Specifications and methods of test					
ISO 510:1977	Red lead for paints					
ISO 5416:2006	Direct reduced iron - Determination of metallic iron - Bromine-methanol titrimetric method		x		x	
ISO 5418-1:2006	Iron ores - Determination of copper - Part 1: 2,2'-Biquinolyl spectrophotometric method		x		x	
ISO 5418-2:2006	Iron ores - Determination of copper - Part 2: Flame atomic absorption spectrometric method		x		x	

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
ISO 5435:2008	Rubber compounding ingredients - Carbon black - Determination of tinting strength		x		x	
ISO 548:1981	Manganese ores - Determination of barium oxide content - Barium sulphate gravimetric method		x		x	
ISO 549:1981	Manganese ores - Determination of combined water content - Gravimetric method		x		x	
ISO 5794-1:2010	Rubber compounding ingredients - Silica, precipitated, hydrated - Part 1: Non-rubber tests		x		x	
ISO 5794-2:2014	Rubber compounding ingredients - Silica, precipitated, hydrated - Part 2: Evaluation procedures in styrene-butadiene rubber		x		x	
ISO 5794-3:2011	Rubber compounding ingredients - Silica, precipitated, hydrated - Part 3: Evaluation procedures in a blend of solution styrene-butadiene rubber (S-SBR) and butadiene rubber (BR)		x		x	
ISO 5796:2000	Rubber compounding ingredients - Natural calcium carbonate - Test methods				x	
ISO 5889:1983	Manganese ores and concentrates - Determination of aluminium, copper, lead and zinc contents - Flame atomic absorption spectrometric method		x		x	
ISO 5890:1981	Manganese ores and concentrates - Determination of silicon content - Gravimetric method		x		x	
ISO 591-1:2000	Titanium dioxide pigments for paints - Part 1: Specifications and methods of test		x		x	
ISO 5975:1983	Chromium ores - Determination of calcium and magnesium contents - EDTA titrimetric method		x		x	
ISO 5997:1984	Chromium ores and concentrates - Determination of silicon content - Molecular absorption spectrometric method and gravimetric method		x		x	
ISO 6127:1981	Chromium ores - Determination of phosphorus content - Reduced molybdophosphate photometric method		x		x	
ISO 6129:1981	Chromium ores - Determination of hygroscopic moisture content in analytical samples - Gravimetric method		x		x	
ISO 6130:1985	Chromium ores - Determination of total iron content - Titrimetric method after reduction		x		x	
ISO 6139:1993	Aluminium ores - Experimental determination of the heterogeneity of distribution of a lot				x	
ISO 6153:1989	Chromium ores - Increment sampling					
ISO 6154:1989	Chromium ores - Preparation of samples					
ISO 619:1981	Manganese ores - Determination of chromium content - Diphenylcarbazine photometric method and silver persulphate titrimetric method		x		x	
ISO 6209:2009	Rubber compounding ingredients - Carbon black - Determination of solvent-extractable material		x		x	
ISO 6230:1989	Manganese ores - Determination of size distribution by sieving				x	
ISO 6233:1983	Manganese ores and concentrates - Determination of calcium and magnesium contents - EDTA titrimetric method		x		x	
ISO 6271:2015	Clear liquids - Estimation of colour by the platinum-cobalt colour scale					
ISO 6331:1983	Chromium ores and concentrates - Determination of chromium content - Titrimetric method		x		x	
ISO 6472:2017	Rubber compounding ingredients - Abbreviated terms				x	
ISO 6629:1981	Chromium ores and concentrates - Methods of chemical analysis - General instructions					
ISO 6744-1:1999	Binders for paints and varnishes - Alkyd resins - Part 1: General methods of test					
ISO 6744-2:1999	Binders for paints and varnishes - Alkyd resins - Part 2: Determination of phthalic anhydride content					

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
ISO 6744-3:1999	Binders for paints and varnishes - Alkyd resins - Part 3: Determination of unsaponifiable matter content					
ISO 6744-4:1999	Binders for paints and varnishes - Alkyd resins - Part 4: Determination of fatty acid content					
ISO 6745:1990	Zinc phosphate pigments for paints - Specifications and methods of test					
ISO 6830:1986	Iron ores - Determination of aluminium content - EDTA titrimetric method		x		x	
ISO 7142:2007	Binders for paints and varnishes - Epoxy resins - General methods of test				x	
ISO 7143:2007	Binders for paints and varnishes - Methods of test for characterizing water-based binders					
ISO 7215:2015	Iron ores for blast furnace feedstocks - Determination of the reducibility by the final degree of reduction index					
ISO 7335:1987	Iron ores - Determination of combined water content - Karl Fischer titrimetric method					
ISO 7579:2009	Dyestuffs - Determination of solubility in organic solvents - Gravimetric and photometric methods				x	
ISO 7723:1984	Manganese ores and concentrates - Determination of titanium content - 4,4'-Diantiprylmethane spectrometric method		x		x	
ISO 7764:2006	Iron ores - Preparation of predried test samples for chemical analysis					
ISO 7834:1987	Iron ores - Determination of arsenic content - Molybdenum blue spectrophotometric method		x		x	
ISO 787-1:1982	General methods of test for pigments and extenders - Part 1: Comparison of colour of pigments					
ISO 787-10:1993	General methods of test for pigments and extenders - Part 10: Determination of density - Pycnometer method					
ISO 787-11:1981	General methods of test for pigments and extenders - Part 11: Determination of tamped volume and apparent density after tamping					
ISO 787-13:2002	General methods of test for pigments and extenders - Part 13: Determination of water-soluble sulfates, chlorides and nitrates		x			
ISO 787-14:2002	General methods of test for pigments and extenders - Part 14: Determination of resistivity of aqueous extract					
ISO 787-15:1986	General methods of test for pigments and extenders - Part 15: Comparison of resistance to light of coloured pigments of similar types					
ISO 787-16:1986	General methods of test for pigments and extenders - Part 16: Determination of relative tinting strength (or equivalent colouring value) and colour on reduction of coloured pigments - Visual comparison method					
ISO 787-17:2002	General methods of test for pigments and extenders - Part 17: Comparison of lightening power of white pigments		x			
ISO 787-18:1983	General methods of test for pigments and extenders - Part 18: Determination of residue on sieve - Mechanical flushing procedure					
ISO 787-19:1974	General methods of test for pigments - Part 19: Determination of water-soluble nitrates (Salicylic acid method)		x			
ISO 787-2:1981	General methods of test for pigments and extenders - Part 2: Determination of matter volatile at 105 degrees C					
ISO 787-21:1979	General methods of test for pigments and extenders - Part 21: Comparison of heat stability of pigments using a stoving medium					

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
ISO 787-22:1980	General methods of test for pigments and extenders - Part 22: Comparison of resistance to bleeding of pigments					
ISO 787-23:1979	General methods of test for pigments and extenders - Part 23: Determination of density (using a centrifuge to remove entrained air)					
ISO 787-24:1985	General methods of test for pigments and extenders - Part 24: Determination of relative tinting strength of coloured pigments and relative scattering power of white pigments - Photometric methods					
ISO 787-25:1993	General methods of test for pigments and extenders - Part 25: Comparison of the colour, in full-shade systems, of white, black and coloured pigments - Colorimetric method					
ISO 787-3:2000	General methods of test for pigments and extenders - Part 3: Determination of matter soluble in water - Hot extraction method					
ISO 787-4:1981	General methods of test for pigments and extenders - Part 4: Determination of acidity or alkalinity of the aqueous extract					
ISO 787-5:1980	General methods of test for pigments and extenders - Part 5: Determination of oil absorption value					
ISO 787-7:2009	General methods of test for pigments and extenders - Part 7: Determination of residue on sieve - Water method - Manual procedure					
ISO 787-8:2000	General methods of test for pigments and extenders - Part 8: Determination of matter soluble in water - Cold extraction method					
ISO 787-9:1981	General methods of test for pigments and extenders - Part 9: Determination of pH value of an aqueous suspension					
ISO 788:1974	Ultramarine pigments for paints					
ISO 7953:1985	Manganese ores and concentrates - Determination of calcium and magnesium contents - Flame atomic absorption spectrometric method		x		x	
ISO 7969:1985	Manganese ores and concentrates - Determination of sodium and potassium contents - Flame atomic absorption spectrometric method		x		x	
ISO 7990:1985	Manganese ores and concentrates - Determination of total iron content - Titrimetric method after reduction and sulfosalicylic acid spectrophotometric method		x		x	
ISO 7992:2015	Iron ores for blast furnace feedstocks - Determination of reduction under load					
ISO 8263:1992	Iron ore fines - Method for presentation of the results of sintering tests					
ISO 8312:2015	Rubber compounding ingredients - Stearic acid - Definition and test methods					
ISO 8332:2011	Rubber compounding ingredients - Sulfur - Methods of test					
ISO 8371:2015	Iron ores for blast furnace feedstocks - Determination of the decrepitation index					
ISO 8511:2011	Rubber compounding ingredients - Carbon black - Determination of pellet size distribution					
ISO 8530:1986	Manganese and chromium ores - Experimental methods for checking the precision of sample division					
ISO 8531:1986	Manganese and chromium ores - Experimental methods for checking the precision of moisture determination					

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
ISO 8541:1986	Manganese and chromium ores - Experimental methods for checking the bias of sampling and sample preparation					
ISO 8542:1986	Manganese and chromium ores - Experimental methods for evaluation of quality variation and methods for checking the precision of sampling					
ISO 8623:2015	Tall-oil fatty acids for paints and varnishes - Test methods and characteristic values			x		
ISO 8685:1992	Aluminium ores - Sampling procedures					
ISO 8780-1:1990	Pigments and extenders - Methods of dispersion for assessment of dispersion characteristics - Part 1: Introduction					
ISO 8780-2:1990	Pigments and extenders - Methods of dispersion for assessment of dispersion characteristics - Part 2: Dispersion using an oscillatory shaking machine					
ISO 8780-3:1990	Pigments and extenders - Methods of dispersion for assessment of dispersion characteristics - Part 3: Dispersion using a high-speed impeller mill					
ISO 8780-4:1990	Pigments and extenders - Methods of dispersion for assessment of dispersion characteristics - Part 4: Dispersion using a bead mill					
ISO 8780-5:1990	Pigments and extenders - Methods of dispersion for assessment of dispersion characteristics - Part 5: Dispersion using an automatic muller					
ISO 8780-6:1990	Pigments and extenders - Methods of dispersion for assessment of dispersion characteristics - Part 6: Dispersion using a triple-roll mill					
ISO 8781-1:1990	Pigments and extenders - Methods of assessment of dispersion characteristics - Part 1: Assessment from the change in tinting strength of coloured pigments					
ISO 8781-2:1990	Pigments and extenders - Methods of assessment of dispersion characteristics - Part 2: Assessment from the change in fineness of grind					
ISO 8781-3:1990	Pigments and extenders - Methods of assessment of dispersion characteristics - Part 3: Assessment from the change in gloss					
ISO 8889:1988	Chromium ores and concentrates - Determination of aluminium content - Complexometric method		x		x	
ISO 8942:2010	Rubber compounding ingredients - Carbon black - Determination of individual pellet crushing strength					
ISO 9033:1989	Aluminium ores - Determination of the moisture content of bulk material		x			
ISO 9035:1989	Iron ores - Determination of acid-soluble iron(II) content - Titrimetric method		x		x	
ISO 9208:1989	Aluminium ores - Determination of vanadium content - BPHA spectrophotometric method		x		x	
ISO 9235:2013	Aromatic natural raw materials - Vocabulary	x				
ISO 9292:1988	Manganese ores and concentrates - Determination of total iron content - 1,10-Phenanthroline spectrometric method		x		x	
ISO 9298:2017	Rubber compounding ingredients - Zinc oxide - Test methods	x				
ISO 9516-1:2003	Iron ores - Determination of various elements by X-ray fluorescence spectrometry - Part 1: Comprehensive procedure				x	

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
ISO 9517:2007	Iron ores - Determination of water-soluble chloride - Ion-selective electrode method		x		x	
ISO 9599:2015	Copper, lead, zinc and nickel sulfide concentrates - Determination of hygroscopic moisture content of the analysis sample - Gravimetric method					
ISO 9681:1990	Manganese ores and concentrates - Determination of iron content - Flame atomic absorption spectrometric method		x		x	
ISO 9682-1:2009	Iron ores - Determination of manganese content - Part 1: Flame atomic absorption spectrometric method		x		x	
ISO 9682-2:2006	Iron ores - Determination of manganese content - Part 2: Periodate spectrophotometric method		x		x	
ISO 9683-1:2006	Iron ores - Determination of vanadium - Part 1: BPHA spectrophotometric method		x		x	
ISO 9683-2:2009	Iron ores - Determination of vanadium - Part 2: Flame atomic absorption spectrometric methods		x		x	
ISO 9685:1991	Iron ores - Determination of nickel and/or chromium contents - Flame atomic absorption spectrometric method		x		x	
ISO 9686:2006	Direct reduced iron - Determination of carbon and/or sulfur - High-frequency combustion method with infrared measurement		x		x	
ISO 9873	Dental hand instruments - Reusable mirrors and handles				x	
ISO/AWI 12742 [Under development]	Copper, lead, and zinc sulfide concentrates - Determination of transportable moisture limits - Flow-table method					
ISO/AWI 19745	Determination of Crude (Free) water content of Ammoniated Phosphate products (DAP, MAP) by gravimetric vacuum oven at 50 °C					
ISO/AWI 22451	Rare earth - Elements recycling - Measurement method of rare earth elements in by-products and industrial wastes	x			x	
ISO/AWI 22453	Rare earth - Elements recycling - Method for the exchange of information of rare earth elements in by-products and industrial wastes				x	
ISO/CD 18473-3 [Under development]	Functional pigments and extenders for special applications - Part 3: Fumed silica for silicone rubber application					
ISO/CD 20927 [Under development]	Rubber compounding ingredients - Precipitated silica - Determination of aggregate size distribution by using a disc centrifuge					
ISO/CD 3858 [Under development]	Rubber compounding ingredients - Carbon black - Determination of light transmittance of toluene extract					
ISO/CD 5435 [Under development]	Rubber compounding ingredients - Carbon black - Determination of tinting strength					
ISO/CD 787-28 [Under development]	General methods of test for pigments and extenders - Part 28: Determination of total content of polychlorinated biphenyls in organic pigments by dissolution, cleanup and GC/MS	x	x			
ISO/CD 8332 [Under development]	Rubber compounding ingredients - Sulfur - Methods of test					
ISO/DIS 10638 [Under development]	Rubber - Identification of antidegradants by gas chromatography/mass spectrometry					
ISO/DIS 12743 [Under development]	Copper, lead, zinc and nickel concentrates - Sampling procedures for determination of metal and moisture content					
ISO/DIS 21283	Iron ores - Determination of specific surface area - Test method using air-permeability apparatus (Blaine)					
ISO/DIS 28641 [Under development]	Rubber compounding ingredients - Organic chemicals - General test methods	x			x	
ISO/DIS 4619 [Under development]	Driers for paints and varnishes				x	

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
ISO/DIS 4701	Iron ores and direct reduced iron - Determination of size distribution by sieving					
ISO/FDIS 21533	Dentistry - Reusable cartridge syringes intended for intraligamentary injections					
ISO/NP 19388	Sludge recovery, recycling, treatment and disposal -- Guidelines for the operation of Anaerobic digestion facilities		x			
ISO/TR 11422:1996	Iron ores - Recommended procedures for iron ore dissolution using either acid digestion or alkali fusion					
ISO/TR 14047:2012	Environmental management - Life cycle assessment - Illustrative examples on how to apply ISO 14044 to impact assessment situations					
ISO/TR 14049:2012	Environmental management - Life cycle assessment - Illustrative examples on how to apply ISO 14044 to goal and scope definition and inventory analysis					
ISO/TR 14062:2002	Environmental management - Integrating environmental aspects into product design and development		x			
ISO/TR 15855:2001	Copper, lead and zinc sulfide concentrates - Step-by-step procedure for the testing of static scales					
ISO/TR 16043:2015	Iron ores - Determination of chlorine content - X-ray fluorescence spectrometric method		x		x	
ISO/TR 16098:2012	Reclaimed rubbers and reclaimed crumb rubbers - Evaluation of dispersion in rubber mixes	x				
ISO/TR 16218:2013	Packaging and the environment - Processes for chemical recovery	x		x	x	
ISO/TR 16879	Iron ores - Determination of various elements - X-ray fluorescence spectrometric method using pressed powders		x			
ISO/TR 18230:2015	Iron ores - Determination of loss on ignition - Non-oxidised ores					
ISO/TR 18231:2016	Iron ores - Wavelength dispersive X-ray fluorescence spectrometers - Determination of precision					
ISO/TR 18336:2016	Guidelines for good XRF laboratory practice for the iron ore industry					
ISO/TR 21275:2017	Rubber - Comprehensive review of the composition and nature of process fumes in the rubber industry		x			
ISO/TR 4688-1:2017	Iron ores - Determination of aluminium - Part 1: Flame atomic absorption spectrometric method		x			
ISO/TR 9686:2017	Direct reduced iron - Determination of carbon and/or sulfur - High-frequency combustion method with infrared measurement		x			
ISO/TS 12720:2014	Sustainability in building and civil engineering works - Guidelines for the application of the general principles in ISO 15392	x	x	x		
ISO/TS 14067:2013	Greenhouse gases - Carbon footprint of products - Requirements and guidelines for quantification and communication		x	x	x	
ISO/TS 16095:2014	Reclaimed rubber derived from products containing mainly natural rubber - Evaluation procedure					
ISO/TS 16096:2014	Reclaimed isobutene-isoprene (IIR) rubber - Evaluation procedure		x			
ISO/TS 16176:2011	Rubber compounding ingredients - Carbon black - Determination of the aggregate-size distribution at ultimate dispersion					
ISO/WD 2597-4 [Under development]	Iron ores - Determination of total iron content - Part 4: Potentiometric titration method		x		x	
ISO/WD 3085 [Under development]	Iron ores - Experimental methods for checking the precision of sampling, sample preparation and measurement					
ISO/WD 3087 [Under development]	Iron ores - Determination of the moisture content of a lot					
ISO/WD 4689-1 [Under development]	Iron ores - Determination of sulfur content - Part 1: Barium sulfate gravimetric method		x		x	

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
ITU-T L.1100	Procedure for recycling rare metals in information and communication technology goods	x			x	x
IWA 19:2017	Guidance principles for the sustainable management of secondary metals	x	x		x	
JEITA ETR-7011	Guide for Reusable and/or Recyclable mark on containers and packaging for electronic components				x	x
JIS A 8706-1	Crawler type recycle machine of construction wastes - Safety - Part 1: Requirements for mobile crushers					
JIS A 8706-2	Crawler type recycle machine of construction waste - Safety - Part 2: Requirements for mobile wood crushers with drum type cutter					
JIS C 5750-4-1	Dependability management - Part 4-1: Application guide - Dependability of products containing reused parts - Requirements for functionality and test				x	
JIS C 9911	Calculation and display methods of recycled and reuse indicator of electric or electronic equipment				x	
JIS H 2109	Classification standard of copper and copper alloy recycle materials				x	x
JIS R 5214	Ecocement	x	x	x	x	
JIS Z 1641	Requirement for steel drum reprocessing				x	
JIS Z 7120	Plastics - Guideline for the application of Mobius loop to plastic products				x	
JIS Z 7121	Methods of life cycle inventory studies on plastics including recycling stages		x		x	
Joint Ordinance IBAMA/INMETRO nº 1 de 29/03/2010	Principles of Good Laboratory Practice - BPL					
Joint Ordinance IBAMA/INMETRO nº 2 de 16/12/2010	Single classification resulting from the union of the environmental indicators that compose the Green Note of the Brazilian Institute of Environment and Renewable Natural Resources -IBAMA					
JS 13430	Packaging - Requirements for packaging recoverable by material recycling	x			x	
JS 1443	Environmental management - Life cycle assessment		x		x	
JS 1449	Environmental management - Life cycle assessment - Examples of applications of JS 1502 to goal and scope definition and inventory analysis					
JS 1502	Environmental management - Life cycle assessment - Goal and scope definition and inventory analysis		x			
JS 1503	Environmental management - Life cycle assessment - Life cycle impact assessment		x			
JWG10, PT5, M/543	General method for assessing the proportion of recycled material content in an energy related products			x	x	
JWG10, PT6, M/543	General method for assessing the ability to recycle critical raw materials from products			x	x	
JWG10, PT6, M/543	General method to declare the use of critical raw materials in energy related products				x	
Law Nº 12305, dated 02/08/2010	Establishes the National Policy of Solid Waste, amends the Law No 9.605, dated February 12, 1998; and provides other directives					
Law Nº 12651 dated 25/05/2012	Disposes on the protection of native vegetation					
LES 2021	Guideline of recyclable percentage calculation for small general purpose SI engines				x	
LST CR 1460:2005	Packaging - Energy recovery from used packaging				x	
NATRUE	NATRUE- Label Criteria Standard	x			x	
NF A08-821	Non-alloy carbon ferrous scrap categories and related specifications		x		x	

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
NF A08-822	Test method for the characterization of scrap on a concrete surface	x			x	
NF P15-900-3	Local public services - Guidelines for service activities relating to drinking water supply and sewerage - Part 3 : management of waste water treatment					
NF P18-545	Aggregates - defining elements, conformity and coding	x				
NF P40-202*NF DTU 60.11	Building works - Calculation rules for sanitary installations and rainwater draining off - Part 1-1 : cold and warm sanitary networks - Part 1-2 : design and calculation for looped networks - Part 2 : waste and black water draining - Part 3 : rain water draining					
NF Q01-007	Paper and board - Nomenclature for the names relating to fibre composition	x				
NF T50-700	Plastics - Rotomoulding - Characterisation of polyolefins for rotomoulding and general specifications of rotomoulded parts					
NF U44-051 COMPIL	Organic soil improvers - Designations, specifications and marking			x		
NF U44-051/A1	Organic soil improvers - Designations, specifications and marking	x		x		
NF U44-095/A1	Organic soil improvers - Composts containing substances essential to agricultural, stanning from water treatment	x	x	x	x	
NF U44-164	Organic soil improvers and growing media - Analytical method for inert components - Bleach washing method	x		x		
NF V05-113	Fruits, vegetables and derived products - Mineralization of organic substances by incineration	x			x	
NF X30-408	Household waste - Characterization method - Bulk product analysis				x	
NF X30-413	Waste - Constitution of a sample of household waste contained in a waste collection vehicle					
NF X30-432	Waste - Steels stemming from sorting of domestic and related waste - Methods for assessing the bulk density and cohesion of batch-packaged steels and for assessing the magnetic metal content of bulk steels prior to packaging					
NF X30-437	Household and related refuse - Constitution and characterisation, on entering sorting centres of a sample out of a batch of selectively collected household and related refuse					
NF X30-445	Household and related waste - Constitution of a sample of bulk household and related waste					
NF X30-466	Household and related refuse - Characterisation method - Dry product analysis					
NF X30-472	Household and related waste - Characterisation of sorting rejects					
NF X30-474	Household and related refuse - Forming and characterisation of a spot sample taken from a skip containing selectively collected household and related refuse					
NF X31-211	Characterization of waste - Leaching test of a solid waste material initially massive or generated by a solidification process				x	X
NF X31-211	Characterization of waste - Leaching test of a solid waste material initially massive or generated by a solidification process				x	X
NF X31-212	Characterization of waste - Determination of the massive solid characteristic				x	X
NF X35-702	Safety of machinery - Ergonomic principles for the design of of sorting cabins intended for the manual sorting of recyclable and dry household and similar waste originating from selective collection					X
NFX 31 212:2011	Characterization of waste - Determination of the massive solid characteristic				x	X
NTA 8080:2015	Sustainability criteria for biomass for energy purposes and biobased products – Part 1: Sustainability requirements					

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
OECD 301A	Biodegradation Test – DOC			x	x	
OECD 301B	Biodegradation Test – CO2 Evolution			x	x	
OECD 301D	Biodegradation Closed Bottle Test			x	x	
OECD 301E	Biodegradation Modified OECD Screening				x	
OECD 301F	Biodegradation Manometric Respirometry				x	
OECD 306	Biodegradability in Seawater				x	X
OECD 307	Aerobic and Anaerobic Transformation in Soil				x	
OECD 310	Ready Biodegradability - CO2 in sealed vessels (Headspace Test)				x	
ONORM S 2006	Recycling of waste and existing substances - Definitions and methods				x	
ONORM S 2026-1	Recovered fuels from wastes - Part 1: Concepts for solid and liquid fuels	x				
ONORM S 2026-2	Recovered fuels from wastes - Part 2: Quality characteristics and analysis methods for solid and liquid fuels	x	x		x	
ONORM S 2080-1	Quality requirements for secondary raw materials - Part 1: Paper	x			x	
ONORM S 2201	Organic waste - Quality requirements	x			x	
ONR 2914520	Packaging - Reuse - Methods for assessing the performance of a reuse system (CEN/TR 14520)				x	
Ordinance INMETRO nº 470 de 08/12/2011						
PAS 101:2003	Recovered container glass - Specification for quality and guidance for good practice in collection				x	
PAS 103:2004	Collected waste plastics packaging - Specification for quality and guidance for good practice in collection and preparation for recycling				x	
PAS 104:2004	Wood recycling in the panelboard manufacturing industry - Specification for quality and guidance for good practice for the supply of post consumer wood for consumption in the manufacture of panelboard products				x	
PAS 1049	Transmission of recycling relevant product information between producers and recyclers - The recycling passport				x	
PAS 141:2011	Reuse of used and waste electrical and electronic equipment (UEEE and WEEE) - Process management - Specification				x	
PAS 402:2013	Waste resource management - Specification for performance reporting					
PD 6607:1996*CR 12340:1996	Packaging - Recommendations for conducting life-cycle inventory analysis of packaging systems		x		x	
PEFC Annex 1	Terms and definitions				x	
PEFC ST 1003:2010	Sustainable Forest Management				x	
PEFC ST 2002:2013	Chain of Custody of Forest Based Products - Requirements			x	x	
prCEN/TR 16xxx	Bio-based products — Examples of reporting on sustainability criteria			x	x	
prCEN/TR 16xxx	Bio-based products — Examples of reporting on sustainability criteria				x	
prEN 14243-4	Materials obtained from end of life tyres - Part 4: Steel wires and textile fibres - Methods for their characterization	x			x	
prEN 17033:2016	Plastics - Biodegradable mulch films for use in agriculture and horticulture - Requirements and test methods			x	x	
prEN 45550	Definitions related to material efficiency				x	
prEN 45551	Guide on how to use generic material efficiency standards when writing energy related product specific standardization deliverables				x	
prEN 45552	General method for the assessment of the durability of energy-related products.				x	
prEN 45553	General method for the assessment of the ability to re-manufacture energy related products				x	
prEN 45554	General methods for the assessment of the ability to repair, reuse and upgrade energy related products				x	

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
prEN 45555	General methods for assessing the recyclability and recoverability of energy related products				x	
prEN 45556	General method for assessing the proportion of re-used components in energy-related products				x	
prEN 45557	General method for assessing the proportion of recycled material content in energy related products				x	
prEN 45558	General method to declare the use of critical raw materials in energy related products				x	
prEN 45559	Methods for providing information relating to material efficiency aspects of energy-related products				x	
Project	Harmonization of environmental criteria				x	
RAL-GZ 728	Quality assurance and test specifications for the demanufacture of refrigeration equipment					
RAL-UZ 14	Basic Criteria for Award of the Environmental Label - Recycled Paper	x	x	x	x	
RAL-UZ 30a	Basic Criteria for Award of the Environmental Label - Products made from Recycled Plastics		x	x	x	
RAL-UZ 35	Basic Criteria for Award of the Environmental Label - Wallpapers and Woodchip Wall Coverings primarily made of Recycled Paper		x	x	x	
RAL-UZ 55	Basic Criteria for Award of the Environmental Label - Recycled Printing Modules Refilled with Toner		x	x	x	
RAL-UZ 56	Basic Criteria for Award of the Environmental Label - Recycled Cardboard		x	x	x	
RBS Global Standard	RSB Principles & Criteria	x		x	x	
RBS Global Standard	RSB GHG Calculation Methodology	x	x	x	x	
Resolution CONAMA nº 313, dated 29 de outubro de 2002	Addresses the National Inventory of Industrial Solid Waste	x				
Resolution CONAMA nº 448 dated 18/01/2012	Establishes guidelines, criteria and procedures for managing waste generated by buildings					
Resolution CONAMA nº 450 dated 06/03/2012 and Resolution CONAMA nº 362 dated 23/06/2005	Provides the rules of collection de gathering, collection and final disposal of lubricating oil used or contaminated					
Resolution CONAMA Nº 452 dated 02/07/2012	Provides procedures for control the import of waste, according to the standards adopted by the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Deposit					
Responsible Care			x	x	x	
Roundtable on Sustainable Biomaterials (RSB)	RSB Standard for Certification of Bio-Products	x	x	x	x	
PEFCRSB Standard	RSB Low iLUC Risk Biomass Criteria and Compliance Indicators	x	x		x	
SAE AIR 5277A	Aerospace Fluid Power Waste Reduction Practices for Used Phosphate Ester Aviation Hydraulic Fluid					
SAE ARP 1967A	Containers, Shipping and Storage, Reusable				x	
SAE AS 22074	Circuit Breaker, Recycling, Trip-Free, Push-Pull, 1/2 Thru 5 Ampere, Type I				x	
SAE AS 6055	Drum, Metal Reusable, Shipping and Storage				x	
SAE J 1990	Recovery and Recycle Equipment for Mobile Automotive Air-Conditioning Systems				x	
SANS 30002:2012	Ships and marine technology - Ship recycling management systems - Guidelines for selection of ship recyclers (and pro forma contract)				x	
SANS 30006:2012	Ship recycling management systems - Diagrams to show the location of hazardous materials onboard ships					
SANS 30007:2012	Ships and marine technology - Measures to prevent asbestos emission and exposure during ship recycling				x	
SFS 2691	Pipes for waste water - Reducers					
SFS 3783:1980	Sulphuric acid for industrial use - Determination of iron and lead contents - AAS-method		x			
SFS 3784:1980	Sulphuric acid for industrial use - Determination of nitrate content - Colorimetric method		x			

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
SFS 3785:1980	Sulphuric acid for industrial use - Determination of permanganate index		x			
SFS 3786:1981	Liquefied sulphur dioxide for industrial use - Sampling					
SFS 3787:1981	Liquefied sulphur dioxide for industrial use - Determination of sulphuric acid content and evaporation residue		x			
SFS 3788:1981	Liquefied sulphur dioxide for industrial use - Determination of water - Karl Fischer method		x			
SFS 3923:1988	Sodium and potassium silicates for industrial use - Determination of silica oxide - Titrimetric method		x			
SFS 3924:1988	Sodium and potassium silicates for industrial use - Determination of total alkalinity - Titrimetric method		x			
SFS 4468:1980	Sulphuric acid for industrial use - Sampling					
SFS 4469:1980	Sulphuric acid and oleum for industrial use - Determination of total acidity and calculation of sulphur trioxide content of oleum		x			
SFS 4470:1980	Sulphuric acid and oleum for industrial use - Determination of sulphur oxide - Iodometric method		x			
SFS 4742:1982	Sodium sulphate for industrial use - Sampling					
SFS 4743:1981	Sodium sulphate for industrial use - Determination of loss in mass at 110 °C					
SFS 4744:1981	Sodium sulphate for industrial use - Determination of water-insoluble matter - Gravimetric method		x			
SFS 4745:1981	Sodium sulphate for industrial use - Determination of acid-insoluble matter - Gravimetric method		x			
SFS 4746:1981	Sodium sulphate for industrial use - Determination of acidity and alkalinity		x			
SFS 4747:1981	Sodium sulphate for industrial use - Determination of chloride content - Mercurimetric method		x			
SFS 4850:1982	Aluminium sulphate for industrial use - Sampling					
SFS 4851:1982	Aluminium sulphate for industrial use - Determination of acidity and alkalinity		x			
SFS 4852:1982	Aluminium sulphate for industrial use - Determination of iron content - AAS-method			x		
SFS 4853:1982	Aluminium sulphate for industrial use - Determination of aluminium - Titrimetric method			x		
SFS 4859:1982	Aluminium sulphate for industrial use - Determination of loss in mass at 425 °C					
SFS 4866:1987	Hydrogen peroxide for industrial use - Sampling					
SFS 4867:1987	Hydrogen peroxide for industrial use - Determination of hydrogen peroxide - Titrimetric method		x			
SFS 4868:1987	Hydrogen peroxide for industrial use - Determination of apparent acidity - Titrimetric method		x			
SFS 4869:1987	Hydrogen peroxide for industrial use - Determination of chloride and sulphate contents - Turbidimetric methods		x			
SFS 4870:1987	Hydrogen peroxide for industrial use - Determination of decay rate at 96 °C in 16 hours					
SPCR 141	Small Scale Composting- SP Technical Research Institute of Sweden			x		
STN 83 8106	Waste disposal - Sealing of the landfills - Design, construction, control and technical requirements					
STP1477	Biofuels			x	x	
STP1540	Testing and Specification of Recycled Materials for Sustainable Geotechnical Construction				x	
STP1566	Geopolymer Binder Systems			x	x	
STP1575	Environmentally Considerate Lubricants			x	x	
Sustainable Biomass Programme S1	Feedstock compliance Standard	x			x	
Sustainable Biomass Programme S2	Verification of Sbp compliant Feedstock	x			x	
Sustainable Biomass Programme S6	Energy and carbon balance calculation	x	x		x	
Sustainable Forestry Initiative	SFI 2015-2019 Fiber Sourcing	x			x	

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Sustainable Industry Classification System™ (SICS™) #RR0101	BIOFUELS Sustainability Accounting Standard	x	x		x	
Sustainable Industry Classification System™ (SICS™) #RR0201	FORESTRY & LOGGING Sustainability Accounting Standard	x	x		x	
Sustainable Rubber Initiative- HoD/SNR-i/22-05	Sustainable Natural Rubber Initiative's Criteria and Performance Indicators		x		x	
T51-808*AC T51-808	Plastics - Assessment of oxobiodegradability of polyolefinic materials in the form of films - Methodology and requirements -		x		x	
TS 13318	Authorized services for medical waste elimination devices - Rules					
UL 2778	Products made from recycled plastic			x	x	
UL 2789	Environmental Claim Validation Procedure for Calculation of Estimated Recyclability Rate			x	x	
UL 2809	Environmental Claim Validation Procedures for Recycled Content			x	x	
UNE 156000:1998	Paper envelopes - Ecological criteria		x	x	x	
UNE 53969:1997	Plastics - Polyethylene (PE) waste collection bags - Life cycle assessment		x	x	x	
UNE 53970:1996	Plastics - Polyethylene (PE) bags type shirts - Ecological criteria		x	x	x	
UNE 53971:1996	Plastics - Waste collection bags in polyethylene (PE) - Ecological criteria		x	x	x	
UNE 7145:1959	Hot extraction of asphaltic materials and bitume recovery					
UNI 10667-1:2010	Plastic raw-secondary materials - Part 1: General	x	x		x	
UNI 10667-10:2011	Plastic raw-secondary materials - Polystyrene for general purposes, from the recycling of industrial residues and/or from pre and/or post-consumer materials - Part 10: Requirements and test methods	x			x	
UNI 10667-11:2009	Recycled plastic materials - Polyethylene and ethylene copolymers from agricultural and horticultural films to be used for different purposes - Requirements and test methods	x			x	
UNI 10667-12:2006	Recycled plastic materials - Expanded polystyrene from industrial residues and/or from post-consumer to be used for general purposes - Part 12: Requirements and test methods	x			x	
UNI 10667-13:2001	Recycled plastic materials - Fillers obtained from grinding of production reject and/or from post consumer of reinforced thermosetting plastic composit - Requirements and test methods	x			x	
UNI 10667-14:2009	Recycled plastic materials - Mixtures of polymeric materials and of others materials based on cellulose to be used as aggregate into mortar of cement - Parte 14: Requirements and test methods	x			x	
UNI 10667-15:2008	Recycled plastic materials - Polyethylenterephtalate from post consumer, industrial scraps and residues from mechanical recycling to be used for chemical recycling and depolymerization - Part 15: Requirements and test methods	x			x	
UNI 10667-16:2009	Recycled plastic materials - Blends of plastics heterogeneous based polyolefins from industrial residue and/ or from post consumer materials to be used for extrusion processes and / or injection moulding - Part 16: Requirements and test methods	x			x	
UNI 10667-17:2011	Plastic raw-secondary materials - Blends of heterogeneous plastics based on polyolefins from industrial residue and/or from post consumer materials to be used for reducing processes in blast furnace - Part 17: Requirements and test methods	x			x	
UNI 10667-18:2011	Plastic raw-secondary materials - Blends of heterogeneous plastics based polyolefins from industrial residue and/ or from post consumer materials to be used for conversion into liquid and/or gas fuel - Part 18: Requirements and test methods	x			x	

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
UNI 10667-2:2010	Plastic raw-secondary materials - Polyethylene for general purposes from the recycling of industrial residues and/or from pre and/or post consumer materials - Part 2: Requirements and test methods	x			x	
UNI 10667-3:2011	Plastic raw-secondary materials - Polypropylene for general purposes from the recycling of industrial residues and/or from pre and/or post consumer materials - Part 3: Requirements and test methods	x			x	
UNI 10667-4:2011	Plastic raw-secondary materials - Polyvinylchloride for general purposes, from the recycling of pre and/or post consumer liquid containers - Part 4: Requirements and test methods	x			x	
UNI 10667-5:2012	Plastic raw-secondary materials - Plasticized polyvinylchloride for general purpose, from the recycling of industrial residues and/or from pre and/or post consumer materials - Part 5: Requirements and test methods	x			x	
UNI 10667-6:2011	Plastic raw-secondary materials - Unplasticized poly(vinylchloride) for general purposes from the recycling of industrial residues and/or from rigid not plasticized items from pre and/or post consumer - Part 6: Requirements and test methods	x			x	
UNI 10667-7:2011	Plastic raw-secondary materials - Polyethylenerephthalate flakes for the production of fibres, from the recycling of post consumer liquid containers - Part 7: Requirements and test methods	x			x	
UNI 10667-8:2011	Recycled plastics materials - Polyethylenerephthalate flakes for blow moulding, from the recycling of post- consumer liquid containers - Part 8: Requirements and test methods	x			x	
UNI 10667-9:2011	Plastic raw-secondary materials - Polyethylenerephthalate flakes for the production of sheets and sheetings, from the recycling of post-consumer liquid containers - Part 9: Requirements and test methods	x			x	
UNI 10853-1:2000	Recycled plastic materials from recovery of durable goods to end of life - General	x			x	
UNI 10853-2:2000	Recycled plastic materials from recovery of durable goods to end of life - Polypropylene - Requirements and test methods	x			x	
UNI 10853-3:2006	Recycled plastic materials from recovery of durable goods to end of life - Part 3: Polystyrene - Requirements and test methods	x			x	
UNI 10853-4:2006	Recycled plastic materials from recovery of durable goods to end of life - Part 4: Acrylonitrile/Butadiene/ Styrene (ABS) - Requirements and test methods	x			x	
UNI 11066:2003	Customized reusable wooden pallet - Design, manufacturing, performance requirements and test methods				x	
UNI 11183:2006	Plastic materials biodegradable at room temperature - Requirements and test methods			x	x	
UNI 11279-1:2008	Engineered repository for Category 2 radioactive waste packages - Part 1: Basic design criteria					
UNI 11462:2012	Plastic materials biodegradable in soil - Types, requirements and test methods			x	x	
UNI 9212-15:1991	Manufactured goods filled with feather materials - Determination of the specific gravity, of the compressibility and of the delayed elastic recovery of the feather material					
VDI 2074	Recycling in the building services		x			
VDI 2243	Recycling-oriented product development		x	x	x	
VDI 2343 Blatt 1	Recycling of electrical and electronic products - Principles and terminology				x	
VDI 2343 Blatt 2	Recycling of electrical and electronical equipment - Logistics			x	x	

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
VDI 2343 Blatt 3	Recycling of electrical and electronic equipment - Disassembly				x	
VDI 2343 Blatt 4	Recycling of electrical and electronic equipment - Preparation techniques				x	
VDI 2343 Blatt 5	Recycling of electrical and electronic equipment - Material and thermal recycling and removal				x	
VDI 2343 Blatt 7	Recycling of electrical and electronic equipment - Re-use				x	
VDI 3397 Blatt 2	Maintenance of metalworking fluids for metalcutting and forming operations - Measures for maintaining quality, process improvement, and for reducing solid and liquid waste					
VDI 3476 Blatt 3	Waste gas cleaning - Methods of catalytic waste gas cleaning - Selective catalytic reduction		x			
VDI 4082	Recycling of cars - Draining and preparation of vehicles for the disassembly					x
VDI 4091	Closed-loop production and material flow management - Methodology - Paper			x	?	
VDI 6310	Classification and quality criteria of biofineries		x			
VDI/BV-BS 6206 Blatt 1	Buildings constructed with reuseable pre-assembled room units in steel frame construction - Fundamentals					
VGB M 216	Recommendations for Design and Properties of Waste-fuelled Steam Generators					
<u>Vincotte OK biobased</u> WI 275000	biobased carbon content	x	x	x	x	
WI00366009	Sludge recovery, recycling, treatment and disposal					
WI00366013	Materials obtained from End-of-Life Tyres — Granulates and powders — Elastomers identification: Gas-chromatography and mass-spectrometric detection of pyrolysis products in solution				x	x
WI00366013	Materials obtained from End of Life Tyres — Steel wires – Determination of the non-metallic content				x	x
WI00366xxx	Materials obtained from End of Life Tyres - Evaluation of the odour intensity of rubber granulates	x				x
WI00366xxx	Material obtained from End of Life Tyres - Guideline for the determination of bulk density of granulates and powders	x				x
WI00444xxx	Waste - Determination of the content of elements and substances in waste				x	x
X30-012	Waste - Recycling terminology				x	x
XP A04-800	Steel products - Non-melting assessment method of light scrap by the means of shredding, magnetic sorting and washing - Determination of the content of the clean and dry magnetic product					
XP E01-006	Mechanical products - Environmental performance - Assessment and declaration		x	x	x	
XP P16-002	Sewerage Glossary					
XP T47-751	Non reusable used tyres (NRUT) - Determination of the format of products from primary shredding - Manual method based on the measurement of the largest projected length	x		x		x
XP T47-752	End of Life Tyres (ELF) - Determination of the particle size analysis of granulates issued from End of Life Tyres - Method based on the mechanical sieving of product	x		x	x	x
XP T47-753	End of life tyres (ELT) - Determination of the format of products from primary shredding - Method based on the automated measurement of the largest projected length	x		x	x	x
XP T47-754	End-of-life (EOL) tyres - Determination of the ferrous wire content in the granulates stemming from EOL tyres - Method based on the magnetic sorting of products	x			x	x
XP T47-755	End of life tyres (ELT) - Sampling of granulates from grinding process of ELT - Method based on taking a relevant sample from a big-bag from successive different levels					x

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
XP T47-756	End of life tyres (ELT) - Sampling of products from primary shredding - Conveyor scenario			x	x	x
XP T47-757	End of life tyres (ELT) - Determination of the format of products from primary shredding - Method of evaluation of filaments			x	x	x
XP T47-758	End of life tyres - Separate determination of free and bound textile contents of granulates from grinding process of End of life tyres - Method based on the manual separation after mechanical sieving of products				x	x
XP T47-759	End of life tyres (ELT) - Sampling of products from primary shredding - Scenario pile being moved	x		x	x	x
XP T47-760	End of life tyres (ELT) - Characterisation of products from primary shredding - Guidance for a testing campaign	x		x	x	x
XP T47-761-1	End of Life Tyres (ELT) - Determination of residuals impurities content for steel from primary shredding or grinding process of End of Life Tyres - Reference method based on thermal decomposition in inert atmosphere				x	x
XP T47-761-2	End of life tyres (ELT) - Determination of residuals impurities content for steel from primary shredding or grinding process of End of Life Tyres - Part 2 : method on manufacturing site				x	x
XP T47-762-1	End of Life Tyres (ELT) - Sampling of steel from primary shredding or grinding process of End of Life Tyres - Part 1 : conveyor scenario					x
XP T47-763-1	End of life tyres (ELT) - Determination of density, porosity and void ratio of shredded tyres - Method(s) of measurement and test protocol(s) - Part 1: method based on water pycnometry (shredded tyres in the abounded state)					x
XP T47-763-2	End of life tyres (ELT) - Determination of density, porosity and void ratio of shredded tyres - Method(s) of measurement and test protocol(s) - Part 2 : method based on the measure of the compressibility (shredded tyres under stress)					x
XP T47-765	End of Life Tyres (ELT) - Characterisation of granulates from granulation processes - Guidance for a testing campaign	x			x	x
XP T47-766	End of life tyres (ELT) - Characterization of granulates from granulation processes - Evaluation of the odour intensity	x			x	x
XP X30-403	Waste - Silicate glass - Test for determination of the initial dissolution velocity on contact with a regularly renewed aqueous solution, regenerated within a closed circuit by evaporation and condensation					x
XP X30-469	Solid wastes - Test for determining as a function of time the transfer rate into an aqueous solution of constituents of a material in contact with this aqueous solution having specified composition and renewable rate in the framework of a scenario					x
XP X30-473	Household and related waste - Inspection of sorting equipment performance					x
XP X30-484	Household and related refuse - Characterisation of household and related refuse contained in a skip for bulky waste					x
XP X30-489	Characterization of waste - Determination of the content of elements and substances in waste				x	
ZVEI Entladungslampen, Recycling	Collection and Recycling of Discharge Lamps	x			x	
	Climate Action Reserve: Nitrogen Management Project Protocol Version 1.1			x		

Identifier	Title of the standard/initiative	TG 1	TG 2	TG 3	TG 4	TG 5
	Association of Fertilizer and Phosphate Chemists AFPC, Methods of analysis for phosphoric acid, superphosphate, triple superphosphate and ammonium phosphates, No 2 Free Water, B. Vacuum desiccator method					
	Standards for Sustainable Asphalt Pavement			x	x	
	Development of American National Standards for Sustainable Building Products			x	x	
	Arrêté du 13 juin 2017 approuvant un cahier des charges pour la mise sur le marché et l'utilisation de digestats de méthanisation agricoles en tant que matières fertilisantes . Official Value of Digestate as a Fertilizer in France	x				
	Verified Carbon Standard: VM0022: Quantifying N2O Emissions Reductions in Agricultural Crops through Nitrogen Fertilizer Rate Reduction				x	
	American Carbon Registry: Methodology for Quantifying Nitrous Oxide (N2O) Emissions Reductions from Reduced Use of Nitrogen Fertilizer on Agricultural Crops					
	American Carbon Registry: N2O Emission Reductions through Changes in Fertilizer Management					
	REGLEMENT D'USAGE DE LA MARQUE FERTILISANT DURABLE					
	REVAQ CERTIFIED WASTEWATER TREATMENT PLANTS IN SWEDEN FOR IMPROVED QUALITY OF RECYCLED DIGESTATE NUTRIENTS				x	
	Sustainable Dentistry					
	Sustainable Roofing Practices					
	Sustainable Low-Slope Roofing					
	Standards for Sustainable Manufacturing		x			
	Driving the Sustainable Highway					
	Performance Related Tests on Recycled Materials for Sustainable Design of Pavement Systems		x			
	Toward More Sustainable Meetings: ASTM E2743-11 Standard Specification for Evaluation and Selection of Transportation for Environmentally Sustainable Meetings, Events, Trade Shows, and Conferences					
	Sustainable Manufacturing Terminology					
	Manual 49 MNL49 - 2ND User's Guide to ASTM Specification C94/C94M on Ready Mixed Concrete: 2nd Edition					
	American Carbon Registry: N2O Emission Reductions through Changes in Fertilizer Management		x			

Annex E Programme of the workshop



09:30 – 10:00	REGISTRATION AND WAKE-UP COFFEE	
10:00 – 10:10	WELCOME Fredric PETIT, Convenor, CEN-CENELEC/BTWG 11	
10:10 – 10:30	INTRODUCTION AND EXPLANATION OF THE APPROACH Minique VRINS, Project leader, CEN-CENELEC/BTWG 11	
10:30 – 12:30	PRESENTATION OF THE RESULTS: IDENTIFIED GAPS AND NEEDS BY WG 11 EXPERTS Raw materials (15 min) Doreen FEDRIGO-FAZIO, Senior Policy Officer, ECOS Production and design (15 min) Doreen FEDRIGO-FAZIO, Senior Policy Officer, ECOS Consumption and labels (15 min) Tine SEEBERG HANSEN, Senior Chemical Compliance Specialist, Grundfos Recycling / End-of-life / Waste management (15 min) Wim GRYMONPREZ, New Business Development Manager Plastics, VKC-Centexbel Panel discussion (60 min)	
12:30 – 13:30	LUNCH	
13:30 – 15:00	BREAKOUT SESSIONS <i>Each participant will be able to attend 2 breakout sessions on specific topics introduced in the morning session: Raw materials, Production and design, Consumption and labels, Recycling/End-of-life/Waste management. The breakout sessions will be scheduled based on the received expressions of interest in the registration form.</i>	
13:30 – 14:15	Breakout session 1 <i>TBD based on expressed interest.</i>	Breakout session 2 <i>TBD based on expressed interest.</i>
14:15 – 15:00	Breakout session 3 <i>TBD based on expressed interest.</i>	Breakout session 4 <i>TBD based on expressed interest.</i>
15:00 – 15:15	COFFEE BREAK	
15:15 – 15:45	CONCLUSIONS OF THE BREAKOUT SESSIONS Minique VRINS, Project leader, CEN-CENELEC/BTWG 11	
15:45 – 16:00	CLOSING REMARKS & NEXT STEPS Fredric PETIT, Convenor, CEN-CENELEC/BTWG 11	

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Annex F Participants of the workshop



REGISTRATION LIST

By Alphabetical order

Family Name	First Name	Organization	Signature
Alwarsdotter	Ylwa	Sekab	<i>Ylwa Alwarsdotter</i>
Blazzkowski	Solange	Philips	
Bluck	Howard	BMRA	<i>Howard Bluck</i>
Boenke	Achim	EC DG Grow / D.2	<i>Achim Boenke</i>
Bordado	Joao	IST	
Carrier	Lara	APPLiA	<i>Lara Carrier</i>
Cebere	Beata	Agrinos AS	<i>Beata Cebere</i>
CHANSON	Claude	RECHARGE	
Collini	Maria Luena	Recharge	<i>Maria Luena Collini</i>
De Boer	Lise	RIVM	<i>Lise De Boer</i>
Decottignies	Virginie	SUEZ	<i>Virginie Decottignies</i>
De La Fuente	Timoteo	EC DG Grow	<i>Timoteo De La Fuente</i>
Eberl	Hans-Christian	European Commission DG RTD	<i>Hans-Christian Eberl</i>
El Mrabet	Noam	Interel	<i>Noam El Mrabet</i>
Farachi	Fernanda	NOVAMONT Spa	<i>Fernanda Farachi</i>
Fedrico-Fazio	Doreen	ECOS	

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Gobbi	Sara	ASTM International	
Gondova	Andrea	Yokogawa	<i>Gondova</i>
Grymonprez	Wim	VKC-Centexbel	
Gustafsson	Maria	SIS - Swedish Standards Institute	<i>Maria Gustafsson</i>
Hansen	Tine Seeberg	Grundfos Holding A/S	
Helms Rasmussen	Marie	VELUX A/S	<i>Marie Helms Rasmussen</i>
Ibrahimi	Blerim	MINISTRY OF TRADE AND INDUSTRY	
Jahns	Markus	TÜV SÜD Product Service GmbH	<i>Mr. Jan</i>
Janssen	Nicole	RIVM	<i>Nicole</i>
Janssen	Edwin	The Natural Step	<i>Edwin</i>
Kappenberg	Bernd	Cefic	<i>Kappenberg</i>
Lamy	Yann	Italpollina	<i>SARRESEARCH</i>
Mantel	Rainer	BKV GmbH	<i>Mantel</i>
Maxhuni	Haki	MINISTRY OF TRADE AND INDUSTRY	
Melchior	Frederic	Eurogypsum	<i>Frederic</i>
Petit	Frederic	CEN-CLC BTWG 11	
Popescu	Ioana	ECOS	<i>Ioana</i>
Rosier	Amaury	SOLVAKEM Circular Chemistry Solutions	<i>Amaury</i>

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Sasaki	Shinya	JBCE	<i>Shinya Sasaki</i>
Seeberg Hansen	Tine	GRUNDFOS	<i>Tine Seeberg Hansen</i>
Schreurs	Paul	VLAIO	<i>Paul Schreurs</i>
Sitters	Eric	ICL-IP/EFRA	<i>Eric Sitters</i>
Speziale	LIGHea	Cewep	<i>Speziale</i>
TAVERNE	Jean-Pierre	ETRMA	<i>Jean-Pierre Tavernier</i>
Thornton	Chris	Sustainable Phosphorus Platform	<i>Chris Thornton</i>
Tincani	Marco	PLASTICS EUROPE	<i>Marco Tincani</i>
Valero	Alana	ANEC	<i>Alana Valero</i>
Varvema	Päivi	UPM	<i>Päivi Varvema</i>
Vollmann	Marcelo	Cefic Petrochemicals Europe	<i>Marcelo Vollmann</i>
Vriesendorp	Willem	Fipra	
Vrins	Minique	CEN-CLC BTWG 11	
Waibel	Chaim Gabriel	Plastics Recyclers Europe	<i>Chaim Waibel</i>
Wiltenburg	Moni	Fipra	<i>Wiltenburg</i>

*Bradey Kevin
STICHTINGHE Keiul*

*BSEF
Thuenen-Institute*

Wiltenburg

Annex G Results of the Workshop

GOAL OF THE BREAKOUT SESSIONS

- Add to the collective intelligence
- Identify initiatives or topics that are missing
- Remarks on the background document
- What standards/initiatives does your company/sector work with relevant for this work
- Identify current limitations in standards for moving to a more circular economy



Sustainable Chemicals

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CONCLUSIONS OF THE BREAKOUT SESSION - RAW MATERIALS

- Gap: (the lack of) adoption of standards
- Identified hurdle: collection of waste (pre-normative)
- Develop chemical recycling technology (pre-normative)
- Need for technology to extract certain chemicals (pre-normative)
- Imposed recycled content could possibly work for some products

Sustainable Chemicals

CONCLUSIONS OF THE BREAKOUT SESSION – Consumption and labels

- Mis-usage of the LCA (ISO 14040 & ISO 14044)
- Possible sustainability criteria for non bio-based products
- Need for thresholds, not more labels
- B2B and B2C communication standards for non bio-based products
- PCR general text in final report
- Claim proof of evidence; how is this communicated? (TS, Norm?)

Sustainable Chemicals

End of life/recycling

- ~~Lack of ENs based on imposed recycled content e.g. vacuum cleaners, sewer pipes.~~
Easier on plastics and difficult for some materials like textiles. Different amounts to be imposed needed based on the future application/technology.
- Market outlets, GPP - necessary - some studies which are already publically available could be good starting points
- Standards needed for risk and performance assessment in unison based on the final product.
- Defined number of cycles need to be investigated/set based on the material
- Discussions needed to link circularity and sustainability – MAJOR GAP e.g. PVC in a sustainable world?
- Standards on reuse have not been spoken about (except for one Spanish standard)
- Plastics perspective - Recyclates characterisation – needs to be reviewed.
- EN/TR needed for waste management process – current stage

Sustainable Chemicals

CONCLUSIONS OF THE BREAKOUT SESSION - Production/Design

- **Design is the entry point for sustainability into product standards** - product is the key element as the producer should know what's in the product and has immediate impact on the rest of the chain and circle
- How are the EU standards taking care of **sustainable chemicals management**? E.g. when separate chemicals are used in combination for second life, how is their cocktail effect considered/tested? Product standards can consider this parameters from product design perspective....multi criteria
- **Problems defining LCA** in circular settings (very subjective) – ENs needed – experience from PEF?
- **Worker exposure** – sorting techniques, risks – given the big information losses when they are returned as wastes in this context scan or code needs to be made so that enough so that discarders, sorters, recyclers can know
- **Plastics industry activities**: certification schemes for bales of materials, PROSCALE project to integrate LCA model with tox data; reducing types of plastics used for different products; biodegradability – packaging main plastic
- **Another initiative to add**: EPD+ (multi-stakeholder set-up, e.g. leather, pipes)
- The **Natural Step** framework – to be added to the list (sustainability definition, work with industry e.g. sustainable window frames label)
- **NL activities**: Role of sustainable (green) public procurement – NL government efforts based on buying power; also a tool is developed - multi-criteria tool to weigh different elements (social, environmental, ...)

Annex H CEN and CENELEC standards related to WEEE and RoHS

Reference	Title	Responsible Body	Standardisation request (Mandates)	Directives
EN 50419:2006	Marking of electrical and electronic equipment in accordance with Article 11(2) of Directive 2002/96/EC (WEEE)	CLC/TC 111X	M/336, M/518	2012/19/EU
EN 50574-1:2012	Collection, logistics & treatment requirements for end-of-life household appliances containing volatile fluorocarbons or volatile hydrocarbons	CLC/TC 111X	M/518	2012/19/EU
EN 50625-1:2014	Collection, logistics & Treatment requirements for WEEE - Part 1: General treatment requirements	CLC/TC 111X	M/518	2012/19/EU
EN 50625-2-1:2014	Collection, logistics and treatment requirements for WEEE - Part 2-1: Treatment requirements for lamps	CLC/TC 111X	M/490, M/518	2012/19/EU
EN 50625-2-2:2015	Collection, logistics & Treatment requirements for WEEE - Part 2-2: Treatment requirements for WEEE containing CRTs and flat panel displays	CLC/TC 111X	M/490, M/518	2012/19/EU
CLC/TS 50625-3-1:2015	Collection, logistics & treatment requirements for WEEE - Part 3-1: Specification for de-pollution - General	CLC/TC 111X	M/518	2012/19/EU
CLC/TS 50625-5:2017	Collection, logistics & Treatment requirements for WEEE - Part 5: Specification for the final treatment of WEEE fractions - Copper and precious metals	CLC/TC 111X		2012/19/EU
prEN 50614	Requirements for the preparing for re-use of waste electrical and electronic equipment	CLC/TC 111X	M/518	2012/19/EU
EN 50625-2-4:2017	Collection, logistics & treatment requirements for WEEE - Part 2-4: Treatment requirements for photovoltaic panels	CLC/TC 111X	M/518	2012/19/EU
EN 50625-2-3:2017	Collection, logistics & treatment requirements for WEEE - Part 2-3: Treatment requirements for temperature exchange equipment and other WEEE containing VFC and/or VHC	CLC/TC 111X	M/518	2012/19/EU
CLC/TS 50625-3-2:2016	Collection, logistics & Treatment requirements for WEEE - Part 3-2: Technical specification for de-pollution - Lamps	CLC/TC 111X	M/518	2012/19/EU
CLC/TS 50625-4:2017	Collection, logistics & treatment requirements for WEEE - Part 4: Specification for the collection and logistics associated with WEEE	CLC/TC 111X	M/518	2012/19/EU
CLC/TS 50625-3-4:2017	Collection, logistics & treatment requirements for WEEE - Part 3-4: Specification for de-pollution - temperature exchange equipment	CLC/TC 111X	M/518	2012/19/EU
CLC/TS 50625-3-3:2017	Collection, logistics & treatment requirements for WEEE - Part 3-3: Specification for de-pollution - WEEE containing CRTs and flat panel displays	CLC/TC 111X	M/518	2012/19/EU
CLC/TS 50625-3-5:2017	Collection, logistics & Treatment requirements for WEEE - Part 3-5: Technical specification for de-pollution - Photovoltaic panels	CLC/TC 111X	M/518	2012/19/EU
CLC/FprTR 50625-6	Collection, logistics & treatment requirements for WEEE - Part 6: Report on the alignment between Directive 2012/19/EU and EN 50625 series standards and EN 50614	CLC/TC 111X	M/518	2012/19/EU

Reference	Title	Responsible Body	Standardisation request (Mandates)	Directives
EN 62321:2009	Electrotechnical products - Determination of levels of six regulated substances (lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls, polybrominated diphenyl ethers)	CLC/TC 111X		2011/65/EU (ROHS_2011) 2002/95/EC (ROHS_2002)
EN 50581:2012	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances	CLC/TC 111X	M/499	2011/65/EU
EN 63000:2016	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances	CLC/TC 111X		-
EN 62321:2009	Electrotechnical products - Determination of levels of six regulated substances (lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls, polybrominated diphenyl ethers)	CLC/TC 111X		2011/65/EU, 2002/95/EC
EN 50581:2012	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances	CLC/TC 111X	M/499	2011/65/EU
EN 62321-1:2013	Determination of certain substances in electrotechnical products - Part 1: Introduction and overview	CLC/TC 111X		2011/65/EU
EN 62321-2:2014	Determination of certain substances in electrotechnical products - Part 2: Disassembly, disjointment and mechanical sample preparation	CLC/TC 111X		2011/65/EU
EN 62321-3-1:2014	Determination of certain substances in electrotechnical products - Part 3-1: Screening - Lead, mercury, cadmium, total chromium and total bromine by X-ray fluorescence spectrometry	CLC/TC 111X		2011/65/EU
EN 62321-3-2:2014	Determination of certain substances in electrotechnical products - Part 3-2: Screening - Total bromine in polymers and electronics by Combustion - Ion Chromatography	CLC/TC 111X		2011/65/EU
EN 62321-4:2014	Determination of certain substances in electrotechnical products - Part 4: Mercury in polymers, metals and electronics by CV-AAS, CV-AFS, ICP-OES and ICP-MS	CLC/TC 111X		2011/65/EU
EN 62321-5:2014	Determination of certain substances in electrotechnical products - Part 5: Cadmium, lead and chromium in polymers and electronics and cadmium and lead in metals by AAS, AFS, ICP-OES and ICP-MS	CLC/TC 111X		2011/65/EU
EN 62321-6:2015	Determination of certain substances in electrotechnical products - Part 6: Polybrominated biphenyls and polybrominated diphenyl ethers in polymers by gas chromatography-mass spectrometry (GC-MS)	CLC/TC 111X		2011/65/EU
EN 62321-4:2014/A1:2017	Determination of certain substances in electrotechnical products - Part 4: Mercury in polymers, metals and electronics by CV-AAS, CV-AFS, ICP-OES and ICP-MS	CLC/TC 111X		2011/65/EU

Annex I Overview of available biodegradation tests

Table 1 - Biodegradation in fresh water

	Ultimate aerobic biodegradation (including ready biodegradability tests)						Anaerobic biodegradation
	Evolution of CO ₂ (Modified Sturm test)	Evolution of CO ₂ (Head space test)	DOC removal	Oxygen consumption (Closed bottle)	Oxygen consumption (Manometric respirometry)	Specific analytical methods Labelled compounds	Gas production (CH ₄ + CO ₂)
Organic compounds	OECD 301B EN ISO 9439	OECD 310 EN ISO 14593	OECD 301A OECD 301E EN ISO 7827	OECD 301D EN ISO 10707 ISO 10708	OECD 301F EN ISO 9408	ISO 14592-1	-
Plastics	EN ISO 14852	-	-	-	EN ISO 14851	-	ISO 14853
Packaging	EN 14047	-	-	-	EN 14048	-	-

Table 2 - Biodegradation in sea water

	Ultimate aerobic biodegradation					Anaerobic biodegradation
	Evolution of CO ₂ (Modified Sturm test)	Evolution of CO ₂ (Headspace test)	DOC removal	Oxygen consumption (Closed bottle)	Oxygen consumption (Manometric respirometry)	Gas production (CH ₄ + CO ₂)
Organic compounds	ISO 16221	ISO 16221	OECD 306 ISO 16221	OECD 306 ISO 16221	-	-
Plastics	ISO 19679	-	-	-	ISO 18830	-

NOTE: The standards for plastics are relevant for aerobic biodegradation at the seawater/sediment interface rather than the biodegradation on seawater

Table 3 - Biodegradation under controlled composting conditions

	Ultimate aerobic biodegradation		
	Evolution of CO ₂	DOC removal	Oxygen consumption
Organic compounds	-	-	-
Plastics	EN ISO 14855-1 EN ISO 14855-2	-	-
Packaging	EN 14046	-	-

Table 4 - Biodegradation in soil

	Ultimate aerobic biodegradation				Anaerobic biodegradation
	Evolution of CO ₂	DOC removal	Oxygen consumption	Specific analytical methods + Labelled compounds	Specific analytical methods + Labelled compounds
Organic compounds	ISO 11266	-	ISO 11266	ISO 11266 OECD 307	ISO 15473 OECD 307
Plastics	EN ISO 17556	-	-	-	-

Table 5 - Biodegradation in digested sludge

	Gas production (CH ₄ +CO ₂)	Gas production (CH ₄ + CO ₂) (controlled anaerobic slurry digestion system)
Organic compounds	OECD 311 EN ISO 11734	-
Plastics	ISO 15985	ISO 13975

Annex J Subjects that are related to Sustainable Chemicals but out of scope

Secondary metals are addressed in a large number of mostly EN harmonised standards. These address general requirements, sampling and tests of specific scrap materials such as aluminium or copper and their alloys from specified products (such as beverage cans, packaging, radiators and wires or cables) or more general shredding processes. One EN (13283:2002) addresses 'secondary zinc' from zinc and zinc alloys. Recycling of titanium and titanium alloy scrap is addressed through a standard developed in an aerospace series (EN2955:1993). Other specific initiatives worth noting include a Brazilian standard (ABNT NBR 16409:2015) providing guidance for sustainable production of pig iron produced using charcoal and an ISO workshop agreement providing guidance principles for the sustainable management of secondary metals (IWA 19:2017).

Critical raw materials also feature in three initiatives. An International Telecommunication Union recommendation (ITU-T L.1100) sets out procedures for recycling rare metals in information and communication technology goods, and ISO TC 298 on 'rare earth' has a number of projects underway that set out terms and definitions for specific rare earth metals, on packaging and labelling, and most notably on measurement method of rare earth elements in by-products and industrial wastes. The third initiative is part of the EU's 'Ecodesign mandate' (M/543) in which at least two standards relevant to this sustainable chemicals project are relevant: prEN 45557 'General method for assessing the proportion of recycled material content in energy related products' and prEN 45558 'General method to declare the use of critical raw materials in energy related products'. The draft the draft standardisation request shared to the ESOs for consultation on the material efficient recycling of WEEE and batteries with a focus on CRMs was criticised.

Nutrients.

The European Fertilizer regulation is being revised to include organic nutrients, mineral nutrients, bio stimulants and soil improvers. Upon adoption of the revised Regulation, CEN will likely start developing European standards that will support the implementation of the Regulation based on a standardisation request. The fertilizer Regulation does not however address recovery of other products from organic streams, for example fibres from digestates or chemical/polymers from sewage sludge, and these are not covered by any standards.

Annex K CEN and CENELEC deliverables linked to the main recommendations (section 6.2)

Plastics

Deliverable reference	Title of the deliverable
EN 1566 series	Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure - Chlorinated poly(vinyl chloride) (PVC-C)
EN 13206	Plastics - Thermoplastic covering films for use in agriculture and horticulture
CEN/TR 15351:2006	Plastics - Guide for vocabulary in the field of degradable and biodegradable polymers and plastic items
CEN/TR 15822:2009	Plastics - Biodegradable plastics in or on the soil - Reuse, disposal and related environmental issues
CEN/TS 14541:2013	Plastics pipes and fittings - Characteristics for utilisation of non-virgin PVC-U, PP and PE materials
CEN/TS 15534-2:2007	Wood-plastics composites (WPC) - Part 2: Characterisation of WPC materials
CEN/TS 16010:2013	Plastics - Recycled plastics - Sampling procedures for testing plastics waste and recyclates
CEN/TS 16011:2013	Plastics - Recycled plastics - Sample preparation
CEN/TS 16137:2011	Plastics – Determination of bio-based carbon content
CEN/TS 16295:2012	Plastics - Declaration of the bio-based carbon content
CEN/TS 16398:2012	Plastics - Template for reporting and communication of bio-based carbon content and recovery options of biopolymers and bioplastics - Data sheet
CEN/TS 16861:2015	Plastics - Recycled plastics - Determination of selected marker compounds in food grade recycled polyethylene terephthalate (PET)
CEN/TR 17219	Plastics - Biodegradable thermoplastic mulch films for use in agriculture and horticulture - Guide for the quantification of alteration of films
prEN 17228	Plastics - Bio-based polymers, plastics, and plastic products - Terminology, characteristics and communication
EN 13592+A1:2007	Plastics sacks for household waste collection - Types, requirements and test methods
EN 13655	Plastics - Thermoplastic mulch films recoverable after use, for use in agriculture and horticulture
EN 14995:2006	Plastics - Evaluation of compostability - Test scheme and Specifications
EN 15342:2007	Plastics - Recycled plastics - Characterization of polystyrene (PS) recyclates
EN 15343:2007	Plastics - Recycled plastics - Plastics recycling traceability and assessment of conformity and recycled content
EN 15344:2007	Plastics - Recycled plastics - Characterisation of Polyethylene (PE) recyclates
EN 15345	Plastics - Recycled Plastics - Characterisation of PP
EN 15345:2007	Plastics - Recycled Plastics - Characterisation of Polypropylene (PP) recyclates
EN 15346	Plastics - Recycled plastics - Characterisation of PVC
EN 15346:2014	Plastics - Recycled plastics - Characterisation of poly(vinyl chloride) (PVC) recyclates
EN 15347:2007	Plastics - Recycled Plastics - Characterisation of plastics wastes

EN 15348:2014	Plastics - Recycled plastics - Characterisation of poly(ethylene terephthalate) (PET) recyclates
CEN/TR 15353	Plastics - Recycled plastics - Guidelines for the development of standards for recycled plastics
EN 17098-1	Plastics - Barrier films for agricultural and horticultural soil disinfection by fumigation - Part 1: Specifications for barrier films
EN 17098-2	: Plastics - Barrier films for agricultural and horticultural soil disinfection by fumigation - Part 2: Method for film permeability determination using a static technique
EN ISO 16103:2005	Packaging - Transport packages for dangerous goods - Recycled plastics material
EN ISO 17556:2012	Plastics - Determination of the ultimate aerobic biodegradability of plastic materials in soil by measuring the oxygen demand in a respirometer or the amount of carbon dioxide evolved
EN ISO 20200:2005	Plastics - Determination of the degree of disintegration of plastic materials under simulated composting conditions in a laboratory-scale test
prEN 17033:2016	Plastics - Biodegradable mulch films for use in agriculture and horticulture - Requirements and test methods

Rubber

Deliverable reference	Title of the deliverable
WI00366xxx	Materials obtained from End of Life Tyres - Evaluation of the odour intensity of rubber granulates
CEN/TS 14243:2010	Materials produced from end of life tyres - Specification of categories based on their dimension(s) and impurities and methods for determining their dimension(s) and impurities
CEN/TS 16916:2016	Materials obtained from end of life tyres - Determination of specific requirements for sampling and determination of moisture content using the oven-dry method
CEN/TS 17045:2017	Materials obtained from end of life tyres - Quality criteria for the selection of whole tyres, for recovery and recycling processes
prEN 14243-4	Materials obtained from end of life tyres - Part 4: Steel wires and textile fibres - Methods for their characterization
WI00366009	Materials obtained from End-of-Life Tyres — Granulates and powders — Elastomers identification: Gas-chromatography and mass-spectrometric detection of pyrolysis products in solution
WI00366013	Materials obtained from End of Life Tyres — Steel wires – Determination of the non-metallic content
WI00366xxx	Materials obtained from End of Life Tyres - Evaluation of the odour intensity of rubber granulates
WI00366xxx	Material obtained from End of Life Tyres - Guideline for the determination of bulk density of granulates and powders

Design

Deliverable reference	Title of the deliverable
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EN 12574-1:2017	Stationary waste containers - Part 1: Containers with a capacity up to 10000 l with flat or dome lid(s), for trunnion, double trunnion or pocket lifting device - Dimensions and design
EN 62430:2009	Environmentally conscious design for electrical and electronic products
EN 840-1:2012	Mobile waste and recycling containers - Part 1: Containers with 2 wheels with a capacity up to 400 l for comb lifting devices - Dimensions and design
EN 840-2:2012	Mobile waste and recycling containers - Part 2: Containers with 4 wheels with a capacity up to 1300 l with flat lid(s), for trunnion and/or comb lifting devices - Dimensions and design
EN 840-3:2012	Mobile waste and recycling containers - Part 3: Containers with 4 wheels with a capacity up to 1300 l with dome lid(s), for trunnion and/or comb lifting devices - Dimensions and design
EN 840-4:2012	Mobile waste and recycling containers - Part 4: Containers with 4 wheels with a capacity up to 1700 l with flat lid(s), for wide trunnion or BG- and/or wide comb lifting devices - Dimensions and design
EN IEC 62075:2012	Audio/video, information and communication technology equipment - Environmentally conscious design

Recycling

Deliverable reference	Title of the deliverable
CEN/TR 13688:2008	Packaging - Material recycling - Report on requirements for substances and materials to prevent a sustained impediment to recycling
CEN/TS 17045:2017	Materials obtained from end of life tyres - Quality criteria for the selection of whole tyres, for recovery and recycling processes
EN 13430:2004	Packaging - Requirements for packaging recoverable by material recycling
EN 13437:2003	Packaging and material recycling - Criteria for recycling methods - Description of recycling processes and flow chart
EN 13440:2003	Packaging - Rate of recycling - Definition and method of calculation
EN 15343	Plastics - Recycled Plastics - Plastics recycling traceability and
EN 15343:2007	Plastics - Recycled plastics - Plastics recycling traceability and assessment of conformity and recycled content
EN 2955:1993	Aerospace series; recycling of titanium and titanium alloy scrap
EN 643:2014	Paper and board - European list of standard grades of paper and board for recycling
EN 840-1:2012	Mobile waste and recycling containers - Part 1: Containers with 2 wheels with a capacity up to 400 l for comb lifting devices - Dimensions and design
EN 840-2:2012	Mobile waste and recycling containers - Part 2: Containers with 4 wheels with a capacity up to 1300 l with flat lid(s), for trunnion and/or comb lifting devices - Dimensions and design
EN 840-3:2012	Mobile waste and recycling containers - Part 3: Containers with 4 wheels with a capacity up to 1300 l with dome lid(s), for trunnion and/or comb lifting devices - Dimensions and design
EN 840-4:2012	Mobile waste and recycling containers - Part 4: Containers with 4 wheels with a capacity up to 1700 l with flat lid(s), for wide trunnion or BG- and/or wide comb lifting devices - Dimensions and design
WI 275000	Sludge recovery, recycling, treatment and disposal

Biodegradability

EN 14046:2003	Packaging - Evaluation of the ultimate aerobic biodegradability of packaging materials under controlled composting conditions - Method by analysis of released carbon dioxide
EN 14047:2002	Packaging - Determination of the ultimate aerobic biodegradability of packaging materials in an aqueous medium - Method by analysis of evolved carbon dioxide
EN 14048:2002	Packaging - Determination of the ultimate aerobic biodegradability of packaging materials in an aqueous medium - Method by measuring the oxygen demand in a closed respirometer
EN ISO 10707:1997	Water quality - Evaluation in an aqueous medium of the "ultimate" aerobic biodegradability of organic compounds - Method by analysis of biochemical oxygen demand (closed bottle test)
EN 13432:2000	Packaging - Requirements for packaging recoverable through composting and biodegradation - Test scheme and evaluation criteria for the final acceptance of packaging
EN ISO 14593:2005	Water quality - Evaluation of ultimate aerobic biodegradability of organic compounds in aqueous medium - Method by analysis of inorganic carbon in sealed vessels (CO ₂ headspace test)
EN ISO 14851:2004	Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium - Method by measuring the oxygen demand in a closed respirometer
EN ISO 14852:2004	Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium - Method by analysis of evolved carbon dioxide
EN ISO 14855-1:2012	Determination of the ultimate aerobic biodegradability of plastic materials under controlled composting conditions - Method by analysis of evolved carbon dioxide - Part 1 : general method
EN ISO 14855-2:2009	Determination of the ultimate aerobic biodegradability of plastic materials under controlled composting conditions - Method by analysis of evolved carbon dioxide - Part 2 : gravimetric measurement of carbon dioxide evolved in a laboratory-scale test
EN ISO 17556:2012	Plastics - Determination of the ultimate aerobic biodegradability of plastic materials in soil by measuring the oxygen demand in a respirometer or the amount of carbon dioxide evolved
EN ISO 7827:2013	Water quality - Evaluation of the "ready", "ultimate" aerobic biodegradability of organic compounds in an aqueous medium - Method by analysis of dissolved organic carbon (DOC)
EN ISO 9408:1999	Water quality - Evaluation of ultimate aerobic biodegradability of organic compounds in aqueous medium by determination of oxygen demand in a closed respirometer
EN ISO 9439:2000	Water quality - Evaluation of ultimate aerobic biodegradability of organic compounds in aqueous medium - Carbon dioxide evolution test

Waste and recycling

CEN/TR 14589:2003	Characterization of waste - State of the art document - Chromium VI speciation in solid matrices
CEN/TR 15018:2005	Characterization of waste - Digestion of waste samples using alkali-fusion techniques
CEN/TR 15214-3:2006	Characterization of sludges - Detection and enumeration of Escherichia coli in sludges, soils, soil improvers, growing media and bio-wastes - Part 3 : macromethod (Most Probable Number) in liquid medium

CEN/TR 15215-2:2006	Characterization of sludges - Detection and enumeration of Salmonella spp. in sludges, soils, soil improvers, growing media and biowastes - Part 2 : liquid enrichment method in selenite-cystine medium followed by Rapport-Vassiliadis for semi-quantitative Most Probable Number (MPN) determination
CEN/TR 15310-1:2006	Characterization of waste - Sampling of waste materials - Part 1 : guidance on selection and application of criteria for sampling under various conditions
CEN/TR 15310-2:2006	Characterization of waste - Sampling of waste materials - Part 2 : Guidance on sampling techniques
CEN/TR 15310-3:2006	Characterization of waste - Sampling of waste materials - Part 3 : guidance on procedures for sub-sampling in the field
CEN/TR 15310-4:2006	Characterization of waste - Sampling of waste materials - Part 4 : guidance on procedures for sample packaging, storage, preservation, transport and delivery
CEN/TR 15310-5:2006	Characterization of waste - Sampling of waste materials - Part 5 : guidance on the process of defining the sampling plan
CEN/TR 16110:2010	Characterization of waste - Guidance on the use of ecotoxicity tests applied to waste
CEN/TR 16130:2011	Characterization of waste - On-site verification
CEN/TR 16363:2012	Characterization of waste - Kinetic testing for assessing acid generation potential of sulfidic waste from extractive industries
CEN/TS 15364:2006	Characterization of waste - Leaching behaviour tests - Acid and base neutralization capacity test
CEN/TS 15862:2012	Characterisation of waste - Compliance leaching test - One stage batch leaching test for monoliths at a fixed liquid to surface area ratio (L/A) for test portions with fixed minimum dimensions
CEN/TS 15864:2012	Characterisation of waste - Leaching behaviour test for basic characterisation - Dynamic monolithic leaching test with continuous leachant renewal under conditions relevant for specified scenario(s)
CEN/TS 16010:2013	Plastics - Recycled plastics - Sampling procedures for testing plastics waste and recyclates
CEN/TS 16023:2013	Characterization of waste - Determination of gross calorific value and calculation of net calorific value
CEN/TS 16229:2011	Characterization of waste - Sampling and analysis of weak acid dissociable cyanide discharged into tailings ponds
CEN/TS 16660:2015	Characterisation of waste - Leaching behaviour test - Determination of the reducing character and the reducing capacity
CEN/TS 16675:2014	Characterization of waste - Verification of the monolithic status of waste
EN 12255-1:2002	Wastewater treatment plants - Part 1 : general construction principles
EN 12255-10:2000	Wastewater treatment plants - Part 10 : safety principles
EN 12255-11:2001	Wastewater treatment plants - Part 11 : general data required
EN 12255-12:2003	Wastewater treatment plants - Part 12 : control and automation
EN 12255-13:2002	Wastewater treatment plants - Part 13 : chemical treatment - Treatment of wastewater by precipitation/flocculation
EN 12255-14:2003	Wastewater treatment plants - Part 14 : disinfection

EN 12255-15:2003	Wastewater treatment plants - Part 15 : measurement of the oxygen transfer in clean water in aeration tanks of activated sludge plants
EN 12255-16:2005	Wastewater treatment plants - Part 16 : physical (mechanical) filtration
EN 12255-3:2000 ;EN 12255-3/AC:2000	Wastewater treatment plants - Part 3 : preliminary treatment
EN 12255-4:2002	Wastewater treatment plants - Part 4 : primary settlement
EN 12255-5:1999	Wastewater treatment plants - Part 5 : lagooning processes
EN 12255-6:2002	Wastewater treatment plants - Part 6 : activated sludge process
EN 12255-7:2002	Wastewater treatment plants - Part 7 : biological fixed-film reactors
EN 12255-8:2001	Wastewater treatment plants - Part 8 : sludge treatment and storage
EN 12255-8:2001	Wastewater treatment plants - Part 8 : sludge treatment and storage
EN 12255-9:2002	Wastewater treatment plants - Part 9 : odour control and ventilation
EN 12457-1:2002	Characterization of waste - Leaching - Compliance test for leaching of granular waste materials and sludges - Part 1 : one stage batch test at a liquid to solid ratio of 2 l/kg for materials with high solid content and with particle size below 4mm (without or with size reduction)
EN 12457-2:2002	Characterization of waste - Leaching - Compliance test for leaching of granular waste materials and sludges - Part 2 : one stage batch test at a liquid to solid ratio of 10 l/kg for materials with particle size below 4 mm (without or with size reduction)
EN 12457-3:2002	Characterization of waste - Leaching - Compliance test for leaching of granular waste materials and sludges - Part 3 : two stage batch test at a liquid to solid ratio of 2 l/kg and 8 l/kg for materials with high solid content and with particle size below 4mm (without or with size reduction)
EN 12457-4:2002	Characterization of waste - Leaching - Compliance test for leaching of granular waste materials and sludges - Part 4 : one stage batch test at a liquid to solid ratio of 10 l/kg for materials with particle size below 10 mm (without or with size reduction)
EN 12461:1998	Biotechnology - Large scale process and production - Guidance for the handling, inactivating and testing of waste
EN 12566-3+A2:2013	Small wastewater treatment systems for up to 50 PT - Part 3 : packaged and/or site assembled domestic wastewater treatment plants
EN 12574-1:2017	Stationary waste containers - Part 1: Containers with a capacity up to 10000 l with flat or dome lid(s), for trunnion, double trunnion or pocket lifting device - Dimensions and design
EN 12920+A1:2008	Characterization of waste - Methodology for the Determination of the leaching behaviour of waste under specified conditions
EN 12940:2004	Footwear manufacturing wastes - Waste classification and management
EN 13137:2001	Characterization of waste - Determination of total organic carbon (TOC) in waste, sludges and sediments
EN 13427:2004	Packaging - Requirements for the use of European Standards in the field of packaging and packaging waste

EN 13592+A1:2007	Plastics sacks for household waste collection - Types, requirements and test methods
EN 13593:2003	Packaging - Paper sacks for household waste collection - Types, requirements and test methods
EN 13656:2002	Characterization of waste - Microwave assisted digestion with hydrofluoric (HF), nitric (HNO ₃) and hydrochloric (HCl) acid mixture for subsequent determination of elements
EN 13657:2002	Characterization of waste - Digestion for subsequent determination of aqua regia soluble portion of elements
EN 13965-2:2010	Characterization of waste - Terminology - Part 2: management related terms and definitions
EN 14039:2004	Characterization of waste - Determination of hydrocarbon content in the range of C ₁₀ to C ₄₀ by gas chromatography
EN 14345:2004	Characterization of waste - Determination of hydrocarbon content by gravimetry
EN 14346:2006	Characterization of waste - Calculation of dry matter by determination of dry residue and water content
EN 14405:2017	Characterization of waste - Leaching behaviour test - Up-flow percolation test (under specified conditions)
EN 14429:2015	Characterisation of waste - Leaching behaviour test - Influence of pH on leaching with initial acid/base addition
EN 14582:2007	Characterisation of waste - Halogen and sulfur content - Oxygen combustion in closed systems and determination methods
EN 14582:2016	Characterization of waste - Halogen and sulfur content - Oxygen combustion in closed systems and determination methods
EN 14735:2005	Characterization of waste - Preparation of waste samples for ecotoxicity tests
EN 14899:2005	Characterisation of waste - Sampling of waste materials - Framework for the preparation and application of a sampling plan
EN 14997:2015	Characterisation of waste - Leaching behaviour test - Influence of pH on leaching with continuous pH control
EN 15002:2015	Characterization of waste - Preparation of test portions from the laboratory sample
EN 15169:2007	Characterization of waste - Determination of loss on ignition in waste, sludge and sediments
EN 15192:2006	Characterization of waste and soil - Determination of chromium (VI) in solid material by alkaline digestion and ion chromatography with spectrophotometric detection
EN 15216:2007	Characterization of waste - Determination of total dissolved solids (TDS) in water and eluates
EN 15308:2016	Characterization of waste - Determination of selected polychlorinated biphenyls (PCB) in solid waste, by using capillary gas chromatography with electron capture or mass spectrometric detection
EN 15309:2007	Characterization of waste and soil - Determination of elemental composition by X-ray fluorescence
EN 15347	Plastics - Recycled Plastics - Characterisation of plastics wastes
EN 15347:2007	Plastics - Recycled Plastics - Characterisation of plastics wastes
EN 15863:2015	Characterisation of waste - Leaching behaviour test for basic characterisation - Dynamic monolithic leaching test with periodic leachant renewal, under fixed conditions
EN 15875:2011 ;EN 15875/AC:2012	Characterization of waste - Static test for determination of acid potential and neutralisation potential of sulfidic waste

EN 16123:2013	Characterization of waste - Guidance on selection and application of screening methods
EN 16192:2011	Characterization of waste - Analysis of eluates
EN 16323:2014	Glossary of wastewater engineering terms
EN 16377:2013	Characterization of waste - Determination of brominated flame retardants (BFR) in solid waste
EN 16424:2014	Characterization of waste - Screening methods for the element composition by portable X-ray fluorescence instruments
EN 16457:2014	Characterization of waste - Framework for the preparation and application of a testing programme - Objectives, planning and report
EN 840-1:2012	Mobile waste and recycling containers - Part 1: Containers with 2 wheels with a capacity up to 400 l for comb lifting devices - Dimensions and design
EN 840-2:2012	Mobile waste and recycling containers - Part 2: Containers with 4 wheels with a capacity up to 1300 l with flat lid(s), for trunnion and/or comb lifting devices - Dimensions and design
EN 840-3:2012	Mobile waste and recycling containers - Part 3: Containers with 4 wheels with a capacity up to 1300 l with dome lid(s), for trunnion and/or comb lifting devices - Dimensions and design
EN 840-4:2012	Mobile waste and recycling containers - Part 4: Containers with 4 wheels with a capacity up to 1700 l with flat lid(s), for wide trunnion or BG- and/or wide comb lifting devices - Dimensions and design
WI00444xxx	Waste - Determination of the content of elements and substances in waste
CEN/TS 16010:2013	Plastics - Recycled plastics - Sampling procedures for testing plastics waste and recyclates
CEN/TS 16011:2013	Plastics - Recycled plastics - Sample preparation
CEN/TS 16861:2015	Plastics - Recycled plastics - Determination of selected marker compounds in food grade recycled polyethylene terephthalate (PET)
EN 15342:2007	Plastics - Recycled plastics - Characterization of polystyrene (PS) recyclates
EN 15343:2007	Plastics - Recycled plastics - Plastics recycling traceability and assessment of conformity and recycled content
EN 15344:2007	Plastics - Recycled plastics - Characterisation of Polyethylene (PE) recyclates
EN 15345:2007	Plastics - Recycled Plastics - Characterisation of Polypropylene (PP) recyclates
EN 15346:2014	Plastics - Recycled plastics - Characterisation of poly(vinyl chloride) (PVC) recyclates
EN 15347:2007	Plastics - Recycled Plastics - Characterisation of plastics wastes
EN 15348:2014	Plastics - Recycled plastics - Characterisation of poly(ethylene terephthalate) (PET) recyclates
CEN/TR 15353	Plastics - Recycled plastics - Guidelines for the development of standards for recycled plastics
EN 1744-6:2006	Tests for chemical properties of aggregates - Part 6 : determination of the influence of recycled aggregate extract on the initial setting time of cement
EN 933-11:2009	Tests for geometrical properties of aggregates - Part 11 : classification test for the constituents of coarse recycled aggregate
EN ISO 16103:2005	Packaging - Transport packages for dangerous goods - Recycled plastics material
prEN 45557	General method for assessing the proportion of recycled material content in energy related products