RSB – ROUNDTABLE ON SUSTAINABLE BIOMATERIALS

RSB Standard for Advanced Products

(Non-energy use)

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Introduction

This *RSB Standard for Advanced Products* enables producers of non-energy use products and their intermediates to demonstrate sustainable practices throughout their supply chain.

RSB certified *Advanced Products* are products that:

- are sustainably produced - processing along the entire supply chain is in line with sustainable practices as described in the RSB Principles & Criteria, and
- mitigate climate change - system greenhouse gas emissions in the defined production are reduced or avoided compared to the fossil reference product, and
- reduce the risk of fossil depletion - the use of fossil resources in the defined production system is reduced compared to the fossil reference product.

Advanced Products can come in different forms. The following product categories are covered by this standard:

- Category I: Products that are *bio-based.* These products are derived from biomass and have a share of bio-based content not less than 25% present in the product;
- Category II: Products produced from non-biogenic end-of-life products or production residues;
- Category III: Products produced in a production system that processes bio-based feedstock or non-bio-based end-of-life products or production residues in combination with virgin fossil feedstock and that ensures that at least 25% of the virgin fossil feedstock needed to produce the certified product batch are replaced by alternative feedstock (bio-based feedstock or non-bio-based end-of-life products, by-products or residues).

  Please note: Products in category III may not have a physical bio-based content because fossil and bio-based feedstocks are not segregated at the integrated production site. Depending on the share of bio-based feedstocks used, a physical bio-based content might be measurable in the product.

This RSB Standard sets requirements for each product category and defines category-specific on-product claims that are allowed to be used by operators to avoid confusion in the market. For example, the claim “bio-based product” may only be used for category I products.

Advanced products include plastics, textiles, pharmaceuticals, packaging, tableware, cosmetics, nutritional supplements, food, feed, pulp, paper and many others (see a more detailed list below and in Annex I).

Like advanced fuels, advanced products are being increasingly used. The upstream supply chains of advanced products are similar if not in most cases identical to advanced fuel supply chains. Participants in the advanced fuel and advanced product supply and production chains are often the same operators, thereby serving a number of market segments. Substances such as bio-naphtha or biomethane can be used both as a fuel or as a feedstock for further processing into products. Therefore, the supply chains for advanced products may overlap with advanced fuels, generating the same environmental and social impacts as already covered by the RSB

Standard.

However, supply chains of advanced products are often significantly more complex than for fuels. In the case of energy products, the output is a single fuel molecule (such as ethanol or DME) or possibly one or more well-defined distributions of molecules (such as in diesel or jet fuel production). A biorefinery focused on fuels typically has a small number of well-defined and regulated outputs, which are delivered to an end customer or distributor to be incorporated in the fuel supply chain. In the case of advanced products, both the supply chains and the final products may be much more complex, although fuel processes may also generate non-energy co- or by-products. The supply chains normally encompass different sites across the globe.

This standard describes sustainability requirements for operators involved in the supply chains of advanced products, as well as requirements related to chain of custody, bio-based content and greenhouse gas emission assessment. It provides clarity with respect to claims that operators may make for the advanced products they may offer to alternative market sectors.

Main changes from the previous version (Version 1.4)

1. The title of the standard was changed to *RSB Standard for Advanced Products*.
2. Additional product categories were added to the scope of the standard.
3. A definition for *Advanced Product* was added.
4. A specification for the certified sustainable content was added.
5. A clarification was included that products derived from end-of-life products and processing residues shall meet *RSB Standard RSB-STD-01-010* (RSB Standard for advanced fuels).
6. A section on calculating GHG emissions and GHG emission reduction thresholds was included.
7. Requirement related to the risk of fossil depletion were added for all product categories.
8. For bio-based products, the option to determine the bio-based content was included in addition to the bio-based carbon content.
9. Clarifications on the requirement regarding the threshold for bio-based (carbon) content were included.
10. Specifications for communication and claims were included.

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A. Intent of this standard

The intent of this standard is to describe the conditions under which Participating Operators producing, converting, processing or trading advanced products may receive RSB certification and make associated claims of compliance.

B. Scope of this standard

This is an international standard which is valid worldwide for all Participating Operators producing, converting, processing or trading advanced products or their intermediates.

Advanced products cover products of the following categories:

- Category Ia: Bio-based products from agricultural, forestry, marine or aquatic feedstocks,
- Category Ib: Bio-based products from bio-based end-of-life products, by-products or residues,
- Category IIa: Products produced through bio-conversion processes that convert non-biogenic end-of-life products, by-products or residues using biological methods (microbes, fungi, other types of organisms),
- Category IIb: Products produced through other carbon recycling technologies using non-biogenic end-of-life products, by-products or residues,
- Category IIIa: Products that may not have a physical bio-based content but have been produced in a production system that uses feedstock derived from agricultural, forestry marine or aquatic biomass in combination with fossil feedstock,
- Category IIIb: Products that may not have a physical bio-based content but have been produced in a production system that uses feedstock derived from biogenic end-of-life products, by-products or residues in combination with fossil feedstock,
- Category IIIc: Products that may not have a physical bio-based content but have been produced in a production system that uses non-biogenic end-of-life products, by-products or residues in combination with virgin fossil feedstock.[1]

Examples of target markets for advanced products include, but are not limited to: packaging materials, plastics, cosmetics, tableware, pharmaceuticals, textiles, pulp and paper.

C. Status and effective date

This version 2.0 of the RSB Standard for Advanced Products shall be effective from 7 December 2018.

D. Note on use of this standard

All aspects of this standard are considered to be normative, including the intent, scope, standard effective date, references, terms and definitions, tables and annexes, unless otherwise stated.

Users implementing this standard shall ensure that the intent is met, through implementing all of the requirements specified herein, and any and all additional measures necessary to achieve the intent of this standard.

E. Terms and definitions

1. For the purposes of this standard, the terms and definitions given in RSB-STD-01-002, RSB Glossary of Terms shall apply. Relevant terms for this standard as defined in RSB-STD-01-002 are:

1. 1. **Bio-based**
Derived from *biomass*.

1. 2. **Bio-based carbon content**
Fraction of carbon derived from *biomass* in a product.

Please note: The bio-based carbon content is expressed as a fraction of the total carbon content, or as a fraction of the total organic carbon content.

1. 3. **Bio-based content**
Fraction of a product that is derived from *biomass.*

Please note: In the context of this standard, bio-based content is used as an umbrella term that encompasses bio-based carbon content and bio-based mass content.

1. 4. **Bio-based mass content**
Fraction of the total mass of a product derived from *biomass*.

Please note: The method to determine the bio-based mass content is complementary to the determination of the bio-based carbon content and takes further elements into account (e.g. oxygen, hydrogen, nitrogen).

[1] *Please note*: Products in category III may not have a physical bio-based content because fossil and bio-based feedstocks are not segregated at the integrated production site. Depending on the share of bio-based feedstocks used, a physical bio-based content might be measurable in the product.

1. 5. **Bio-based product**
Bioproduct. Biomaterial. Product wholly or partly derived from *biomass*.

Please note: Bio-based products must have a verifiable share of bio-based content not less than 25% present in the product (See F.3.1 for more information).

1. 6. **Biomass**
Raw material of biological origin excluding material embedded in geological formations or transformed to fossilised material (Source: ISO 13065).

1. 7. **Global Warming Potential (GWP)**

Characterisation factor describing the radiative forcing impact of one mass-based unit of a given greenhouse gas relative to that of carbon dioxide over a given period of time (Source: ISO 13065).

1. 8. **Raw material**
Feedstock. Material that is used to produce a product (Source: ISO 13065).

1. 9. **Total carbon**
TC. Quantity of carbon present in a sample in the form of organic, inorganic or elemental carbon (Source: ISO 16620-1:2015)**.**

1. 10. **Total organic carbon**
TOC. Quantity of carbon that is converted into carbon dioxide by combustion and which is not liberated as carbon dioxide by acid treatment (Source: ISO 16620-1:2015).

2. The following specific terms and definitions shall apply

2. 1. **Activity data**
Quantified measures of a level of activity that result in GHG emissions or removals (Source: Greenhouse Gas Protocol – Product Life Cycle Accounting and Reporting Standard, 2011).

Examples: Energy (joules of energy consumed), mass (kilograms of a material), volume (volume of chemicals used), distance (kilometres of transport), etc.

2. 2. **Advanced Products**
Products that:

- are sustainably produced, and
- mitigate climate change, and
- reduce the risk of fossil depletion.

2. 3. **Batch**
A specific quantity of a product that is intended to have uniform characteristics and qualities.

2. 4. **Production residue**
Material that is a secondary product of a process which is inelastic in supply and that has an economic value ratio of ≤ 5% with respect to the sum of primary product(s), co-products and other by-products generated from the same production process.

Please note: Operators using production residues shall meet the requirements as defined in RSB-STD-01-010 RSB Standard for Advanced Fuels.

2. 5. **Emission factor**
GHG emissions per unit of activity data (Source: Greenhouse Gas Protocol – Product Life Cycle Accounting and Reporting Standard, 2011).

2. 6. **Final product**
Goods and services that are ultimately consumed by the end user rather than used in the production of another good or services (Source: Greenhouse Gas Protocol – Product Life Cycle Accounting and Reporting Standard, 2011).

2. 7. **Intermediate product**
Goods that are used as inputs for the production of other goods or services (Source: Greenhouse Gas Protocol – Product Life Cycle Accounting and Reporting Standard, 2011).

2. 8. **Material balance**
Comparison of physical quantities, expressed by mass, of inputs and outputs for a product in the manufacturing process of this product, over a specific time-period (Source: EN 16785-2).

2. 9. **Recycled carbon content**
Fraction of carbon derived from recycled carbon in a product.

Only pre-consumer and post-consumer materials shall be considered in line with ISO 14021:2016.

Please note: The recycled carbon content is expressed as a fraction of the total carbon content.

F. Requirements

The operator shall demonstrate that the *Advanced Product*

- is sustainably produced throughout the supply chain - the processing is in line with sustainable practices as described in the RSB Principles & Criteria, and
- mitigates climate change – in the defined production system greenhouse gas emissions are avoided compared to the reference product, and
- reduces the risk of fossil depletion – in the defined production system the use of fossil resources is reduced compared to the fossil reference product.

1. Requirements related to the sustainable production

1. 1. The RSB Principles & Criteria (RSB-STD-01-001) shall apply to any industrial operator in the scope of certification.

1. 2. The RSB Principles & Criteria (RSB-STD-01-001) shall apply to any biomass producer (e.g. farm or a plantation) in the scope of certification.

1. 3. The operator shall source feedstock that is certified by the RSB and apply the RSB Standard for Traceability of RSB Certified Material (Chain of Custody) (RSB-STD-20-001).

1. 4. In the event that the feedstock for a batch of certified product is not wholly but only partly RSB-certified, the operator shall

    a) specify the amount of certified feedstock in relation to the total mass of the feedstock in the product documentation (e.g. website etc.), and

    b) ensure that at least 25% of the feedstock for any batch of certified product is RSB-certified from the certification onwards, and

    c) ensure that 100% of the feedstock for any batch of certified product is RSB-certified within 3 years from the first certification audit, by developing and implementing a plan which is to be

verified by the auditor. 50% of the feedstock should be certified in year 1 and 75% in year 2.

The threshold of 100% in b) may be lowered to 90% if the operator can demonstrate that feedstocks are not available on the market as RSB certified.

Operators who do not achieve the target of 100% (or 90%) within 3 years shall use the RSB trademark on the product only in combination with the amount of RSB-certified feedstock in relation to the total mass of the feedstock.

Balancing of certified feedstock over time shall follow the *RSB Standard for Traceability* (RSB-STD-20-001).

Please note: RSB may accept feedstock certified against other certification standards if:

- a benchmark study was conducted to assess if all RSB requirements are covered by the other certification standard, and
- this benchmark study was recognised by the RSB Board of Directors, and
- any gaps between the other certification standard and the RSB standard have been covered by a certificate issued through an RSB recognised certification body.[2]

1. 5. Operators using end-of-life products or production residues shall apply, in addition, the following sections of the RSB Standard for Advanced Fuels (RSB-STD-01-010).

- Eligibility requirements (see informative Annex III for more information);
- Sustainability requirements;
- Traceability requirements;
- Feedstock specific requirements;
- Pathway-specific requirements for recycled carbon fuels;
- Pathway-specific requirements for renewable fuels of non-biological origin.

2. Requirements related to the mitigation of climate change

[2] The 2017 SAN Standard may be an example of a standard that can be benchmarked against the RSB for the use of agricultural residues

2. 1. Requirements for operators producing intermediate products or biomass:

2. 1. 1. Operators shall calculate lifecycle cradle-to-gate GHG emissions of certified biomass and/or intermediate products, i.e. the emission value shall include the emissions of all inputs and raw materials including the emissions of the previous step in the supply chain. The operators along the chain of custody shall add the additional emissions from transport and /or processing.

The GHG emission calculation shall cover the product or the product component that the RSB claim is referring to (see also chapter on Communication and Claims).

Please note: Cradle-to-gate refers to the boundary of the certification scope and requires that all emissions from the extraction of the raw materials, agricultural activities or forestry ("cradle") up to the factory gate are included in the assesment.

2. 1. 2. The following elements shall be included in the GHG emission calculation:

- Emissions from the extraction or cultivation of raw materials shall include emissions from the extraction or the cultivation process itself, from the collection of the raw materials, from waste and leakage including field emissions and from the production of chemicals or products used in the extraction or cultivation;
- Annualised emissions from carbon stock changes caused by land-use change shall be calculated by dividing the total emissions equally over 20 years. GHG emissions from any land use change that has occured since January 2008 shall be taken into account;
- Emissions from processing shall include emissions from the processing itself, from waste and leakage, from the production of chemicals or products used in processing;
- Emissions from transport and distribution shall include emissions from transport of raw materials, intermediates and final products from storage of materials as well as distribution: All relevant transport and distribution steps shall be taken into account.

Activity data shall be measured or based on technical specifications (e.g. for processing facilities). Emission factors shall be drawn from established databases, e.g. Ecoinvent or GaBi.

Please note: See specific requirements for end-of-life products and production residues in 2.4.2.

2. 1. 3. In addition, the operator may consider the following elements for the GHG emission calculation:

- Emission saving from soil carbon accumulation via improved agricultural management for measures undertaken after 1 January 2008 including shifting to reduced or zero-tillage, improved crop rotation and /or cover crops, crop residue management, improved fertiliser or manure management, the use of soil improver (e.g. compost) or through the non-harvested component of perennial biomass. The operator shall provide evidence that the soil carbon has increased, or solid and verifiable evidence is provided that it can reasonably be expected to have increased over the period in which the raw material concerned were cultivated;
- Emission saving from excess electricity from cogeneration and other energy sources like steam.

2. 1. 4. The operator shall follow one of the methodologies listed below for the calculation of GHG emissions:

- EU Renewable Energy Directive methodology;
- RSB GHG Calculation Methodology (RSB-STD-01-003-01);
- ISO 14040:2016 Environmental management – Life cycle assessment – Principles and framework in combination with ISO 14044:2006: Environmental management – Life cycle assessment – Requirements and guidelines;
- Greenhouse Gas Protocol: Product life cycle accounting and reporting standard.

For all calculations of GHG emissions, the operator shall adhere to all requirements of this standard RSB-STD-02-001. In the case of any inconsistencies between this standard RSB-STD-02-001 and the GHG methodology chosen, this standard RSB-STD-02-001 shall prevail.

Already existing certifications of GHG values issued by an independent certification body or a critical review following the critical review process as outlined in 14044:2006 may be accepted by the auditor as evidence to comply with this criterion if the operator can demonstrate that the same assumptions and activity data are still valid.

2. 1. 5. Following EN 16760, operators may include the CO_2 uptake by biomass in the calculation.

The net quantity of atmospheric carbon dioxide fixed in a product shall be determined by using stoichiometry and the biogenic carbon content.

Example: The carbon content in polylactic acid is 50%. If the carbon is 100% biogenic, the quantity of atmospheric carbon dioxide fixed in the product is: $0{,}5 * \frac{1}{12} * 44 = 1.83 \ \ kg\ CO_2/kg\ PLA$

2. 1. 6. The operator shall report GHG emissions to the next operator in the supply chain by specifying:

a) the functional unit the GHG value is referring to, and
b) if and how the CO_2 uptake was accounted for.

As an alternative to b) operators may also report a separate value for the CO_2 uptake.

2. 2. Requirements for operators producing final products

2. 2. 1. Whenever certified final products are intended to replace fossil derived products, these certified final products shall achieve at least **10% lower lifecycle greenhouse gas emissions** calculated on a cradle-to-grave basis relative to the lifecycle greenhouse gas emissions of a comparable fossil product.

Please note: Certified products that are not intended to replace fossil derived products (e.g. food, feed related products) are exempt from this requirement.

2. 2. 2. The operator shall demonstrate that the systems being compared are equivalent; the system shall be compared using the same functional unit and equivalent methodological considerations such as system boundary and allocation procedures.

2. 2. 3. To comply with 2.2.1. operators shall calculate GHG emissions on a cradle-to-grave basis, which in addition to the emissions as calculated in line with 2.1 includes the following emissions:

e_u = direct emissions from the use-phase of the certified product (combusted fuels; products that contain or form greenhouse gases, that are emitted during use, e.g. fertilizers)

e_{eol}= emissions generated during waste disposal and treatment (e.g. incineration), including the conversion of biogenic carbon into other greenhouse gases (e.g. landfill methane emissions)

2. 2. 4. If the operator can demonstrate that there is no difference of e_{eol} and e_u between the certified product and the comparable fossil product, the inclusion of e_{eol} and e_u in the scope of the calculation is not required.

Whenever the operator does not include e_{eol} and e_u in the calculation of the advanced product, the calculation of the fossil reference product shall also not include the components e_{eol} and e_u.

2. 2. 5. In the case that the uptake of CO_2 in bio-based raw material was not included, the calculation of the CO_2 emissions in e_{eol} is not required for the corresponding proportion in the advanced product.

2. 2. 6. Whenever greenhouse gases are incorporated over more than 100 years, these removals may be calculated as if they were stored indefinitely.

2. 2. 7. Greenhouse gases that are stored for less than 100 years shall be calculated according to the ILCD Handbook as follows:[3]

$$e_{temp.Storage} = \sum m_i * t_s * GWP_{IPPC,i} / 100$$

$e_{temp.Storage}$: Emission savings of temporarily stored GHG species i

m_i: Mass of greenhouse gas i removed

For CO_2: $m_{CO2} = m_C * M_{CO2}/M_C$

with
m_c being the mass of carbon stored in a product and released as carbon dioxide within a 100-year timeframe
M_{CO2}, M_C being the molecular weights of CO_2 and carbon, respectively

For CH_4: $m_{CH4} = m_C * M_{CH4}/M_C$

with
m_c being the mass of carbon that is temporarily stored in e.g. a landfill and released as methane within a 100-year timeframe
M_{CH4}, M_C being the molecular weights of methane and carbon respectively

t_S: Time of temporal removal / storage in years

$GWP_{IPCC, i}$: IPCC Global Warming Potential (GWP) for 100-year time horizon for greenhouse gas i

[3] European Commission -Joint Research Centre -Institute for Environment and Sustainability: International Reference Life Cycle Data System (ILCD) Handbook -General guide for Life Cycle Assessment -Detailed guidance. First edition March 2010. EUR 24708 EN. Luxembourg. Publications Office of the European Union; 2010

Table 1: GWP 100-year[4]

Common Name	Chemical Formula	GWP100
Carbon dioxide	CO_2	1
Methane	CH_4	28
Nitrous oxide	N_2O	265

Example: Determination of temporal accounting of 10 kg bio-based product (embedded carbon: 4 kg) that sequesters carbon for 80 years in the use phase.

$$e_{temp.Storage} = \sum m_i * t_s * GWP_{IPPC,i} / 100$$
$$= -4 * \frac{44}{12} kg\ CO_{2eq} * 80 * \frac{1}{100} == -11.73\ kg\ CO_{2eq}$$

2. 3. Specific provisions for the calculation of GHG emissions for Category III products

2. 3. The operator shall calculate the GHG emissions that are avoided through replacing fossil with bio-based feedstock or fossil-based end-of-life products or production residues in the production system.

2. 3. 1. The operator shall calculate the cradle-to-gate lifecycle GHG emissions of the fossil reference product by applying the conditions as set out in clauses 2.1.1 to 2.1.5.

2. 3. 2. The operator shall calculate the lifecycle GHG emissions of the feedstock that is replacing the fossil feedstock by applying the conditions as set out in clauses 2.1.1 to 2.1.5.

2. 3. 3. The operator shall determine the GHG emissions that are avoided in the production system by replacing the GHG values of the fossil raw material that was substituted with the GHG emission value of the bio-based feedstock or the fossil-based end-of-life product or production residue. Should the feedstock replacing the fossil feedstock have a different chemical structure, the different chemical value shall be considered (see 3.3.2).

2. 3. 4. The operator shall attribute the avoided GHG emissions to the advanced product based on the feedstock equivalents documented in the book-keeping system (see 3.3).

[4] https://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WG1AR5_Chapter08_FINAL.pdf

2. 3. 5. The operator shall ensure that final products achieve at least 10% lower lifecycle greenhouse gas emissions on a cradle-to-grave basis calculated as described in 2.2.

Please note: Certified products that are not intended to replace fossil derived products (e.g. food, feed related products) are exempt from this requirement

2. 4. Feedstock specific provisions in the calculation for GHG emissions.

2. 4. 1. **Requirements for wood based-products**

For wood-based products, the requirements of RSB Principles & Criteria (RSB-STD-01-001) Criterion 3b shall apply.

2. 4. 2. **Requirements for end-of-life products and production residues**

2.- 4. 2. 1. Biogenic or fossil end-of-life products and production residues shall be considered to have zero-life-cycle emissions up to the collection of those materials. The calculation of greenhouse gas emissions shall therefore start with the collection of the material at the point of origin.

2. 4. 2. 2. The CO_2 uptake of biogenic residues may be considered at the point of origin as described in 2.1.5 and 2.1.6.

2. 4. 2. 3. All emissions that occur within the same site at the point of origin as side effects of the redirection of the feedstock flows have to be considered.

Example: A residue flow that was previously incinerated is now separated into two streams. One stream is used for the advanced product, while the other stream is still incinerated. Should the stream for incineration require additional energy (e.g. for pumping) as an effect of the separation, those emissions have to be included in the GHG calculation of the advanced product.

2. 4. 2. 4. Whenever operators who use fossil or bio-based end-of-life products or production residues can demonstrate that the carbon stored in those waste or residue-based materials

would ultimately be emitted into the atmosphere as local CO_2 emissions (e.g. incineration of fossil MSW) in the absence of the utilisation (i.e.in the baseline scenario), the operator may

- calculate the GHG emissions that will be avoided compared to the baseline scenario, and
- deduct the avoided emissions from the GHG value of the final product.

To simplify this calculation, the operator may also set e_{eol} at zero instead of calculating and deducting avoided emissions from the final GHG value.

Please note: As specified in section 6 on communication and claims, operators applying 2.4.2.4 have to disclose that avoided emissions were considered whenever the GHG emission of the product or the GHG saving potential compared to the fossil reference product is used in Business-to-Business (B2B) or Business-to-Consumer (B2C) communication.

3. Requirements related to the risk of fossil depletion

3. 1. Requirements for bio-based products (Category Ia and Ib)

3. 1. 1. Minimum bio-based content of a product

The operator shall ensure that the bio-based content of the certified product or product component is not less than 25%.

In addition, if the product is listed on the website of the USDA BioPreferred program, the operator shall ensure, that the category-specific bio-based content as defined by the USDA is achieved[5].

3. 1. 2. In the case of fluctuations of the bio-based content over time, the operator shall ensure that

a) the bio-based content as required in 3.1.1 is achieved at any time and
b) the on-product claim states the bio-based carbon or bio-based mass content that can be ensured at any time during the production process.

[5] https://www.biopreferred.gov/BioPreferred/faces/pages/ProductCategories.xhtml

3. 1. 3. Determination of the bio-based content

The operator shall determine the bio-based content of certified products by using one of the following options:

3. 1. 3. 1. Determination of the bio-based carbon content through ^{14}C measurement according to EN 16640, ASTM D6866, CEN/TS 16137:2011 or ISO 16620-1:2015.

The bio-based carbon content shall be expressed as percentage of mass of the total organic carbon, or the total carbon of the certified product.

Documented sampling procedures shall be used to ensure that the samples are representative for the product under consideration.

3. 1. 3. 2. Determination of the bio-based mass content using the radiocarbon analysis and elemental analysis according to EN 16785-1 or ISO 16620-4.

Documented sampling procedures shall be used to ensure that the samples are representative for the product under consideration.

The bio-based mass content shall be expressed as the percentage of the total mass of the product.

3. 1. 3. 3. Determination of the bio-based content by using the material balance method according to EN 16785-2.

As required in EN 16785-2 the operator shall establish a traceability system capable of providing the necessary information and to ensure the validity of all needed data required by this method and the representativeness of the product batch considered.

The bio-based content shall be expressed as the percentage of the total mass of the product.

3. 2. Requirements for products produced through carbon recycling technologies (Category II)

3. 2. 1. Minimum recycled carbon content of a product

The operator shall ensure that the recycled carbon content of the certified product or product component is not less than 25% relative to the carbon content of the product.

3. 2. 2. In the case of fluctuations of the recycled carbon content over time, the operator shall ensure that

a) a recycled carbon content of not less than 25% is achieved at any time and
b) the on-product claim states the recycled content that can be ensured at any time during the production process

3. 2. 3. Determination of the recycled carbon content

The operator shall determine the recycled carbon content by calculating a material balance for a representative product batch, by following the steps:

- Quantification of the feedstocks, by mass and recycled carbon content, used for the advanced product under consideration, and
- Quantification of losses, by mass and recycled carbon content, in the production unit, for each lost material, if any, and
- Quantification of the output(s), by mass, and
- Calculation of the recycled carbon content from these data.

3. 3. Requirements for Category III Products

The operator shall demonstrate that the advanced product reduces the risk of fossil depletion compared to the fossil reference product:

3. 3. 1. The operator shall assess the impact of the fossil reference product related to the depletion of fossil resources by determining the fossil feedstock needed as a material for the production. The assessment shall follow the rules as specified in ISO 14044 (2006).

3. 3. 2. Where more than one fossil feedstock type is required, the operator shall

a) normalise the amount of fossil feedstock required based on the chemical value of the different feedstock types, and
b) express the amount of fossil feedstock needed in one common unit (feedstock equivalent)

The chemical value of the feedstocks shall be determined based on the quantity of this feedstock that is required to produce one unit of product, in relationship to other feedstocks. In determining the chemical values, the operator shall account for differences in product yields as well as additional inputs such as energy or other chemicals, which may be required when using this feedstock.

3. 3. 3. The operator shall document the amount of bio-based feedstock and the amount of feedstock based on non-biobased end-of-life

products or production residues that is used as material in the system. The following feedstock shall not be considered in balance:

- Feedstock that is used as energy or other auxiliaries, which will not be present in a final product (e.g. solvents, catalysts)
- Feedstock that is used for the production of bio-based products.

3. 3. 4. The operator shall normalise the amount of feedstock from 3.3.3 based on the chemical value of the different types of feedstock and express the amount of new feedstock in the same common unit used in 3.2.2. (e.g. alternative feedstock equivalent)

3. 3. 5. The operator shall ensure at least 25% of the fossil feedstock equivalents needed for the production of the Advanced Product are substituted by alternative feedstock equivalents.

3. 3. 6. Operators shall have a documented book-keeping system in place to monitor the balance of alternative feedstock equivalents that have been added to the system and advanced products withdrawn from the system (i.e. sold to customers).

3. 3. 7. Operators shall ensure that alternative feedstock equivalents and advanced product claims are balanced within a 3-month period. Within the balancing period, a deficit may occur, as long as balance is achieved over the 3-months-period. A positive balance may be reported into the next reporting period.

3. 3. 8. The boundary of the assessment shall be

- one site, or
- several sites at the same geographic location which are connected with pipelines or other means of transport, or
- sites at different geographic locations if the operator can ensure and demonstrate for all sites that double-booking does not occur, e.g. by limiting the boundary to one legal entity or by having specific contractual relationships in place.

4. Traceability requirements

The RSB Standard for Traceability of RSB Certified Material (Chain of Custody) (RSB-STD-20-001) shall apply to any operator in the scope of certification.

5. Other requirements

The following standards shall apply to all participating operators, as described in annex II:

5. 1. RSB Standard for Participating Operators (RSB-STD-30-001).

   Please note: As part of the certification scope, the operator shall clearly describe the product or the product component certification is sought for.

5. 2. RSB Standard for Risk Management (RSB-STD-60-001).

5. 3. RSB Procedure on Communication and Claims (RSB-PRO-50-001).

6. Communication and Claims

6. 1. Operators shall use the short claim "RSB compliant Advanced Product**"**. An equivalent claim may be used upon written approval by the RSB Secretariat.

6. 2. Operators shall comply with the RSB Procedure on Communication and Claims (RSB-PRO-50-001). RSB may specify claims to be used for all three product categories in RSB-PRO-50-001.

   Please note: The term biomass / biofuels shall be adapted for the use of the advanced products in the scope of certification.

6. 3. The operator shall specify the product or the product component that an on-product claim is referring to.

6. 4. In the event that the scope of certification does only cover one component of the product, the operator shall only use an on-product claim if the certified component represents at least 50% of the total mass content of the product.

   If the certified component is less than 50% of the total mass content of the product, then the product claim on the product shall be related to the respective product component.

   Example: Milk beverage, where only the packaging is certified. In this case the claim must clearly refer to the packaging only, for example "RSB certified carton".

6. 5 Whenever the operator considers avoided emissions as specified in 2.4.2.4. in the GHG calculation, any B2B or B2C communication related to GHG emissions shall

- disclose that avoided emissions outside of the production process were considered;
- specify the baseline scenario;
- not state or imply that the GHG calculation was done in accordance with ISO 14067 or any other carbon footprint standard that does not include the option of account for avoided emissions.

6. 6. Requirements for bio-based products:

Operators using the approaches listed in 6.1 (bio-based products) shall add the following information to the on-product claims:

6. 6. 1. Minimum bio-based carbon in relation to the total carbon or the total organic carbon (in %). The standard used for measuring or calculations shall be stated; or

6. 6. 2. Minimum biomass in relation to the total mass of the product (in %). The standard used for measuring or calculation shall be stated.

6. 7. Requirements for recycled carbon products

6. 7. 1. Operators using recycled carbon technologies (category II) shall add the following information to the on-product claims:

- Minimum recycled carbon content in relation to the total carbon (in %), and

- Method used to determine the recycled carbon content

6. 7. 2. On-product claims for recycled carbon products must not refer to a bio-based product, bio-based content or a bio-based carbon content.

6. 8. Requirements for Category III products

Unless the bio-based content is measurable, operators using Category III approaches must not refer to a bio-based product, bio-based content or a bio-based carbon content.

6. 8. 1. On-product claims shall refer to e.g. the amount of primary fossil resources saved, or the amount of primary fossil carbon saved

by the input of eligible feedstock in the production system, for example:

“This RSB compliant product leads to a x% substitution of fossil with RSB certified biomass in the production system”

6. 8. 2. On-product claims for advanced products from fossil end-of-life products, production residues must not refer to any bio-based input and may use for example the following:

“*This RSB compliant product leads to a x% substitution of fossil resources by waste recycling in the production system*”, or

“*RSB compliant advanced product x% recycled feedstock, calculated and attributed on a product system basis*”

Deviating claims may be used after verification by the certification body and approval by RSB Secretariat.

6. 8. 3. Claims referring to GHG emissions must not refer to the product or a product carbon footprint but to the GHG emissions avoided in the system boundary.

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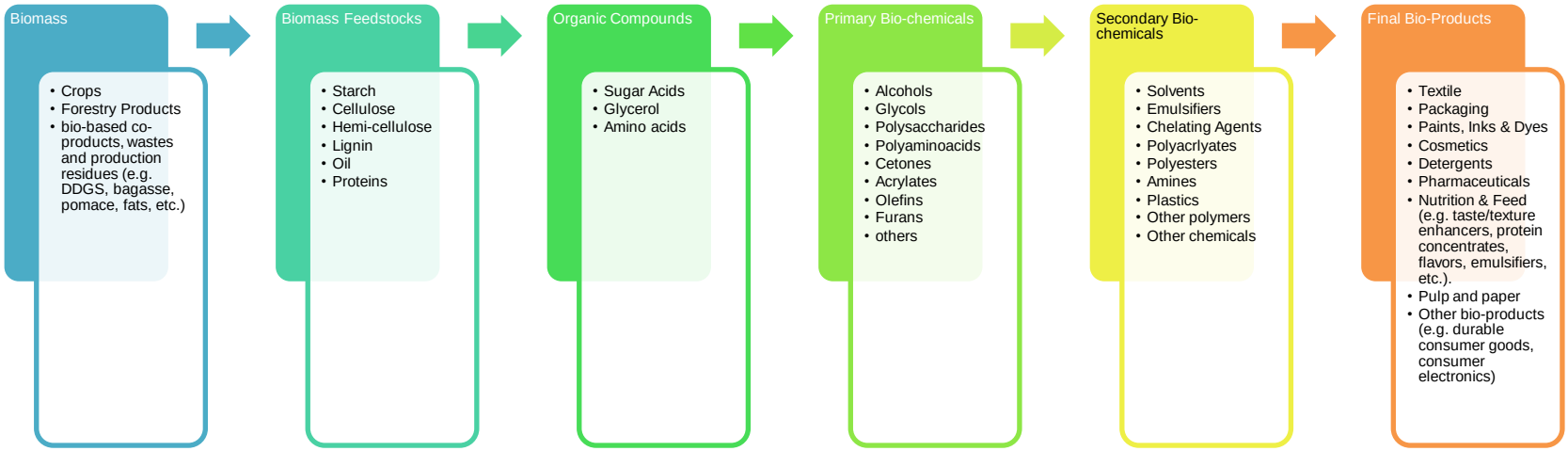
Annex I: Examples of bio-based supply chains



Annex II – Scope of RSB documents applicable at the audit

	RSB Principles & Criteria (RSB-STD-01-001)	GHG Calculation (RSB-STD-01-003-01)	Standard for Participating Operators (RSB-STD-30-001)	Chain of Custody Standard (RSB-STD-20-001)	Procedure for Communication & Claims (RSB-PRO-50-001)	Standard for Risk Management (RSB-STD-60-001)	Standard for Advanced products (RSB-STD-02-001)	For waste or residues based Advanced products RSB-STD-01-010 or RSB-STD-11-001-01-010
Biomass Producer*	√√*	√ √	√ √	√ √	√ √	√ √	√ √	√ √
Industrial Operator**	√ √*	√ √	√ √	√ √	√ √	√ √	√ √	√ √
Trader***			√ √	√ √	√ √	√ √	√ √	√ √

√ : Main audit

√: Surveillance audit

√* The surveillance audit shall focus on the implementation of the ESMP, the correction of non-conformities and compliance with progress requirements

* The term “Biomass Producer” refers to farmers and plantation or forest managers

** The term “Industrial Operator” refers to Feedstock processors, intermediary producers, biofuel or biomaterial producers

*** The term “Trader” refers to Trading companies (including companies selling to end-consumers) and blenders