



Fuel Classification Flow Diagram

This note provides guidance on the use of Ofgem’s ‘Fuel Classification Flow Diagram’. Specific reference is made to the Renewable Obligations Order, Feed-in Tariffs Order, and European Commission background Directives and Communications, where applicable. This guidance only needs to be used to help determine the fuel classification of materials that are not already listed in the Appendices on Common fuel classifications of the Renewables Obligation: Sustainability Criteria Guidance and Feed-in Tariffs: Guidance on sustainability criteria and feedstock restrictions. It is expected that in most cases the classification will only need to be made once, the first time a new material is supplied. The classification only needs to be revisited in the event of significant changes (for example to the relative market values of the materials involved). Whilst most woody materials already have suggested classifications (Table 13 of Appendix 3, ‘Renewables Obligation: Sustainability Criteria Guidance’ and Table 14 of Appendix 2, ‘Feed-in Tariffs: Guidance on sustainability criteria and feedstock restrictions’), where this is not the case and where relevant, a regional risk-based approach can be used.

Question no.	Question	Guidance
1.	Is the material the primary aim of the production process?	<p>All processes are optimised towards the production of a specific material (the primary aim of the production process). This material is classified as the main product. Any remaining materials arising from the process would then be classified as co-products, residues or wastes. At a given moment in time there may be several products that the production is aiming to produce, but there will be only one main product that the process is optimised for. In practice the relative economic market value of the materials determines the optimisation of the production process. A main product will therefore be economically the most important.</p> <p>The process can either refer to cultivation that takes place directly in the field or forest (such as virgin roundwood derived from woodland management, short rotation forestry, miscanthus), or in an industrial facility (such as virgin oils derived from agricultural crops).</p> <p>If the answer to this question is Yes, then the suggested material classification is a “Product”.</p>
2.	Has the production process been deliberately modified (or optimised) to increase the economic value of the material, produce a larger quantity or	<p>As described above (Q1), all processes are optimised towards the production of the main product.</p> <p>In addition, if the main production process has been “deliberately modified (or “optimised)” to “increase the economic value, or produce a larger quantity or another quality” of a secondary material, then this material should also be classified as a product. (Note that such materials are referred to as co-products in the context of the Renewable Energy Directive). Otherwise, the likely suggested classification of the material is a type of a residue (see Q4 to 9).</p>

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	<p>another quality of material?</p>	<p>Two methods can be used to determine whether an industrial process has been deliberately modified. These are both based on the input and output mass balance (material flows) of the process. For operational plants, mass balance data should be compared to historical plant performance data to establish whether any variance exists (for example, that the process has been “deliberately modified or optimised”). For new production plants, data can be compared to the standard industry configuration for that specific process (or technology type) in the relevant country or region (if more relevant or depending on availability).</p> <p>If the process is deliberately modified (such as due to fluctuating market value) to optimise the main product and another material, the production of both these materials should be regarded as the primary aim of the process, and consequently both materials should be considered co-products. One such example is molasses production (generated from sugar refining), where sugar crystallisation can be forced to a different extent depending on what is most economic.</p> <p>Collection of a material is not considered to be a deliberate modification of a process. As long as the material has already been created, and if the addition of a collection method does not increase the production of the material itself, it is not consider deliberate modification.</p> <p>If the answer to this question is Yes, then the suggested material classification is “Co-Product”.</p>
<p>3.</p>	<p>Does the material have considerable/essential economic value compared with the main product in markets other than energy?</p>	<p>Materials that have a considerable economic value in relation to the main product can be considered to be co-products. Such materials are significant to producers, even if the process is not optimised towards their production. Generators are therefore required to report fully against the sustainability criteria of such materials under the RO and FIT. For guidance, materials trading at around 15% or more of the value of the main product can be considered to be economically significant. This is not a hard threshold, rather an indicator of significance intended to aid classification of a material. The approach is in line with that taken for biofuels by the UK Department for Transport.¹ The relative economic value for a specific material can differ depending on local markets and the extent to which the material is able to be transported.</p> <p>When determining the relative economic value, the material price on a £/tonne basis² should be multiplied by the physical fraction of the material from the produced outputs to take account of the relative quantities of the materials produced. This revenue-based approach avoids that valuable materials would be considered products even if they are</p>

¹ This approach is consistent with that taken by the Department for Transport. Please refer to footnote 111 of RTFO Part Two: Carbon and Sustainability Guidance Version 8.2, available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/481353/RTFO_guidance_part_two_-_carbon_and_sustainability_guidance_year_8.pdf

² For solid biomass the price should be specified on a dry basis (i.e. 0% moisture content).

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		<p>only produced in very small quantities, and are therefore not significant for the generator in the context of the whole production process.</p> <p>The average annual price of both the main product and material should be considered to take into account price fluctuations (eg due to seasonality). In most cases it is expected that a generator would conduct this calculation once to aid classification of a new material, and would only need to repeat the calculation more regularly if the material is found to be close to the 15% relative value threshold or in the event of significant changes in the market for those materials.</p> <p>Examples of materials that have considerable economic value compared with the main product include DDGS (Dried Distiller's Grains with Solubles) which is produced during the ethanol production and meal from vegetable oil production.</p> <p>Some materials have an alternative use with a "high-value application" such as being a raw material for the production of chemicals, pharmaceuticals or as a key ingredient for animal feed. The further use of the material for energy generation should not impact on these existing markets.</p> <p>If the answer to this question is Yes, then the suggested material classification is "Co-Product".</p>
4.	<p>Was the material collected directly during the cultivation or harvesting of an agricultural crop?</p>	<p>If the material was collected from the field during the cultivation or harvesting of an agricultural crop then it should be classified as an agricultural residue. Agricultural residues include straw, husks, cobs and nut shells. Production of these materials is clearly not the primary aim of the production process. These materials are instead an inevitable consequence of the production of the main product.</p> <p>If the harvested material was removed from the field and generated from related industries or processing then it is no longer classified as an agricultural residue. Such materials are instead considered to be processing residues. In other words, once the product has been harvested and further processing occurs, any residues generated from this are considered processing residues.</p> <p>Standing trees from plantations for non-timber products (for example coconut, rubber, palm trees) which have reached the end of their useful life are considered agricultural residues.</p> <p>If the answer to this question is Yes, then the suggested material classification is "Agricultural residue".</p>

Question no.	Question	Guidance
5.	Was the material collected directly from the forest?	<p>Forestry residues are derived from “virgin wood” and may include (but not limited to) materials such as tree tops, branches, brash, clippings, trimmings, leaves, bark, shavings, woodchips and saw dust from felling. Forestry residues also include:</p> <ul style="list-style-type: none"> • virgin wood that has been felled due to damage from insect nests or blight which damages the tree and/or may spread disease to other trees/organisms and is of little value other than for energy, • wood that has been damaged by fire and so has no other market than for energy, and • wood from trees that have been uprooted or damaged during hurricanes or storms and is of little value other than for energy. <p>Forestry residues do not include any residues from related industries, or residues associated with processing the material (such as sawdust from saw mills). Such materials are instead considered to be processing residues.</p> <p>If the answer to this question is Yes, then the suggested material classification is “Forestry residue”.</p>
6.	Was the material collected as part of tree surgery work, management of municipal parks, verges of roads and railways?	<p>If the material was collected directly as part of tree surgery work usually in gardens, management of municipal parks or other populated settings, verges of roads and railways, then it should be classified as an arboricultural residue.</p> <p>Arboricultural residues are considered to be material from woody plants and trees only, and not grass or other biomaterial. Arboricultural residues from arboriculture should not include forestry residues.</p> <p>If the answer to this question is Yes, then the suggested material classification is “Arboricultural residue”.</p>
7.	Was the material collected directly from a fishery?	<p>If the material was collected directly from a fishery then it should be classified as a fishery residue. Fishery residues do not include any residues from related industries, or residues associated with processing the material (for example fish residues from the fish canning industry). Such materials are instead considered to be processing residues.</p> <p>If the answer to this question is Yes, then the suggested material classification is a “Fishery residue”.</p>

Question no.	Question	Guidance
8.	Was the material collected directly from an aquaculture farm?	<p>If the material was collected directly from an aquaculture farm then it should be classified as an aquaculture residue. Aquaculture residues do not include any residues from related industries or residues associated with processing the material. Such materials are instead considered to be processing residues.</p> <p>If the answer to this question is Yes, then the suggested material classification is "Aquaculture residue".</p>
9.	Does the material arise as a result of a production process?	<p>Any remaining materials arising from the main production process should be classified as either a processing residue or waste, depending on the outcome of Q10.</p> <p>Processing residues are defined in the the RO orders section 2 as such: <i>"A processing residue is a substance that is not the end product(s) that a production process directly seeks to produce. It is not a primary aim of the production process and the process has not been deliberately modified to produce it."</i></p> <p>If the material did not arise from a production process, then by default it is an end-of-life waste material (for example post-consumer waste wood).</p> <p>If the answer to this question is Yes, then the suggested material classification may be either "Processing residue" or "Waste" (depending on the answer to Q10).</p>
10.	Does the material have any marketable³ uses other than energy generation?	<p>The answer to this question can differ depending on local markets and the extent to which the material is able to be transported.</p> <p>Some materials arising from a production process have an alternative use, other than energy generation, such as being a raw material for the production of chemicals, pharmaceuticals or as an ingredient for animal feed.</p> <p>When determining whether the material has other uses, consideration of access / distance to the market should also be considered. The distance to market has an implication on the transport cost, which for low value materials may imply that it is not economic for the material to be sent to that market. It is then likely that the material will be discarded instead of being used.</p>

³ Defined as capable of being promoted for sale.

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		<p>If the answer to this question is Yes, then the suggested material classification is a “Processing residue”.</p>
<p>11.</p>	<p>The material is discarded, intended to be discarded or is required to be discarded.</p>	<p>According to the Renewables Obligation Order 2015, “waste has the meaning given in Article 3(1) of Directive 2008/98/EC of the European Parliament and of the Council on waste but—(a) also includes anything derived from waste, and (b) does not include landfill gas or sewage gas”. According to the Feed-in Tariffs (Amendment) Order 2017, “waste has the meaning given in Article 3(1) of Directive 2008/98/EC of the European Parliament and of the Council on waste⁴ and includes excreta produced by animals”.</p> <p>Article 3(1) of Directive 2008/98/EC (otherwise known as the “Waste Framework Directive”) defines waste as, “any substance or object which the holder discards or intends or is required to discard”.</p> <p>The term “discard” has a specific extended meaning in the context of the Waste Framework Directive and includes the “recovery” (including “recycling”) of a substance or object, as well as its “disposal” (for example to landfill). The holder of a material may be regarded as discarding a substance or object if they are carrying out a “recycling” or other recovery operation in the course of their business even though the substance or object has a commercial value to them. Furthermore, it makes no difference whether a disposal or recovery operation is carried out by the person who produced the waste or someone else.</p> <p>Although the Renewable Energy Directive itself does not include a definition of waste, clause 5.2 of Communication 2010/C 160/02, further clarifies that “wastes include materials that have to be withdrawn from the market for health or safety reasons”, and “furthermore that raw materials that have been intentionally modified to count as waste (for example by adding waste material to a material that was not waste) should not be considered as qualifying.”</p> <p>It should be noted that Environment Agency has an important role under the Waste Framework Directive in determining whether or not a substance is a waste or is derived from waste. As far as possible, a consistent approach will be taken to defining wastes . However, as outlined in the RO biomass sustainability government response document,⁵ for sustainability reporting the waste definition should be used with the broad intention of the RED in mind. For further guidance please refer to Chapter 3 of the ‘Renewables Obligation: Sustainability Criteria Guidance’. The Department for Business, Energy and Industrial Strategy (BEIS) encourages consistency across schemes and where possible we will follow the same approach for FIT. This may mean there are times when a material is classified as a waste by the</p>

⁴ OJ No L 312,22.11.2008, p3

⁵ See Chapter 8 - Definitions and Clarifications, section 8.5.

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		<p>Environment Agency, but this is not definitive for the purpose of the ROO and FIT. Generators should carefully consider all feedstocks that may be classified as wastes, to ensure that the waste hierarchy has been applied and alternative markets have been considered before using them to generate energy. The manipulation or modification of the state or condition of a substance or object in an attempt to make it fit the definition of a waste, will not allow the substance to be considered as a waste.</p>
12.	<p>Was the material intentionally modified or contaminated to fall within the definition of waste?</p>	<p>Article 3(1) of Directive 2008/98/EC (otherwise known as the “Waste Framework Directive”) defines waste as, “any substance or object which the holder discards or intends or is required to discard”.</p> <p>The term “discard” has a specific extended meaning in the context of the Waste Framework Directive and includes the “recovery” (including “recycling”) of a substance or object, as well as its “disposal” (for example to landfill). The holder of a material may be regarded as discarding a substance or object if they are carrying out a “recycling” or other recovery operation in the course of their business even though the substance or object has a commercial value to them. Furthermore, it makes no difference whether a disposal or recovery operation is carried out by the person who produced the waste or someone else.</p> <p>The definition of waste does not include landfill gas, sewage gas or any other substances that have been intentionally modified or contaminated to fall within the meaning of waste. See Chapter 3 of the ‘Renewables Obligation: Sustainability Criteria Guidance’.</p> <p>If the answer to this question is No, the suggested material classification is a “Waste”. Otherwise, the suggested material classification cannot be defined as a waste and the classification of the material should be as per classification of the original material, before it was intentionally modified or contaminated.</p>