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ENTERPRISE AND INDUSTRY DIRECTORATE-GENERAL

Chemicals, metals, mechanical, electrical and construction industries; Raw materials
Chemicals - Classification & Labelling, Specific Products, Competitiveness

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M/492 EN

MANDATE ADDRESSED TO CEN, CENELEC AND ETSI FOR THE DEVELOPMENT OF HORIZONTAL EUROPEAN STANDARDS AND OTHER STANDARDISATION DELIVERABLES FOR BIO-BASED PRODUCTS

1. SCOPE

This mandate concerns the development of various horizontal standards and other standardisation deliverables for BIO-BASED PRODUCTS as a follow-up of the CEN Report of CEN/BT/WG 209 "Bio-based products" on the earlier programming mandate M/429 on Bio-based Products. This mandate is also linked both to the mandate M/430 on the development of European standards for bio-polymers and bio-lubricants as well as to the mandate on the development for bio-surfactants and bio-solvents of European standards together with Technical Specifications (TSs) and/or Technical Reports (TRs) as interim outputs. Moreover, it also relates to the specific standardisation-related aspects, conclusions and proposed activities for bio-based products lead markets as outlined in the REPORT OF THE TASKFORCE ON BIO-BASED PRODUCTS composed in preparation of the Communication "A Lead Market Initiative for Europe" {COM(2007) 860 final} entitled "*Accelerating the Development of the Market for Bio-based Products in Europe*".

2. JUSTIFICATION

2.1. Political Context

The Competitiveness Council[1] invited the Commission *"to present during 2007 an initiative on lead markets, based on a broad stakeholder consultation for defining a valid approach for fostering emergence of markets with high economic and societal value. This would include identifying areas where concerted action through key policy instruments and framework conditions, coherent and coordinated policy making by relevant public authorities, as well as enhanced cooperation between key stakeholders can speed up market development, without interfering with competitive forces."*

[1] Conclusions of 4 December 2006 on innovation policy and competitiveness.

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At the beginning of 2010 the Commission published the 'Europe 2020 Strategy'[2] that highlighted the aim for smart growth that requires promoting knowledge and innovation form essential drivers obtaining future growth. This required work aim at turning innovative ideas into new products and services creating growth, quality jobs and help address European as well as global societal challenges such as combating climate change. As part of this, the Flagship Initiative: "Innovation Union" was announced. Consequently, the Commission recently published its Communication on 'Europe 2020 Flagship Initiative - Innovation Union'[3]. Within this activity 'European Innovation Partnerships' between the EU and national levels are announced to speed up the development and deployment of the technologies needed to meet the societal challenges identified. Additionally, the Commission will also prepare a separate Communication addressing the 'Knowledge Based Bio-Economy', where 'key enabling technologies' and bio-based products will help to shape Europe's industrial future.

2.2. Rationale

According to a recent study the 2006 volume of markets for **bio-based products** might more than triple until 2020 to an estimated 250 billion Euro globally, which could result in a similar increase in jobs (380,000). As of 2005, bio-based products already accounted for 7% of global sales and around 77 billion Euro in value within the chemical sector. The EU industry accounted for approximately 30% of this value.

The EU industry accounted for approximately 30% of this value. Sales of products made by biotechnological processes in 2012 are expected to be around 135 billion Euro = 7.7% of total chemical sales[4]. The most important sub-segments in 2012 are expected to be active pharmaceutical ingredients and cosmetics[6]. In particular, the active pharmaceutical ingredients, with 33.7% of global chemical sales, are expected to be the chemical segment with the highest sales percentage of products produced using biotechnological processes[6]. Specialty chemicals produced using biotechnological processes are expected to see a slight decline in sales by 2012[6]. It is expected that Asia achieve the highest sales globally followed by Europe and North America[6]. It is predicted that Europe will be strong in sales in the sub-segments active pharmaceutical ingredients, polymers and fibres, cosmetics and organic chemicals[6]. The sub-segments inorganic substances and fertilizers and gases are predicted to see the lowest sales[6].

Innovation policy in the European Union now[5] applies a wide range of policy instruments to create a more favourable business climate for innovative goods and services. In the next few years, the implementation of the LMI will be at the heart of the deepening and implementation of the EC's innovation strategy. This calls for urgent and

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[2] Communication from the Commission Europe 2020 - A strategy for smart, sustainable and inclusive growth"; COM(2010) 2020; Brussels, 3.3.2010.

[3] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions; Europe 2020 Flagship Initiative - Innovation Union; SEC(2010) 1161; COM(2010) 546 final; Brussels, 6.10.2010.

[4] Source: CEFIC Facts & Figures January 2009, Market evaluation of FESTEL CAPITAL from May 2009.

[5] Communication "Putting knowledge into practice: A broad-based innovation strategy for Europe" of September 2006

coordinated action through ambitious action plans for the identified areas, to rapidly bring visible advantage for Europe's economy and consumers.

One of the important features of the action plans (one for each lead market area) is to speed up the implementation of standardisation work. Since the action plans consist of a short time frame, it is important that during the first months of the LMI a strong drive towards implementation of the activities in the bio-based and other lead market areas is made.

Both the Lead Market Initiative (LMI) Communication and the Report[6] from the Ad-hoc Advisory Group for Bio-based Products in the framework of the European Commission's Lead Market Initiative concluded that standards may facilitate the development of Lead Markets. Standards should preferably be performance-based, yet technology-neutral.

Regarding bio-based products7 standards are seen as essential elements in aggregating initial demand, in particular for new bio-based products. In the area of bio-based products, an industry self-commitment concerning biodegradable and compostable polymer products exists since 2004, while another one for "Bio Hydraulic Oils" as part of bio-lubricants is current being prepared. This was facilitated by the Commission through a working group on renewable raw materials (RRMs) for industry and consists

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[6] Ad-hoc Advisory Group for Bio-based Products in the framework of the European Commission's Lead Market Initiative (2009), Taking Bio-Based From Promise To Market - Measures to promote the market introduction of innovative bio-based products, Report.

[7] Definition used in the Interservice Task Force Report: Bio-based products ("Bio" refers to "Renewable biological resources" and not "biotechnology". While advances in life sciences and biotechnology are a major driver for optimising biomass production and for bio-product innovations, there are other technology drivers, such as chemistry, nanotechnologies, etc.) refer to non-food products derived from biomass (plants, algae, crops, trees, marine organisms and biological waste from households, animals and food production). Bio-based products may range from high-value added fine chemicals such as pharmaceuticals, cosmetics, food additives, etc., to high volume materials such as general bio-polymers or chemical feed stocks. The concept excludes traditional bio-based products, such as pulp and paper, and wood products, and bio-mass as an energy source. As far as bio-fuels are concerned, it is essential to consider the link between the production of bio-fuels and bio-based products. This could occur in so called "bio-refineries". The technologies to produce bio-fuels and bio-based products, or their intermediate chemical building blocks, follow the same principles. Bio-based products have the potential of reinforcing the economics and rapid introduction of bio-fuels and vice versa. Moreover, conventional paper and wood products are excluded even though these products are based on bio-mass, the reason being that for these products there are not the same kind of market failures that might be at hand for new bio-based products. However, wood based production is affected by the development of the bio-fuels demand and pulp and paper production plants have in principle the technical potential of becoming bio-refineries. The current forest-based industries can therefore be affected by the developments in lead markets for bio-based products.

Definitions used in the CEN-Report on Mandate M/429:

Definition of „bio-based" (Resolution from 3.Nov 2009):

1. bio-based = derived from biomass

2. biomass = material of biological origin excluding material embedded in geological formations and/or fossilized
Note: This definition refers to the well-known short-cycle of carbon, i.e. the life cycle of biological materials (e.g. plants, algae, marine organisms, forestry, micro-organisms, animals, and biological waste from households, agriculture, animals and food/feed production).
3. bio-based product = product wholly or partly bio-based.

Note: The bio-based product is normally characterised by the bio-based content.

of a voluntary certification and labelling scheme8. These commitments are seen as the starting point towards a harmonised internal market for bio-based products. It is essential to further build upon the biodegradability standards, e.g. stronger standards for lubricants in forest and agricultural machines to boost the use of bio-lubricants for this application. It was concluded that a coherent concept for bio-based product standardisation is needed, taking into account existing Commission policy on standardisation, as outlined in the Commission Communication on the role of European standardisation in the framework of European policies and legislation (COM(2004) 674 final) and the Communication 'Towards a greater contribution from standardisation to innovation in Europe (COM(2008) 133 final).

Consequently and on the basis of Directive 98/34/EC laying down a procedure for the provision of information in the field of technical standards and regulations and of rules on Information Society services, the Commission is launching this mandate to explore the potential of EU wide bio-based product standards by equally building on the results and experiences obtained during the work on other mandates (i.e. programming mandate M/429 on Bio-based Products; mandate M/430 on the development of European standards for bio-polymers and bio-lubricants; and mandate on the development for bio-surfactants and bio-solvents of European standards together with Technical Specifications (TSs) and/or Technical Reports (TRs) as interim outputs).

Furthermore, the need for environmental and other sustainability criteria for such European standards and other standardisation deliverables should be considered by taking into account that final end products might be made up of a mix of bio-based and non bio-based components. In view of the importance of taking a life cycle perspective for evaluating bio-based products and fulfilling the mandate of the IPP Communication[9], the EC services of the Joint Research Centre and DG Environment developed a guidance handbook for good practice in Life Cycle Assessment, as basis for more robust practice analysis: the International Reference Life Cycle Data System (ILCD) Handbook. This handbook acts within the ISO 14040 series, but provides clearer guidance, avoiding subjective choices and ambiguities. The handbook was developed in co-ordination and consultation with EU industry and international partners including UNEP, Japan, China, etc.. In the EU it also supports the implementation of the EC's Thematic Strategies on the Sustainable Use of Natural Resources and on Waste as well as the upcoming SCP Action plan.

3. DESCRIPTION OF THE MANDATE

In order to promote the bio-based product lead market, CEN, CENELEC and ETSI are invited to execute the following tasks, taking full account of and building upon – as appropriate – the REPORT OF THE TASKFORCE ON BIO-BASED PRODUCTS

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[8] The notification costs of this voluntary scheme are ~7000€ per product linked to the execution of standardised tests (i.e. EN13432), while the additional certification costs are ~1400€ per product for the first year and ~1200€ per product for each of the following years. Companies include: BASF AG (DE), Cargill Dow (USA), Novamont (IT), Rodenburg Biopolymers (NL). It is supported by EU federations: IBAW, Plastics Europe, and ERRMA. More information on www.errma.org. Some bio-lubricants would also qualify for an ECO-Label (see Commission Decision N°2005/360/EC of the 26 April 2005 establishing the ecological criteria for the award of the Community eco-label to lubricants – OJ L 118/26, 5.5.2005).

[9] COM(2003) 302 final

composed in preparation of the Communication “A Lead Market Initiative for Europe” {COM(2007) 860 final} entitled “*Accelerating the Development of the Market for Bio-based Products in Europe*”:

- the establishment of a committee for bio-based products.
- the development of a standard for a consistent terminology for bio-based products.
- the development of a single standard with several parts for bio-based products covering horizontal aspects like sampling, bio-based content, application of and correlation towards LCA, sustainability of biomass used and a certification scheme for bio-based products, identifying which characteristics can/should be assessed and how they should be reported.

For the development of different European standards and other standardization deliverables for bio-based products the roadmap depicted in Table 1 is to be followed:

The scope for the to be established Committee and Work Items will be as follows:

Committee for Bio-based Products:

Standardization of terminology, methods, criteria, guidance and tools applicable to bio-based products, taking into account the received CEN Technical Report.

Work Item 1:

Standardization of general terminology applicable to bio-based products, taking into account CEN/TR15932 and the Technical Report assembled by CEN/BT/WG209/TG1.

Work Item 2:

Standardization of a method determining the bio-based carbon content of products, taking into account prEN 15440, CEN/TS 16137, ASTM D6866 and ASTM D6852. At the same time another Work Item should also cover the standardization of a method determining the bio-based content of products, other than bio-based carbon content.

Work Item 3:

Standardization of sustainability criteria applicable to bio-based products, taking into account the work of CEN/TC 383 and the EU-Prosuite project.

Work Item 4:

Standardization of life cycle analysis guidance applicable to bio-based products, taking into account the work of ISO/TC 207, the EU-Prosuite-and EU-Calcas-Projects, SEEBALANCE® tool and other relevant ongoing research.

Work Item 5:

Standardization of declaration and certification tools applicable to bio-based products, taking into account the work of CEN/TC 249/WG 17.

The next prospective areas for further development of bio-based products as identified by the European Lead Market Initiative, the CEN-Report on Mandate M/429 and the EU-

RRM-Group are bio-surfactants and bio-solvents (see other parallel standardisation Mandate on surfactants and solvents - M/491).

The standardization deliverables in the short term shall be descriptive standards or test methods.

CEN, CENELEC and ETSI are requested to take into account on-going pre-and co-normative research and development (including relevant work done by relevant stakeholders, industry, in national as well as international fora and the Commission's Framework Programmes for research i.e. FP6 and FP7; CIP; Life+; etc.) and co-ordinate their activities in order to avoid any duplication of work as well ensure the generation of a clear priority list for future activities (see especially the last bullet point above). In this respect, it is also essential that any other relevant research activities/projects from various sources (e.g. European, National and Regional and Industry (here, especially the ETPs – see also below) Programmes) are taken actively and effectively into account.

Moreover, they should also establish and/or build upon existing appropriate links for the above described tasks with relevant European Technology Platforms (ETPs), especially with the ones entitled Sustainable Chemistry (SusChem) (linked to the integrated and diversified biorefinery and renewable/regrowable raw materials related activities), Plants for the Future (linked to renewable/regrowable raw materials and waste as raw material for non-food use), Forest Based Sector (linked to renewable/regrowable raw materials and waste as raw material) and Biofuels (noting that as far as bio-fuels are concerned to consider just the link between the production of bio-fuels and bio-based products – see also footnote 6 of this mandate) to ensure a coordinated and fast progress of their tasks.

Furthermore, identified needs for environmental and other sustainability criteria for European standards or other standardisation deliverables bio-based products should also be consistent with work carried out and priorities set by the REPORT OF THE TASKFORCE ON BIO-BASED PRODUCTS composed in preparation of the Communication "A Lead Market Initiative for Europe" {COM(2007) 860 final} entitled "*Accelerating the Development of the Market for Bio-based Products in Europe*".

European standardisation efforts should also be elaborated wherever possible in cooperation with the international standards bodies and take into account in particular the ongoing activities in other parts of the world (i.e. activities in the USA and Japan especially in relation to: (a) test methods for determining the bio-based content of natural range materials using radiocarbon and isotope ratio mass spectrometry analysis; (b) practice for evaluating and reporting environmental performance of bio-based products; (c) guidance for the determination of bio-based content, resources consumption, and environmental profile of materials and products; and (d) guidance for sampling and reporting of results for the determination of the bio-based content of materials via Carbon Isotope Analysis or other approaches into account.

4. EXECUTION OF THE MANDATE

The Commission hereby asks CEN, CENELEC and ETSI to fulfil the tasks as described above, while taking into account the rationale of this mandate stated in the justification.

CEN, CENELEC and ETSI are required to keep close contacts with the Commission and to ensure that their activities are co-ordinated in a way to create a consistent and coherent

framework at the international level, notably with regard to other relevant activities in relevant European Research Projects and the EU-RRM-Group.

For the development of different European standards and other standardization deliverables for bio-based products the roadmap depicted in Table 1 is to be followed:

No.	Title	Deliverable	Start Month	End Month
0	Establish Committee		0	6
1	Bio-based products – Overview of standards	CEN/TR[10]	0	6
2	Bio-based products – Part 1: Terminology	EN	6	42
3	Bio-based products – Part 2: Determination of bio-based carbon content	TS	6	28
4	Bio-based products – Part 3: Specific sustainability criteria	CEN/TS	24	52[11]
5	Bio-based products – Part 4: Specific Life-Cycle Analysis Guidance	CEN/TS[12]	24	52[13]
6	Bio-based products – Part 5: Determination of bio-based content	EN	6	42
7	Bio-based products – Part 6: Specific declaration and certification tools	CEN/TS	24	60

Table 1: Roadmap for Bio-based Products Standardisation

5. BODIES TO BE ASSOCIATED

The execution of the mandate should be undertaken in cooperation with the widest possible range of interested groups: The Joint Research Centre of the European Commission, OECD Activities as well as research institutes, and the different relevant technology platforms (see section 4 of this mandate). Moreover, the results of the stakeholder analysis performed by CEN/BT/WG 209 "Bio-based products", which identified the availability of a wide range of companies and organizations, shall be actively used by associating them in the standardisation process.

[10] Lifetime : no limit.

[11] This time line allows building upon the results from the EU, PROSUITE-Project on the development of a sustainability assessment tool that will be tested for bio-based products.

[12] Lifetime 2x3 years = 6 years, afterwards further development to European Standard (EN).

[13] This time line allows building upon the results from the EU, PROSUITE-Project on the development of a sustainability assessment tool that will be tested for bio-based products.

As appropriate, CEN, CENELEC and ETSI will also invite the standardisation stakeholders representing consumers' interests (ANEC), environmental protection (ECOS), workers (ETUI-REHS), SMEs (NORMAPME), European Renewable Raw Materials Association (ERRMA), European Solvents Industry Group (ESIG), International Association for Soaps, Detergents and Maintenance Products (AISE), European Bioplastics (European branch association representing industrial manufacturers, processors and users of bioplastics and biodegradable polymers (BDP) and their derivative products), European Association for Bioindustries (EuropaBio), **C**omité **E**uropéen des **T**ransmissions **O**léohydrauliques et **P**neumatiques (CETOP) or the European Fluid Power Committee, relevant activities under the Europe Innova Initiative, relevant European Technology Platforms (ETPs) and others to take part in the development of the programme.