BUSINESS PLAN

CEN/TC 343
SOLID RECOVERED MATERIALS, INCLUDING SOLID RECOVERED FUELS

EXECUTIVE SUMMARY

CEN/TC 343 was originally established to develop the relevant European standards for the market for solid recovered fuels. The standardization work was based on Mandate M/325 from the European Commission, partly in support of the RES-E Directive 2001/77/EC. In 2015, the work enlarged to global markets with the formation of the equivalent ISO committee, ISO/TC 300. During 2021, both committees agreed to change their title and scope to include material use in addition to energy use. Consequently, the new scope is:

Standardization of solid recovered materials, including solid recovered fuels, from non-hazardous waste for the purpose of utilisation (recovery and recycling) in a following process.

The scope covers the material from the point of acceptance to the point of delivery into the next stage of processing.

Excluded: Fuels covered by CEN/TC 335.

NOTE Solid recovered material (SRM) is any non-hazardous waste that can be specified and classified for a specific recovery or recycling purpose, as with Solid Recovered Fuel (SRF), which is only to be called SRF if it has specifications and classes that meet the requirements for energy conversion. Other purposes may, for example, be chemical recycling and mineral input into cement manufacture. The purpose of use for the SRM, in and of itself, is not important to these SRM standards unless specifically stated as such within the relevant standard(s). Reuse is not recognised as a purpose for SRM within these standards.

As a consequence of this change, a new abbreviation, SRM, was launched, to describe solid recovered material.

Business environment

Waste management includes waste recovery, i.e. recycling or treatment of waste for reuse. Energy recovery from waste is practised all over the world in various forms.

Solid recovered fuel is prepared from non-hazardous waste, main categories of raw material being municipal solid waste (MSW), commercial and industrial waste (CIW) and construction and demolition waste (CDW). Processing burnable parts of waste into fuel – to be subsequently utilized in power plants or industrial processes – is also taking place on all continents.

Preparation and use of solid recovered materials help to reduce the amount of non-recyclable waste that is landfilled today. Solid recovered fuels can substitute fossil fuels and thus lower the overall emissions of CO_2. Uniform procedures based on international standards will contribute to the production of solid recovered material (including SRF) in a consistent quality, to facilitate international trade, secure supplies and achieve high environmental and socio-economic goals.

New trends are observed on the global market: Waste is more and more considered as “raw material” and not purely as residue. This creates new business opportunities. ‘Solid recovered fuel’ is only one example of the general concept ‘solid recovered material, SRM’.

European standardisation of solid recovered material, in the form of solid recovered fuels, is seen as a key to increase the safe and efficient use of solid recovered fuels and for their acceptability in the fuel market in Europe. Classified solid recovered fuels can be used for the substitution of fossil fuels in many sectors, i.e. for the production of heat and/or power and in different industrial furnaces. Different technologies for solid fuel combustion, e.g. grate firing, fluidized bed firing, pulverized fuel firing, gasification etc. can be used.

Parties involved are material producers, waste management companies, producers of heat and/or power, producers of lime and cement klinker, equipment producers, trade associations, authorities and NGOs.

The majority of work items of CEN/TC 343 will be developed in collaboration with ISO/TC 300 under the Vienna Agreement.

Benefits

The purpose for making common standards for SRM derived from non-hazardous waste is:

- Reducing dependency on imported materials and virgin resources, e.g. fossil fuels (security of supply)
- Providing common procedures and free trade on the internal market
- Creating jobs in an expanding industry
- Promoting recovery and reducing final disposal of materials, such as combustible non-hazardous wastes
- Simplifying communications between suppliers and customers of solid recovered material
- Assuring that material conversion equipment and solid recovered materials are designed for each other
- Supporting the market with standards which help with the economic valuation of the material, supporting the safe handling of the material and contributing to the protection of the environment
- Producing a common way to control and regulate safety demands and taking environmental aspects into consideration
- Providing common language and characteristics for solid recovered materials

Priorities

- Converting the initial CEN solid recovered fuel publications into EN ISO standards
- Responding to internal market needs
- Promoting the European interests in global standardization

1 BUSINESS ENVIRONMENT OF CEN/TC 343

1.1 Description of the Business Environment

The following political, economic, technical, regulatory, legal, societal and/or international dynamics describe the business environment of the industry sector, products, materials, disciplines or practices related to the scope of this CEN/TC, and they may significantly influence how the relevant standards development processes are conducted and the content of the resulting standards:

SRM is typically provided through the following main categories of waste:

- municipal solid waste (MSW)
- commercial and industrial waste (CIW) and
- construction and demolition waste (CDW).

Environmentally sound waste management activities are done at various scales, including transboundary movements, and one of the key pillars in the protection of the environment and human health. It also has an important role in the fight against climate change, the efficient and rational use of natural resources and energy, as well as enhancing the circular economy. Waste management includes waste recovery, e.g. recycling or treatment of waste for reuse. Some forms of non-hazardous waste utilization have been carried out for decades, some very well-known and understood, while others less well known, for instance the use of SRM for their mineral content in the cement industry. With the growing need to utilize resources as fully and effectively as possible, utilization of non-hazardous wastes is an important part in ensuring discarded non-hazardous wastes support resource substitution and the circular economy.

Preparation and use of solid recovered material helps to reduce the amount of waste that is landfilled today. Solid recovered materials can also be substitutes for virgin resources (e.g. first used) and solid fossil fuels and thus lower the overall emissions of CO_2. Uniform procedures based on international standards will contribute to facilitate international trade, secure supplies and achieve high environmental and socio-economic goals.

Until recently, the main interested parties in the standardization process are waste management companies (especially those who process waste into fuel), producers of heat and/or power, cement and lime manufacturers, manufacturers of equipment used in the value chain, trade associations, authorities and non-governmental organizations (NGO). However, SRM is being considered more widely as sustainability, resource utilization and climate change all focus on one planet living (e.g. living within the resources we currently have – such as reprocessing textile fibres and plastic chemical recovery).

One of the well-known uses of SRM is for solid recovered fuel (SRF) production, which is used in energy recovery from waste and is practised all over the world in various forms. The fuel is often called by different names like Refuse Derived Fuel (RDF), Waste Derived Fuel (WDF) or Solid Recovered Fuel (SRF). The term SRF is used especially in Europe when it refers to fuels fulfilling the requirements of European standards. The use of different terms suggests that there is a need for international standardization in this area.

Given the social drivers to minimize waste and increase resource utilization, non-hazardous waste used in the appropriate processes and facilities provides a use for some of the material that has been typically considered end-of-life. This is additional to off-setting virgin materials requirements in manufacturing. For instance, chemical recovery/recycling could provide an opportunity to breakdown single use plastics, produce hydrogen and use CO2 – chemical recycling could help recovering and reprocessing textiles.

All affected stakeholders – like manufacturers and users of SRM (including SRF), manufacturers of equipment, testing houses, regulators, authorities and NGOs – will benefit from standardized

terminology. Manufacturers and users of SRM benefit especially from the possibility to specify and measure the quality of the material in a standardized way. For SRF producers – often SME waste management companies – the increased use of SRF offers a good opportunity to develop a viable business. This will continue as the demand for SRM develops. Equipment manufacturers are often global actors and global standards naturally benefit them. For users of SRM it is often a cost saving alternative, and therefore they have a vested interest to increase possibilities of its use, e.g. through standardization. For regulators and authorities, standardization gives a possibility to find ways to define Best Available Techniques (BAT) and appropriate and acceptable uses, for example, to measure the renewable part of the SRF in a commonly accepted way.

The legal framework is wide:

The Waste Directive (Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain directives)

The Directive gives a wide definition of waste. As the scope of CEN/TC 343 currently covers the 'material', the definition of 'recovery' may be interpreted to cover the production of SRM.

NOTE In the Waste Directive, 'recycling' is defined as follows: any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations.

The Landfill Directive (Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste)

The directive sets binding targets for the diversion of biodegradable waste from landfill.

Note 1. Some member states do not, or will not, allow combustible waste in landfill; others do the same for untreated waste.

Note 2. Some member states have introduced a landfill tax to encourage diversion of wastes from landfill.

The Industrial Emissions Directive, IED (Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control)

The directive entered into force in 2011 and was transposed into national legislation by Member States by 2013.

Best Available Techniques (BAT) Reference Document for Waste Treatment was published in 2018. This document was produced by the European Integrated Pollution Prevention and Control Bureau (EIPPCB) at the European Commission's Joint Research Centre. BREF on waste treatment includes installations preparing fuel from non-hazardous waste.

The Renewable energy directive, RED II Directive (Directive (EU) 2018/2001/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC)

This renewed directive (which is a recast from directive 2009/28/EC) establishes a common framework for the promotion of energy from renewable sources in the EU and sets a binding target of 32 % for the overall share of energy from renewable sources in the EU's gross final consumption of energy in 2030. It also establishes sustainability and greenhouse gas emissions saving criteria for biofuels, bioliquids and biomass fuels and lays down rules on financial support to enhance the use of renewable energy usage.

The directive defines "biomass" as: "the biodegradable fraction of products, waste and residues from biological origin from agriculture (including vegetal and animal substances), forestry and related industries including fisheries and aquaculture, as well as the biodegradable fraction of industrial and municipal waste". Hence, as it was the case with the Dir. 2001/77 EC, it supports the market development of SRF.

The Kyoto Protocol

The Kyoto Protocol sets binding targets for different countries for emissions of six Greenhouse Gases. Member States have different practices for calculating the reductions of the emissions of Greenhouse Gases from energy generation through the incineration of waste and combustion of waste-derived fuels.

Note. The standards are not intended to resolve discussions about (a) the relative merits of recovery vs. disposal or (b) whether solid recovered fuels are products or still wastes (or both), but they will serve as tools for the Community Legislator and Competent National Authority when these issues are considered.

Zero Pollution action plan for air, water and soil by the European Commission

According to the zero pollution vision for 2050, air, water and soil pollution is reduced to levels no longer considered harmful to health and natural ecosystems and that respect the boundaries our planet can cope with, thus creating a toxic-free environment.

CEN/TC 343 follows closely the execution of the Green Deal, which is the subject of SABE working group "Toxic-free environment".

One of the objectives in EU laws (air, water, marine and other) is to reduce waste generation, and specifically, residual municipal waste by 50 %. This might have impacts with regards to SRM production where municipal waste could be an important raw material.

1.2 Quantitative indicators of the business environment

The following list of quantitative indicators describes the business environment in order to provide adequate information to support actions of the CEN /TC:

The World Bank, in its recent report "What a waste 2.0: A Global Snapshot of Solid Waste Management", highlighted that there were 2.01 billion tons of MSW generated in the world (the estimated total waste per year was 24.7 billion tons). The majority (almost 80 %) of MSW is either not formally managed or ending up in landfill. 1.6 billion tons of CO_2 emissions in 2016 are caused by solid waste.

The OECD Environmental Statistics database provide a unique collection of policy-relevant environmental statistics. The datasets present trends in the amounts of municipal waste generated, and the treatment and disposal methods used. OECD gathers information about the development of municipal waste worldwide. More information and the statistics can be found in this link.

The estimated quantity of SRM currently used (mainly for SRF) annually in the European Union is 13,5 million tonnes from which 12 million tonnes are used in cement kilns and dedicated waste-to-energy plants (source: European Recovered Fuels Organization and Cembureau, 2015).

In line with the Waste Hierarchy, the preparation and use of solid recovered materials helps to reduce the amount of non-recyclable waste that is landfilled today. Solid recovered fuels can substitute solid fossil fuels and thus lower the overall emissions of CO_2 in the energy sector. Being an indigenous alternative fuel, the use of solid recovered fuel helps to reduce dependence on fossil fuel imports by the Member States. Uniform procedures based on European standards will contribute to security of supply and other environmental and socio-economic goals of the Commission.

The European Union's main energy policy targets, known as the "20-20-20" targets include:

- A 20 % reduction in EU greenhouse gas emissions from 1990 levels
- Raising the share of EU energy consumption from renewable resources to 20 %
- A 20 % improvement in the EU's energy efficiency

The EU has launched a communication to move up from 20 % to 30 % target in cutting greenhouse gas reductions. While this decision has not been finalized, the new target for 2030 provides an intention and perceived direction of travel for the EU.

The estimated quantity of solid recovered fuels produced in the European Union in 2008 was 12 million tonnes (6 Mtoe). That figure could rise to approx. 50 million tonnes and is likely to continue to grow as biodegradable waste is diverted from landfill, in accordance with the Council Directive on the landfilling of waste (source: European Recovered Fuels Organization), which makes solid recovered fuels an important aspect of solid recovered materials.

2 BENEFITS EXPECTED FROM THE WORK OF CEN/TC 343

The political, economical, social, technical, legal and international factors that directly require some or all of the standardisation activities proposed by the CEN/TC, or significantly influence the way these activities are carried out, are the following:

Environmental legislation

The Waste Directive (2008/98/EC) lays down the hierarchy of principles of waste-management policy. Prevention of waste is the first priority, followed by recycling and other recovery (including energy recovery); final disposal is the least favoured option. Any new work items for SRM will consider the benefits of utilization of materials within the waste hierarchy to determine if the standards support the material's optimum position in the waste hierarchy. This hierarchy must be applied with some flexibility and its implementation must be guided by considering the best environmental solution, while taking into account economic and social costs and benefits. In particular, where environmentally sound, preference should be given to recovery of material over landfill. The evaluation of environmental, economic and scientific effects of each option may lead to preference being given to the energy-recovery option. If preference to recovery is given, standardization of SRM is a tool for operators and permitting authorities for creating trust of the public in environmental parameters and quality assurance of SRM. This has already been demonstrated with standardization of SRM. The Waste Directive also lays down principles when certain specified waste shall cease to be waste. EN-standards may play a role when the EU or a National legislator sets criteria for end-of-waste status.

Circular Economy Action Plan (CEAP)

SRM fits within the EC CEAP published in March 2020 as part of the European Green Deal. By providing International Standards for SRM, including SRF, material utilization can be maximised supporting the reduction of natural resources and extending the life cycle of materials.

Economic

Raw and processed materials used for SRM are often used with different or co-benefits, such as their use in cement and lime kilns, that not only use the SRM as an energy source (SRF) but also as a mineral input to the process. Similarly, more utilization of the SRM will be determined by the economic value of the product at the time of use, e.g. one month the SRM may be used for energy recovery and another for chemical recycling. The same resource with the same properties and characteristics but utilized for different processes and end results. The SRM standards should support the ability to make economic decisions on recovery options.

Standardization of SRM has already started with the development of SRF standards. Standardization is seen as a key means to increase the safe and efficient use of SRM (including SRF) and for their acceptability in the marketplace. Classified SRM can be used as a substitute, particularly for fossil fuels in many sectors, such as for the production of heat and/or power, and in industrial furnaces. Different technologies for SRM can be used (e.g. for combustion, gasification, pyrolysis, chemical recycling, metal extraction and co-processing).

Planning and utilization of SRM and particularly energy-conversion plants using solid recovered fuels is dependent on the long-term availability of, and predictability of price levels of those materials. The cost of preparation of SRM, particularly SRF, is often higher than for the production of traditional fossil fuels, one of the reasons being the comparably smaller scale of operation. The development of International Standards is seen as a major driver to expand the market for solid recovered material. Increasing competition, because of increasing trade, should assist in stabilising prices for solid recovered material, including solid recovered fuels, at acceptable levels.

Social

International Standards are of great importance especially for globally operating manufacturers of SRM and particularly SRF production and of waste-to-energy technology. Also, many users of SRM, especially in the cement manufacturing industry, are global actors benefiting from universal practices and standards. The concept of SRM production and its use in some sectors are well-known on every continent. Consequently, international research and development of SRM production and use would also benefit from standardized terms and practices.

Trans-border shipments of SRM and particularly SRF/RDF have recently increased rapidly in Europe. Although there are no statistics about the international trade of SRF, there is anecdotal evidence and good reason to believe that it is increasing. Global trade and shipments of SRM would undoubtedly benefit from ISO standards.

Some of the standards will be directed towards establishing criteria for safe handling and the potential for health risk exposure. Standardization would intend to support the reduction in accidents and incidents experienced with SRM.

An increased use of waste for energy purposes will have positive socio-economic effects at regional, national and European levels. Regionally, it will create new market opportunities for waste-management companies and improve the local infrastructure. At the national level, the increased production of solid recovered materialswill lead to the creation of new jobs in the business sectors of material utilization and has already been seen in fuel production, design and manufacturing of equipment, energy production and consultancy.

Technical

One of the major problems for the creation of a dynamic and sustainable market in SRM is that the quality of traded recovered materials may vary among the various producers. Users are often reluctant to buy materials whose quality and compositions are not well known. The development of standards for the sampling, testing and specifications (which may be economic, technical and environmental characteristics) of SRM could support the development of the market and help to describe the SRM in a consistent and reliable way. A reliable quality management system for the production of SRM is therefore advantageous for increasing the market and particularly for the use of new types of SRM, although ISO/TC 300 at present rely on the market using other quality management standards, such as the ISO 9000 series.

The interaction between fuel characteristics and conversion technology is still one of the most important factors for successful commercialisation of solid recovered materials and particular solid recovered fuels. As suppliers of solid recovered materials develop their ability to specify their products more accurately, so the manufacturers of conversion technology, etc. will become more willing to guarantee the performance of their equipment.

Establishing internationally recognised SRM standards can support the development of conformity assessment systems and schemes, which in turn may support regulation, legislation and trading of the products and the uptake of material utilization from SRM.

3 PARTICIPATION IN CEN/TC 343

All the CEN national members are entitled to nominate delegates to CEN Technical Committees and experts to Working Groups, ensuring a balance of all interested parties. Participation as observers of recognized European or international organizations is also possible under certain conditions. To participate in the activities of this CEN/TC, please contact the national standards organization in your country.

Interested parties are material-producing companies, waste-management and other material and fuel-producing companies, equipment producing companies and companies operating processing and waste-to-energy plans, incineration and co-incineration installations using solid fuels, as well as trades unions, public authorities and non-governmental organisations. All are represented in CEN/TC 343 Solid recovered materials, including solid recovered fuels.

4 OBJECTIVES OF CEN/TC 343 AND STRATEGIES FOR THEIR ACHIEVEMENT

4.1 Defined objectives of CEN/TC 343

CEN/TC 343 was originally established to develop the relevant European Standards for the market for solid recovered fuels. The work has evolved after cooperation with ISO/TC 300 was established in 2015. CEN/TC 343 will standardize solid recovered materials, including SRF, prepared from non-hazardous waste to be utilised for recovery and recycling purposes, including power plants, gasification plants, pyrolysis plants, chemical recycling, mineral utilization such as for industrial processes (like cement and lime manufacturing). ISO/TC 300 excludes standards for solid biofuels (ISO/TC 238) and excludes the actual use purpose of the material (e.g. the conversion to energy or the chemical transformation of plastic during the chemical recycling process).

The objective of CEN/TC 343 is the elaboration of standards on:

1. terminology
2. fuel specifications and classes
3. quality management system
4. sampling
5. sample reduction
6. physical and mechanical tests
7. chemical tests
8. supplementary tests

so as to promote the growing European market for solid recovered materials.

4.2 Identified strategies to achieve the defined objectives

After creation of ISO/TC 300 in 2015, the existing European standards and other European publications were taken as a basis for ISO's work. With the scope expanded in 2020, new work items on the basis of the need to classify SRM for other purposes will also be considered. The practical drafting work is conducted in ISO working groups according to the Vienna Agreement.

The work has been organized through six working groups. The structure may alter with the expansion of scope to enable SRM for different purposes to work at different rates and for different aspects of the material.

The work of ISO/TC 300 and its working groups will be conducted through correspondence, physical and hybrid meetings, standards development platform tools, teleconferences and e-mail, utilizing as much as possible modern electronic communication means.

To ensure avoiding duplicate work, ISO/TC 300 will establish all relevant internal and external liaisons that are needed. An up-to-date list of liaisons can be found in this link.

The main target of ISO/TC 300 is to develop International Standards but, when appropriate, also other deliverables, e.g. Technical Specifications and Technical Reports, are an option.

The task of CEN/TC 343 is to ensure that the Euroopean legislation framework is respected while drafting the standards. CEN/TC 343 will also follow and take part in relevant programmes and projects established by the Commission.

4.3 Environmental aspects

Environmentally sound waste management activities are carrued out at various scales, including transboundary movements, and one of the key pillars in the protection of the environment and human health. It also has an important role in the fight against climate change, the efficient and rational use of natural resources and energy, as well as enhancing the circular economy. Waste management includes waste recovery, e.g. recycling or treatment of waste for reuse. Some forms of non-hazardous waste utilization have been carried out for decades, some are very well-known and understood, while others less well known, for instance the use of SRM for their mineral content in the cement industry. With the growing need to utilize resources as fully and effectively as possible, utilization of non-hazardous wastes is an important part in ensuring discarded non-hazardous wastes support resource substitution and the circular economy.

Development of a functioning market for classified SRF will reduce Green House Gas emissions per produced electricity unit compared to other waste management options and generating energy from fossil fuels, thereby helping to achieve the environmental goals of European Environmental, Waste and Energy Policies.

The reduction of CO_2 emissions is about 1t CO2/t SRF for co-incineration in a cement kiln and a coal fired power plant and about 0,5 t/t for an optimized Waste to Energy plant (reference: pages 42 and 43 of the Prognos report 'Resource savings and CO2 reduction potential in waste management in Europe and the possible contribution to the CO2 reduction target in 2020').

Currently, CEN/TC 343 provides test methods (including sampling) and related classification and specification of SRF addressing the environmental parameters for consideration in the design and operation of facilities using SRF.

5 FACTORS AFFECTING COMPLETION AND IMPLEMENTATION OF THE WORK PROGRAMME

European Standards were developed with the active participation of the European Commission, which enhanced the probability of their broad acceptability and coherence with applicable legislation.

The requirements of the mandate M/325 (given by EC in 2002) were confirmed by EC to have been fulfilled in February 2012.

After moving towards the international standardisation, new ideas and new members have been obtained that increase the impacts of the work programme.

6 CEN/TC 343 AND COOPERATION WITH ISO

Since the establishment of ISO/TC 300, all work has been conducted in ISO/TC 300 working groups. European members are actively participating in ISO/TC 300. Currently, all working group convenors are European, which enhances the ability of the standards meeting European legal framework.