

End of waste: Anaerobic digestate produced from anaerobic digestion of source-segregated biodegradable waste

Guidance note

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What is this document about?

This document clarifies when digestate produced from the anaerobic digestion of source-segregated biodegradable waste (biowaste) is no longer considered waste.

This document will help you understand when digestate meets end of waste (Article 6 of the Waste Framework Directive).

This is so you can

- be confident that the quality of digestate produced is suitable for use, for a specific purpose
- protect human health and prevent pollution of the environment, including soil
- understand when [waste management controls](#) no longer apply
- be confident that the quality of digestate produced meets an approved standard

Who is this document for?

This document is for regulated anaerobic digestate producers wanting to process their source-segregated biodegradable wastes to meet end of waste requirements within Article 6 of the revised Waste Framework Directive.

It is to support certification bodies, providing third party accreditation under the Renewable Energy Assurance Ltd certification schemes, when carrying out their certifications.

This document will also be beneficial to end users of waste derived digestate who may want to review appropriate processes and end of waste status for digestate they accept for use.

Contact for queries and feedback

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Version History

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1. Waste you can use

You must:

- Only use source segregated biodegradable materials as defined in the British Standard Institution's PAS 110:2014 Producing Quality Anaerobic Digestate (BSI PAS110). This is publicly available (section 10).

And

- the materials you use must be compliant with the waste codes, descriptions and restrictions in [the tables in Annex 1](#).

'Use' in this paragraph means feeding a material into the biological treatment phases of the process.

2. End of waste

Digestate will have met the end of waste test, and not be considered waste if all of the following are met:

- It has been produced using only the source-segregated biodegradable wastes listed in Annex 1
- The waste must have been stored and processed in line with the specification defined in BSI PAS110, with the additional quality standard:
 - The maximum allowed concentration of plastic in the digestate and other products derived from it is 8% of the 'total physical contaminants (excluding stones)' limits in Table 1 of BSI PAS110.
- Certification has been obtained confirming compliance with BSI PAS110 (as set out in section 6).
- It needs no further treatment other than the methods described in BSI PAS110 before the intended use
- It meets any extra specification requested by and agreed with your customer
- There is certainty of use for the material (see section 3 and 4)
- Records are kept, in line with section 5, to evidence how the requirements of end of waste are satisfied for the quality and quantity of the digestate produced, including certainty of use and nutrient management plan requirements.

Certified digestates held in storage with no specific and confirmed use for the quality and quantity stored, suggests that there is no specific purpose and no demand exists for this material. In those circumstances the material will be considered a waste. This means you must follow [waste management controls](#).

3. Use of digestate

The use of the digestate must comply with the requirements of this guidance, relevant legislation and land management agreements. Relevant legislation may include but is not limited to:

- [Animal By-Products Regulations](#)
- [Control of Agricultural Pollution Regulations](#)
- [Codes of Good Agricultural Practices](#)
- [Groundwater protection - GOV.UK](#)
- [Natural Resources Wales / Find protected areas of land and sea](#)
- [Assessing environmental impact in agriculture | Sub-topic | GOV.WALES](#).

Failing to do this, or to comply with [waste management controls](#) when you cannot show compliance with end of waste criteria, may be an offence.

4. Nutrient management plans

Digestate should only be used to supply the required nutrients at the appropriate application rate, time, frequency and place to meet crop need or agricultural benefit.

To ensure this is communicated to customers, when supplying digestate to agriculture, your digestate supply documentation must tell the customers that

- they must have a written nutrient management plan (NMP) to include all nutrients from all sources before use
- they must apply digestate in line with the NMP, taking into account any other organic manures and manufactured fertilisers, at rates that do not exceed soil and crop need
- they are responsible for following their NMP.
- where there is no soil and crop need for the digestate, it is considered waste and they must follow [waste management controls](#)

If you do not do this, NRW may take action in line with its [enforcement and sanctions policy](#).

5. Record keeping

Record your incoming waste. Your records need to include:

- the waste code and waste description, in compliance with your environmental permit or exemption
- its volume or weight
- the source of the waste
- the date of delivery
- the name and address of supplier
- the name and address of carrier
- your method for confirming the waste is acceptable input material and, if it's not acceptable (including only in part), your rejection reasons and what you did with the rejected waste

Record your outgoing product. Retain copies of customer supply documentation (for 4 years as set out in section 6), including details of customer obligations for the use and NMP requirements (where appropriate), as set out in section 4.

Include a declaration in your customer supply documentation that the final product meets:

- BSI PAS110
- the requirements of the end of waste criteria in this document
- any additional customer specifications (as agreed between the supplier and the customer)

You must make all records available for inspection when requested.

6. Certification

You must show you comply with the requirements of this document, including all the conditions of BSI PAS110. You must prove this to a certification body that is:

- appointed by the Biofertiliser Certification Scheme
- operating in line with scheme rules agreed with NRW
- accredited, or can demonstrate working towards accreditation to ISO 17065:2012 (or its latest equivalent) by the United Kingdom Accreditation Service (UKAS), maintained annually

As part of the certification process, you must:

- make and keep records for a minimum of 4 years, following the guidance in section 5
- make these records available to the certification body for certification purposes

NRW will agree scheme rules if:

- the method of certification shows that the requirements of this end of waste criteria and BSI PAS 110 are being met
- compliance is certified annually by an independent certification body that is accredited as detailed above.
- the accredited certification body is accredited to certify digestate
- certification verifies source documentation, evidence of site management procedures (including compliance with the quality management system) and laboratory test results
- the certification body or its authorised contractor carries out at least one site inspection a year to check and confirm on-site documentation
- an impartial committee oversees the certification process

7. Manure and slurry

Livestock manure and slurry treated through Anaerobic Digestion (AD) is a waste treatment and will be subject to waste regulations, including the need for an environmental permit or exemption under the [Environmental Permitting Regulations](#).

NRW will consider digestate from treated livestock manure and slurry to have ceased to be waste without requiring certification to PAS110:2014 where the feedstock to the authorised AD plant is livestock manure and slurry only (EWC 02 01 06) or is only mixed with non-waste feedstock e.g. crops grown specifically for AD, provided that:

- you comply with the other requirements in section 2 of this guidance for certainty of use and record keeping (the last two listed bullet points in section 2)
- the digestate is used on agricultural land

- you can demonstrate and provide evidence that use of the digestate will not present a risk of causing environmental harm (section 3 and 4 of this guidance).

If the livestock manure and slurry feedstock is mixed with other waste feedstocks, e.g. animal feed and green waste including any crops not specifically grown for AD such as discarded vegetables and excess silage, then the resultant digestate will be regulated as waste unless it meets all of the end of waste criteria set out within this document, including requiring certification in line with section 6.

Digestates derived from the treatment of livestock manure and slurry held in storage with no specific and confirmed use for the quality and quantity stored, suggests that there is no specific purpose and no demand exists for this material. In those circumstances the material will be considered a waste. This means you must follow [waste management controls](#).

During an outbreak of an animal disease, section 7 of this guidance will not apply and specific controls will be required to be followed under the advice of the Animal and Plant Health Agency and any specific Regulatory Statements relating to Animal Disease Outbreak issued by NRW.

8. Loss of non-waste status

Digestate meeting these end of waste criteria will become waste again (meaning you must follow [waste management controls](#)) if, at any stage:

- It is discarded
- The holder intends to or is required to discard it
- It is applied in excess of soil and crop requirements
- It is stored indefinitely with little prospect of being used

The above applies to anyone holding stores of digestate, not just producers.

9. Mixing waste and non-waste

If digestate that meets end of waste criteria is mixed with waste material, the whole mixed volume becomes waste and [waste management controls](#) must be followed.

If digestate that meets end of waste criteria is mixed with other non-waste material, the whole mixed volume is not waste. Doing this is not considered further treatment. For example, blending compost which has met end of waste criteria for compost with digestate that has met end of waste criteria is not a waste activity, as neither material is waste.

10. Standards and specifications

BSI PAS110

British Standard Institution's PAS 110:2014 Producing Quality Anaerobic Digestate (BSI PAS110). You can download free copies of BSI PAS110 from:

- [WRAP](#)
- [Renewable Energy Assurance Limited](#)

Responsible sourcing scheme

If you supply digestate as a growing medium ingredient to the horticulture sector, you must only supply it to an accredited member of the [responsible sourcing scheme](#).

You must agree the digestate quality specification in writing with each member of the responsible sourcing scheme you supply. The quality specification must include (but is not limited to) physical contaminants and stability or maturity limits.

11. Review and compliance

NRW will review this guidance as required, and can withdraw or amend it at anytime if considered necessary (for example, if there is evidence of abuse of the guidance, there are pollution incidents related to materials claimed under this guidance, there is a change in legislation or scientific evidence etc).

If the procedures outlined within this document are not followed to demonstrate end of waste for digestate, NRW may take action in line with its [enforcement and sanctions policy](#).

Annex 1: Waste inputs

Chapter	Description	
02 01	Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing	
Waste code	Waste description	Restrictions
02 01 01	Sludges from washing and cleaning	Only vegetables, fruit and other crops
02 01 02	Animal tissue waste	None
02 01 03	Plant-tissue waste	Includes straw, other crop residues, riverine vegetation and spent growing media based on plant issues, such as compost derived from source-segregated biodegradable waste, peat and bark
02 01 06	Animal faeces, urine and manure	Includes animal faeces, urine, manure and spoiled fully biodegradable bedding
02 01 07	Wastes from forestry	Only green waste and plant tissue
02 01 99	Wastes not otherwise specified	Only spent mushroom compost or discarded mushrooms from commercial mushroom cultivation

Chapter	Description	
02 02	Wastes from the preparation and processing of meat, fish and other foods of animal origin	
Waste code	Waste description	Restrictions
02 02 01	Sludges from washing and cleaning, peeling, centrifuging and separation including wash waters and	None

Chapter	Description	
02 02	Wastes from the preparation and processing of meat, fish and other foods of animal origin	
Waste code	Waste description	Restrictions
	sludges from secondary food processing or the cook chill sector	
02 02 02	Animal-tissue waste	May include blood and animal gut contents
02 02 03	Materials unsuitable for consumption or processing	May include gut contents, shells and shellfish wastes. Includes sludges from gelatine production.
02 02 04	Sludges from on-site effluent treatment	Only wastes from preparation and processing of meat, fish and other foods of animal origin

Chapter	Description	
02 03	Wastes from fruit, vegetables, cereals, edible oils, cocoa, coffee, tea and tobacco preparation and processing; conserve production; yeast and yeast extract production, molasses preparation and fermentation	
Waste code	Waste description	Restrictions
02 03 01	Sludges from washing, cleaning, peeling, centrifuging and separation	Only sludges from food processing
02 03 04	Materials unsuitable for consumption or processing	Only biodegradable waste. There must be no chemical additives or toxin residues present.
02 03 05	Sludges from on-site effluent treatment or processing sludge from production of edible fats and	None

Chapter	Description	
02 03	Wastes from fruit, vegetables, cereals, edible oils, cocoa, coffee, tea and tobacco preparation and processing; conserve production; yeast and yeast extract production, molasses preparation and fermentation	
Waste code	Waste description	Restrictions
	oils, including seasoning residues	

Chapter	Description	
02 04	Wastes from sugar processing	
Waste code	Waste description	Restrictions
02 04 03	Sludges from on-site effluent treatment	Only biological sludge

Chapter	Description	
02 05	Wastes from the dairy products industry	
Waste code	Waste description	Restrictions
02 05 01	Materials unsuitable for consumption or processing	Includes raw milk. Must only be biodegradable waste.
02 05 02	Sludges from on-site effluent treatment	None

Chapter	Description	
02 06	Wastes from the baking and confectionery industry	
Waste code	Waste description	Restrictions
02 06 01	Materials unsuitable for consumption or processing	Only biodegradable waste
02 06 03	Sludges from on-site effluent treatment	None

Chapter	Description	
02 07	Wastes from the production of alcoholic and non-alcoholic beverages (except coffee, tea and cocoa)	
Waste code	Waste description	Restrictions
02 07 01	Wastes from washing, cleaning and mechanical reduction of raw materials	Only biodegradable wastes from the processing of the raw materials used in the production of alcoholic and non-alcoholic beverages (except coffee, tea and cocoa)
02 07 02	Wastes from spirits distillation	Only spent grains, hops and whisky filter sheets and cloths, yeast and yeast like residues, sludge from the distillation process, or malt husks, malt sprouts, yeasts and yeast-like residues
02 07 04	Material unsuitable for consumption or processing	Only biodegradable wastes from processing raw materials used in producing alcoholic and non-alcoholic beverages (except coffee, tea and cocoa)
02 07 05	Sludges from on-site effluent treatment	Only sludges from the production of alcoholic and non-alcoholic beverages (except coffee, tea and cocoa)

Chapter	Description	
03 03	Wastes from pulp, paper and cardboard production and processing	
Waste code	Waste description	Restrictions
03 03 10	Fibre rejects, fibre-, filler- and coating-sludges from mechanical separation	Only allowed if not mixed with, or does not contain, de-inking sludge
03 03 11	Sludges from on-site effluent treatment other than those mentioned in 03 03 10	Only allowed if not mixed with, or does not contain, de-inking sludge

Chapter	Description	
04 02	Wastes from the textile industry	
Waste code	Waste description	Restrictions
04 02 10	Organic matter from natural products (for example grease, wax)	Only biodegradable material
04 02 21	Wastes from unprocessed textile fibres	Only biodegradable material

Chapter	Description	
07 01	Wastes from the manufacture, formulation, supply and use (MFSU) of basic organic chemicals	
Waste code	Waste description	Restrictions
07 01 08*	Other still bottoms and reaction residues	Only glycerol waste from biodiesel manufacture from non-waste vegetable oils

(*) An asterisk at the end of a code means the waste is hazardous.

Chapter	Description	
15 01	Packaging (including separately collected municipal packaging waste)	
Waste code	Waste description	Restrictions
15 01 01	Paper and cardboard packaging	Only if: <ul style="list-style-type: none"> the material complies with the restriction for the waste type in Note 1 at the end of this section there is no non-biodegradable coating or preserving substance present
15 01 03	Wooden packaging	Only virgin timber
15 01 05	Composite packaging	Only if each component: <ul style="list-style-type: none"> comes from the input types allowed by this guidance meets the restriction for the corresponding waste type in Note 1 at the end of this section

Chapter	Description	
16 10	Aqueous liquid wastes destined for off-site treatment	
Waste code	Waste description	Restrictions
16 10 02	Aqueous liquid wastes other than those mentioned in 16 10 01	Includes: <ul style="list-style-type: none"> milk and dairy waste milk from agricultural premises untreated wash waters from cleaning fruit and vegetables on farm

Chapter	Description	
16 10	Aqueous liquid wastes destined for off-site treatment	
Waste code	Waste description	Restrictions
		<p>Digestate or liquor must come from an aerobic process that:</p> <ul style="list-style-type: none"> only accepts the waste input types allowed by this guidance meets the EU Regulation 1069/2009, its implementing EU Regulation 142/2011 (as amended) and The Animal By-Products (Enforcement) (Wales) Regulations 2014 <p>Liquor or leachate must come from a composting process that:</p> <ul style="list-style-type: none"> only accepts the waste input types allowed by this guidance meets the EU Regulation 1069/2009, its implementing EU Regulation 142/2011 (as amended) and The Animal By-Products (Enforcement) (Wales) Regulations 2014

Chapter	Description	
19 02	Wastes from physico/chemical treatments of waste (including dechromatation, decyanidation, neutralisation)	
Waste code	Waste description	Restrictions
19 02 03	Premixed wastes composed only of non-hazardous wastes	<p>This must:</p> <ul style="list-style-type: none"> only come from the input types allowed by this guidance be segregated from, and uncontaminated by, any other waste type

Chapter	Description	
19 02	Wastes from physico/chemical treatments of waste (including dechromatation, decyanidation, neutralisation)	
19 02 06	Sludges from physico-chemical treatment other than those mentioned in 19 02 05	<p>This must:</p> <ul style="list-style-type: none"> only come from the physical treatment or pH adjustment of the input types allowed by this guidance be segregated from, and uncontaminated by, any other waste type
19 02 10	Glycerol not designated as hazardous	Excludes 19 02 08

Chapter	Description	
19 05	Wastes from aerobic treatment of solid wastes	
Waste code	Waste description	Restrictions
19 05 01	Non-composted fraction of municipal and similar wastes	<p>This must:</p> <ul style="list-style-type: none"> only come from the input types allowed by this guidance be segregated from, and uncontaminated by, any other waste type
19 05 02	Non-composted fraction of animal and vegetable wastes	<p>This must:</p> <ul style="list-style-type: none"> only come from the input types allowed by this guidance be segregated from, and uncontaminated by, any other waste type
19 05 03	Off-specification compost	The compost must only come from the input types allowed this guidance or the equivalent compost guidance. This includes oversize material that comes from screening the compost.

Chapter	Description	
19 06	Wastes from anaerobic treatment of waste	
Waste code	Waste description	Restrictions
19 06 03	Liquor from anaerobic treatment of municipal waste	<p>This must:</p> <ul style="list-style-type: none"> only come from the input types allowed by this guidance come from a facility that is independently certified as complying with BSI PAS 110 be in pasteurised and stabilised batches that are authorised by the Animal and Plant Health Agency <p>Must not contain wastes that come from mechanical biological treatment facilities</p>
19 06 04	Digestate from anaerobic treatment of municipal waste	<p>This must:</p> <ul style="list-style-type: none"> only come from the input types allowed by this guidance come from a facility that is independently certified as complying with BSI PAS 110 be in pasteurised and stabilised batches that are authorised by the Animal and Plant Health Agency <p>Must not contain wastes that come from mechanical biological treatment facilities</p>
19 06 05	Liquor from anaerobic treatment of animal and vegetable waste	<p>This must:</p> <ul style="list-style-type: none"> only come from the input types allowed by this guidance come from a facility that is independently certified as complying with BSI PAS 110 be in pasteurised and stabilised batches that are authorised by the Animal and Plant Health Agency <p>Must not contain wastes that come from mechanical biological treatment facilities</p>

Chapter	Description	
19 06	Wastes from anaerobic treatment of waste	
Waste code	Waste description	Restrictions
19 06 06	Digestate from anaerobic treatment of animal and vegetable waste	<p>This must:</p> <ul style="list-style-type: none"> • only come from the input types allowed by this guidance • come from a facility that is independently certified as complying with BSI PAS110 • be in pasteurised and stabilised batches that are authorised by the Animal and Plant Health Agency <p>Must not contain wastes that come from mechanical biological treatment facilities</p>

Chapter	Description	
19 08	Wastes from waste water treatment plants not otherwise specified	
Waste code	Waste description	Restrictions
19 08 09	Grease and oil mixture from oil and water separation containing only edible oils and fats	None
19 08 12	Sludges from biological treatment of industrial waste water (from a process that treats wastes which are identified in Annex 1 of this guidance)	Must only be from a process that treats wastes identified in this Annex

Chapter	Description	
19 12	Wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified	
Waste code	Waste description	Restrictions
19 12 12	Other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11	<p>This must:</p> <ul style="list-style-type: none"> only come from the input types allowed by this guidance be segregated from, and uncontaminated by any other waste type be biodegradable waste

Chapter	Description	
20 01	Separately collected fractions (except 15 01)	
Waste code	Waste description	Restrictions
20 01 01	Paper and cardboard	This must meet the restriction for the corresponding waste type in Note 1 at the end of this section. Must not contain any non-biodegradable coating or preservative.
20 01 08	Biodegradable kitchen and canteen waste	This must meet the restriction for the corresponding waste type in Note 1 at the end of this section
20 01 25	Edible oil and fat	None

Chapter	Description	
20 02	Garden and park wastes (including cemetery waste)	
Waste code	Waste description	Restrictions
20 02 01	Biodegradable waste	<p>This must be biodegradable material such as:</p> <ul style="list-style-type: none"> • manure • garden waste • green waste • horticultural waste • plant tissue • parks and garden waste • hedge and tree trimmings • grass cuttings and leafy materials <p>It must not contain:</p> <ul style="list-style-type: none"> • material with chemical additives and toxic residues • road sweeping gully waste • dog faeces • Japanese knotweed or other invasive plant and flatworm species

Chapter	Description	
20 03	Other municipal wastes	
Waste code	Waste description	Restrictions
20 03 01	Mixed municipal waste	This must be separately collected biodegradable wastes that are the types allowed by this guidance. Any food packaging must meet the restriction for the waste type in Note 1 at the end of this section.
20 03 02	Waste from markets	This must be separately collected biodegradable wastes that are the types

Chapter	Description	
20 03	Other municipal wastes	
Waste code	Waste description	Restrictions
		allowed by this guidance. Such as plant material, fruit and vegetables. Any food packaging must meet the restriction for the waste type in Note 1 at the end of this section.

Note 1

You can only use industrially compostable packaging and non-packaging items that are independently certified as compliant with at least one of the following:

- EN 13432
- EN 14995
- ASTM D6400

You can only use home compostable packaging and non-packaging items that are independently certified as compliant with at least one of the following:

- EN 17427
- AS 5810-2010
- NF T51-800
- TÜV Austria's certification requirements for home compostable packaging under their 'OK compost HOME scheme'