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Guidance on the determination and calculation of graduated contributions following the executive order on packaging and packaging waste[1]

Background and purpose

The purpose of this guide is to provide a deeper understanding of compliance with the design requirements. Additionally, it offers an interpretive contribution to how producer responsibility organizations can meet the requirement for graduating financial contributions from the producer responsibility organization. This is pursuant to the executive order on certain requirements for packaging, extended producer responsibility for packaging, and other waste that is collected along with packaging waste.

Central definitions:

Definitions

Unit of packaging: a unit, including any integrated or separate components, which as a whole serves a packaging function, such as the containment, protection, handling, delivery, storage, transport or presentation of products, and includes independent units of grouped or transport packaging where they are discarded prior to the point of sale.

Main component: a component which has the highest weight in cases where several components are glued, welded or fastened together.

Integral component: a packaging component, whether or not of the same material as, or distinct from, the main body of the packaging unit, that is integral to the packaging unit and its functioning, that does not need to be separated from the main body of the packaging unit in order to ensure the functionality of the packaging unit and that is typically discarded at the same time as the main body of the packaging unit, although not necessarily via the same disposal route

Separate component: a packaging component, whether or not from the same material as the main body of the packaging unit, that is distinct from the main body of the packaging unit, that needs to be

[1] Order on certain requirements for packaging, extended producer responsibility for packaging and other waste that is collected with packaging waste

disassembled completely and permanently from the main body of the packaging unit and that is typically discarded prior to and separately from the main body of the packaging unit, including packaging components that can be separated from each other simply through mechanical stress during transportation or sorting

Recycled plastic: recycled plastic means plastic that has been post-consumer plastic waste before recycling [2].

Contact-sensitive product: follows the EU definition within the scope of the regulations: (EC) no. 1831/2003, (EC) no. 1935/2004, (EC) no. 767/2009, (EC) no. 2009 /1223, (EU) 2017/745, (EU) 2017/746, (EU) 2019/4, (EU) 2019/6, Directive 2001/83/EC or Directive 2008/68/EC.

Mono-material: a mono-material means a material that only consists of one single type of material.

Operational costs: costs of handling packaging waste. Pure administrative costs are not covered.

Postconsumer recycled plastic waste: is plastic waste that comes from plastic products that have been marketed [3].

The model for the environmental graduated contribution

The Danish model for environmentally modulated fees for packaging generally consists of two parts:

1. An overview of material subcategories, along with their levels and associated design requirements.
2. An economic model that indicates the amount the producer must pay, in accordance with the categorization of their marketed packaging quantities.

Part 1. material subcategories, levels and design requirements

What is a material subcategory?

Contrary to the term "material categories", which are the categories reported to the DPA, packaging must be classified into a material subcategory. This subcategory specifies the materials that are subject to grading. Material subcategories are defined based on the type of material and the recycling stream in which the packaging is recycled.

The material subcategories are:

- Flexible plastic
- Rigid Plastic
- Rigid PET
- Foam plastic

[2]Definition from COMMISSION IMPLEMENTING DECISION (EU) 2023/2683 of 30 November 2023 on rules for the application of Directive (EU) 2019/904 of the European Parliament and of the Council as regards the calculation, verification and reporting of data on the content of recycled plastic in single-use plastic bottles for drinks

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- Glass
- Cardboard
- Paper
- Food and beverage cartons
- Ferrous metals
- Aluminum

Under the section titled "Material Subcategories", there is a description of what the various material categories encompass.

The packaging's categorization into various material subcategories determines which design requirement the packaging must meet. The economics of waste treatment must be balanced under each material subcategory, and therefore, the categorization into a specific material subcategory also determines the fee the producer must pay to the producer responsibility organization. The economics of the material subcategories are detailed in the section on the economic model.

How is a packaging categorized into a material subcategory?

A package consists of a primary component and any additional separate components. Both the primary component and separate components may have integrated components.

The primary component, documented separate components, and integrated components that can be separated from the component they are integrated with, are each categorized independently. The categorization is based on the dominant material of the component according to weight.

The documentation for separation must adhere to the procedure description and limit values as per prEN 18120-3 Annex C, or other documentation that yields a similar evaluation result.

If a separate component is not documented, it is categorized under the same material category as the primary component and contributes to its weight.

An integrated component is documented as separable if it can be detached from the component it is integrated with by simple mechanical impact during transportation or sorting.

If it is not documented whether integrated components can be detached from the primary component, they are categorized under the same material category as the primary component and contribute to its weight.

In case that there is no dominant material, the packaging is categorized based on the material that requires the highest contribution in the relevant collective scheme.

Figure 1. illustrates how a packaging unit is divided into primary components, separate components, and integrated components.

Decision tree – which material subcategory should be used?

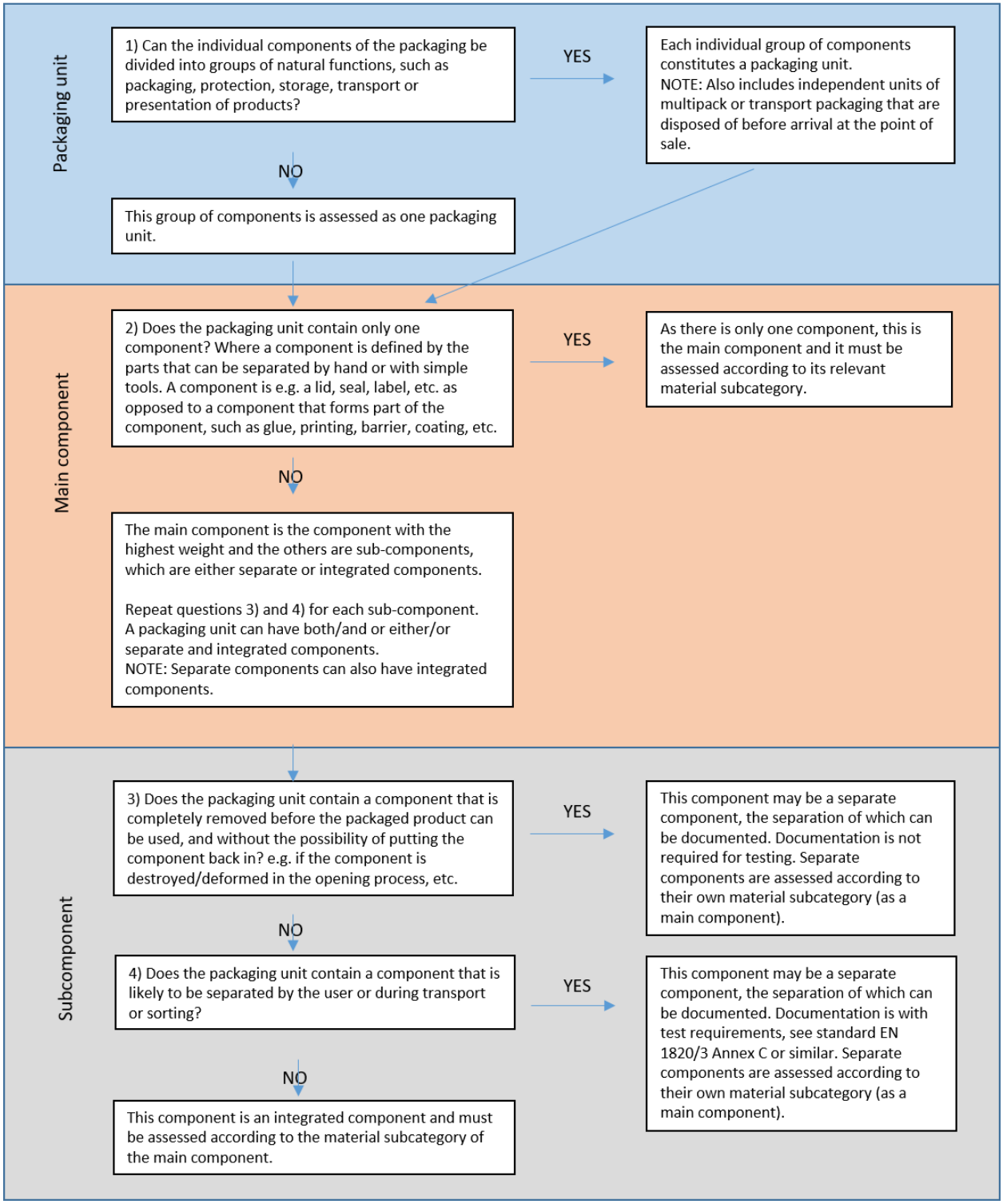

Figure 1Decision tree of division between main component, special component and integrated component

A consequence of this method is that the packaging of a product can contain a primary component, with associated integrated components and separate components. In certain cases, these must be assessed separately, and each contributes independently to the producer responsibility organisation.

Concrete examples of the use of the decision tree in Figure 1 can be seen in Figure 2 and Figure 3

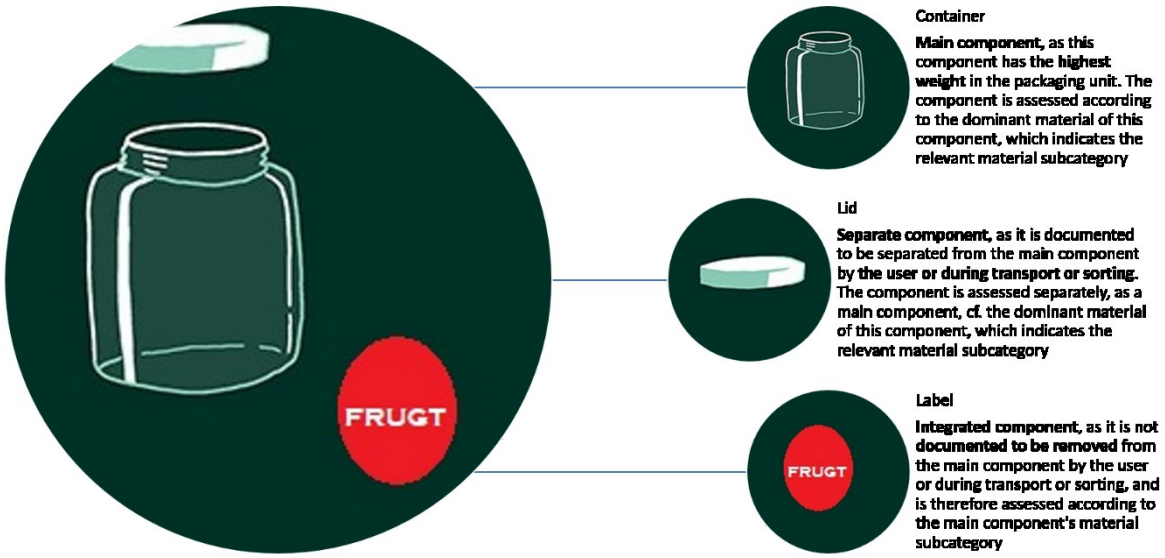

Figure 2Example of division of packaging into main component and integrated components

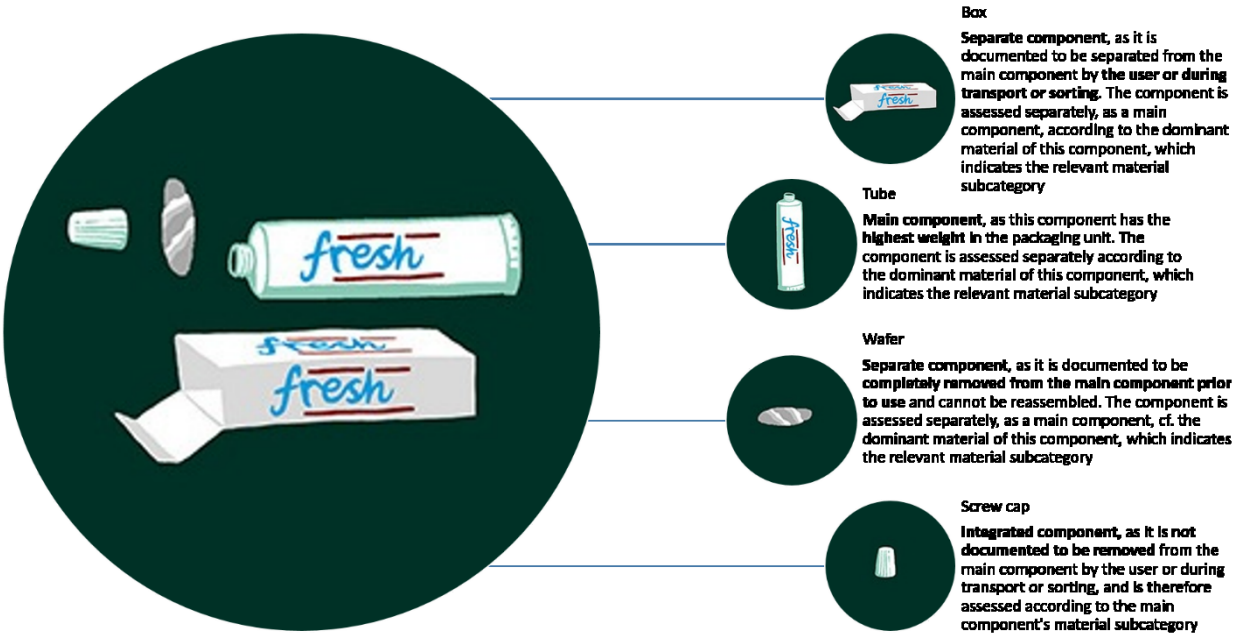

Figure 3 Example of division of packaging unit into main component, separate and integrated components

Levels under each material subcategory

Under each material subcategory, the packaging is divided into several levels based on the environmental impact of the packaging waste. As shown in Figure 3, these levels are labeled as green, yellow, and red. The green level categorizes packaging with the lowest environmental impact, the yellow level categorizes packaging with a medium environmental impact, and the red level categorizes packaging with the highest environmental impact.

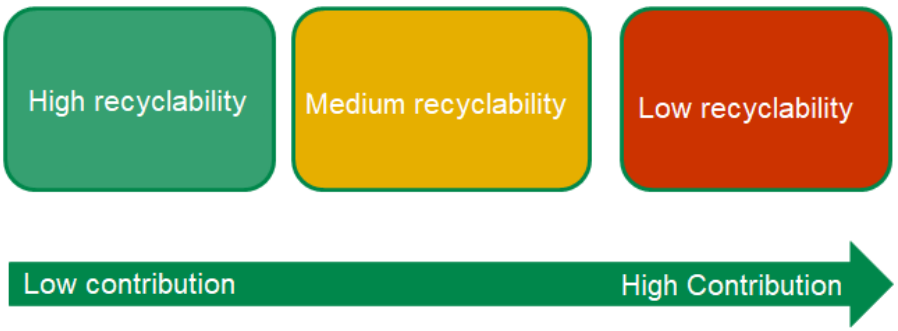

Figure 4. Levels for environmental graduation

Figure 4 below provides an overview of the number of levels under each material subcategory:

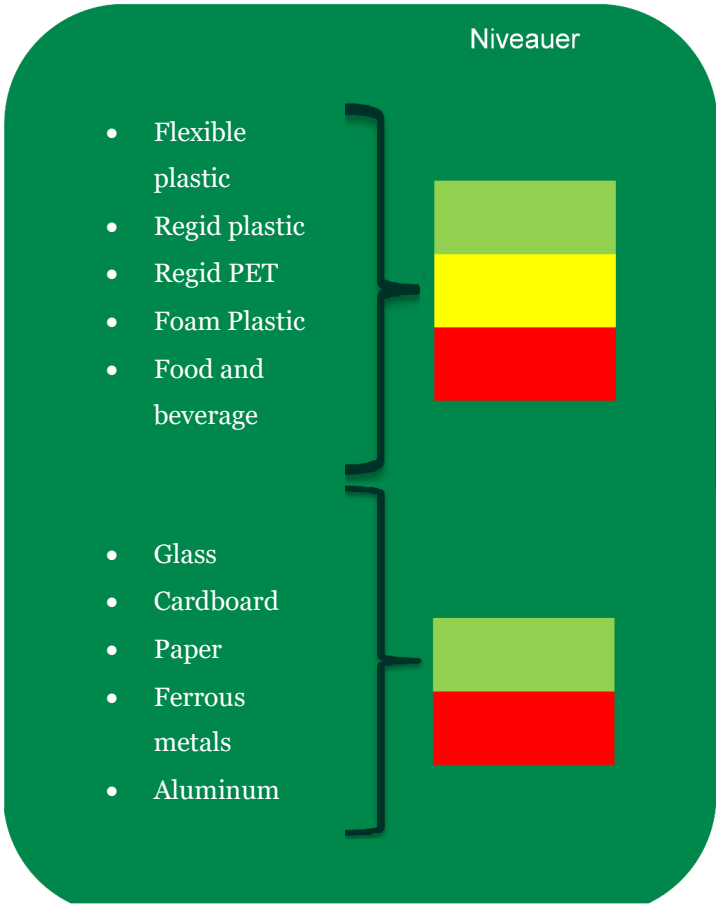

Figure 5. Levels for the 10 material subcategories

As depicted in Figure 5, there are three levels (green, yellow, red) for flexible plastic, rigid plastic, rigid PET, foam plastic and food and beverage cartons. There are two levels (green, red) for glass, paper, cardboard, ferrous metals, and aluminum.

Design requirements

A design requirement is the requirement against which a specific packaging must be evaluated to be placed into the green, yellow, or red level under a material subcategory. Appendix 2-11 provides an overview of the design requirements for each material subcategory.

How to place a packaging in one of the levels green, yellow or red

Packaging marketed by the producers of the producer responsibility organization must be divided into three levels for packaging categorized in the material subcategories: Flexible Plastic, Rigid Plastic, Rigid PET, Foam Plastic, and Food and Beverage Cartons

1. Green Level: Packaging that meets the design requirements for the green level, and none of the design requirements for the red level, is categorized within its respective material subcategory.
2. Yellow Level: Packaging that meets the design requirements for the yellow level, and none of the design requirements for the red level, is categorized within its respective material subcategory.
3. Red Level: Packaging that meets one or more of the design requirements for the red level, or does not meet the requirements for green or yellow, is categorized within its respective material subcategory.

If a design requirement cannot be documented, the packaging is categorized under the red level.

For packaging categorized into glass, cardboard, paper, ferrous metals and aluminum, it is divided into two levels;

1. Green Level: Packaging that meets the design requirements for the green level, and none of the design requirements for the red level, is categorized within its respective material subcategory.
2. Red Level: Packaging that meets one or more of the design requirements for the red level is categorized within its respective material subcategory.

If a design requirement cannot be documented, the packaging is categorized under the red level.

Compliance with design requirements

(Refer to §81) The producer responsibility organizations are required to conduct self-regulation to ensure that the collected contributions from the producer responsibility organization are graduated in accordance with the model for the environmentally modulated fees. This means that the producer responsibility organization must ensure that their members' packaging is categorized correctly in terms of material subcategory and level. (Refer to §86) The responsibility of ensuring accurate documentation for the categorization of their members falls upon the producer responsibility organization. They must prepare a written description of the procedure and documentation for the implementation of this self-regulation. The description must be made available to the Danish Environmental Protection Agency upon request. (Refer to §107) In addition, the Danish Environmental Protection Agency can order business operators and producer responsibility organizations to submit relevant documents, technical specifications, data, or information on compliance and technical aspects of packaging, including access to embedded software.

Part 2. the economy model

The producer responsibility organization are responsible for categorizing the members' marketed packaging into material subcategories and into the respective levels of green, yellow, and red. As illustrated in Figure 6, this division determines how much a producer must contribute to the producer responsibility organization. The producer responsibility organization gives each producer who markets one or more red-level packaging an additional cost of 35 percent of the individual producer's calculated operational costs for waste management of all of its packaging that falls below the red level.

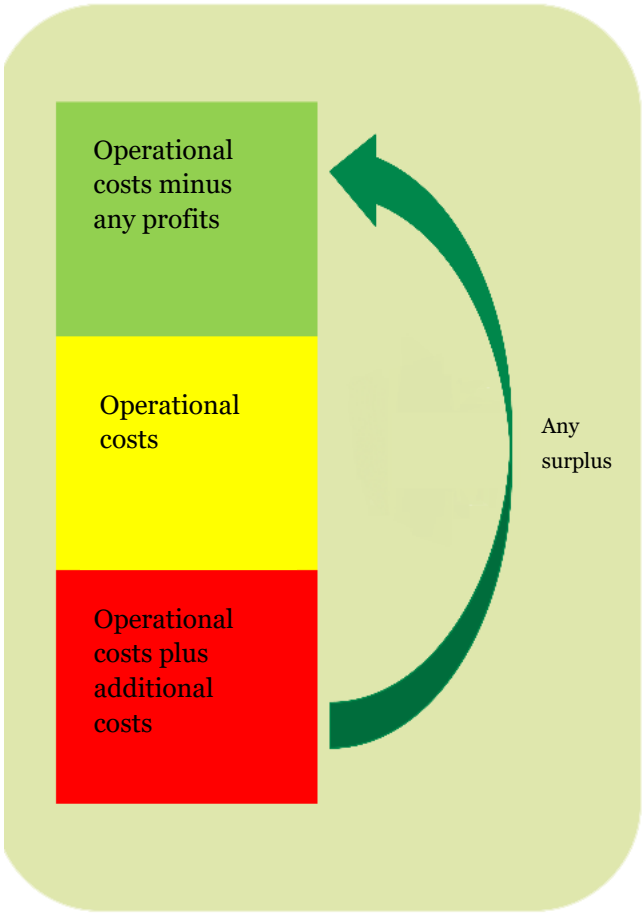

Figure 6 Economic model

The producer responsibility organization uses the additional revenue from the extra cost charged in a given material subcategory to cover up to 80 percent of the operational costs for waste management of green level packaging within the same material subcategory. If there is a surplus under the individual material subcategories, the extra income is first allocated to packaging in the yellow level, then to the red level, with up to 80 percent of the operational costs covered at most. The remaining operational costs for waste management of packaging in the green level are distributed according to the producers' share of marketed quantities within each material subcategory at this level. Packaging in the yellow level pays for its own calculated operational costs for waste management.

The producer's payment to the producer responsibility organization will depend on how many tons of packaging the producer brings to the market in a given material subcategory, and also on whether the packaging is placed in the green, yellow, or red level. The same manufacturer may bring different types of packaging to the market under the same material subcategory, but at different levels. In this case, the producer's payment will depend on how many tons of packaging, for example, end up in the green and red levels, respectively. In practice, the producer responsibility organization, of which the producer is a member, could allow the additional cost and the reduced contribution to offset each other, so that the producer receives only one total bill.

Examples of financial calculations

In the following section, three examples are provided on how the gradation of the producers' contribution to the producer responsibility organization can be calculated, considering different numbers of levels and

distributions of marketed packaging under various levels. The method of collecting the contribution in practice is at the discretion of the collective arrangement.

Please note that the price examples provided should not be taken at face value. It is the producer responsibility organization that determine the average operational waste management cost applicable to their respective members.

A potential practical example could be:

Example 1

A producer responsibility organization have 10 producers who collectively bring a total of 10 tons of cardboard packaging to the market. Five of these producers contribute 5 tons of cardboard packaging that falls under the red level, while the other five contribute 5 tons that fall under the green level. The producer responsibility organization assumes the responsibility for waste management from the producers, ensuring that the 10 tons of waste are appropriately managed. This is achieved by hiring a waste management company, which charges a total of DKK 13,170 to process the 10 tons of cardboard packaging. This results in an average waste management cost of DKK 1,317 per ton. The producer responsibility organization is then responsible for distributing these total costs among the 10 producers who introduced the cardboard packaging to the market. According to Annex 14 of the executive order, producers in the high contribution level must pay an additional 35 percent of their calculated operational costs for waste management for all of their packaging that falls under the red level. This means that the producers who fall under the higher contribution level have to pay DKK 1,778 per ton. As a result, the total payment for the five producers in the red level amounts to DKK 8,890.

The remaining DKK 4,280 must then be distributed among the five producers who fall under the green level, meaning they each need to pay DKK 856 per ton.

Collective arrangements:

A potential practical example for the producer responsibility organization's calculation might be:

Step 1: For producers in the red level, the producer responsibility organization charges the average waste management cost per ton plus an additional fee of 35 percent. For producers falling under the green level, the producer responsibility organization charges a contribution equal to the average waste management cost.

Step 2: Once the producer responsibility organization has collected the contributions, it can determine the surplus in the scheme, and then refund the surplus, distributed per ton, to the producers who have paid under the green level.

Examples 2

A producer responsibility organization have 10 producers who collectively bring 250 tons of glass packaging to the market. In this example, the cost for handling a ton of glass packaging is DKK 1,748. This means that the producer responsibility organization must collect and distribute DKK 1,748 x 250, equating to DKK 437,000, according to the level system.
Out of the 10 producers, three place packaging on the market at the red level and seven place packaging on the market at the green level. For the three producers at the red level, the producer responsibility organization must charge the average waste management cost plus an additional 35 percent. This means that the cost for the three producers at the red level is DKK 2,360 per ton. The excess amount charged from the three producers at the red level is transferred to the group of seven producers at the green level.

As a result, these producers are charged less than DKK 1,748, effectively "rewarding" them for meeting the criterion.

Red level price per marketed quantity (kg) = operational list price * 1.35:

Producer	Quantity placed on the market (tonnes)	Operational list price (DKK)	Graduated price for KO	Profit for distribution (DKK)
1	14	24,472	33,037	8,565
2	12	20,976	28,317.6	7,342
3	37	64,676	87,313	22,637
Sum	63	110,124	148,667	38,543

Table 1. Calculation of graduated price for producers in the red level

As can be seen above, there is a profit of DKK 38,543. from the red level to be distributed to green level.

Producer	Marketed quantity (ton)	Operational prices (DKK)	Graduated price for KO (DKK)
4	5	8,740	7,709
5	7.5	13,110	11,564
6	8	13,984	12,335
7	50	87,400	77,094
8	33.5	58,558	51,653
9	48	83,904	74,011
10	35	61,180	53,966
SUM	187	326,876	288,333

Table 2. Calculation of graduated price for producers in the green level

As seen in Tables 1 and 2, the sum of the leveled prices amounts to: 148,667 + 288,333 = DKK 437,000.

Graduated price/ton for green level is calculated using the following formula:

The sum of operational costs for the green level (DKK 326,876), less the profit for distribution (38,543), equals 288,333. This value, divided by the total marketed quantity in the green level (187 tonnes), equals 1,542. This represents the discount that the green level receives per ton of marketed quantities.

Example 3 of financial calculations

A producer responsibility organization have 10 producers who collectively bring 300 ton of rigid plastic to the market. The cost for handling this material category in this example is DKK 4,364 per ton. This means that the producer responsibility organization must collect and distribute DKK 4,364 x 300 ton, equating to DKK 1,309,200.

Out of the 10 producers, three introduce packaging to the market at the red level, two at the yellow level, and five at the green level. For the three producers at the red level, the producer responsibility organization charges the standard cost plus an additional 35 percent. This means that the cost for these three producers in the red level will be DKK 5,891 per ton. The excess amount charged to these three producers is transferred to the group of five producers in the green level. As a result, these producers are charged less than DKK 4,364, effectively "rewarding" them for meeting the criterion. The remaining two

producers in the yellow level must pay the average waste management cost of DKK 4,364 per ton.

Red group price per marketed quantity (ton) = operational list price * 1.35:

Producer	Marketed quantity (ton)	Operational list price (DKK)	Graduated price for KO	Profit for distribution (DKK)
1	52	226,928	306,353	79,425
2	24	104,736	141,394	36,658
3	74	322,936	435,964	113,028
Sum	150	654,600	883,710	229,110

Table 3. Calculation of graduated price for producers in the red group

As seen above, there is a profit of DKK 229,110 from the red level to be distributed to the green level.

Yellow Group's price per marketed quantity = operational list price

Producer	Marketed quantity	Operational list price
4	33	144,012
5	22	96,008
SUM	55	240,020

Table 4. Calculation of price for producers in the yellow level

Producer	Marketed quantity (ton)	Operational prices (DKK)	Graduated price for KO (DKK)
6	10	43,640	19,523
7	42	183,288	81,997
8	19	82,916	37,094
9	17	74,188	33,189
10	7	30,548	13,666
SUM	95	414,580	185,470

Table 5. Calculation of price for producers in the green level

As seen in Tables 3, 4, and 5, the sum of the producers' payments amounts to: DKK 883,710 (red) + DKK 240,020 (yellow) + DKK 185,470 (green) = DKK 1,309,200.

Graduated price/ton for green group is calculated using the following formula:

The sum of operational costs for the green level (DKK 414,580) minus the profit for distribution (229,110), divided by the total marketed quantity in the green level (95 ton), equals DKK 1,952 per ton.

Material subcategories of packaging

Categorization of packaging means that the packaging is divided into different material subcategories, for which specific design requirements apply. Under each material subcategory is a non-exhaustive list of which packaging each material subcategory includes:

1. **Flexible plastic**
    - Includes plastic-dominant packaging made from flexible films, laminates, multi-layer material and flexible plastics. Flexible plastic can be made from a simple type of plastic or

composed of many different materials, e.g. PE (polyethylene), PP (polypropylene), PET (polyethylene terephthalate), PA (nylon), fiber-based materials and aluminum etc.

2. **Rigid plastic**
   - Includes packaging made from all types of rigid plastic, e.g. polyethylene, polypropylene, polystyrene etc. However, excluding rigid PET (polyethylene terephthalate). Rigid plastic can be made from a single type of plastic or composed of different types of materials.

3. **Rigid PET**
   - Includes rigid PET (polyethylene terephthalate) packaging , as distinct from flexible PET, which falls under the flexible plastic material category. For rigid PET, the dominant material is rigid PET, but the packaging can be composed of different materials.

4. **Foam plastic**
   - Includes packaging made from all types of foam plastic, for example for transport protection or insulation, e.g. EPS (expanded polystyrene), XPS (extruded polystyrene), EPP (expanded polypropylene), PUR (polyurethane) and similar materials. For foam plastic, the dominant material is foam plastic, but the packaging can be composed of different materials.

5. **Food and beverage cartons**
   - Includes food and drink cartons that have contained food, e.g. milk cartons, juice cartons and cartons for e.g. peeled tomatoes or the like .

6. **Glass**
   - Includes glass packaging.

7. **Cardboard**
   - Includes fibre-based packaging which is usually not flexible, e.g. cardboard, corrugated cardboard and similar materials which are produced in a cardboard production process. Cardboard typically has a weight between 180 grams/m2 and 400 grams/m2. Cardboard typically has a weight of 400 grams/m2 and upwards.

8. **Paper**
   - Includes fibre-based packaging which is flexible, eg paper bags, sandwich paper, muffin tins and the like which are produced in a paper production process. In some contexts, paper is also used in connection with, for example, non-flexible packaging. Paper typically has a weight between 17 grams/m2 to 180 grams/m2.

9. **Ferrous metals**
   - Includes metal packaging that consists predominantly of steel and other ferrous material, e.g. cans, drums, buckets and the like.

10. **Aluminum**
    - Includes aluminum packaging that consists of a dominant content of aluminum, e.g. cans, foils and trays and the like.

Appendix 1: Design requirements for flexible plastics

Main component:

	Green level	Yellow level	Red level
Material	- Greater than or equal to 90% by weight PP single or multi-layer material or - More than or equal to 95% by weight PE single or multi-layer material	- Blend of PE and PP with more than or equal to 90% by weight PE/PP	- Biodegradable plastic And/or - All other materials, e.g. mono-PS, multi-layer foils with mixed materials, e.g. PET, PVC, PS, paper
Density	- Density of PE or PP of less than or equal to 1 g/cm3	- Density of PE or PP of less than or equal to 1 g/cm3	- Density of material of more than 1 g/cm3
Color	- no added color or - Added color without carbon black or - Color that is NIR-sortable	- no added color or - Added color without carbon black or - Color that is NIR-sortable	- Added color with carbon black content or - Color that is not NIR-sortable
Barrier	- No barrier Or one or more of the following: - PVOH - SiOx - AlOx - Acrylic - Metallization (0.02-0.05 µm) - EVOH without binder or with compatible binder with less than or equal to 5% by weight of the entire main component	- Other barriers with less than or equal to 5% by weight of the entire main component	- Material with PVC or PVdC and/or - Other barrier with more than 5% by weight of the entire main component
Adhesives for multilayer materials	- Less than or equal to 5% by weight of total weight of main component	- Less than or equal to 7% by weight of total weight of main component	- More than 7% by weight of total weight of main component

Main component and integrated component

	Green level	Yellow level	Red level
Printing ink for label and foil decoration	- No pressure and/or - Printing complies with the applicable EuPIA list of printing colours	- No pressure and/or - Printing complies with the applicable EuPIA list of printing colours	- Does not comply with the applicable EuPIA list of printing colours
Recycled content from Post-consumer recycled plastic	- More than or equal to 20 percent by weight of recycled plastic of the total weight of the packaging, excluding contact-sensitive products	- Less than 20 percent by weight of recycled plastic of the total weight of the packaging, excluding contact-sensitive products or None	

In relation to design requirements for flexible plastics, the following is understood as:

1) Material: purity criterion applies exclusively to the polymer structure of the main component excluding the barrier, where the weight percentage does not include other elements such as glue, labels or integrated components.

2) Density: the additives may in themselves have a density that does not comply with the design requirement. It is the material of the main component, which must not have a density that deviates from the design requirement after the additives have been mixed with the plastic.

3) Recycled content: calculation of weight percent recycled content is based on the weight of the main component and any integrated components (the total weight of the packaging including other materials) as a percentage of this weight.

Appendix 2: Design requirements for Rigid plastic

Main component:

	Green level	Yellow level	Red level
Material	- Greater than or equal to 95% PP by weight or - Greater than or equal to 99% by weight PE	- Less than or equal to 30% by weight PE in PP main component or - Less than or equal to 5% by weight PP in PE main component	- Biodegradable plastic and/or - All other materials of mono or mixed materials
Density	- Density of PP or PE of less than or equal to 0.97 g/cm3	- Density of PP or PE of less than or equal to 0.97 g/cm3	- Density of material greater than 0.97 g/cm3
Color	- No added color or - Added color without carbon black content or - Color that is NIR-sortable	- No added color or - Added color without carbon black content or - Color that is NIR-sortable	- Added color with carbon black content or - Color that is not NIR-sortable
Barrier	- No barrier Or one or more of the following: - AlOx - SiOx - EVOH without binder or with compatible binder, less than or equal to 6% by weight of the entire main component	- Other barriers than specified in "green" or "red" and/or - EVOH with compatible binder, of more than 6% by weight of the entire main component	One or more of the following: - ON - PVC - PVdC - EVOH with non-compatible binder

Integrated component:

	Green level	Yellow level	Red level
All	- No integrated component or - Integral component of same material as main component with density of integral component less than 1 g/cm3 and/or - Material of label in PE to PP main component or PP label to PE main component	- Material of integrated component in PE, PP or PE/PP with density less than 1 g/cm3 and/or - Material with a density greater than or equal to 1 g/cm3, e.g. PET, PETG, PLA, PS	- Material of other plastics with density less than 1 g/cm3 and/or - Material with metal or metallization and/or - Material with fiber or paper - And/or - Material with PVC and/or - Biodegradable plastic

Main component and integrated component:

	Green level	Yellow level	Red level
Recycled content from Post-consumer recycled plastic	- More than or equal to 20 percent by weight of recycled plastic of the total weight of the packaging, excluding contact-sensitive products	- Less than 20 percent by weight of recycled plastic of the total weight of the packaging, excluding contact-sensitive products or - None	

In relation to the design requirements for Rigid plastic is understood by:

1) Material: purity criterion applies exclusively to the polymer structure of the main material excluding barrier, where the weight percentage does not include other elements such as glue, labels or integrated components.

2) Density: the additives themselves may have a density that does not comply with the design requirement. It is the material of the main component, which must not have a density that deviates from the design requirement after the additives have been mixed with the plastic.

3) Integrated components: note difference in definition of integrated component and separate component.

4) Recycled content: calculation of weight percent recycled content is based on the weight of the main component and any integrated components (the total weight of the packaging including other materials) as a percentage of this weight.

Appendix 3: Design requirements for foam plastic

Main component:

	Green level	Yellow level	Red level
Material	- More than or equal to 95% by weight EPS, mono EPS possibly. coated with PS or - More than or equal to 95% by weight EPP, mono EPP possibly. coated with PP	- More than or equal to 90% by weight EPS possibly coated with PS or - More than or equal to 90% by weight EPP possibly. coated with PP	- Other foamed materials, mixture or monomaterials e.g. XPS, PUR: PVC and/or - Biodegradable plastics
Additives	- No additives or - Stabilizers and/or - Antioxidants and/or - Lubricants and/or - Peroxides	- No additives or - Stabilizers and/or - Antioxidants and/or - Lubricants and/or - Peroxides	- Mineral fillers and/or - Other additives, e.g. flame retardant, plasticiser and/or - Content that provides bio/oxo/photodegradable properties
Color	- No added color or - EPS in white, and EPS may have added graphite (gray color) or - EPP colored white, grey, black	- Other colors	
Print color and degree of coverage	- No or - Printing ink follows EuPIA's list and/or	- Printing ink below 50 percent coverage of outer surface	- Ink that does not follow EuPIA's list and/or - Printing ink equal to or greater than 50 percent coverage of outer surface

	- Laser marking and/or - Printing ink below 25 percent coverage of outer surface		

Integrated component:

	Green level	Yellow level	Red level
All	- No integrated component or - Material is same as main component: EPS (PS) or EPP (PP)	- No integrated component or - Material same as main component: EPS (PS) or EPP (PP) and/or - Label in PP	- Other materials

Main component and integrated component:

	Green level	Yellow level	Red level
Recycled content from post-consumer recycled plastic	- More than or equal to 20 percent by weight of recycled plastic of the total weight of the packaging, excluding contact-sensitive products	- Less than 20 percent by weight of recycled plastic of the total weight of the packaging, excluding contact-sensitive products or - None	

In relation to design requirements for foam plastic, the following is understood by:

1) Material: The purity criterion applies exclusively to the polymer structure, where the weight percentage does not include other elements such as glue, labels or integrated components.

2) Additives: It is permitted to use the specified additives which are assessed as necessary for the material's processing or functionality below the green level. The intention is that only necessary additives may be used for green level.

3) Printing colour: Printing on the material must comply with the EuPIA list of printing colours, in order to comply with green level requirements. A limit has been set on the degree of coverage of pressure on the surface of the packaging, calculated from the outer surface, i.e. bottom, sides and top without edges, but without a lid, if this is a main component in itself.

4) Recycled content: Calculation of weight percent recycled content is based on the weight of the main component and any sub-components (the total weight of the packaging including other materials) as a percentage of this weight.

Appendix 4: Design requirements for Rigid PET

Main component:

	Green level	Yellow level	Red level
Material	- More than or equal to 98% PET by weight	- Greater than or equal to 95% PET by weight or - PET/PE with less than or equal to 10% PE by weight	- PET with other materials, e.g. PVC, PS, aluminium, PP, PETG, PET-GAG, expanded PET and/or - Material that is biodegradable
Additives	- No additives or - Content of silicone surface treatment and/or - Content of anti-blocking masterbatch and/or - Content of masterbatch for impact strength modification and/or - Contents of nucleation masterbatch to control crystal formation	- Content of other additives, e.g. UV stabilizer, AA blockers, optical whitening; oxygen scavengers etc.	- Content that provides bio-, oxo- or photo-degradable properties and/or - Content of nanocomposite
Color	- Undyed or - Added color without carbon black or - Color that is NIR-sortable	- Undyed or - Added color without carbon black or - Color that is NIR-sortable	- Added color with carbon black or - Fluorescent color or - Metallic color or Color that is not NIR-sortable

Barrier	- No barrier or - Material with SiOx and/or - Material with PET based barrier	- Material with a different barrier than specified in green or red level and/or - Material with oxygen scavenger	- Material with EVOH and/or - Material with PA

Integrated component:

	Green level	Yellow level	Red level
All	- No integrated components or - Lids and other components made of rigid PET and/or - Flexible plastic of PE or PP with a density below 1 g/cm3	- Material with a mixture of PE and PP and/or - Material of flexible PET and/or - Material of foam PET and/or - PET multi-material with and without barrier, e.g. PET/EVOH/PE and/or - Pads made of bubble wrap or absorbent paper	- Other materials with a density greater than or equal to 1 g/cm3 and/or - Material with fiber or paper and/or - Material with metal layer or metallization and/or - Material with silicone and/or - Material with PVC and/or - Material which is biodegradable plastic

Main component and integrated component

	Green level	Yellow level	Red level
Recycled content from post-consumer recycled plastic	- More than or equal to 20 percent by weight of recycled plastic of the total weight of the packaging	- Less than 20 percent by weight of recycled plastic of the total weight of the packaging or - None	

In relation to design requirements for Rigid PET is understood by:

1) Material: The purity criterion applies exclusively to the polymer structure of the main material excluding the barrier, where the weight percentage does not include other elements such as glue, labels or integrated components.

2) Additives: Specified criteria have been set for the green and red levels, while all other additives are permitted for the yellow level. The intention is that these additives must be necessary for processing or the functionality of the material.

3) Colour: Undyed means that no new color is added during the production of new packaging, but the material can have color added from recycled material from a previous cycle. Uncolored packaging may therefore have a color.

4) Recycled content: Calculation of weight percent recycled content is based on the weight of the main component and any integrated components (the total weight of the packaging including other materials) as a percentage of this weight.

Appendix 5: Design requirements for Glass

Main component:

	Green level	Red level
Material	- Does not contain ceramics, stone, porcelain, crystal glass, lead glass, quartz, borosilicate glass	- Contains ceramics, stone, porcelain, crystal glass, lead glass, quartz, borosilicate glass
Color and decoration	- No metallization of glass and - Light transmission greater than or equal to: 10.00 percent at wavelength 400 nm to 780 nm, measured at the darkest point on the glass or - Color that is NIR-sortable	- Has metallization of glass and/or - Light transmittance of less than 10.00 percent at wavelength 400 nm to 780 nm, measured at the darkest point on the glass or - Color that is not NIR-sortable
Glue	- No glue on main component or the integrated component or - Glue is water washable	- Glue is not water washable

Integrated component:

	Green level	Red level
Label	- No label/sleeve or similar or - Attached a sleeve of plastic, bast or textile that takes up less than or equal to 75% percent of the outer surface of the packaging without lid and - The sleeve is shrunk so that the foil does not go under the bottom of the bottle and/or	- Attached a sleeve of plastic, bast or textile that takes up more than 75% percent of the outer surface of the packaging without a lid, except by reference to product information considerations, where it is specified in other legislation and/or - The sleeve is shrunk so that the foil goes under the bottom of the bottle and/or

	- The fiber or plastic label takes up less than or equal to 50 percent of the outer surface of the packaging without the lid	- The fiber or plastic label takes up more than 50 percent of the outer surface of the package without the lid, except when referring to product information considerations where specified in other legislation

In relation to design requirements for glass is understood by:

1) Glue: Water-washable means that the glue can be washed off the main component so that all the glue sticks to the label without dissolving in the washing water.

Appendix 8: Design requirements for Cardboard

Main component and integrated component:

	Green level	**Red level**
Material	- Consists of greater than or equal to 95 percent by weight of fibrous material, of the total weight, where tape does not count. and - Not intentionally added PFAS or mineral oils in the form of either mineral oils with saturated hydrocarbons (MOSH) or mineral oils with aromatic hydrocarbons (MOAH). The requirement does not include addition when using recycled content and - No additives have been intentionally added that make the cardboard difficult to dissolve	- Consists of less than 95% by weight of fiber material, of the total weight, where tape does not count. or - intentionally added PFAS or mineral oils in the form of either mineral oils with saturated hydrocarbons (MOSH) or mineral oils with aromatic hydrocarbons (MOAH). The requirement does not include addition when using recycled content or - intentionally added additives that make the cardboard difficult to dissolve
Surface treatment	- Not surface-treated with wax or paraffin	- - Surface treated for wet resistance with wax or paraffin

Appendix 6: Design requirements for Paper

Main component and integrated component:

	Green level	**Red level**
Material	- Consists of greater than or equal to 95 percent by weight of fiber material, of the total weight, where tape does not count. and - Not intentionally added PFAS or mineral oils in the form of either mineral oils with saturated hydrocarbons (MOSH) or mineral oils with aromatic hydrocarbons (MOAH) **.** The requirement does not include addition when using recycled content and - No additives have been intentionally added that make the paper difficult to dissolve	- Consists of less than 95 percent by weight of fiber material, of the total weight, where tape does not count. or - Intentionally added PFAS or mineral oils in the form of either mineral oils with saturated hydrocarbons (MOSH) or mineral oils with aromatic hydrocarbons (MOAH) **.** The requirement does not include addition when using recycled content or - Intentionally added additives that make the paper difficult to dissolve
Surface treatment	- Not surface treated with wax or paraffin	- Surface treated for wet resistance with wax or paraffin

Appendix 7: Design requirements for Food and beverage cartons

Main component and integrated component:

	Green level	**Yellow level**	**Red level**
Printing inks	- Color again or - Does not contain printing colors from inks listed on the EuPIA exclusion list	- Color again or - Does not contain printing colors from inks listed on the EuPIA exclusion list	- Contains printing colors from inks listed on the EuPIA exclusion list
Laminates and barrier films	- Laminates and barrier films of plastic contains more than or equal to 90% PE by weight and - Laminates and barrier films of plastic contain less than or equal to 5% PET by weight and - Laminates and barrier films do not contain biodegradable plastic	- Laminates and barrier films of plastic contains more than or equal to 80% PE by weight and - Laminates and barrier films of plastic contain less than or equal to 5% PET by weight and - Laminates and barrier films do not contain biodegradable plastic	- Laminates and barrier films of plastic contain less than 80% PE by weight or - Laminates and barrier films contain more than 5% PET by weight or - Laminates and barrier films contain biodegradable plastic
Lid/closure	- No or - The material is the same as the main component and - Does not contain biodegradable plastic	- Contains greater than or equal to 80% by weight of PE or PP for integral component and - Does not contain biodegradable plastic	- Contains less than 80% by weight PE or PP for integrated component or - Contains biodegradable plastic

In relation to design requirements for food and beverage cartons, the following is understood as:

1) Laminates and barrier films: The purity criterion applies exclusively to the polymer structure, where the weight percentage does not include other elements such as glue, labels or integrated components.

Appendix 8: Design requirements for Ferrous metals

Main component and integrated component:

	Green level	**Red level**
Material	- Consists of more than or equal to 90% by weight of ferrous metals, of the total weight and - Does not contain aluminum or aluminum alloy	- Consists of less than 90% by weight of ferrous metals, of the total weight or - Contains aluminum or aluminum alloy

Appendix 9: Design requirements for Aluminum

Main component:

	Green level	Red level
Format	- Is not an aerosol container	- Is an aerosol container

Main component and integrated component:

	Green level	Red level
Material	- For thick-walled (rigid) aluminum packaging (use of aluminum sheets with a thickness >200 micron) the following applies: the packaging consists of more than or equal to 90 percent aluminum by weight, of the total weight or - For thin-walled (semi-rigid) aluminum packaging (use of aluminum foil with a thickness > 60 micron and < 200 micron) applies: Does the packaging consist of more than or equal to 85% aluminum by weight, of the total weight or - For flexible aluminum foil packaging (use of aluminum foil with a thickness ≤ 60 micron applies: Does the packaging consist of more than or equal to 79% aluminum by weight, of the total weight and - Does not contain ferrous metals or alloy of ferrous metals	- For thick-walled (rigid) aluminum packaging (use of aluminum sheets with a thickness >200 micron) the following applies: the packaging consists of less than 90 percent by weight of aluminum, of the total weight or - For thin-walled (semi-rigid) aluminum packaging (use of aluminum foil with a thickness > 60 mimcron and < 200 micron) applies: Does the packaging consist of less than 85 percent by weight of aluminum, of the total weight or - For flexible aluminum foil packaging (use of aluminum foil with a thickness ≤ 60 micron applies: Does the packaging consist of less than 79% aluminum by weight, of the total weight or - Contains ferrous metals or alloys of ferrous metals