OCAD3E

Approved Coordinating Body for Waste Electrical and Electronic Equipment

Frequently Asked Questions: Simplified assessment of the recyclability of EEE meeting the requirements of Decree No. 2022-748

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Purpose of this document

These Frequently Asked Questions (FAQs) supplement the Technical Guidance produced jointly by the Ecologic and ecosystem Producers Responsibility Organisations ("PROs"in the remainder of this document), which provides a harmonised methodology enabling producers of electrical and electronic equipment ("EEE) to characterise the recyclability of their products in order to inform consumers in accordance with the information set out in Decree no. 2022-748. The purpose of this FAQ is to provide clarifications and explanations to facilitate the application of the rules and principles set out in the Technical Guidance.

FAQ

1. Producers and products subject to the information obligation 4

1.1. Who is affected by this information obligation? 4

1.2. How should turnover be calculated to determine the application of this information obligation? 4

1.3. How can the recyclability of products collected through individual systems be assessed? ... 4

1.4. Is the information on the recyclability of products declarative or should it be verified by a third party? 4

1.5. How to account for accessories? 5

1.6. Should packaging be included in the assessment? 5

1.7. Should batteries and accumulators be included in the assessment? 5

2. Regulatory criteria and statements 5

2.1. Why can't the recycling rates communicated by the PROs and ADEME be used directly to demonstrate that a product is mostly recyclable? 5

2.2. Why is no product 100% recyclable? 6

2.3. How can we assess the recyclability of products that will only reach the end of their life in 15 or 20 years? 6

2.4. How to explain that the recyclability of a product assessed according to this procedure is lower than the recycling rate communicated by the PROs for the corresponding WEEE stream? 6

3. Evaluation procedure 6

3.1. What does "total product mass" mean for the verification of the 50% threshold? 6

3.2. Why is it important to identify the product category and the corresponding WEEE stream? How does this affect the recyclability of the product? 7

4. Requirement for battery extraction 7

5. Products presumed to be mainly recyclable 7

6. Recyclability of materials 8

6.1. For some materials or components in my product, I can't find a direct match in the Technical guidance, what recyclability should I apply to them? 8

6.2. For some materials or components in my product, I do not have access to their detailed composition: can I exclude them from my assessment and from the total mass of the product? 8

6.3. How do you check whether a plastic has a density of less than or greater than 1.1 ? 8

6.4. How can the presence or absence of brominated flame retardants in plastic parts be assessed? 8

6.5. How recyclable is an electric motor in the framework of Decree n°2022-748 ? 8

6.6. How recyclable is an electronic card in the framework of Decree n°2022-748 ? 8

6.7. Should the default ratios given for electronic boards in table 3 of the Technical guidance be applied before or after the components have been mounted? 9

6.8. Are the default ratios provided for electronic boards in Table 3 applicable to flexible printed circuit boards? 9
6.9. What is the difference between "rich electronic boards" and "generic electronic boards" listed in table 3 of the Technical Guidance ? 9
6.10. How recyclable is electrical cable in the framework of Decree n°2022-748? 9
6.11. What is the recyclability of a compressor (e.g. refrigerator) in the framework of Decree n°2022-748? 9
6.12. Why are only some plastic resins considered recyclable in the framework of Decree n°2022-748 for the EEE sector ? 9
6.13. How to count rare earths in the recyclability of the product in the framework of Decree n°2022-748? 10
6.14. Why is wood not considered recyclable in the framework of Decree n°2022-748 for the EEE sector ? 10
6.15. How is downcycling taken into account in recyclability? 10
6.16. Why is glass ceramic not considered recyclable in the framework of Decree n°2022-748 for the EEE sector ? 10
6.17. Does the "ceramic" line in Table 2 cover the ceramic in some capacitors? 10
6.18. How to account for the different elements of an LCD screen ? 10
6.19. What does the entry 'textiles' in Table 2 of the Technical Guidance cover? 10
6.20. What types of capacitors are covered in Table 3 of the Technical Guidance? 11
6.21. How should a label stuck on the product be taken into account? 11
6.22. How should double-sided tape bonding be taken into account? 11
6.23. How to count a plastic layer on a plastic part ? 11
6.24. What's the impact of a metallic surface treatment on a material's recyclability ? 11
7. Disruptive linkages for recycling 11
7.1. How should disruptive recycling linkages be taken into account when this stage is necessary? 11
7.2. Is a linkage between 2 recyclable plastics of the same type considered to be disruptive? .. 12

1. Producers and products subject to the information obligation

1.1. Who is affected by this information obligation?

As stated in the FAQ published by the Ministry of Ecology (https://www.ecologie.gouv.fr/encadrement-des-allegations-environnementales-et-information-du-consommateur-sur-produits), it is the producers, importers or other marketers of products who are concerned by the obligation to inform the consumer about certain environmental qualities and characteristics of their products, within the meaning of Article 13 of the AGEC law. The producer is defined as "any natural or legal person who manufactures the product or has it designed or manufactured and markets it under his own name or brand". The importer is defined as "any natural or legal person who places a product from a third country on the French market". In general, in case of difference, the elements provided by the FAQ published by the Ministry in charge of ecology prevail over the answers provided in this FAQ.

1.2. How should turnover be calculated to determine the application of this information obligation?

As specified in the FAQ published by the Ministry of Ecology (https://www.ecologie.gouv.fr/encadrement-des-allegations-environnementales-et-information-du-consommateur-sur-produits), the turnover to be taken into account to check whether the company is concerned corresponds to the annual turnover achieved cumulatively for all the products mentioned in Article R. 541-221 of the Environmental Code placed on the French market (cumulatively for the various EPR sectors) during the last accounting period.

1.3. How can the recyclability of products collected through individual systems be assessed?

The guidance provided by Ecologic and ecosystem does not apply to products managed through individual systems. As stated in the FAQ published by the Ministry of Ecology (https://www.ecologie.gouv.fr/encadrement-des-allegations-environnementales-et-information-du-consommateur-sur-produits), this information is the responsibility of the producers who have set up individual systems.

1.4. Is the information on the recyclability of products declarative or should it be verified by a third party?

The data is declarative and does not necessarily have to be verified by a third party before publication. Nevertheless, the veracity of this information is the responsibility of the producer. Penalties may therefore be imposed if the obligation to provide information is not complied with, or if the information provided is incorrect because the calculation methodology proposed by the Producers Responsibility Organisations has not been respected. As the FAQ published by the Ministry of Ecology reminds us (https://www.ecologie.gouv.fr/encadrement-des-allegations-environnementales-et-information-du-consommateur-sur-produits), "a system of control and sanction is provided for in Article L. 541-9-4-1 of the Environmental Code in the event of non-compliance with the obligations defined in Article L. 541-9-1 of the Environmental Code. [Under Article L. 511-7 of the Consumer Code, DGCCRF inspectors are empowered to seek out and record violations or breaches of these provisions, as of 1 January 2023. Furthermore, "as for any other commercial practice, the system of sanctions relating to misleading commercial practices, provided for in Article L. 132-2 of the Consumer Code, is applicable".

1.5. How to account for accessories?

Accessories should be assessed by applying the rules and recyclability rates of the category to which the equipment they are associated with belongs. An accessory sold separately will however have to be the subject of a dedicated product sheet. The FAQ published by the public authorities indicates (as of 26/01/2023): "the obligation does not apply to each component of a product, but to the product as a whole. Only the information on recyclability - since it depends on the information given by each Producer Responsibility Organisation (PRO) - can be given at the level of each component covered by an EPR channel". It is recommended to use the same breakdowns between the main product and accessories as for the declarations of quantities placed on the market to the PROs.

1.6. Should packaging be included in the assessment?

Packaging itself is considered a "waste generating product" within the meaning of the Environmental Code and Decree No. 2022-748. Their recyclability must therefore be assessed and communicated separately, on the basis of the information communicated by the approved PROs of the EPR sector on packaging.

1.7. Should batteries and accumulators be included in the assessment?

Batteries and accumulators are in themselves considered as "waste generating products" within the meaning of the Environmental Code and Decree n°2022-748. Their recyclability must therefore be assessed and communicated separately, on the basis of the information communicated by the approved PROs of the EPR sector for batteries and accumulators. The inclusion of materials that form an assembly of cells within a "pack" (e.g. plastic casing) must be consistent with the breakdown of elements declared and managed at end-of-life within each EPR system: when an entire "pack" is declared as being placed on the market and managed at its end-of-life by the batteries and accumulators system EPR system (being easily separable directly by the user prior to discarding), the mass of this pack is excluded from the assessment of the recyclability of the electrical and electronic equipment.

2. Regulatory criteria and statements

2.1. Why can't the recycling rates communicated by the PROs and ADEME be used directly to demonstrate that a product is mostly recyclable?

The **WEEE recycling rates** communicated by the eco-organisations and the **recyclability of EEE** placed on the market are two different indicators that cannot be directly compared. Indeed, the **WEEE recycling rates** measured and published by the PROs are based on characterisations carried out on the flows of end-of-life **appliances currently collected, according to procedures established to meet the objectives set by the WEEE Directive**. These flows are made up of several dozen or even hundreds of different types of products, themselves represented by a very wide variety of models and compositions: the recycling rates of the WEEE sector therefore represent an average value for all of these products. Around this average, the recycling rates for each type of product can vary greatly depending on the type of product and, for a given type of product, depending on its composition. Moreover, the flows on which these recycling rates are evaluated are made up of appliances that were put on the market in the past, several years ago (up to 15, 20 or even more years for some). Article 13 of the AGEC law and its implementing decree require the recyclability of products currently on the market to be assessed, whose composition cannot a priori be assumed to be identical to previous

generations. **In order to meet the obligations of the AGEC law, the PROs have therefore assessed the recyclability** by material and by category of equipment through a detailed and nationally representative analysis of the capacities of the recycling channels, in accordance with the criteria defined by decree n°2022-748. **This recyclability by material must be used to assess the recyclability of products currently on the market**, in accordance with the above-mentioned decree.

2.2. Why is no product 100% recyclable?

Before being recycled and available for a new use in an industrial production cycle, a material present in electrical and electronic equipment must go through multiple successive sorting, preparation and refining operations. These operations necessarily involve a certain amount of loss, which limits recyclability to below 100%. Furthermore, the complexity of electrical and electronic equipment, the wide variety of materials that make it up and their strong interdependence necessarily lead to the implementation of sorting strategies that result in the prioritisation of certain materials over others which, if present in minimal quantities, cannot be recycled industrially (criterion n°5 of the decree). As a result, electrical and electronic equipment cannot be 100% recycled using existing techniques on an industrial scale.

2.3. How can we assess the recyclability of products that will only reach the end of their life in 15 or 20 years?

Decree No. 2022-748 does not provide any particular rule or exemption depending on the life span of the equipment, but prescribes that the capacity of the product to be recycled on an industrial scale and in practice be assessed, and that it be verified whether the recycling channel can justify a good capacity to take in products that can be integrated into it (criterion No. 5 of the decree). The processes used as a reference to assess the recyclability of materials and components making up EEE reflect the best techniques currently available in the French WEEE sector.

2.4. How to explain that the recyclability of a product assessed according to this procedure is lower than the recycling rate communicated by the PROs for the corresponding WEEE stream?

The treatment processes implemented in the WEEE sector operate on heterogeneous mixtures of end-of-life products and materials. Within each WEEE stream, the various types of products treated achieve different levels of recycling depending on their composition: the recycling rate reported by the PROs is an average that may mask a certain dispersion between products. Moreover, the products placed on the market and covered by this consumer information do not have exactly the same composition as those currently collected and processed by the WEEE sector. Recycling rates measured on streams of products currently at the end of their life cannot therefore be taken directly as evidence of recyclability for new products belonging to the same categories.

3. Evaluation procedure

3.1. What does "total product mass" mean for the verification of the 50% threshold?

The total mass to be taken into account to verify that the 50% threshold is reached is the mass of the product placed on the market, excluding batteries and accumulators and packaging. The recyclability of batteries and accumulators and packaging must be assessed in accordance with the information provided by the approved PROs for these sectors.

3.2. Why is it important to identify the product category and the corresponding WEEE stream? How does this affect the recyclability of the product?

End-of-life electrical and electronic equipment is collected, grouped and then processed into different WEEE streams commonly referred to as

- Cold-LHA: large cold appliances
- Non-cold-LHA: large non-cooling appliances
- SHA: small appliances in a mixture
- Screens

The treatment and recovery processes used vary according to the characteristics and composition of each of these flows, with the aim of optimising the recovery of each of these flows. As a result, the recyclability of a material may vary according to the type of product in which it is incorporated. The correspondence table below presents, for different examples of products, the corresponding WEEE stream:

Categories[1]	Examples of products	WEEE stream
Category 1: heat exchange equipment	refrigerators, freezers, automatic cold product dispensers, air conditioning equipment, dehumidifiers, heat pumps, all thermodynamic equipment, etc.	Cold-LHA
Category 2: Displays, monitors and equipment incorporating displays with a surface area greater than 100 cm².	screens, televisions, LCD photo frames, monitors, laptops, etc. *(note: if the surface of the screen is less than 100cm², the corresponding WEEE stream is "PAM")*	SCREENS
Category 4: large equipment	all equipment except heat exchange equipment with an external dimension greater than 50 cm, including for example: large household appliances, electric radiators, boilers, large tools, etc.	Non-cold-LHA
Category 5: small equipment	equipment with all external dimensions less than 50 cm, including for example: hoovers, small household appliances, personal care equipment, audio-video equipment, electric toys, small tools, etc.	SHA
Category 6: small computer and telecommunications equipment	equipment with all external dimensions less than 50 cm, including for example: mobile phones, GPS, calculators, laptops, printers, computer peripherals, etc.	SHA
Category 8: pedal-assisted cycles and motorised personal transport devices	equipment with all external dimensions less than 50 cm	SHA
	equipment with an external dimension greater than 50 cm	Non-cold-LHA

4. Requirement for battery extraction

Section currently empty, to be further completed based on questions received.

5. Products presumed to be mainly recyclable

Section currently empty, to be further completed based on questions received.

[1] Category 3 on lamps is not covered in this note, but will be the subject of specific information from the approved eco-organisation on this category, ecosystem. Category 7 on photovoltaic panels is not covered because it is managed by the eco-organisation Soren.

6. Recyclability of materials

6.1. For some materials or components in my product, I can't find a direct match in the Technical guidance, what recyclability should I apply to them?

By default, these materials or components should be considered as non-recyclable. You can contact your PRO to study this case. The list of materials and components provided in this technical note may be progressively enriched according to needs.

6.2. For some materials or components in my product, I do not have access to their detailed composition: can I exclude them from my assessment and from the total mass of the product?

The total mass to be taken into account to verify the 50% threshold is the total mass of the product placed on the market, excluding battery, accumulator and packaging. If the component is listed in Table 3 of the technical Guidance, the default ratio provided can be applied. Otherwise, by default, materials or components for which the producer cannot find specific information on their composition or recyclability must be modelled as non-recyclable, and taken into account in the total mass of the product.

6.3. How do you check whether a plastic has a density of less than or greater than 1.1 ?

This information is usually contained in the technical data sheets or material safety data sheets drawn up by plastics suppliers. In the absence of this information, the plastic in question should not be considered recyclable. Technical data sheets may indicate the density as a volumetric mass, sometimes called « *specific gravity* », in kg/m^3 or g/cm^3: a density of 1.1 corresponds to a density of 1.1 g/cm^3.

6.4. How can the presence or absence of brominated flame retardants in plastic parts be assessed?

This information can be obtained from the suppliers of the plastics concerned, and can be consulted via the corresponding Material Safety Data Sheets. For the purposes of this methodology, all brominated flame retardants are concerned (and not just those covered by regulations such as RoHS or REACH). The applicable threshold for considering the presence or absence of brominated flame retardants is 0.01% by mass of homogeneous material.

6.5. How recyclable is an electric motor in the framework of Decree n°2022-748 ?

Electric motors are recycled, after various stages of sorting and refining. Any plastic components that may be linked to the motor unit are not systematically recycled. The data provided in Table 2 of the Technical Guidance should be applied to the materials of electric motors when the manufacturer knows their composition. Where this is not the case, the ratio provided in table 3 can be applied by default to the rotor-stator part of the motor. Any other elements (plastic parts, electronic cards) linked to the motor must be assessed separately, with the data corresponding to the materials or components concerned.

6.6. How recyclable is an electronic card in the framework of Decree n°2022-748 ?

Electronic boards (including here the whole printed circuit board and the components mounted on it), are separated from the rest of the materials through a combination of automated and manual sorting in order to be sent to specific recycling channels. The data provided in Table 2 of the Technical Guidance should be applied to PCB materials where the manufacturer knows their composition. Where this is not the case, the ratio provided in Table 3 can be used as a default.

6.7. Should the default ratios given for electronic boards in table 3 of the Technical guidance be applied before or after the components have been mounted?

These ratios must be applied to the total mass of the electronic board including the components mounted on it.

6.8. Are the default ratios provided for electronic boards in Table 3 applicable to flexible printed circuit boards?

Where the composition of these circuits is not known to the manufacturer, the ratios provided in Table 3 of the Technical Guidance can be used as a default. If the composition is known, the data provided in Table 2 should be preferred.

6.9. What is the difference between "rich electronic boards" and "generic electronic boards" listed in table 3 of the Technical Guidance ?

"Rich" electronic boards are those used in certain products and which contain a higher proportion of metallic materials. To the best of our knowledge, this includes the following products: smartphones, laptops, printers, monitors, televisions, tablets and CPUs. The default ratio for "rich electronic boards" may, at the manufacturer's sole responsibility, be used for products other than those listed above, where the manufacturer has evidence enabling it to assume that this ratio is representative of the component used in its product.

6.10. How recyclable is electrical cable in the framework of Decree n°2022-748?

After various stages of manual separation, mechanical separation and refining, the metal part of the electrical cables is recycled. The data provided in Table 2 should be applied to the cable materials when the manufacturer knows their composition. Where this is not the case, the ratio provided in Table 3 can be used as a default. These rules apply to all cables (AC, DC, USB, HDMI, internal connection cables, etc.).

6.11. What is the recyclability of a compressor (e.g. refrigerator) in the framework of Decree n°2022-748?

The compressor is separated from the rest of the equipment, depolluted and sent to a specific facility where the various metals are sorted and recycled. Any plastic components should be accounted for separately from the metal part. The data provided in table 2 should be applied to the compressor materials when the manufacturer knows their composition. Where this is not the case, the ratio provided in Table 3 can be used as a default. These rules apply to all cables (AC, DC, USB, HDMI, internal connection cables, etc.).

6.12. Why are only some plastic resins considered recyclable in the framework of Decree n°2022-748 for the EEE sector ?

EEE contains a multitude of different resins (sometimes more than 20 different types of plastic in certain appliances), which are themselves implemented with various formulations in terms of fillers and additives. The existing processes aim to identify and sort these resins using different techniques (optical sorting and/or densimetry in particular) in order to direct them into recycling channels. However, the variety of resins used in equipment and their formulations does not allow, on an industrial scale and in practice, to obtain for each of these resins a sorting quality and purity levels that satisfy the specifications set by the potential users downstream of the recycling chain (plastics manufacturers and EEE manufacturers). As a result, only certain resins can currently be identified and

sorted with quality levels that guarantee the existence and sustainability of outlets, and thus meet the conditions set by the decree. On the other hand, some resins do not meet the conditions set by Decree no. 2022-748 for the WEEE sector, such as polycarbonate (PC), acrylonitrile styrene acrylate (ASA), polyphenylene ether (PPE), polyamide (PA), and polyoxymethylene (POM).

6.13. How to count rare earths in the recyclability of the product in the framework of Decree n°2022-748?

Although their recycling is an environmental issue and a technological challenge, given their very low mass in equipment, by simplification these materials do not need to be specifically detailed and documented as part of the assessment of the recyclability of an item of equipment as prescribed by Decree No 2022-748. On the other hand, the presence of rare earths is a characteristic that is itself subject to a consumer information obligation under the same decree. In addition, in the case of metal components containing rare earths (e.g. "neodymium" magnets), the recyclability parameters for metals and metal alloys provided in table 2 must be applied to the mass of these components.

6.14. Why is wood not considered recyclable in the framework of Decree n°2022-748 for the EEE sector ?

Wood does not meet criterion 5 of the decree in the context of the WEEE sector. There is currently no recycling channel for wood from electrical and electronic equipment, mainly because of the difficulties in sorting this material from WEEE with sufficient quality levels and volumes to develop and sustain outlets.

6.15. How is downcycling taken into account in recyclability?

“Downcycling" does not have a regulatory definition. However, Article L541-1-1 explicitly differentiates "recycling" from other treatment methods such as "material recovery" or "backfilling". As Decree No. 2022-748 only considers recycling operations to assess the recyclability of materials, channels that do not meet the regulatory definition of "recycling" are not taken into account.

6.16. Why is glass ceramic not considered recyclable in the framework of Decree n°2022-748 for the EEE sector ?

Glass-ceramics, which are mainly found in cooktops, do not meet criterion 5 of the decree in the context of the WEEE stream. There is currently no recycling channel for glass-ceramics from electrical and electronic equipment, as there is no guarantee that the quality and quantity of material obtained from the non-cold LHA stream is sufficient to develop and sustain outlets.

6.17. Does the "ceramic" line in Table 2 cover the ceramic in some capacitors?

Yes, the recyclability of the ceramic in some capacitors (e.g. multilayer ceramic capacitors) is also zero.

6.18. How to account for the different elements of an LCD screen ?

The recyclability of the different materials making up an LCD screen can be assessed by applying the parameters in Table 2, if the detailed composition of the screen is known by the manufacturer. Where this is not known, the default ratio proposed in Table 3 can be applied to the panel as such. Metal parts in the screen structure, diffusers and reflectors (usually plastic: PMMA, PC, PS) shall not be included in the mass of the LCD panel to which the ratio provided in Table 3 is applied.

6.19. What does the entry 'textiles' in Table 2 of the Technical Guidance cover?

All parts made of textile materials can be covered by this entry, for example: straps for games consoles, cameras, headlamps, etc.

6.20. What types of capacitors are covered in Table 3 of the Technical Guidance?

All types of capacitors are covered, without distinction: electrolytic capacitors, multilayer ceramic capacitors, tantalum capacitors, polymer capacitors, etc.

6.21. How should a label stuck on the product be taken into account?

The mass of the label must be considered as non-recyclable. However, the presence of a label is not considered to be a disruptive linkage on recycling within the meaning of this assessment.

6.22. How should double-sided tape bonding be taken into account?

Double-sided adhesive tape is not considered irreversible for the purposes of this assessment. However, the adhesive itself cannot be recycled.

6.23. How to count a plastic layer on a plastic part ?

Given the current state of knowledge and the best sorting technologies available, it can be considered that the presence of a plastic layer on a recyclable plastic, as long as it does not significantly modify the plastic part's density (+/-0.01), does not cancel out its recyclability. The layer material itself is however not considered as recyclable.

6.24. What's the impact of a metallic surface treatment on a material's recyclability ?

Given the current state of knowledge and the best sorting technologies available, it can be considered that the presence of a metallic surface treatment on a recyclable plastic, as long as it does not significantly modify the plastic part's density (+/- 0.01), does not cancel out its recyclability. On a metallic part, it can be considered that the surface treatment has no impact on its recyclability as long as it does not modify significantly its magnetic properties.

7. Disruptive linkages for recycling

7.1. How should disruptive recycling linkages be taken into account when this stage is necessary?

The table below provides examples that can be used as a guide for applying the rules for taking account of disruptive links set out in the Technical Guidance.

Case studies	Simplified rules
Plastic foot overmoulded on a metal tube (example: washing machine foot)	- metal tube: recyclable -plastic foot: not recyclable
Concrete ballast overmoulded in a plastic shell	- concrete ballast: not recyclable - plastic shell: not recyclable
Plastic frame overmoulded on a glass plate (example: refrigerator shelf)	- plastic frame: not recyclable - glass: the proportion of linked glass is non-recyclable, the recyclability of the rest must be assessed according to Table 2
Layer of metal bonded to a layer of plastic (e.g. door and storm door of a washing machine top)	- metal: recyclable - plastic: not recyclable

Metal tube encapsulated in PUR foam (example: refrigerator probe)	- metal tube: recyclable - polyurethane foam: not recyclable
Plastic-metal composite panels (e.g. thermal insulation)	- plastic layer: not recyclable - metal layer: recyclable
Aluminium foil bonded to a block of expanded polystyrene (EPS)	EPS: not recyclable Aluminium foil: recyclable
Metal screw in plastic handle	- metal screws: recyclable - plastic handle: recyclable (the effect of screws is considered marginal in terms of material loss)
Metal insert in a plastic overmould	- metal: recyclable - plastic overmoulding: not recyclable

7.2. Is a linkage between 2 recyclable plastics of the same type considered to be disruptive?

No: a linkage between two parts made of the same recyclable plastic (for example, between two parts made of PP not filled with BFR and with a density < 1.1) is not disruptive, both parts remain recyclable.

On the opposite, a linkage between a part made of PP not filled with BFR and with a density < 1.1 and a part made of ABS not filled with BFR and with a density < 1.1 is considered to be disruptive.