

# GREEN DEAL Reliable evidence for applications of plastic recyclate

Final report

January 2022

## ***Aims of the Green Deal***

- The aim of this Green Deal is to develop a methodology to provide transparency on the percentage of recyclate in a semi-manufactured or finished product, which can thus be used to give reliable assurance of, or make reliable business to consumer claims about, the percentage of recyclate in products. This method will describe what information in any case needs to be available and be passed on from link to link in the chain, and what type of claim is permitted for a particular product. Claims may vary for different types of recycling processes, such as mechanical and chemical recycling.
- The method must be suitable for use by all the companies in the plastics value chain. The Green Deal also aims to investigate how this method could be widely adopted in the market. In so far as possible, the method will be based on existing standards.
- The Parties to this Green Deal will also seek to roll out the method at European level, generating broad European support for it by advocating its use in comparable European standardisation initiatives.

## ***Parties that signed the Green Deal***

- Government: The Ministry for Environment and Housing and the Ministry for Economic Affairs and Climate Policy.
- Sector organisations: NRK, NRK-Recycling, PlasticsEurope Netherlands
- Chemicals and plastics companies: Sabic Petrochemicals, BASF Nederland, Morssinkhof-Rymoplast
- End processors: Philips Electronics Nederland, Unilever Benelux
- Private parties: NEN – Netherlands Standardization Institute

Since November 2020 the international sector organisations PRE and EuPC have started participating in the green deal.

## ***Duration***

This Green Deal was signed on 7 January 2020, the deal was completed in January 2022.

## ***Results***

### ***The methodology to provide transparency on the percentage of recyclate***

To provide transparency on the percentage of recyclate in a semi-finished or end-product, the following elements should be in place:

1. A third party verified certification on the origin of the residual material.
2. A chain of custody model that fulfils the criteria of NEN-ISO 22095 that is verified by a third party by an accredited organisation<sup>1</sup>.
3. The business to business claims should be in line with the requirements of NEN-ISO 22095. The business to consumer claims should be in line with the guidance for claims of this green deal<sup>2</sup>.

Figure 1 shows a schematic overview.

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<sup>1</sup> The current situation in the market is that the chain of custody models 'segregation' and 'controlled blending' are used in most recycling value chains. Thermochemical recycling value chains use 'mass balance'. The European Commission is expected to formulate binding guidelines for the use of allocation in the mass balance model in 2022.

<sup>2</sup> Broad consensus was reached within this green deal for the guidelines for the 'segregation' and 'controlled blending' value chains. For mass balance, no consensus was achieved. The temporary self-imposed guidelines for thermochemical recycling using mass balance will be updated after the EC has decided on guidelines for the use of mass balance.

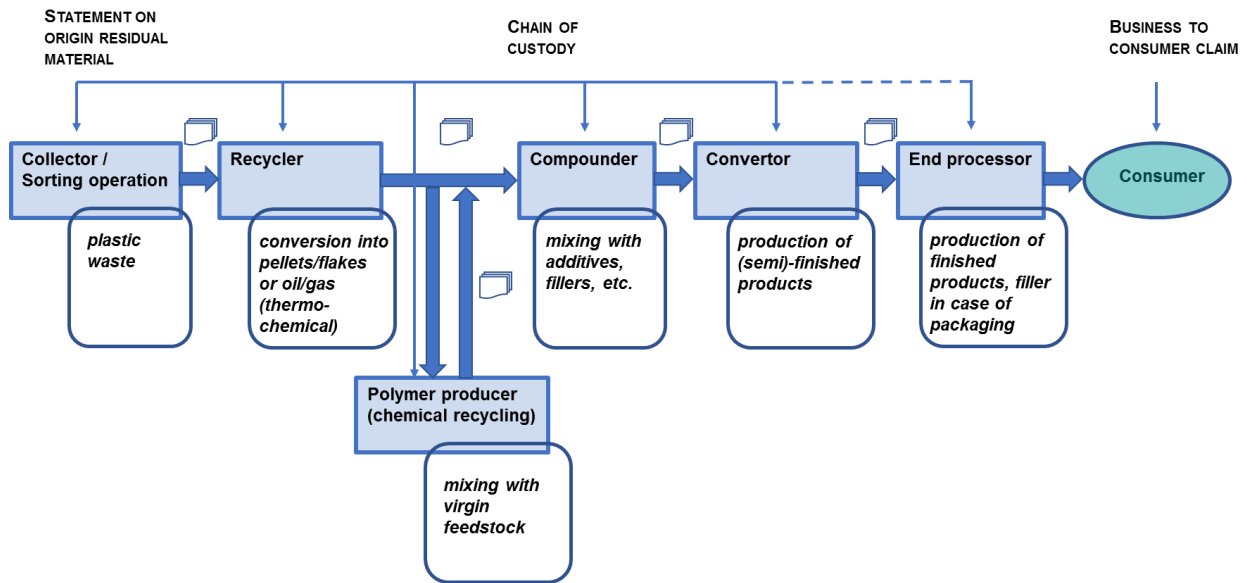


Figure 1: schematic overview of the three elements that are relevant for making reliable claims on recycled content.

#### Statement on origin of residual material

It is important to establish and verify the origin and quantity of the incoming waste material. In this way there is a guarantee that plastic waste is actually being recycled. And what type of plastic waste (pre- and post-consumer). This can be done by self-declarations, but the Green Deal strongly advises to work with a third party verified certification on the origin of the residual material. Most certification systems for recycled content already work with certification up to the point of origin, but sometimes this is difficult when waste traders are involved.

#### Chain of custody model

NEN has taken the initiative to develop an ISO chain of custody standard, which was published in October 2020. This generic standard provides unambiguous definitions of the different chain of custody models, and the corresponding requirements, which are independent of sectors, materials, products, and issues addressed. The chain of custody models that are currently used for mechanical recycling and some types of chemical recycling (polymerization, solvolysis) are physical segregation and controlled blending. There is broad consensus within the green deal that these chain of custody models can be used for making reliable claims on recycled content.

For some types of chemical recycling, it is necessary to use a mass balance chain of custody model. When recycled feedstock is processed together with fossil based feedstock in existing large scale petrochemical production plants, it cannot be physically traceable throughout these production processes. Unlike the book & claim chain of custody model, a mass balance keeps track of the quantity of recycled feedstock going into a plant and allocates this in an administrative way to a certain part of the output. The generic ISO standard does not provide enough detail for chemical production chains in which feedstocks are chemically turned in to products with different characteristics. The Green Deal partners have taken the initiative for a technical committee under ISO to develop specific standards for both mass balance and book and claim. This ISO/TC 308 was installed early 2021, several partners of the green deal have become member of this ISO/TC 308 via the respective national standardization institutes. The first meeting of this new ISO/TC 308 was held on 6 October 2021. To guarantee broad international uptake it was decided not to develop a Dutch standard. The ISO standard will take more time to be completed but is the best way to create acceptance on the European and even global level.

For allocating recycled input in a mass balance model, several ways of allocation are possible ranging from proportional allocation to free allocation<sup>3</sup>. There is no legislation on what types of allocation should be used for recycling. The chemical recycling sector wants to work with free allocation, but the mechanical recycling sector opposes to this type of allocation.

Furthermore, the mass balance model offers producers two ways of selling the recycled content that has been allocated to the plastics output, regardless of what type of allocation is used. Producers can sell the plastics output with the calculated recycled plastics content (for instance, 100 kg – 10%, rolling average). Or they can sell a certain volume of output with another %, as long as not more recycled content is sold than was allocated (for instance, 10 kg – 100%, credit method). The generic ISO standard on chain of custody describes both options. However, the green deal members have different views on the desirability of the credit method.

Chemical recyclers stress the importance of the credit method for upscaling chemical recycling, as the volumes of recycled feedstock that will be processed in the largescale petrochemical plants will be relatively small in the next years. Brand owners prefer the credit method for chemical recycling as well, as consumers have a preference for products that claim a high share of recycled content. Mechanical recyclers use segregation and mainly controlled blending models with focus on physical traceability of the recycled plastic. Mechanical recyclers focus their claims on known recycled content in output products. Although mechanical recyclers could also use mass balance, they prefer to use chain of custody models without mixing as this gives them the opportunity to make stronger claims including a verifiable percentage of recycled content in the end product.

Within the green deal no consensus is reached on what type of allocation should be used. Also at the European level there is an ongoing discussion on the methodology to be used to calculate recycled content in products, including mass balance allocation. This discussion originates from the recycling definition in the Waste Framework Directive and the Single Use Plastics Directive where PET beverage bottles will have to contain 30% recycled content by 2025. The European Commission will come with guidelines for chain of custody in an implementing decision of the Single Use Plastics Directive, probably in spring 2022. The members of the green deal will follow developments closely and adapt the guidance for claims as soon as legal rules will be proposed by the commission.

#### *Interoperability of certification schemes*

Currently there are many certification systems for recycled content. Most of them focus both on chain of custody requirements and on the final calculation of the recycled content. They often require that several companies in the supply chain get certified against their certification scheme. A compounder or end processor that buys recycled plastics from different companies each with their own certification, might have to get certified by each individual scheme. That would lead to unnecessary costs. NEN has taken the initiative to develop an approach for more interoperability in the supply chain based on Chain of Custody certification. The certification of so-called 'trusted supply chain actors' (TSA) will support the credibility of the (recycled content) claims made by those supply chain actors, independently of the various sector- or product specific certification scheme that have been used. A working group was instantiated as part of this green deal to discuss this approach. Apart from members of this green deal, experts from international certification schemes (ISCC, RSB, UL, RedCert, Polycert Europe, RecyClass), verification companies (SGS), international sector organisations (PRE) took part in this working group. This has resulted in a Whitepaper with the concise advice of the experts regarding the next steps for the development of a central Chain of Custody certification scheme based on ISO 22095 (CS 22095) to achieve more interoperability in the recycled plastics value chain.

#### *Guidance for claims*

Another important result of this green deal is a guidance document for reliable claims on recycled plastic content. The end-processors Unilever and Philips shared their insights into customer and consumer needs. Later, a working group was installed, again with international experts from certification schemes and sector

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<sup>3</sup> With regard to multi-output processes where co-products are produced and feedstocks from both virgin and recycled plastic origins are comingled as the input material, allocation must take place. All types of allocation have to deduct the yield losses in the production process.

organisations (ISCC, RSB, UL, Polycert Europe, RecyClass, PRE, EuPC). The guidance document focuses in particular on business to consumer claims on products/packaging, especially those that are communicated on product or on package. Discussions in the working group that prepared this document showed great consensus that guidance was most needed in this area. Variations in the wording are possible, if this will not lead to a stronger claim than proposed for the respective chain of custody model.

**I. Chain of custody models without mixing (fully in line with ISEAL)**

	Characteristics	Credible wording
Identity preserved	Recycled content can be traced right to its source	Contains xx% Addition: comes/is from..
Segregation	Certified plastic waste input can come from different sources. No mixing with non-certified input of the same origin.	Contains xx%

No reference to the chain of custody model is needed in business to consumer communication. A logo of the certification system in combination with a written statement on the recycled content can be applied, or the percentage can be integrated in the logo. This is already common practice.

**II. Chain of custody models with mixing**

	Characteristics	Credible wording
Controlled blending	Mixing of certified plastic waste with non-certified inputs is allowed at any stage of the process resulting in a known proportion of the certified plastic waste in the final output for every delivery. Specified characteristics are also known and can be reported.	Contains xx%

No reference to the chain of custody model is needed in business to consumer communication. A logo of the certification system in combination with a written statement on the recycled content can be applied, or the percentage can be integrated in the logo. This is already common practice.

As mentioned earlier in this document, no agreement is reached on the mass balance chain of custody model. All green deal members support the use of mass balance, but they have different views on what allocation should be allowed. In the table below guidance for claims is given for mass balance including free allocation, as this is currently used in the market and there is no legislation yet that requires a more stringent form of allocation. These guidelines will be updated after the EC has decided on guidelines for the use of mass balance.

Characteristics	Credible wording
Mass balance	<p>Mixing of certified plastic waste with non-certified inputs is allowed at any stage of the process. Free allocation (after deducting of losses).</p> <p><b>Process claim = B2B:</b> The required material* resources for this product are substituted by recycled plastic waste.</p> <p><b>Product claim = B2C:</b>  <u>100% allocation/attribution:</u>            Made with 100% attributed/allocated recycled content according to a certified mass balance approach  <u>&lt; 100% allocation/attribution:</u>            This product is partially made from recycled plastics, in a certified mass balance process            or            This product is made from a mix of recycled and non-recycled plastic, in a certified mass balance process            or            Made with x% attributed/allocated recycled content according to a certified mass balance approach/process.</p>

\* specify what type of material (fossil, biobased)

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*Customers prefer claims with max 5-10 words, the fewer the better. However, a clear distinction must be made to make clear that a mass balance claim is based on calculation. Therefore it is essential that a mass balance % claim is explained by 'attributed/allocated' and a reference to 'mass balance approach/process'.*

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This guidance document will be shared for information with the Commission, the Authority for Consumers and Market and the ISO/TC 308 Chain of Custody that is developing the specific mass balance standard.

### **Pilot projects**

Four pilot projects were conducted with the aim to provide proof of principle (on the volume of recycle) for third party certification of the recycled content of plastic products, to identify potential hurdles in implementation and to involve certification schemes and gain support for the green deal approach. In these pilots an investigation was done how companies now deal with the calculation of recycled content, how this is verified and what claims are used. Sabic (ice tubs) and BASF (multi-layer film for packaging and front-end carrier of a car) were involved in pilots for chemical recycling. Morssinkhof-Rymoplast (bin bags) and 360 Plastics & ELHO (flowerpots) carried out the analysis for mechanical recycling. All companies already have certification and 3<sup>rd</sup> party verification in place. Especially for chemical recycling a wide variety of claims was used and companies within the whole value chain felt the need for more guidance on what claims should be used.

### **Governmental actions**

The government has taken further steps to develop instruments to promote the use of plastic recyclate. On the European level, during the Environmental Council on 17 December 2020, conclusions on the circular action plan of the commission were adopted. Two conclusions are relevant for this green deal:

- The commission is called upon to develop standardised methods for measuring recycled content in products, preferably based on harmonised verification methods.
- The commission is asked to propose measures to foster a stronger demand for recycled material, by setting minimum EU requirements for recycled content in plastic products.

Regarding the mandatory targets several legislative proposals are expected. For instance, in the product policy framework for vehicles. The focus in 2021 will be on revision of legislation for the construction sector (Q3), packaging and the sustainable product policy framework (Q4).

On the national level the green deal is part of the Implementation Program of the Dutch Circular Economy Program.

- An Action Plan Application of plastic recyclate is published with measures for the short term, also aiming to accelerate the market uptake for recyclate, precluding the European obligations. This Action Plan was presented to State Secretary of the Ministry of Infrastructure and Water Management Van Weyenberg on 6 September 2021.
- Rijkswaterstaat has initiated two buyers and suppliers groups for circular plastics (textiles and plastic recyclate). These groups share knowledge on green procurement and develop procurement criteria.
- On behalf of *Versnellingshuis Nederland Circulair!* MVO NL, Polymer Science Park and Rijkswaterstaat have conducted a breakthrough project to accelerate the market for plastic recyclate for paint buckets. The experiences were used to develop a step-by-step plan for other product groups. The plan can be [downloaded](#) from the website of the Versnellingshuis.