



# **Scheme principles for the certification of sustainable material flows in the chemical industry**

**Version: RC² 1.1**

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Document title: „Scheme principles for the certification of sustainable material flows in the chemical industry“

**Version: RC<sup>2</sup> 1.1**

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## 1 Introduction

To make a significant contribution to reducing greenhouse gases and conserving resources in the long term, the chemical industry is increasingly relying on sustainably produced and certified biomass to replace fossil-based raw materials. In addition, chemical recycling of recovered materials with the aim of reducing the use of fossil-based raw materials is gaining in importance and is consistent with the concept of a *circular economy*. In the context of highly complex chemical manufacturing processes, when biomass or recovered materials are used as raw materials, they are first broken down and separated into atomic or molecular components in the same way as fossil-based raw materials ("virgin materials") to incorporate them into a range of different products. The sustainable biogenic content or recycled content in these products can vary considerably, making it virtually impossible to reach a valid conclusion about the content in the end product based on analytical evidence as a result of large-scale chemical compound processes.

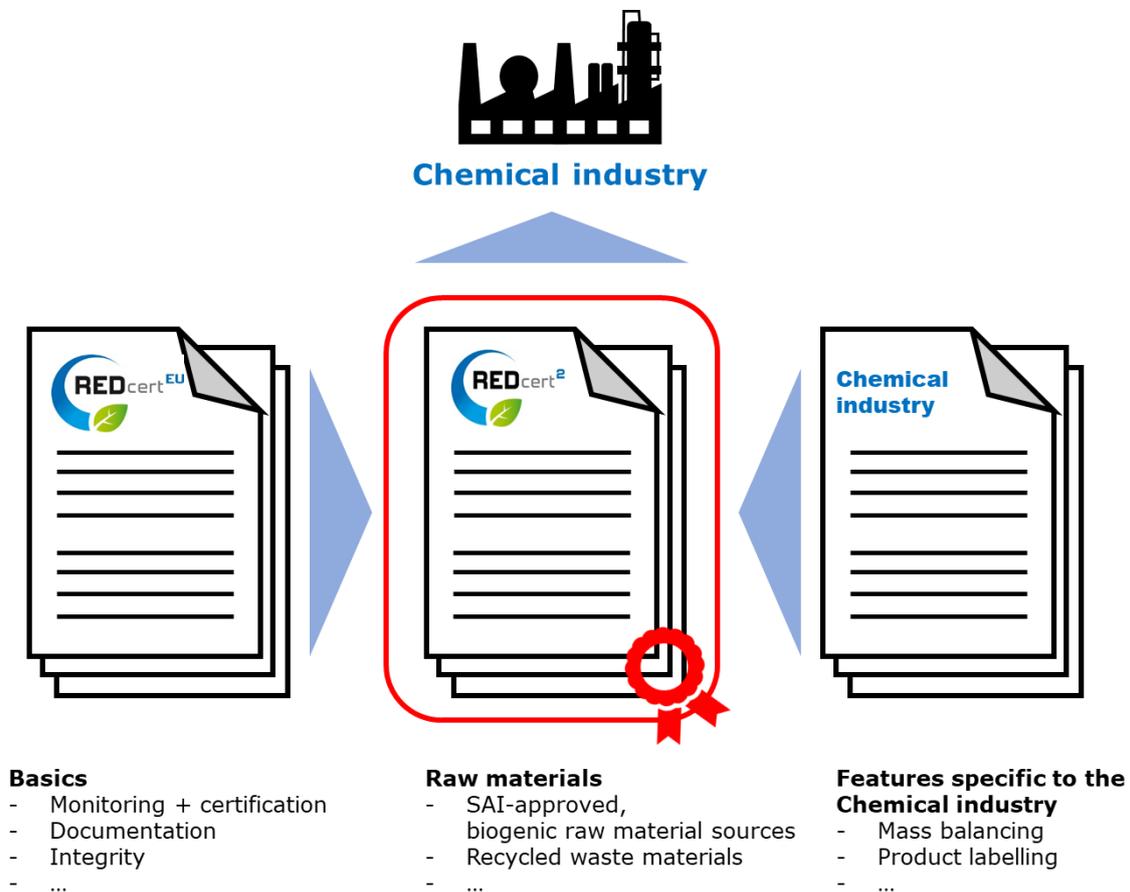
The chemical industry can use the mass balance approach to provide evidence that fossil-based raw materials have been replaced by certain quantities of sustainably certified biomass or recovered materials. However, a balance based purely on "mass", i.e. the weight of the raw materials used, no longer adequately reflects the specific properties of large chemical processes with their growing complexity. The reason is that in every process step, new products and/or intermediate products are created whose conversion rate is almost impossible to determine or verify with respect to the biomass or recovered materials used.

As a result, a concept for a mass balancing approach was jointly developed by BASF SE and TÜV SÜD which is not based on the mass of the biomass or recovered materials used, but on the chemical valence of its individual atomic components. It represents a stoichiometric balancing approach based on an equivalence analysis and documented in a corresponding account management system. This standard, published as CMS 71, was adopted by REDcert and integrated into the REDcert<sup>2</sup> scheme as an optional approach to meeting the needs of the chemical industry.

In this document, REDcert is expanding the concept of sustainability, which to date only covered certified biomass, to include recycled materials. The reason is that recycling of materials with mainly fossil-based components and biogenic materials is seen as an indispensable measure for overall sustainable economic development. This document therefore describes the guidelines for both sustainability certification of biomass-balanced raw materials and products and sustainability certification of products made from recovered materials. By adopting this approach, REDcert is encouraging the increased use of biogenic raw materials and at the same time creating incentives for the continued use of valuable

recovered materials. The aim of these measures is to reduce the use of materials made from fossil-based primary raw materials in the chemical industry, which is traditionally high.

This REDcert<sup>2</sup> document "Scheme principles for the certification of sustainable material flows in the chemical industry" is designed as a supplementary set of rules and directly references the principles set forth in the REDcert-EU scheme in many aspects. As a result, a company operating in the chemical industry can obtain REDcert<sup>2</sup> certification. Certification is possible both for products containing biogenic raw materials and for products containing recycled materials as defined in ISO 14021:2016.



The REDcert<sup>2</sup> mass balance system allows product-specific conclusions to be drawn about the sustainably certified biomass used at a chemical site or within the scope of an extended mass balance (EMB), but does not make it possible to draw conclusions about the percentages of biomass or recovered and recycled materials contained in the products or their use for energy.

REDcert<sup>2</sup> is a certification scheme for sustainable biomass production for the food and animal feed industry as well as the use of biomass as a raw material. The scope of the scheme can be expanded to include processing (conversion) and supply/trade. For the chemical industry, it is a scheme used to show that fossil-based raw materials have been replaced by certified sustainable materials using the mass balance approach.

It generally holds true that the biomass used in integrated production must be REDcert-EU, REDcert<sup>2</sup>, FSC or PEFC certified or meet the requirements of another sustainability standard that has at least been recognised by the European Commission in accordance with Directive (EU) 2018/2001 or has been positively evaluated by the *Sustainable Agriculture Initiative* (SAI) or expressly recognised by REDcert.

The recovered materials used do not have to be certified in terms of its origin or life cycle. Proof of the origin of the recovered materials used must be provided by the first user; to this end, a self-declaration is provided by the disposal or waste processing company which indicates its general consent to allow ad hoc inspections to verify this information.

REDcert can accept other certification schemes as “equivalent”, similar to the provisions for biogenic raw materials, to the extent that sourcing recovered or recycled materials from companies that are not part of the chain certified in the REDcert<sup>2</sup> scheme requires this.

For the sake of clarity, the table below shows how the essential elements of the REDcert EU scheme document “Scope and basic scheme requirements” correlate to the REDcert<sup>2</sup> scheme requirements for the certification of sustainable material flows in the chemical industry:

| <b>REDcert-EU</b><br><b>“Scope and basic scheme requirements”, Version 05; section...</b> | <b>REDcert<sup>2</sup></b><br><b>“Scheme principles for the use of biomass-balanced products in the chemical industry”, Version 1.1</b> | <b>Reference to the respective laws</b> |
|---|---|---|
| Introduction  | ✓ Reference   |   |
| 2 REDcert’s self-defined role   | ✓ Reference   |   |
| 3 Conditions and scope of validity  | ✓ Reference; see supplementary requirements below   |   |

|   |  |                             |
|---|--|-----------------------------|
| <p>4 Organisational structure of REDcert</p>  | <p>✓ Reference</p>   |                             |
| <p>5 The REDcert certification scheme</p> <p>5.1 Sustainability requirements for cultivating and producing biomass</p> <p>☒ not applicable</p> <p>5.2 Special requirements for the collection and use of waste and residual materials</p> <p>5.3 Requirements for the GHG emissions saving and the calculation methods</p> <p>5.4 Requirements for traceability and mass balancing for the continuous proof of origin of biomass</p> <p>5.5 Documentation requirements</p> <p>☒ not applicable</p> <p>5.6 Scheme function</p> | <p>✓ Reference; Special requirements for the GHG emissions saving and the calculation methods</p> <p>✓ Reference</p> <p>5.2 Requirements for biomass-balanced raw materials</p> <p>5.3 Special requirements for the collection and use of biogenic waste and residues and recovered materials</p> <p>5.4 ✓ Optionally applicable. Methodology according to reference</p> <p>5.5 Requirements for the traceability and mass balancing to provide continuous proof of origin of biomass and recovered materials</p> <p>5.6 ✓ Reference; in addition to the following requirements</p> <p>5.7 Requirements for certified products and for communication and use of advertising claims</p> <p>5.8 ✓ Reference; in addition to the following requirements</p> | <p>Directive 2009/28/EC</p> |

|  |   |  |
|--|---|--|
| 5.7 Registration and certification                             | 5.9 ✓ Reference; in addition to the following requirements  |  |
| 5.8 Other certification schemes                                | 5.10 ✓ Reference; in addition to the following requirements |  |
| ☒  | 5.11 Other raw materials                                    |  |
| 6 Measures for transparency and prevention of misuse and fraud | ✓ Reference   |  |
| 6.1 Transparency in scheme presentation                        | ✓ Reference   |  |
| 6.2 Transparency in scheme membership                          | ✓ Reference   |  |
| 6.3 Transparency in scheme administration                      | ✓ Reference   |  |
| 6.4 Transparency in scheme certification                       | ✓ Reference   |  |
| 6.5 Assuring scheme integrity and preventing misuse and fraud  | ✓ Reference   |  |
| 7 Costs for participating companies                            | ✓ Reference   |  |

## 2 REDcert's self-defined role

See REDcert-EU document "Scope and basic scheme requirements".

### 3 Conditions and scope of validity

The requirements criteria outlined in this document apply to suppliers and conversion plants - including upstream and downstream companies - in the chemical industry that replace fossil-based raw materials with sustainably certified materials and produce chemical products from them. If companies in the value chain want to advertise using their REDcert<sup>2</sup> certification or to label products as certified, they must be REDcert<sup>2</sup> certified.

Integrated manufacturing sites or plants typical of large chemical industrial sites can be considered a single site if there is a physical link between the operations on the site that are included under the scope of REDcert<sup>2</sup> certification. However, this does not always apply to third parties that are also based on the site but not part of the company. They may require independent certification if operational implementation is not the responsibility of the parent company (e.g. joint venture).

This document does not include the REDcert<sup>2</sup> requirements for the production of biomass. However, to produce or replace fossil-based materials by sustainable agricultural raw materials in the chemical industry, it is necessary for the biomass to originate from REDcert<sup>2</sup> certified companies or from other schemes that have been positively evaluated by SAI (the current and published SAI benchmark results of the *Farm Sustainability Assessment (FSA)* on the website (<https://saiplatform.org/fsa/>) or that are FSC or PEFC or REDcert-EU certified or originate from other schemes that have been recognised by the European Commission.

This document describes, among other things, the principles of mass balancing for several permanently interconnected sites (see above definition of site) using dedicated transport routes. It does not cover the options for physical and chemical verification of the presence of sustainably certified materials in the company's products. Please refer to the option for physical separation of sustainable and non-sustainable biomass/non-biogenic raw materials (identity preservation, so-called "hard-IP") described in the REDcert-EU document "Scheme principles for mass balancing".

All operations and production units associated with the company holding the certificate that are involved in the implementation of the standard must be identified, documented and integrated into the certification process. This applies in particular to:

- the purchase and transport of renewable raw materials
- the purchase and transport of recovered or recycled materials
- the purchase and transport of certified products from upstream companies

- the transport of intermediate products
- trade with certified products and
- chemical processing steps

When describing the scope of certification, the following information must be documented at a minimum:

- Name of the company/companies
- Functions
- Role in the implementation of the standard
- Responsibilities

If a renewable raw material is used for both mass-balanced and bio-based products, the following must be documented in writing for the production of dedicated products:

- Locations of production sites for dedicated products
- Production volume in the last three years
- Quantity of renewable raw materials used in the last three years and planned quantity for the current year
- Self-declaration stating whether the product is marketed as dedicated

Both biogenic raw materials and recovered materials can be used for the production of mass-balanced products. Biogenic raw materials can also be used for bio-based products. But this use pathway does not apply to recovered materials since, unlike biogenic raw materials, it is not possible to prove the percentage of recycled products contained in the end product by determining the origin of the carbon (usually by means of the C<sup>14</sup> method). However, similar to bio-based products, products consisting purely of recovered or recycled materials can be produced from these raw materials. In this case, verification is carried out on the basis of physically separated material flows and dedicated production processes.

All products to be certified must be identified by their trade name and the name that appears on the safety data sheet. It must be possible to unambiguously identify the products by their names.

To the extent necessary to enforce the scheme requirements, the certificate holder has entered into contractual agreements with the companies identified in the scope of certification regarding this standard. The contractual agreements include a requirement to implement and comply with the present standard, as well as a statement of consent to grant

the commissioned certification body access to all necessary operating sites and to ensure that all necessary documents are provided.

## 4 Organisational structure of REDcert

See REDcert-EU document "Scope and basic scheme requirements".

## 5 The REDcert certification scheme

See REDcert-EU document "Scope and basic scheme requirements".

### 5.1 Sustainability requirements for cultivating and producing biomass

See REDcert-EU document "Scope and basic scheme requirements" as well as the REDcert<sup>2</sup> scheme principles for the production of biomass in food production.

### 5.2 Requirements for biomass-balanced raw materials

The biomass used must be certified as sustainable and a valid REDcert<sup>2</sup> or REDcert-EU certificate must be available as proof of sustainability. Biomass from other sustainability schemes can only be accepted if the sustainability certificate originates from a scheme that has been recognised by the European Commission or positively evaluated by the *Sustainable Agriculture Initiative* (SAI) or is FSC or PEFC certified.

Proof of the origin of the sustainable biomass used for the certified products must be furnished in the form of appropriate identification on the documents accompanying the goods or comparable proof accompanying receipt/purchase of the raw material.

#### **Use of organic intermediates**

If raw materials that have already been processed (intermediate products) are used, a distinction must be made between bio-based intermediate products from dedicated production, mass-balanced intermediate products from integrated production and fossil-based

intermediate products. If bio-based or mass-balanced intermediate products are used which have < 99% of sustainable biomass and whose non-biogenic content is the result of an unavoidable production process, the intermediate products for the non-renewable content must be converted to mass-balance equivalents and this quantity removed from the account management system.

### **Sourcing bio-based sustainable intermediate products from dedicated production**

If the intermediate products are sourced from dedicated production (to the extent that they are to be credited toward biomass balancing), proof verified by a third party is to be provided stating that the quarterly difference between the input and output of the product certified as sustainable is greater than or equal to zero, taking into account the conversion factor.

### **Sourcing mass-balanced intermediate products from integrated production**

If the intermediate products are sourced from integrated production, these intermediate products must have certificates from the *REDcert<sup>2</sup> scheme for the certification of sustainable material flows in the chemical industry*. Certificates from other sustainability schemes can only be recognised if the inspection is based on comparable requirements. If the respective sustainability scheme does not cover all requirements of the *REDcert<sup>2</sup> scheme for the certification of sustainable material flows in the chemical industry*, the corresponding inspection criteria must be additionally verified using this scheme.

### **Use of fossil-based intermediate products**

If intermediate products of fossil origin are used to make certified products, the quantity of sustainably certified mass balance equivalents that correspond to the production of the intermediate product are to be removed from the account management system. The basis for this is the documentation of the quantities of fossil-based raw materials required for the production of the intermediate product. If no data on the quality of the bill of material is available, a conservative estimate based on values from relevant literature is to be used.

### **Negligible aggregates**

Non-certified aggregates with an organic content of less than 1% by mass of the end product can be ignored. Non-certified aggregates with an organic content greater than or

equal to 1% by mass of the end product and less than or equal to 5% by total mass must be compensated using a higher percentage of MB equivalents. The product-specific average with an additional surcharge of 10% (MB equivalent/kg) is used to calculate the quantity of additional MB equivalents to be removed from the account management system.

### 5.3 Special requirements for the collection and use of biogenic waste and residues and recovered materials

For biogenic waste and residues, the requirements of the REDcert-EU document "Scope and basic scheme requirements" apply. In addition to the use of biogenic waste and residues, the REDcert<sup>2</sup> scheme for the certification of sustainable material flows in the chemical industry also allows the use of recovered materials for chemical and mechanical recycling. Additional provisions apply here beyond the requirements outlined in the REDcert-EU document "Scope and basic scheme requirements".

All recyclable waste and residual material flows can generally be used for chemical and mechanical recycling. In view of the Waste Framework Directive 2008/98/EC, priority is given below based on the waste hierarchy:

1. Prevention
2. Preparation for reuse
3. Recycling
4. Other use (e.g. for energy purposes)
5. Disposal

Compliance with the cascaded use of waste raw materials will reduce the amount of waste produced, as well as lower greenhouse gas emissions and the environmental impact caused by improper disposal in landfills.

In addition to the provision of a waste code according to the European Waste Catalogue (2014/955/EU) to identify a waste stream, the definition of terms according to ISO 14021:2016 apply (see Annex 1 – Definition of terms). If a waste code is not available or if one of the requirements of ISO 14021:2016 does not apply, the company has to use the

decision tree of the European Commission (COM (2007) 59) to prove that the material has no other positive economic value or meaningful further use.<sup>1</sup>

For a recycling facility to be certified, appropriate operating licences must be available for all the raw materials such as intermediate or end products used in the facility.

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<sup>1</sup> COMMUNICATION OF THE COMMISSION TO THE COUNCIL AND THE EUROPEAN PARLIAMENT on the Interpretative Communication on waste and by-products from 21.2.2007 (COM (2007) 59)

The system technology used in the conversion plants in the value chain must ensure that the intermediate product produced is suitable to replace conventional raw materials in conversion plants with regard to its chemical, physical and, if applicable, biological properties.

## 5.4 Requirements for the GHG emission saving and the calculation method

Unlike the REDcert-EU scheme, the REDcert<sup>2</sup> scheme does not require GHG emissions to be specified or the GHG emissions savings of certain materials to be fulfilled in accordance with prescribed requirements. However, it is also possible under this scheme to report GHG emissions as an option. Default values may not be used. GHG calculations must always be individual and process-specific. The underlying calculation methodology must either follow the principles described in the REDcert EU scheme "Scope and basic scheme requirements" or meet the requirements of a valid life cycle assessment, e.g. according to ISO 14040:2006 or 14044:2006.

## 5.5 Requirements for the traceability and mass balancing to provide continuous proof of origin of biomass and recovered materials

For biogenic materials, the requirements of the REDcert-EU document "Scope and basic scheme requirements" apply. This is supplemented by the principles of the balancing system in section 8. The requirements described in the document "Scope and basic scheme requirements" can also be applied analogously to recovered and recycled materials. In contrast to the requirements for the information and traceability scheme for sustainable biomass or biofuels, the regular information and traceability scheme for chemical recycling of materials only applies starting from the initial conversion in the value chain. This means that the resulting conversion products such as synthesis gas or pyrolysis oil are not to be regarded as intermediate products in the inspection chain of chemical recycling, but are input materials for a wide variety of products. In this case, the first conversion plant is required to furnish proof of the waste properties or waste origin of the recovered materials. If the materials originate from internal company processes, proof must be provided using the approach described in section 5.3. The waste properties or waste origin of externally sourced recovered materials are ensured by the submission of a self-declaration (see

introduction: self-declaration of the disposal or waste processing company). The traceability of quantities of waste and non-waste conversion products must be ensured by a mass balance system. The mass balance system must be structured based on the requirements outlined in the REDcert-EU document "Scheme principles for mass balancing". Other companies along the production and supply chain of chemically recycled materials must follow the principles of the balancing system in section 8.

In the case of purely mechanical processing of materials, the mass balance system must be applied along the entire production and supply chain in accordance with the requirements outlined in the REDcert-EU document "Scheme principles for mass balancing". In this case, the information and traceability scheme applies from the moment when a waste fraction, collected separately or from a sorting facility, is used to produce mechanically recycled products.

Waste producers and collection points/sorting facilities for fossil-based waste materials are not subject to inspection and certification, but can also be inspected if deemed necessary. Whether or not this inspection is carried out is the responsibility of the first contract partner in the inspection chain (see introduction: self-declaration of the disposal or waste processing company).

## 5.6 Documentation requirements

The documentation requirements stipulate that REDcert must keep all valid certificates in an internal and publicly accessible database. If necessary, all certified products can be listed in the certificate's annex if necessary. The certificate holder can create product certificates with appropriately certified advertising claims in a protected area of the REDcert certificate database at any time. When this kind of product certificate is created, a copy is automatically sent to the responsible certification body and to REDcert, which can check the accuracy of the statements made there at any time on a risk basis. Certification bodies must keep a list of the respective certified products. The product list must show the sales name of the product as well as the name of the corresponding certificate holder.

Within the validity period of a certificate, it is also possible that, after a successful desk audit, newly added products and products to be sold are added to the product list during the year. The product list must show the sales name of the product. The requirements for bill of material outlined in section 5.7 "Requirements for certified products or for communication and use of advertising claims" apply for all products.

In addition, the quantity of raw materials or raw material equivalents used for production must be reported annually to REDcert via the REDcert database.

## 5.7 Requirements for certified products or for communication and use of advertising claims

### **Minimum percentage of renewable raw materials or recovered or recycled materials**

In the production or purchasing process of a biomass-balanced product certified under the REDcert<sup>2</sup> scheme for the certification of sustainable material flows in the chemical industry, a percentage of at least 20% of the fossil-based raw materials required to make this product has been verifiably replaced by an equivalent amount of sustainably certified biomass in integrated manufacturing sites or plants or under the scope of the expanded mass balance. For the production of fossil-based recycled products, which are certified pursuant to this document, at least 20% of the fossil-based raw materials required for production must be replaced by an equivalent amount of sustainably certified recycled raw materials in integrated manufacturing sites or plants.

### **Bill of material**

Bill of material are available for the certified products. Bill of material define the quantity of fossil-based raw materials required for the production of the respective substance. Bill of material are determined specific to the process on the basis of the mass balance. Actual formulations from the past three years can also be used instead of bill of material.

The prerequisite for the use of bill of material is that they are determined under the scope of an existing scheme and documented in quality management processes. At least once a year, bill of material must be reviewed for accuracy and changed if necessary. The annual review must be documented and archived.

Bill of material may be used if the non-conformity resulting from the annual review is documented over a period of five years. During the initial certification cycle, documentation over three years can be accepted. If the maximum deviation from the base formulation is more than 5%, the maximum deviation is the determining factor in conservatively estimating the need for sustainably produced biomass.

In the case of newer products for which no long-term empirical data is available, a conservative bill of materials must be defined in consultation with the auditors and be reviewed

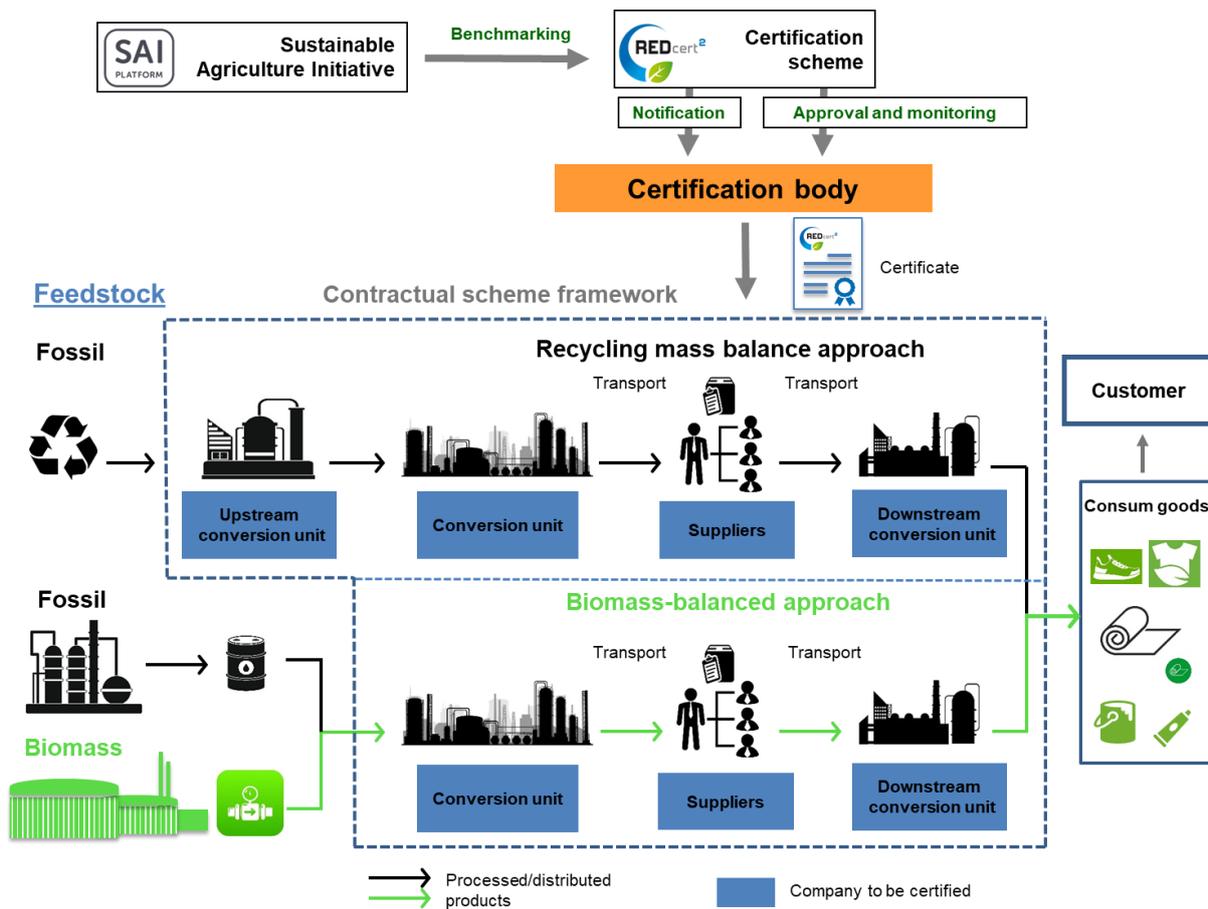
annually. If events occur during the year that have a major effect on the base formulation, the base formulation must be adjusted during the year.

### **General communication and advertising claims**

Every scheme participant may use the "REDcert<sup>2</sup>" logo and word mark for communication purposes. Changes to the appearance of the "REDcert<sup>2</sup>" trademark, in particular by combining it with other signs or seals, require the express consent of REDcert. Advertising claims may be used to market the products certified under this standard if it is clear at what point the sustainable raw materials were introduced into the process. The requirements for the use of the REDcert<sup>2</sup> logo as well as certain product statements are described in the *guidelines governing the use of the REDcert<sup>2</sup> logo and the representation of claims for products made from sustainable material flows*.

## 5.8 Scheme functionality

The figure below provides an overview of the structure and function of the REDcert<sup>2</sup> scheme principles for the certification of sustainable material flows in the chemical industry:



The production and supply chain for raw materials and processed products used in the chemical industry includes the following actors:

### Interfaces

Interfaces are economic operators along the production and supply chain that require certification. A distinction is made between:

- Suppliers
- Conversion plants or integrated manufacturing sites or plants such as chemical plants, paint and varnish producers, plastic producers, etc.

## Suppliers

Many economic operators along the production/supply chain up to the end user are involved in trade or storage of raw materials or processed certified products or act as brokers. These economic operators are considered "suppliers" under REDcert<sup>2</sup>. Suppliers can handle transshipment (storage, mixing) of sustainable raw materials and/or processed certified products without having to convert them. This definition also includes intermediate suppliers/steps that do not "physically" handle the biomass and/or processed certified products.

Suppliers are issued a certificate as proof that they satisfy the scheme requirements.

## Conversion plant/integrated manufacturing sites and plants

The conversion of raw materials (further processing of certified products) takes place in chemical factories, paint and varnish plants, rubber and plastics factories, etc. They must set up a mass balance and account management system which records all quantities of sustainable and non-sustainable raw materials. This documentation includes all consignments with sustainable and non-sustainable biomass prior to conversion as well as all certified products that can be removed from this system.

All companies or company groups of the conversion plants mentioned above as examples are issued a certificate to prove that they fulfil the scheme requirements.

## 5.9 Registration and certification

See REDcert-EU document "Scope and basic scheme requirements".

The scope of certification must be documented in writing by economic operators and submitted to the certification body as an annex to the application for certification. In order to change the scope of certification, a new application must be submitted to the certification body.

## 5.10 Other certification schemes

See REDcert-EU document "Scope and basic scheme requirements".

In addition, biomass from a scheme that has not been recognised as a voluntary certification scheme by the European Commission must have at least one positive benchmark result from the *Sustainable Agriculture Initiative* (SAI) or must have been FSC or PEFC certified.

However, the use of recovered materials for manufacturing recycled products is only possible if they have been certified as described in this scheme document or if the certification scheme under which the relevant material flows were considered is recognised by REDcert as “equivalent”.

## 5.11 Other raw materials

Non-certified or non-equivalent raw materials can be recognised if the following conditions are met:

- For each batch of a product, it must be ensured that at least 25% by weight of the raw materials, from the time of certification, are REDcert<sup>2</sup> certified or have a certification recognised as equivalent.
- Within 3 years, 100% of the raw materials for each batch of the certified product must be REDcert<sup>2</sup> certified or have a certification recognised as equivalent. 50% of the raw materials must be certified after the first year and 75% after the second year.

## 6 Measures for transparency and prevention of misuse and fraud

See REDcert-EU document “Scope and basic scheme requirements”.

### 6.1 Transparency in scheme representation

See REDcert-EU document “Scope and basic scheme requirements”.

### 6.2 Transparency in scheme membership

See REDcert-EU document “Scope and basic scheme requirements”.

### 6.3 Transparency in scheme management

See REDcert-EU document "Scope and basic scheme requirements".

### 6.4 Transparency in certification

See REDcert-EU document "Scope and basic scheme requirements".

### 6.5 Assuring scheme integrity and preventing misuse and fraud

See REDcert-EU document "Scope and basic scheme requirements".

## 7 Costs for participating companies

See the current versions of the REDcert-EU document "Scope and basic scheme requirements" or fee schedule for scheme participants (in the chemical industry) on the website ([www.redcert.org](http://www.redcert.org)).

## 8 Principles of the balancing system

For the sake of clarity, the table below shows how the essential elements of the REDcert-EU scheme document "Scheme principles for mass balancing" correlate to the REDcert<sup>2</sup> scheme requirements for the certification of sustainable material flows in the chemical industry:

| <b>REDcert-EU</b><br><b>"Scheme principles for mass balancing"; section...</b>  | <b>REDcert<sup>2</sup></b><br><b>"Scheme principles for the use of biomass-balanced products in the chemical industry", Version 1.1</b>  | <b>Reference to the respective laws</b> |
|---|--|---|
| <p>2 Scheme principles for mass balancing</p> <p>☒</p> <p>☒</p> <p>☒</p> <p>☒</p> <p>☒</p> <p>☒</p> <p>☒</p> <p>☒</p> | <p>✓ 8 Principles of the balancing system (Reference; supplementing the following provisions in this document)</p> <p>8.1 Balancing method</p> <p>8.2 Balancing period</p> <p>8.3 Ensuring adequate availability of MBUs</p> <p>8.4 Account management system</p> <p>8.5 Additionality</p> <p>8.6 Double counting not permitted</p> <p>8.7 Principles of traceability</p> <p>8.8 Requirements for downstream companies</p> | <p>./.</p>                              |

## 8.1 Balancing method

The certificate holder uses a reliable process for continuous monitoring and ensuring adequate availability of MBUs (sourcing, storage, delivery). The sourced quantities are clearly identified and confirmed by both parties (supplier and producer).

- The conversion of fossil-based and sustainably certified raw materials is based on the lower heating values which are standardised to a clearly defined substance (e.g. methane).
- The conversion of intermediate products to the mass balance equivalent unit (MBU) is not based on the synthesis gas process, but on the quantities of fossil-based raw materials required for the production of this intermediate product. It is not necessary for this technology to actually be used within the production facility. In this case, the required raw material quantity can be conservatively estimated on the basis of processes described in the literature and implemented technologically.
- The conversion of sustainably certified raw materials not listed in Annex 2 a) is carried out with the same conversion factor as the fossil-based equivalent after conversion of intermediate products to mass balance equivalents (example: bioethylene has the same conversion factor as fossil ethylene. Fossil ethylene is to be regarded as the fossil equivalent of bioethylene).
- For sustainably certified raw materials for which no fossil equivalent exists, the conversion is carried out based on its lower calorific values which are standardised to a clearly defined substance (e.g. methane).

## 8.2 Balancing period

The balancing period, which can optionally be selected as sales-based or production-based, must be agreed in advance of the conformity assessment.

In a sales-based balancing period, the required quantity of sustainably certified materials is removed from the account management system at the time of sale. As a result, it is not necessary for the required quantities to already be available in the system during production. The balancing period may not exceed 3 months after the sale. No negative balance is allowed after the end of the mass balance period. Positive balances may be transferred as long as it is guaranteed that the validity (see validity) is not exceeded.

The extension of a balancing period beyond the maximum specified period of 3 months must be requested in writing from REDcert, stating the reasons. The relevant certification body must also be informed. The maximum possible extension of this period is limited to 12 months. REDcert decides in individual cases, on the basis of the information provided, whether to reject or approve the application. This decision only involves the balancing period outlined in the application and has no effect on other balancing periods or the basic requirements for balancing.

In a production-based balancing period, the determined quantity of sustainably certified materials is already available at the time the product is produced.

### 8.3 Ensuring adequate availability of MBUs

The certificate holder has a process in place that ensures that the corresponding sustainably certified raw materials can be sourced in sufficient quantities at the right time in line with the forecast sale of certified products. This process also includes possible deviations of the actual values from the bill of material and ensures that exceeding the bill of material by actual values does not result in a shortfall in the balance.

### 8.4 Account management system

The entered and removed mass balance equivalents must be managed in an account management system. Companies may operate several separate account management systems in order to make different product-specific claims. If both biomass-balanced and recycled materials or products are produced in integrated sites, multiple accounts must be maintained (in the ERP system) to the extent that the statements about the product relate to the origin of the respective raw material (biogenic and/or recycled). An MB equivalent can only be administered here in a single account management system. The account management system selected for a certification cycle is binding for the respective product.

For the production or marketing of certified products, the respective percentage of sustainably certified materials must be removed from the account management system. The allocation of certified MB-equivalents to intermediate products or products is generally only permitted if there is a technical possibility that these intermediate products or products actually can contain physically sustainable substances. The only exception to this rule applies if the extended mass balance (EMB) described in Annex 1 is applicable.

## Entries

The MB equivalents are entered into the account management system in accordance with the verified conversion rates. The MB equivalents entered into the account management system do not have to be differentiated by their raw materials and are therefore interchangeable. MB equivalents can only be entered after the raw materials have been physically transferred to the spatial boundaries for mass balancing and if it is ensured that the raw material is used for material purposes. Sustainably certified materials that are used to generate energy may not be entered in the account management system. The last possible measurement is decisive for the quantity of entries. If the allocation to energy and material use takes place only after the physical transfer to the spatial boundaries for mass balancing, entry to the account management system is permitted if evidence can be provided that the possibility of double counting is ruled out.

## Removals

Entries are removed depending on the selected balancing period. If the sales-based balancing period is used, the quantity is removed when the product is sold. If the production-based balancing period is used, the quantity is removed with the product is manufactured. The removals must be documented for each specific product. The removal is carried out using MB equivalents on the basis of bill of material. Once a year, the entries must be corrected on the basis of the bill of material using actual values. If the actual values are less than the bill of material used, they do not need to be corrected. For corrections, a negligibility limit applies: if the deviation is  $< 0.5\%$  or  $< 200$  kg MB equivalents, it is not necessary to correct the values.

## 8.5 Additionality

The certificate holder may only use additional sustainably certified materials for certified products, i.e. sustainably certified materials which replaces fossil-based raw materials starting from the time of certification.

## 8.6 Double counting not permitted

The account management system must be suitable for preventing *double counting* of MB equivalents, especially if different account management systems are in use.

### **Double counting of products sold as bio-based or consisting purely of recovered materials**

Quantities of sustainably certified biomass used for the dedicated production of products sold as bio-based or consisting purely of recovered materials may not be included in the account management system, i.e. credited twice. It is also possible, for example, to sell the product as bio-based or consisting purely of recovered materials if the sustainably certified materials are included in the list of contents or confirmed to the customer upon request. If a raw material is used both for the production of products sold as bio-based or consisting purely of recovered materials and for the production of mass balanced products, an overall balance for this raw material must be provided. The overall balance must list the quantities of the raw material used for dedicated and mass balance production. A product-specific list of the quantities of the manufactured products must also be available.

### **Other double counting**

The total quantity of sustainably certified raw materials used (for dedicated and certified products) may only be communicated if the impression is not created that every marketed product contains a corresponding percentage of sustainably certified materials.

## **8.7 Principles of traceability**

### **Documentation of material flows**

There is a system in place which continuously documents the material flows of sustainably certified materials used up to the certified end product. This system is part of the quality management system.

### **Handling waste and exhaust gas flows**

Waste and exhaust gas flows arising in the production process must be accounted for in the balance. The sequestered quantities of MB equivalents must be removed from the account management system using the respective balancing method. The waste and exhaust gas flows must be measured for this data to be available. Otherwise, the provisions apply according to the principle of accuracy (see definition of accuracy in Annex 1).

### Handling by-products

By-products can relinquish their sustainable property if the possibility of double counting can be ruled out. The sustainable property does not have to be tied to the specific raw materials or intermediate products. This means that their identity as a sustainable product is no longer given. The relinquishment of the sustainable property can be credited to the base formulation. When determining the amount of the credit, waste and exhaust gas flows in the further processing chain of the by-product must be accounted for.

### Validity of entered MB equivalents

Entered MB equivalents are valid for a period of 12 months.

If the quantity of sustainable materials in the balance exceeds the physical quantity of sustainable materials in the company, only the physically existing quantities can be carried forward to the next balancing period. This means, for example, that Mass Balance Units (MBUs) expire if there is no longer adequate inventory in storage. Credit balances of sustainable materials may not be transferred to the next balancing period. This kind of situation can occur, for example, if sustainable bio-naphtha is included in the mass balance but during the balancing period a large quantity of it was sold for a use other than for the production of *biomass-balanced products* (e.g. for use as food or animal feed).

Deviations from this rule can be accepted if it can be shown that adequate storage capacity for the raw material or its derivatives is available on the site.

### Regulations apply for the process-spanning trade of sustainably certified material flows

Suppliers of sustainably certified materials generally have to give their customers information on the quantity of material supplied that replace fossil-based resources in the production process of the material supplied. This information can be provided in one of two ways. One option is to indicate the quantity of MBUs contained in the product. In this case, it must be indicated which standardised material these MBUs are based on. Alternatively, information can also be provided on the relative amount of fossil fuel-saving materials used in the production of the material. In this case, customers are then required to determine the MBUs contained in the material (preferably based on methane) using this information. This is determined by calculating the quantity of raw materials required for the production of the material in question. This is a conservative calculation based on the processes described in the literature and implemented in technological processes.

All other documentation requirements are set out in the REDcert-EU document "Scheme principles for mass balancing".

## 8.8 Requirements for downstream companies

For downstream companies that use biomass-balanced products or recovered or recycled materials certified as sustainable, special requirements apply to the mass balance and the communication of certified products. In addition to certified products, downstream companies can also directly use certified biomass that has at least a REDcert-EU, REDcert<sup>2</sup>, FSC or PEFC certificate or another scheme that has been positively evaluated by the *Sustainable Agriculture Initiative* (SAI). In addition, downstream companies can also use directly recovered or recycled materials, provided that they can furnish proof of sustainability certification in accordance with this document or their origin from a certification scheme recognised by REDcert as "equivalent".

The downstream company must prove that the use of certified products from upstream companies in production and with the same base formulation requires only marginally more energy and thus reduces the use of fossil-based resources.

### Balancing requirements

Downstream companies carry out either process-specific or process-spanning balancing. The advertising claim allowed for the product determines which method is selected.

### Process-specific mass balancing

When mass balancing is process-specific, it is determined what percentage of mass balanced input materials is contained in the certified product. Input and output materials are balanced specific to the process using this method. Balancing across different operating units is not permitted in this case. It is not necessary to convert the quantities of input and output materials to MB equivalents. Only a production-based balancing period is permitted for a process-specific mass balance. Accordingly, quantities must be removed from the account management system upon production of the product.

### Process-spanning balancing on the basis of mass balance equivalents

When mass balancing spans processes, it is determined what percentage of fossil-based raw materials is replaced by MB equivalents along the entire value chain. As a result, balancing as outlined in section 8.1 can be carried out across several operating units. In contrast to process-specific mass balancing, the balance here is based on MB equivalents. All input materials are converted to the unit MB equivalents by converting intermediate products into mass balance equivalents on the basis of the quantities of fossil-based raw materials required for the production of the respective input material. If no certified value is available from the upstream supplier for this purpose, the required raw material quantity can be conservatively estimated on the basis of processes described in the literature which have been technologically implemented (see section 5.2). Balancing is optionally based either on the production-based or sales-based balancing period. However, the latter is only permitted if the products used by the upstream company are certified on the basis of the production-based balancing period. Quantities may also be removed upon sale of the certified product. A maximum balancing period of three months is permitted.

### Requirements for communication

The requirements for certified downstream companies when using the REDcert<sup>2</sup> logo as well as certain product statements both in a process-specific and process-spanning mass balance are described in the *guidelines governing the use of the REDcert<sup>2</sup> logo and the representation of claims for products made from sustainable material flows*.

## 9 Requirements for neutral inspections

The requirements outlined in the REDcert-EU document "Scheme principles for neutral inspections" also apply to the scheme principles for the certification of sustainable material flows in the chemical industry. When the "Scheme principles for neutral inspections" document mentions the REDcert scheme, this always refers to the REDcert<sup>2</sup> scheme. This also applies to other terms such as checklists, integrity and quality assurance measures, etc. In addition, the following provisions apply.

The documented requirements for neutral inspections relate to both the implementation of the requirements of Directive (EU) 2018/2001 of "bioliquids/biofuels/biomass fuels" as well as the supplementary criteria of the REDcert<sup>2</sup> scheme to the extent that they are applicable.

Inspection certificates are not issued in the REDcert<sup>2</sup> scheme. "Certificates" are only issued to verify compliance. Companies in the chemical industry that want to be certified in line with the REDcert<sup>2</sup> scheme requirements must register online on the REDcert website. The company to be certified must thoroughly familiarise itself with the REDcert<sup>2</sup> scheme requirements for the certification of sustainable material flows in the chemical industry prior to the audit.

For the sake of clarity, the table below shows how the essential elements of the REDcert-EU scheme document "Scheme principles for neutral inspections" correlate to the REDcert<sup>2</sup> scheme requirements for the certification of sustainable material flows in the chemical industry:

| <b>REDcert-EU</b><br><b>"Scheme principles for neutral inspections",</b><br><b>Version 05; section...</b>   | <b>REDcert<sup>2</sup></b><br><b>"Scheme principles for the certification of sustainable material flows in the chemical industry",</b><br><b>Version 1.1</b>  | <b>Reference to the respective laws</b> |
|---|---|---|
| <p>☒</p> <p>1 Inspection system</p> <p>1.1 Types of inspections</p> <p>1.2 Process and duration of inspections</p> <p>1.3 Inspection intervals</p> <p>1.4 Evaluation of the inspection results</p> <p>1.5 Reporting</p> | <p>9 Requirements for neutral inspections</p> <p>✓ 9.1 Reference</p> <p>✓ 9.2 Reference; supplementing the following provisions in this section</p> <p>✓ 9.3</p> <p>✓ 9.4 Reference</p> <p>✓ 9.5 Reference</p> <p>✓ 9.6 Reference</p> |   |

|   |   |  |
|---|---|--|
| <p>1.6 Issuing and revoking certificates</p> <p>1.7 Scope of the inspections</p> <p>1.8 Risk management</p>   | <p>✓ 9.7 Reference; supplementing the following provisions in this section</p> <p>✓ 9.8 Reference; supplementing the following provisions in this document</p> <p>✓ 9.9 Reference; supplementing the following provisions in this document</p>  |  |
| <p>2 Definition of the scope of sample inspections for up-stream operations</p> <p>2.1 Group inspections and certification of farms</p> <p>2.2 Inspections and certification of waste producers</p> <p>2.3 Inspections and certification of storage sites</p> | <p>✓ 10 Reference; with restriction to non-recovered materials</p> <p>☒ (not applicable)</p> <p>☒ (not applicable)</p> <p>☒ (not applicable)</p>  |  |
| <p>3 Requirements and responsibilities of certification bodies</p> <p>3.1 Requirements for certification bodies</p> <p>3.2 Revoking approval</p> <p>3.3 Responsibilities of certification bodies</p>  | <p>✓ 11 Reference</p> <p>✓ 11.1 Reference; supplementing the following provisions in this document</p> <p>✓ 11.2 Reference</p> <p>✓ 11.3 Reference; supplementing the following provisions in this document;</p> <p><b>Note: Inspection certificates are <u>not</u> issued in the REDcert<sup>2</sup> scheme!</b></p> |  |
| <p>4 Requirements of REDcert inspectors</p>   | <p>✓ 12 Reference</p>   |  |

|   |   |  |
|---|---|--|
| 4.1 Training and qualification  | ✓ 12.1 Reference  |  |
| 4.2 Required knowledge, professional and practical experience as an inspector | ✓ 12.2 Reference; the following provisions in this document are different   |  |
| 4.2.1 Further education and training  | ✓ 12.2.1 Reference; the following provisions in this document are different |  |
| 5 Registration process  | ✓ 13 Reference  |  |
| 5.1.1 Registering as a scheme partner   | ✓ 13.1 Reference  |  |
| 5.1.2 Registering a certification body  | ✓ 13.2 Reference  |  |
| 5.1.3 Registering an inspector  | ✓ 13.3 Reference  |  |
| 6 REDcert integrity and quality assurance measures                            | ✓ 14 Reference  |  |

## 9.1 Audit system

See REDcert-EU document "Scheme principles for neutral inspections".

## 9.2 Types of audits

### 9.2.1 Scheme audits

In the initial and subsequent recertification audit, the mass balance and all relevant information such as bill of material, material flows, processes, tools, raw materials used and products sold are checked.

If new sustainable products are to be included in the scope of the certificate during the course of the year, the certificate holder must notify the certification body in advance. The need to verify the sustainability characteristics of these products depends on the (calculated) quantity of these products sold. Products which are sold in quantities of < 1 t can be evaluated as trial quantities and are not subject to audits during the year. Products that are (presumably) sold in quantities > 1 t are generally subject to audits. In this case, the audit can be carried out as a document check or what is known as a desk audit if the audit criteria in the abridged desk audit checklist can be assessed with the same degree of reliability as an on-site audit. This requires certification bodies to assess the risk level/potential and which type of proof needs to be provided. In the respective audit framework, e.g. detailed documented information must be checked by means of ERP systems, databases, etc. for traceability, mass balancing and product declaration. The proof used as a basis for an abridged desk audit must be accessible, transparent, traceable, tamper-proof, credible and trustworthy. If the desk audit shows that the REDcert<sup>2</sup> requirements are not satisfied or not sufficiently satisfied, the certification body must undertake further appropriate steps to check compliance (e.g. on-site audit).

Subcontractors (suppliers only) of a certified company who do not make any chemical, physical or biological changes to the product, e.g. bottlers or warehouses, do not necessarily have to be inspected on site. The certification body responsible is in charge of assessing which companies need to be audited and in which form (on-site or desk audit). The number of sample audits should be determined based on a meaningful grouping (e.g. by activity, trade volume, other relevant parameters) of all subcontractors. The members of these groups are subject to a sample audit using a risk-based approach.

The risk assessment should include the following risk criteria:

- Quantity of the processed product
- Product type
- Registered office of the company in question
- Company size
- Operational management (certificate holder vs. independent management)

### 9.2.2 Special audits

See REDcert-EU document "Scheme principles for neutral inspections".

### 9.3 Process and duration of audits

Audits are to be carried out in accordance with the requirements of ISO 19011.

The duration of the audit is determined by the respective certification body and contractually agreed with the respective operation prior to beginning the audit.

REDcert, however, has the right to define a minimum duration for the respective steps in the future, particularly based on the audit results, in the interest of quality assurance.

### 9.4 Audit intervals

See REDcert-EU document "Scheme principles for neutral inspections".

### 9.5 Evaluation of the audit results

See REDcert-EU document "Scheme principles for neutral inspections".

### 9.6 Reporting

See REDcert-EU document "Scheme principles for neutral inspections".

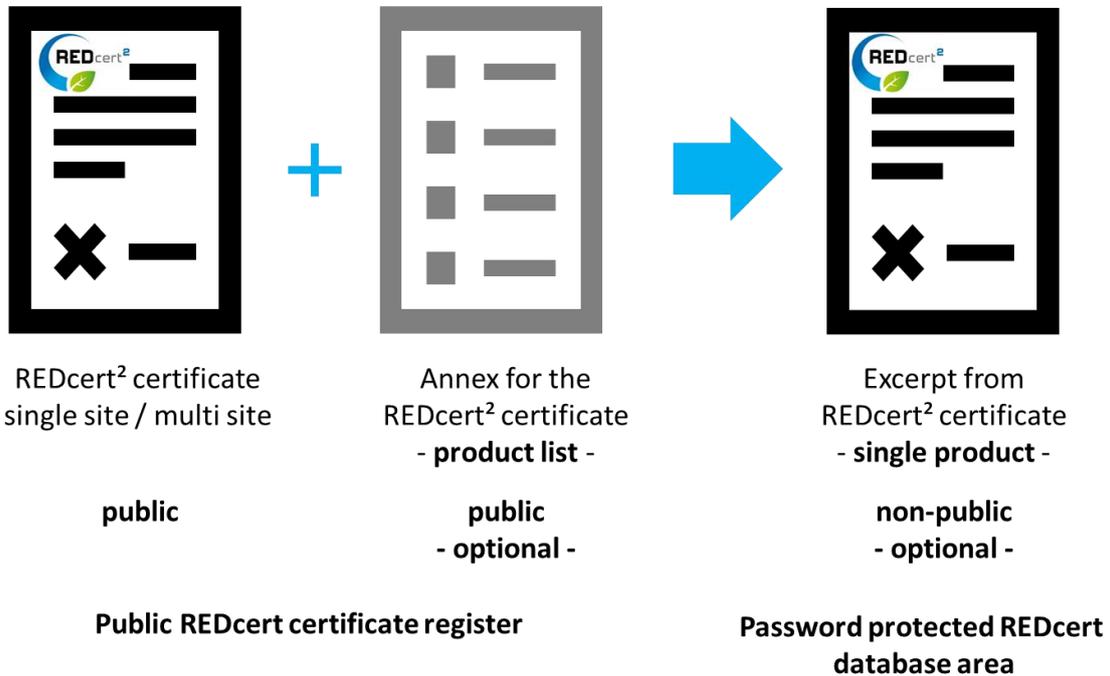
### 9.7 Issuing and revoking certificates

See both the REDcert-EU document "Scheme principles of neutral inspection" as well as the following additions.

Only "certificates" in the form of "single or multi-site certificates" and "product certificates" are issued as proof of conformity. The "single or multi-site certificates" are listed in the scheme's proprietary and publicly accessible database. If required, all products certified under a certificate can be listed in the certificate's annex if necessary. The product certificates for the products certified under a certificate can be created by the certificate holders in a protected area of the REDcert certificate database (see section 5.6 "Documentation requirements").

The figure below shows the different REDcert<sup>2</sup> certificates for the certification of sustainable material flows in the chemical industry:

## Certificates under the REDcert<sup>2</sup> standard for the chemical industry



The templates and forms provided by REDcert must be used to issue certificates. The format and/or language of them may be changed, but not the content. REDcert must be informed if the templates or forms are changed. The translated version of a certificate must indicate that it is a translation which is not legally valid.

For identical products, secondary certificates - based on a basic certificate - can be offered and issued to additional distributors, dealers and shareholders of the certificate holder. Products are considered to be identical if their chemical or environmental properties are not changed and the differences in their physical properties are only negligible. If the chemical or environmental properties of a product are modified, the requirements for a secondary certificate are not fulfilled and the processing company must be certified independently. It is generally only possible to issue secondary certificates if packaged and clearly labelled goods are redistributed by the certificate holder in their original state (closed and sealed) by the additional distributors, dealers and shareholders.

The decision on the admissibility of a secondary certification lies with the certification body responsible following consultation with the basic certificate holder. It is possible to issue secondary certificates for both commercial and retail products. Products that will be or have been changed or products supplied in a loose state are to be represented in the certification via a closed chain. For a secondary certificate to be issued, the following is

required: a valid certification contract between the certificate holder and the certification body, a successful initial certification in which the admissibility of the secondary certification and the existence of the necessary processes are checked. In order to maintain the validity of the secondary certificate, the mass balance and communication of the secondary certificate holder must be checked on a regular basis (risk-based, at least every 12 months) by the certification/registration body. Secondary certificates are valid for a maximum of three years; their validity depends on the validity of the basic certificate.

## 9.8 Scope of the audits

See the REDcert-EU document "Scheme principles of neutral inspection" as well as the following additions.

### 9.8.1 Group certification of operating sites

Compliance with the following conditions enables scheme participants to have their own operating sites inspected as a group in the form of what is known as group certification. The individual operating sites must have comparable production processes with uniform products, which can be represented centrally and digitally. To this end, the group needs an internal management system to create confidence that the individual group members meet the REDcert<sup>2</sup> scheme requirements. All operating sites in the group must be legally and/or contractually linked by a common administration or ERP system that is defined and implemented, monitored and checked internally by the main office.

The following requirements apply to operating sites:

- The main office of the company must keep a list of operating sites and can decide which operating sites may join the group after consulting the certification body.
- It must be clear between the individual operating sites and the main office that the operating sites are integrated into the company in an organisationally uniform manner and that the ownership structure is unambiguous.
- The main office is authorised to instruct the sites, take necessary corrective action and is responsible for the group inspection.
- The group must have or set up a shared main office and appoint a representative of the group management or of the respective business division of the group who is responsible for implementing the scheme requirements.

Compliance with the required criteria must be verified by the certification body responsible, which then decides whether a group certification applies.

#### 9.8.1.1 Scope and process for sample audits of operating sites

The minimum number of operating sites for sample audits as part of the initial certification or the annual re-certification is  $\frac{1}{3}$  of all operating sites belonging to the group. The sample audit must be organised in such a way that non-audited premises are included in the sample in the following year. This will ensure that all sites belonging to the group are audited in a three-year cycle. The main office is audited once a year on site.

The sample audit of the operating sites is carried out on site once a year and is defined by the certification body. Operating sites that are not subject to on-site sample audits must also be audited by verifying the shared ERP system.

#### 9.8.1.2 Threshold value for a failed audit

If  $\frac{1}{3}$  of the operating sites audited does not meet the scheme requirements, the scope of the audits must be doubled. In an extreme case, this can continue until all operating sites that belong to this company have been audited on site (inspection density of up to 100%). The main office will be informed of all major non-conformities. Only operating sites that meet the scheme requirements may supply sustainable products or intermediate products that are certified under REDcert<sup>2</sup>.

Sample audits must be conducted on site (e.g. that audits visit the individual operating sites). A purely documentary check is not permitted.

### 9.9 Risk management

As part of the risk assessment by the certification bodies, the following indicators are to be taken into account at a minimum for the participants in the value chain:

- a) Existence and quality of an internal quality management system
- b) Scope and complexity of the organisation covered by the certification (number of processes and operational units included)
- c) Scope of the products to be evaluated (number, length of production chain)

- d) Scope of the input materials used (aggregates, intermediates)
- e) Non-conformities in previous conformity assessments
- f) Number of sub-contractors

The risk analysis is to be used to determine the quantity and depth of the inspection to be conducted. This involves at a minimum:

- a) Check of measurement data and original documents
- b) Check of business transactions (purchase/sale)
- c) Check of bill of material

In addition, the requirements of section 1.8 Risk management in relation to the inspection system and section 3.3.1 Risk management in relation to the certification bodies found in the REDcert-EU document "Scheme principles of neutral inspections" apply.

## 10 Definition of the scope of sample audits inspections for upstream operations

See REDcert-EU document "Scheme principles of neutral inspections" if non-recovered materials are involved.

## 11 Requirements and responsibilities of certification bodies

See REDcert-EU document "Scheme principles for neutral inspections".

### 11.1 Requirements for certification bodies

All certification bodies require accreditation pursuant to the principles set out in Article 4 of Regulation (EC) 765/2008, either by the competent authority in the respective country or by a national accreditation body according to ISO/IEC 17065:2012 or alternatively ISO/IEC 17021-1:2015.

REDcert reserves the right to require further proof of accreditation for the approval of certification bodies in the REDcert scheme.

The certification bodies conduct their audits in accordance with the requirements in ISO 19011 (prerequisite for accreditation). Conformity evaluations are carried out in line with the specifications of ISO/ICE Guide 60.

The certification bodies must demonstrate experience in checking mass balance systems (certification of biofuels/liquid biofuels/biomass fuels according to Directive (EU) 2018/2001, Art. 30).

Before starting certification activities, a designated representative appointed by a certification body must have taken part in a "Train-the-Trainer" training of the REDcert<sup>2</sup> scheme principles for the certification of sustainable material flows in the chemical industry. He must transfer the knowledge acquired within the certification body to auditors and employees involved in REDcert<sup>2</sup> certification. Additional training requirements for auditors (see section 12.2.1) remain unaffected.

## 11.2 Revoking approval

See REDcert-EU document "Scheme principles for neutral inspections".

## 11.3 Responsibilities of certification bodies

See REDcert-EU document "Scheme principles for neutral inspections".

### 11.3.1 Risk management

See REDcert-EU document "Scheme principles for neutral inspections".

### 11.3.2 Performing audits and issuing certificates and inspection certificates

The certification bodies have to prove implementation of a documented process that governs the certification process and the issuance of certificates under the REDcert<sup>2</sup> certification scheme. The general requirements of the audit process are specified by the standard ISO 19011.

The requirements of the REDcert-EU document "Scheme principles of neutral inspection" also apply.

Inspection certificates are **not** issued in the REDcert<sup>2</sup> scheme for the certification of sustainable material flows in the chemical industry.

### 11.3.3 Lists of interfaces

See REDcert-EU document "Scheme principles for neutral inspections".

### 11.3.4 Storing and handling information

See REDcert-EU document "Scheme principles for neutral inspections".

### 11.3.5 External and internal training for auditors

See REDcert-EU document "Scheme principles for neutral inspections".

## 12 Requirements of REDcert auditors

See REDcert-EU document "Scheme principles for neutral inspections".

### 12.1 Training and qualification

See REDcert-EU document "Scheme principles for neutral inspections".

### 12.2 Required knowledge, professional and practical experience as an auditor

Auditors who conduct audits according to the REDcert<sup>2</sup> scheme principles for the certification of sustainable material flows in the chemical industry must meet the following requirements:

|                                      |   |
|--------------------------------------|---|
| Special skills                       | Audit technique, communication skills, extensive knowledge of the legal requirements in the relevant area and of the REDcert <sup>2</sup> scheme requirements for the certification of sustainable material flows in the chemical industry                        |
| Required qualification as an auditor | Training (e.g. in accordance with EN ISO 19011)<br>Duration: at least 3 days  |
| Professional experience              | At least 5 years of professional experience in the area to be audited in a relevant position  |
| Practical experience as an auditor   | At least 5 audits in the last 2 years in the audited area (e.g. ISO 9001, ISO 14001, REDcert (conversion), environmental verification activities) as well as 2 years of audit experience in a certification standard that certifies quantity-specific information |

### 12.2.1 Further education and training

In addition to furnishing proof of the requirements under 12.2, auditors must have participated in a **2-day** basic training of the REDcert<sup>2</sup> scheme for the certification of sustainable material flows in the chemical industry which addresses in particular the special features of the mass balance approach before they start their activities in the REDcert<sup>2</sup> scheme.

## 13 Registration process

See REDcert-EU document "Scheme principles for neutral inspections". Annexes 1 and 2 contain the applications for registration of a certification body or an auditor under the REDcert<sup>2</sup> certification scheme for the certification of sustainable material flows in the chemical industry.

### 13.1 Registration as scheme partner

See REDcert-EU document "Scheme principles for neutral inspections".

## 13.2 Registering a certification body

See REDcert-EU document "Scheme principles for neutral inspections".

## 13.3 Registering an auditor

See REDcert-EU document "Scheme principles for neutral inspections".

## 14 REDcert integrity and quality assurance measures

See REDcert-EU document "Scheme principles for neutral inspections".

## 15 Sanction system

In terms of the sanction system, the stipulations in the REDcert-EU scheme apply exclusively and in full.

| <b>REDcert-EU<br/>"Sanction system",<br/>section...</b> | <b>REDcert<sup>2</sup><br/>"Scheme principles for the use<br/>of biomass-balanced products<br/>in the chemical industry", Ver-<br/>sion 1.1</b> | <b>Reference to the re-<br/>spective laws</b> |
|---|---|---|
| 1 Introduction  | ✓   |   |
| 2 Procedure   | ✓   |   |
| 3 Special requirements                                  | ✓   |   |

## 16 Relevant documents

The document structure of the REDcert<sup>2</sup> scheme principles for the certification of sustainable material flows in the chemical industry includes the following:

| No. | Document  | Published/revised  |
|-----|---|--|
| 1   | REDcert-EU scope and basic scheme requirements  | The current version of the supplementary REDcert <sup>2</sup> scheme principles for the certification of sustainable material flows in the chemical industry is published on the website at <a href="http://www.red-cert.org">www.red-cert.org</a> . |
| 2   | REDcert-EU Scheme principles for mass balancing   |  |
| 3   | REDcert-EU Scheme principles for neutral inspections  |  |
| 4   | REDcert-EU Sanction system  |  |
| 5   | Checklist for the inspection of interfaces, operating sites and suppliers of sustainable material flows in the chemical industry (REDcert <sup>2</sup> )            |  |
| 6   | Desk audit checklist for the inspection of interfaces, operating sites and suppliers of sustainable material flows in the chemical industry (REDcert <sup>2</sup> ) |  |
| 7   | Checklist for the inspection of waste producers/collection points that deliver waste and residues to the chemical industry (REDcert <sup>2</sup> )                  |  |

## Annex 1 - Definition of terms

### Biomass

The term biomass refers to the biodegradable fraction of products, waste and residual materials 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. Biomass has a biogenic percentage of at least 99%. The non-biogenic part is the result of unavoidable production processes. In addition, the term can also include hydrogen, for example, as long as it comes from electrolysis using electricity from renewable energy sources.

### Recycled content

Proportion, by mass, of recycled material in a product or packaging. Only pre-consumer and post-consumer materials shall be considered as recycled content, consistent with the following usage of terms.

1. Pre-consumer material

Material diverted from the waste stream during a manufacturing process. Excluded is reutilisation of materials such as rework, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated it.

2. Post-consumer material

Material generated by households or by commercial, industrial and institutional facilities in their role as end-users of the product which can no longer be used for its intended purpose. This includes returns of material from the distribution chain.

### Recycled material

Material that has been reprocessed from recovered (reclaimed) material by means of a manufacturing process and made into a final product or into a component for incorporation into a product.

These are, for example, materials such as pyrolysis oils or synthesis gases, which are the raw materials in a chemical recycling process.

### **Recovered (reclaimed) material**

Material that would have otherwise been disposed of as waste or used for energy recovery, but has instead been collected and recovered (reclaimed) as a material input, in lieu of new primary material, for a recycling or a manufacturing process.

These are materials that have been obtained by processing wastes with fossil raw material components (mainly plastic waste). These materials can, for example, be processed into oils or synthesis gases by means of chemical processes such as pyrolysis or gasification. Recovered materials can also be reused by recycling them mechanically. Recycled materials in this case are both the waste fractions collected separately or sourced from a sorting facility, which are used to produce mechanically recycled products, and the products made from them.

### **Company**

In this document, the term company describes an economically and legally independent organisational unit that produces and sells biomass-balanced chemical products or recovered or recycled waste materials.

### **Operating site**

In this document, an operating site is defined as a dependent fixed business operation or plant operating on behalf of the company.

### **Integrated manufacturing sites and plants**

Integrated manufacturing sites and plants are defined as a physically connected arrangement of operating sites at the same location or describes the physical connection of production sites across different locations by dedicated transport routes (e.g. pipelines) without any supply to or from external parties. Third parties are also part of the integrated manufacturing sites or plants, provided that they are physically connected to the operating sites of the integrated site and are under the operational management of the company.

### **Extended mass balance (EMB))**

An extended mass balance is defined as a clearly defined domain. Within the limits of this domain, a company is authorised to operate a single accounting system. The individual operating sites included in the spatial boundaries for mass balancing do not need to be physically connected to one another. Mandatory requirements for the scheme-compliant compilation of an extended mass balance are as follows:

- The operating sites in the spatial boundaries for mass balancing are under the operational management of the same company
- The transfer of sustainability properties is only permitted for identical products
- All operating sites are certified according to this document and have a valid certificate
- The balance limit is a maximum of 2,000 km

### **Dedicated production**

Dedicated production is a chemical, biological or physical manufacturing process in which sustainably certified materials are used in full or in part to produce bio-based products or products made purely from recycled materials.

### **Integrated production**

Integrated production is a chemical, biological or physical manufacturing process in which sustainable biomass or sustainably certified recycled materials are partially used. Material flows from sustainable materials and fossil-based raw materials are not separated from one other and can go through several process steps. This is defined as a physically connected arrangement of sites at the same location or physically connected sites across different locations, e.g. through interconnected pipelines. The products manufactured as part of integrated production can be certified on the basis of the mass balance.

### **Dedicated or bio-based product**

A dedicated or bio-based product consists entirely or partially of sustainably certified biomass and is marketed as such. The bio-based part of such products can be detected by physical or chemical methods.

### **Dedicated product or product consisting purely of recycled materials**

A dedicated product or product consisting purely of recycled materials is made entirely or partially of sustainably certified recycled materials and is sold as such. Evidence of the exclusive use of recycled materials to make these products can be provided by dedicated production.

### **Certified product**

In the case of a certified product, sustainably certified materials have been verifiably used for its manufacture in the value chain. The respective percentage in the product does not necessarily have to be physically verifiable.

### **Fossil-based raw materials**

All substances listed in Annex 2 a) are considered fossil-based raw materials. Other fossil-based raw materials can be recognised by the REDcert scheme on a case-by-case basis.

### **Intermediate products**

Intermediate products are the result of the first or further processing steps and in turn serve as input materials for other products, but not the end product (see Annex 2 b).

### **Base formulation**

A base formulation is a plant-specific quantity specification by the certificate holder of the input materials required for production as well as the quantities of the by-products and main products.

### **Mass balance equivalent**

The mass balance equivalent (MB equivalent) is the standard unit for the balancing system. The conversion of chemical substances to the MB equivalent is based on the mass balance. In order to convert different chemical raw materials in such a way that they can be compared, the technical process of synthesis gas generation including the water gas shift reaction is used as a basis. For fossil-based raw materials and sustainable materials, the conversion rate is determined in MB-equivalent based on the synthesis gas process.

In the process, the quantity required for the production of synthesis gas is determined. This is standardised to a clearly defined product, e.g. methane. For fossil-based raw materials and sustainable materials, the conversion rate for the MB equivalent may be determined using the net calorific value. The possible biomass is listed in Annex 2 a). Other raw materials can be recognised by the REDcert scheme on a case-by-case basis.

### Accuracy

The requirements for and compliance with a measuring and weighing system are represented in the quality management system (QMS) of the certified company (selection of measuring and weighing systems, regular calibration, etc.) and include validity checks and measures which must be initiated accordingly in the event of non-conformities. The measuring and weighing system concentrates on the measurement of main and by-products, waste and exhaust gas flows. For the sake of accuracy, it is possible to make a conservative estimate in order to minimise the work necessary to perform measurements if data is missing. A maximum of 10% (quantity-based) of the necessary data per base formulation may be based on a conservative estimate.

### Materiality

In terms of the limit on the materiality of data, information is material if the result of the measurement could be affected if the information is omitted, misstated or reported incorrectly. Therefore, the limit value for materiality is defined as 5% in relation to the balanced percentage of sustainable materials in the certified product.

## Annex 2 a) - Sustainable certified biomass and fossil-based raw materials

### **Sustainability certified biomass:**

- Hydrogen (produced from renewable energy sources)
- Biomethane
- Bio-naphtha
- Biodiesel
- Vegetable oil
- Palm oil
- Biobutanol
- Bioethanol
- Glycerine
- Biomethanol
- Wood (air-dried)
- Fresh wood
- Biogenic residual materials from production

### **Fossil-based raw materials:**

- Natural gas
- Methane
- Butane mix
- N-butane
- Naphtha
- Crude oil
- Asphalt (HVR)

**Sustainability certified recycled materials:**

- Pyrolysis oil
- Synthesis gas
- Mechanically processed waste fractions

## Annex 2 - intermediate products

### Intermediate products:

- Ethylene
- Butanol
- Methanol
- Glycerine (fossil)
- Acrylic acid
- Adipic acid
- Butadiene
- col
- Butanediol
- Caprolactam
- Ethylene glycol
- Ethylene oxide
- 2-ethylhexanol
- Furandicarboxylic acid
- Polyamide
- Polystyrene
- ene
- Hexamethylenediamine
- Hydrogen
- Isoprenol
- Methanesulfonic acid
- Muconic acid
- Neopentylglycol
- 1,3-propanediol Propylene gly-
- Proylene oxide
- Propylene glycol
- Sebacic acid
- Styrene
- Succinic acid
- Terephthalic acid
- Polypropylene
- Polyvinylchloride Polyethyl-

## Annex 3 Application for registration of a certification body under the REDcert<sup>2</sup> certification scheme for the certification of sustainable material flows in the chemical industry

(The certification body sends the application electronically to REDcert. The certification body is also responsible for the content of the application and for reviewing this information.)

|   |  |
|---|--|
| (1) Master data of the organisation   |  |
| <input type="checkbox"/> See application for registration of a certification body under the REDcert-EU certification scheme   |  |
| <b>Name and legal form of the organisation</b>  |  |
| <b>Name of the person responsible</b><br>(the person responsible has to be authorised to legally represent the certification body)  |  |
| <b>Name of the REDcert<sup>2</sup> contact</b><br>(The REDcert <sup>2</sup> contact person is responsible for communicating with REDcert and providing information externally/internally under the REDcert certification scheme.) |  |
| <b>Address</b><br>(Street address, PO box)  |  |
| <b>Postal code, city</b>  |  |
| <b>Country</b>  |  |
| <b>Mailing address</b> (if different)   |  |
| <b>Postal code, city</b> (if different)   |  |
| <b>Country</b> (if different)   |  |
| <b>Tel. no.</b>   |  |
| <b>Fax no.</b>  |  |
| <b>E-mail</b>   |  |
| (2) Status and scope of recognition by the competent authority  |  |
| <input type="checkbox"/> See application for registration of a certification body under the REDcert-EU certification scheme   |  |
| <b>Certification body approved by the competent authority</b>   | <input type="checkbox"/> Yes / <input type="checkbox"/> No<br>(please check the item that applies) |

|   |   |
|---|---|
| <b>The registration number is:</b>  |   |
| <b>Is approval limited to individual countries or states?</b>   | <input type="checkbox"/> Yes / <input type="checkbox"/> No<br>(please check the item that apply; <u>if <b>Yes</b>, please explain</u> ) |
| <b>Is approval limited to individual areas of application?</b>  | <input type="checkbox"/> Yes / <input type="checkbox"/> No<br>(please check the item that apply; <u>if <b>Yes</b>, please explain</u> ) |
| <b>Is approval limited to individual types of biomass?</b>  | <input type="checkbox"/> Yes / <input type="checkbox"/> No<br>(please check the item that apply; <u>if <b>Yes</b>, please explain</u> ) |
| (3) QM system and documentation of the certification body   |   |
| <input type="checkbox"/> <i>See application for registration of a certification body under the REDcert-EU certification scheme</i>                                  |   |
| <b>Description of the certification process</b><br>(schematic diagram of workflow)  | (To be included as an annex)  |
| <b>Description of the process for issuing certificates</b>  | (To be included as an annex)  |
| <b>List of auditors and people in the certification body who decide about certification including application for approval of an auditor (see respective annex)</b> | (To be included as an annex)  |
| <b>Measures for transparency and prevention of misuse</b>   | (To be included as an annex)  |
| <b>Process for handling complaints and claims</b>   | (To be included as an annex)  |
| <b>Process for revoking and reinstating certificates</b>  | (To be included as an annex)  |

Place and date:

Name and signature of the person responsible at the certification body:

## Annex 4 Application for registration of an auditor under the RED-cert<sup>2</sup> certification scheme for the certification of sustainable material flows in the chemical industry

(The REDcert contact person of the respective certification body submits the application electronically to REDcert. The certification body is responsible for the content of the application and for reviewing this information.)

| 1. General information about the auditor  |                               |   |  |
|---|-------------------------------|---|--|
| <b>Name</b>   |                               |   |  |
| <b>First name</b>   |                               |   |  |
| <b>Form of address/title</b>  |                               | <input type="checkbox"/> Mr. <input type="checkbox"/> Mrs./Ms./Miss |  |
| <b>Date of birth</b>  |                               |   |  |
| <b>Scope of application:</b>  |                               |   |  |
| <input type="checkbox"/> Conversion plant/integrated manufacturing sites and plants (upstream/downstream) |                               |   |  |
| <input type="checkbox"/> Trade in sustainable material flows  |                               |   |  |
| 2. Auditor's training and education   |                               |   |  |
| Type of education<br>(by school degree, chronologically)  | Duration                      | Subject   | Degree<br>(diploma, certificate)                               |
|   | from                      to  |   |  |
| 3. Professional experience of the auditor   |                               |   |  |
| Company   | Duration<br>(number of years) | Industries/main area of activity<br>company activities              | Position in the company<br>(including description of activity) |
|   |                               |   |  |

|  |                           |   |  |  |  |
|--|---------------------------|---|--|--|--|
|  |                           |   |  |  |  |
| <b>4. Relevant training of the auditor</b>   |                           |   |  |  |  |
| <input type="checkbox"/> <i>Mandatory 2-day basic training of the REDcert<sup>2</sup> scheme for the certification of sustainable material flows in the chemical industry (training certificate available)</i>                     |                           |   |  |  |  |
| <b>Training and experience</b>   |                           | <b>When</b><br>(Date of the training/seminar, etc.) |  | <b>Comments</b><br>(brief description of the experience) |  |
|  |                           |   |  |  |  |
|  |                           |   |  |  |  |
|  |                           |   |  |  |  |
|  |                           |   |  |  |  |
| <b>5. Practical experience of the auditor</b><br>(description of the audits conducted)   |                           |   |  |  |  |
| <p><b>All information is handled confidentially and is only used to check the experience as an auditor.</b> The auditor must furnish proof of at least 2 years of professional experience and 5 audits in the applicable area.</p> |                           |   |  |  |  |
| <b>Type of audits</b><br>(e.g. REDcert, ISO, EMAS inspections, environmental reports)  | <b>Date of the audits</b> | <b>Duration</b><br>(days)                           | <b>Name of the audited company</b>   | <b>Scope of the audit</b>                                | <b>Position</b><br>(Lead/co-auditor, observer) |
|  |                           |   |  |  |  |
|  |                           |   |  |  |  |
|  |                           |   |  |  |  |
|  |                           |   |  |  |  |
| <b>6. Confirmation by the certification body</b>   |                           |   |  |  |  |
| <b>The certification body hereby confirms that the data provided here by the auditor has been checked.</b>   |                           |   | <input type="checkbox"/> Yes / <input type="checkbox"/> No<br>(please check the item that applies) |  |  |
| <b>The certification body confirms that a contract with the auditor exists and that all proof of the skills and expertise of the auditor is kept in the office of the certification body.</b>                                      |                           |   | <input type="checkbox"/> Yes / <input type="checkbox"/> No<br>(please check the item that applies) |  |  |

**Comment:** Please use only this template to apply for approval of REDcert<sup>2</sup> auditors for the certification of sustainable material flows in the chemical industry.

Other templates will not be accepted by REDcert.

Date:

Name and signature of the person responsible at the certification body: