

RTFO Guidance - Feedstocks including wastes and residues

Valid from 15 April 2018 - RTFO Year 11

This document contains lists of renewable fuel feedstocks which the Administrator has assessed. It categorises them according to whether in the Administrator's view they are products, or other materials such as wastes and residues which may double count under the RTFO.

Materials listed in Tables 2 to 5 are eligible to receive double the number of RTFCs for every litre/kg of biofuel. It should be used in conjunction with the RTFO Guidance Part Two: Carbon and Sustainability Guidance. Chapter 9 of the guidance document addresses the categorisation of materials including wastes and residues and how these should be reported.

This document may be updated during the course of the obligation period: any changes will be communicated to suppliers and will be reflected in ROS. The latest version can be found on the DfT website's [RTFO Guidance page](#).

New feedstocks may be added to the list in response to applications from industry to categorise the material as a product or waste. Materials may have their status reviewed if new evidence becomes available to the Administrator.

Products

Table 1 contains a list of products that single count under the RTFO.

Table 1- Products		
Material	Description	Valid from
Acid ester	Esters are produced intentionally and are therefore a product.	15/12/11
Brown/sulphite liquor	This material arises during the pulping of wood. As for tall oil, it is considered a product.	15/12/11
Corn or wheat dried distillers grain (DDGS)	This material's treatment in the RED GHG calculations makes clear that it is to be treated as a product.	15/12/11
Corn oil	This is a co-product from distilling corn ethanol. It has a number of potential uses and a relatively high value. This means that it is regarded as a product.	15/5/14
Crude tall oil	Crude tall oil arises from the process of pulping coniferous wood. The pulping process involves cooking woodchip in a chemical mixture and this gives rise to a soapy material which is separated from the pulp and liquor. It is then acidified and heated to convert it into crude tall oil. Crude tall oil is a product of the pulping process.	15/12/11
Glycerol (refined) from virgin oils	The treatment of glycerol from virgin oils in the RED GHG calculations makes clear that it is to be treated as a product.	15/12/11

Meal from virgin oil production	The treatment of these materials in the RED GHG calculations makes clear that they are to be treated as products.	15/12/11
Molasses	This material arises from the processing of sugar cane and sugar beet into sugar. It arises on the basis of a technical decision, and is considered a product.	15/12/11
Palm fatty acid distillate (PFAD)	The treatment of PFAD in the RED GHG calculations indicates that it is to be treated as a product. PFAD has a significant economic value in relation to the main product (palm oil) and a variety of productive uses.	15/12/11
Palm kernel oil	Palm kernel oil is a product.	15/12/11
Palm oil olein	The refined liquid fraction of palm oil is a product.	15/12/11
Palm stearin	The refined solid fraction of palm oil is a co-product of palm olein. It is traded at a discount to palm oil and palm olein; making it a cost-effective ingredient in several applications.	15/12/11
Slaughter products (category 3)	<p>Animal products from the slaughter process</p> <p>Category 3 material imported from outside of the EC must be compliant with the Animal By-Product Regulations. Suppliers must have followed the Defra guidelines on importing animal by-products in order for the appropriate category of ABP to be applied to the consignment</p> <p>Note: As this material is not obtained directly from land, suppliers are not required to demonstrate compliance with the land criteria. The previous land use column in ROS automatically defaults to 'not applicable' as the land criteria are automatically satisfied for slaughter products.</p>	15/03/16
Starch slurry regular	A mixture of starch and water arising from the wet milling of cereals.	15/01/18
Sugar beet pulp	This is the pulp left over following sugar extraction. Its treatment in the RED GHG calculations makes clear that it is to be treated as a product.	15/12/11
Tallow (animal fats) category 2 ¹	<p>Tallow is a product of the meat rendering process. Category 2 tallow has a high economic value and a variety of productive uses. It is a direct substitute for other products (e.g. palm oil).</p> <p>Category 2 tallow may use the waste vegetable or animal oil default GHG value.</p> <p>Note: As this material is not obtained directly from land, suppliers are not required to demonstrate compliance with the land criteria. The previous land use column in ROS automatically defaults to 'not applicable' as the land criteria are automatically satisfied for tallow.</p>	15/12/11

¹ The treatment of tallow will be kept under consideration in relation to legislative changes and to assess the impact on other markets resulting from additional incentives for tallow based biodiesel.

Tallow (animal fats) category 3	<p>Tallow is a product of the meat rendering process. Category 3 tallow has a high economic value and a variety of productive uses. It is a direct substitute for other products (e.g. palm oil).</p> <p>Note: Category 3 tallow is specifically excluded from the default for waste vegetable or animal oil biodiesel. Actual carbon values must be used.</p> <p>Note: As this material is not obtained directly from land, suppliers are not required to demonstrate compliance with the land criteria. The previous land use column in ROS automatically defaults to 'not applicable' as the land criteria are automatically satisfied for tallow.</p>	15/12/11
Tallow - unknown	Tallow of an unknown category will be treated as category 3 tallow.	15/12/11
Uncategorised tallow	<p>Uncategorised tallow imported from outside of the EC must be compliant with the Animal By-Product Regulations. Suppliers must have followed the Defra guidelines on importing animal by-products in order for the appropriate category of tallow to be applied to the consignment.</p> <p>Finished TME fuel imported from outside of the EC will automatically be deemed to have been manufactured from category 3 tallow.</p> <p>If further information is required on this classification, please contact the Administrator.</p> <p>Notes: The EU carbon default may be used.</p> <p>As this material is not obtained directly from land, suppliers are not required to demonstrate compliance with the land criteria. The previous land use column in ROS automatically defaults to 'not applicable' as the land criteria are automatically satisfied for tallow.</p>	15/12/11
Virgin oils	Including, but not limited to, oils derived from palm, soy, rape and sunflower. The treatment of these materials - and of the meal produced as part of the same process - in the RED GHG calculations makes clear that these are to be treated as products.	15/12/11

Agricultural residues

Table 2 contains a list of residues from agriculture, aquaculture, forestry and fisheries (agricultural residues) that are eligible to receive double the number of RTFCs for every litre/kg of biofuel.

Table 2 - Residues from agriculture, aquaculture, forestry and fisheries		
Material	Description	Valid from
Arboricultural residues	Arboricultural residues meet the same criteria as forestry residues. See below.	15/12/11
Bagasse	Bagasse results from crushing sugarcane or sorghum. Bagasse is specifically named as an agricultural residue in the RED.	15/12/11
Cobs	Cobs are specifically named as agricultural residues in the RED.	15/12/11

Forestry residues	Forestry residues are identified explicitly by the RED as residues and treated as wastes/residues in the RED GHG calculations. Processors of this material need to be clear on the differences between forestry residues and waste wood.	15/12/11
Husks	Husks are specifically named as agricultural residues in the RED.	15/12/11
Nut shells	Nut shells are specifically named as an agricultural residue in the RED.	15/12/11
Straw	Straw is specifically named as an agricultural crop residue in the RED.	15/12/11

Wastes and processing residues

Table 3 contains a list of wastes and processing residues that are eligible to receive double the number of RTFCs for every litre/kg of biofuel.

Table 3 - Wastes & processing residues		
Material	Description	Valid from
Brown grease	Brown grease is the grease that is removed from wastewater sent down a restaurant's sink drain. This is a waste. Material removed from sewers known as "FOG" (fats, oils and grease) should now be reported as "Sewage system FOG". Brown grease may use the waste vegetable or animal oil default GHG value.	15/12/11
Cashew nut shell liquid	Cashew nut shell liquid (CNSL) is a process residue. The material is squeezed from the shells of cashew nuts after the edible portion has been removed. There are other potential uses which may be affected by large scale use of CNSL for biofuel, therefore the Administrator will be keeping this decision under review.	15/05/14
Crude glycerine	Crude glycerine is specifically named as a residue from processing in the RED. (The RED treats refined glycerine as a product - see above).	15/12/11
Empty palm fruit bunches	Empty fruit bunches from palm are a process residue. The palm fruits are separated from the bunches at the palm oil mill; and the bunches can then receive further treatment to extract low grade oil residues. There is no default carbon intensity for this feedstock, and so actual data need to be reported.	15/09/17
Ethanol used in the cleaning/extraction of blood plasma	Contaminated bio ethanol used as a washing liquid that cannot be used for food, feed or subsequent pharmaceutical purposes and would otherwise be disposed of.	15/08/18

Food waste (unsuitable for animal feed)	<p>Whether from manufacturers, retailers or consumers, this will be a waste.</p> <p>This may include food that is;</p> <ul style="list-style-type: none"> i) Out of date (food that has exceeded its shelf life) ii) Out of specification (food that fails to meet the required end of use specification). <p>As with all wastes, this material must be unsuitable for other non-energy uses. Examples include beer residue, coffee pulp and protamylasse ('potato juice').</p> <p>There is no default carbon intensity for this feedstock, and so actual data need to be reported.</p>	15/12/11
Grape marc & wine lees	<p>Grape marc and wine lees are processing residues from the wine making industry.</p> <p>Whilst they are two distinct materials, they can be reported together as the GHG savings are similar and there is no benefit in requiring separate reporting.</p>	15/6/14
Low grade starch slurry	<p>Low grade starch slurry for which it can be demonstrated that there are no other economically viable end uses is considered a waste, and double counts.</p> <p>Suppliers may be asked for evidence that this material is unsuitable for other end uses, such as animal feed.</p> <p>Fuel derived from this feedstock, matching the above description, passing over the duty point post 14th July 2018 will need to meet the new description of waste starch slurry below.</p>	15/12/12 - 14/07/18
Waste starch slurry	<p>A mixture of starch and water arising from the wet milling of wheat. The dry matter content of the material must not exceed 20%. Total suspended solid particles larger than 5 microns in diameter must not exceed 10%.</p>	15/07/18
Manure	<p>Manure is treated as a waste/residue in the GHG calculations. It is specifically named as a residue in the Commission Communication on its practical implementation (2010/C 160/02).</p>	15/12/11
Organic municipal solid waste (MSW)	<p>This is a waste. Only the biomass portion of MSW counts as a renewable fuel.</p>	15/12/11
Palm oil mill effluent (POME)	<p>POME is a waste water/sludge arising from palm oil production. It has no economic value; current practise in SE Asia is to release to open ponds for anaerobic digestion resulting in methane emissions.</p> <p>The oil extracted from POME is often referred to as Palm Sludge Oil (PSO). Suppliers wishing to report either POME or PSO on ROS should use the POME category.</p> <p>There is no default carbon intensity for this feedstock, and so actual data need to be reported.</p>	15/12/11

Poultry feather acid oil	<p>This is the oil extracted from poultry feathers after acid treatment to remove edible protein.</p> <p>This material is a waste if it can be demonstrated that there are no other non-energy uses for the material. Suppliers must also comply with relevant animal by-product regulations.</p> <p>There is no default carbon intensity for this feedstock, and so actual data need to be reported.</p>	15/7/16
Rapeseed residue	<p>Rapeseed distillation residue from the oleo-chemical industry, exceeding 50% erucic acid.</p>	15/4/14
Renewable component of end-of-life tyres	<p>Tyres are manufactured from a mixture of non-renewable petroleum products and natural rubber.</p> <p>Suppliers of fuel made from end-of-life tyres will need to have a Fuel Measurement and Sampling (FMS) regime in place. They will need to demonstrate how they have apportioned the renewability of the material to the different co-products from their process.</p> <p>End-of-life tyres are a waste.</p>	15/5/13
Roadside grass cuttings	<p>Roadside grass / verge cuttings contaminated by passing cars and municipal waste. This material must not be suitable for animal feed.</p>	15/3/16
Sewage sludge	<p>Sewage sludge is a remainder of the waste water treatment process.</p> <p>This material is a waste.</p>	15/4/15
Sewage system FOG	<p>Fats, oils and grease ("FOG") are materials extracted from sewers and waste water treatment works, and are often referred to as "fatbergs".</p> <p>This material is a waste.</p>	15/5/17
Soapstock acid oil contaminated with sulphur	<p>Refiners of vegetable or animal oils who use chemical extraction processes to refine their oils will produce acid oils from the neutralisation of the soapstocks. These acid oils may contain residues of either sulphuric or phosphoric acid (in the form of excess acid or the resulting salt).</p> <p>The presence of the contaminants means that this material is unsuitable for other uses (e.g. animal feed), and it is therefore a waste.</p> <p>Suppliers of fuel made from this material should be able to demonstrate that the material was produced by a refiner who used these methods of extraction, and may be asked to produce evidence that it was unfit for consumption.</p> <p>There is no default carbon intensity for this feedstock, and so actual data need to be reported.</p>	5/9/13
Spent bleaching earth	<p>Bleaching earth is used to bleach palm oil as part of the production process. Oil extracted from spent bleaching earth is included in this category. Note that the GHG calculation must include the extraction of the oil from the spent bleaching earth.</p> <p>There is no default carbon intensity for this feedstock, and so actual data need to be reported.</p>	15/12/11

Sugar beet tops, tails, chips and process water	Residual streams from the processing of sugar beet that have no other economically viable end uses. Note: This material does not include the 'crown' of the sugar beet, which is not eligible for double counting.	15/11/13
Tall oil pitch	Tall oil pitch meets the definition of a residue for the purpose of the RED. It is specifically named as a residue in the Commission Communication on its practical implementation (2010/C 160/02).	15/12/11
Tallow (processed animal fats) category 1	Category 1 tallow is processed animal fat produced in the meat rendering process. It has a significant economic value but its legally permissible end uses are, at present, generally limited to energy generation. Category 1 tallow may use the waste vegetable or animal oil default GHG value.	15/12/11
Used cooking oil (UCO)	Commonly called 'UCO' or 'WCO' (waste cooking oil), this is purified oils and fats of plant and animal origin. These have been used by restaurants, catering facilities and kitchens to cook food for human consumption. They are wastes as they are no longer fit for that purpose and are subsequently used as either feedstock for the production of biodiesel as fuel for automotive vehicles and heating or as a direct fuel. Used cooking oil may use the waste vegetable or animal oil default GHG value.	15/12/11
Waste pressings from production of vegetable oils	When a vegetable material such as olives is pressed to produce vegetable oil, the pressed material consisting of pips, skins, flesh etc. remains. This may be used as a fuel. The purpose of the process is to produce oil; the pressings are therefore wastes. An example would include spent husk oil. There is no default carbon intensity for this feedstock, and so actual data need to be reported.	15/12/11
Waste wood	The treatment of waste wood in the RED GHG calculations makes clear it is to be treated as a waste/residue. Processors of this material need to be clear on the differences between waste wood and forestry residues.	15/12/11

Non-food cellulosic and ligno-cellulosic material

Table 4 contains a list of non-food cellulosic and ligno-cellulosic material that are eligible to receive double the number of RTFCs for every litre/kg of biofuel.

Table 4 - Non-food cellulosic and ligno-cellulosic material		
Material	Description	Valid from
Miscanthus	This is a non-food material commonly grown as an energy crop. If it is put to another use first, e.g. as animal bedding, before being used as fuel, then it will be a waste.	15/12/11

Short rotation coppice (SRC)	SRC is a non-food material commonly grown as an energy crop.	15/12/11
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Renewable fuels of non-biological origin

Table 5 contains a list of the feedstocks that have been assessed as suitable for manufacturing renewable fuels of non-biological origin (RFNBOs). For a fuel to be regarded as a RFNBO, all of the available energy must come from the process energy, as the feedstocks have no available energy. RFNBO fuels are eligible for double reward of RTFCs. Further guidance on RFNBOs can be found in the [RTFO Process Guidance](#), from section 3.33 to 3.51.

Table 5 - Renewable fuels of non-biological origin		
Material	Description	Valid from
Carbon dioxide	Carbon dioxide can be from either fossil or biological origin. To be a qualifying feedstock for a RFNBO, the carbon dioxide must be an existing source that has not been deliberately created in order to make the fuel.	15/4/18
Water	Water is a feedstock for RFNBOs as it contains no available energy	15/4/18

Other materials

Table 6 contains a list of materials for which the definition is not sufficiently clear to provide a single categorisation; therefore these materials cannot be reported as feedstocks under the RTFO.

Table 6 - Other materials		
Material	Description	Valid from
Free fatty acids or acid oils or soapstocks	Free fatty acids, acid oils and soapstocks should generally be reported in line with the feedstock they were derived from. For example, free fatty acids derived from UCO have the same waste/residue status as UCO.	15/12/11
Used cooking oil (UCO) mixed with animal fats	Some catering establishments or aggregators in the supply chain may mix together UCO and animal derived cooking oils / fats such as beef dripping. Where a supplier has sourced this type of blend they must report the UCO as a separate consignment to the animal derived fats / oils where practicable. Animal fats / oils used for frying are to be reported as "Food waste" for RTFO purposes. Whilst some animal fats / oils may end up in UCO from the process of frying animal products in vegetable oil, these do not need to be reported separately.	15/4/16

Yellow grease	<p>Yellow grease is the US term for used cooking oil but can be used for a wider range of materials including tallow for which particular requirements apply. Where suppliers have sourced 'yellow grease' they will be expected to report either UCO or the relevant category for tallow (or a combination of the two) as appropriate.</p> <p>In the case that a supplier is unable to substantiate the category of tallow or proportion of UCO content, a conservative approach should be adopted and single counting 'tallow - category 2 or uncategorised' reported. The EU carbon default may be used</p>	15/12/11
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The application for, and/or issuance of, RTFCs under the Renewable Transport Obligations Order does not certify that the fuels supplied are compliant with the Motor Fuel (Composition and Content) Regulations 1999. Suppliers are reminded that they have a wider obligation to consider the risks to human health and the environment. These impacts include that of air quality resulting from the combustion of novel and potentially contaminated feedstocks.