Guidance

Biomethane from waste: resource framework

How to meet 'end of waste' status for biomethane produced from organic wastes in a landfill site or anaerobic digestion plant.

From: **Environment Agency (/government/organisations/environment-agency)**

Applies to England

Contents

1. The purpose of the resource framework

This resource framework relates to biomethane produced from organic wastes in a landfill site or anaerobic digestion plant.

This resource framework is to help you understand when biomethane products are no longer considered waste. Meaning they meet the 'end of waste' test (https://www.gov.uk/guidance/check-if-your-material-is-waste). This is so you can:

- understand when you no longer need to follow waste management controls (https://www.gov.uk/dispose-business-commercial-waste) for biomethane products
- be confident that the quality of biomethane produced meets an approved standard
- be confident that the quality of biomethane produced is suitable for use in appropriate markets
- protect human health and prevent pollution of the environment

2. Requirement for an environmental permit

You must keep to the requirements of your environmental permit when you:

- accept waste
- generate, collect and treat biogas
- upgrade that biogas to biomethane

3. When the final product is not considered waste

Biomethane products will meet the end of waste test (https://www.gov.uk/guidance/check-if-your-material-is-waste), and so not be considered waste anymore, if you can show they have met the requirements for their intended use.

For this resource framework, there are 2 acceptable uses for biomethane products:

- biomethane for injection into the gas grid
- biomethane for use as a fuel in an appliance suitably designed and operated for natural gas

3.1 Biomethane for injection into the gas grid

For biomethane for injection into the gas grid (also called 'biomethane to grid' or BtG), you must meet all of the following requirements. The product

must:

- be destined as a fuel or raw material of a quality acceptable to the grid – the national gas transmissions system, local gas transmission systems and local gas distribution network
- meet the requirements of the Gas Safety (Management) Regulations 1996 (https://www.legislation.gov.uk/uksi/1996/551/contents), including any changes to or replacements of these regulations
- meet an approved product standard for its specific use – see section 7
- be supplied under a Network Entry Agreement that has been created by a gas transporter under the Uniform Network Code
- be supplied with evidence of compliance through records management – see section 4

3.2 Biomethane for use as a fuel in an appliance suitably designed and operated for natural gas

This could be for:

- compression and spark ignition engines
- gas turbines
- fuel cells
- heating appliances

Biomethane as a fuel in suitably designed appliances also covers its use in vehicles.

For biomethane for use as a fuel in an appliance suitably designed and operated for natural gas, you must meet all the following requirements. The product must:

- meet an approved product standard for its specific use – see section 7
- comply with any requirements of the appliance manufacturer's warranty, if required
- be supplied with evidence of compliance with operational requirements contained in the warranty, or other operating instructions, through records management – see section 4

3.3 Other processing requirements

Your biomethane product may need more processing to meet the requirements of:

- an approved product specification
- a customer specification, if required

This could be to:

- remove trace contaminants
- change the calorific value of the gas
- change the form of the gas so it’s ready for use in an appliance or vehicle

This processing is considered a waste recovery operation, which means you must follow waste management controls (https://www.gov.uk/dispose-business-commercial-waste).

4. Providing evidence that quality biomethane has been produced

You must keep and supply appropriate records to prove your biomethane product complies with this resource framework.

For batched supplies, you must record:

- the date of supply
- your customer’s name, contact details and nature of business
- your name and contact details as processor, including the address of the processing site
- details of the application the biomethane is meant for, including any warranty conditions that apply
- the quantity supplied by volume
- a copy of the material safety data sheet if required by other legislation
- a copy of the statement of conformity which includes a statement that the biomethane was produced in compliance with this resource framework

For continuous supplies, you must record same information as batched supplies but giving the dates for a given period of supply, instead of the date of supply. In addition, you must record:

- evidence of when you are not able to connect to the grid
- any flaring activity

You must also keep records of all inspections and testing that have been carried out. You must:

- keep all of these records for a minimum of 2 years

- make these records available for inspection by the regulator, if required

You can email resourcesframeworks@environment-agency.gov.uk to request templates for:

- a statement of conformity
- an analysis of product and comparison with resource framework requirements

If you are unable to demonstrate compliance through the documents listed above, the material you produce will be considered a waste.

5. Compliant products: loss of non-waste status

Biomethane that's compliant with this resource framework will become waste again (meaning you must follow waste management controls (https://www.gov.uk/dispose-business-commercial-waste)) if, at any stage:

- you discard it
- you plan to discard it
- it is required to be discarded
- it is stored indefinitely with little prospect of being used

This applies to anyone holding stores of biomethane, not just producers.

6. Mixing compliant products with waste and non-waste

If you mix biomethane that is compliant with this resource framework with other waste material, the whole mixed volume becomes waste and you must follow waste management controls (https://www.gov.uk/dispose-business-commercial-waste).

If you mix biomethane that is compliant with this resource framework with other non-waste material, the whole mixed volume is not waste. Doing this is not considered further treatment. But you must keep to the requirements of section 5.

7. Standards and specifications which apply to this resource framework

There are no published approved product standards in England for the biomethane that is for:

- injection into the gas grid
- use as a fuel in an appliance suitably designed and operated for natural gas

So to comply with this resource framework, you must meet the requirements in this section. These are based on:

- a detailed analysis of biogas composition
- an environmental and health risk assessment of biomethane use in these applications

You must analyse the biomethane you produce. You can do this either through:

- your own sampling and testing systems
- an external service provider

You should use techniques that are in line with the guidance on monitoring trace components in landfill gas: LFTGN 04 (https://www.gov.uk/government/publications/monitoring-trace-components-in-landfill-gas-lftgn-04). You can use other techniques if you can prove they meet the requirements of this resource framework.

7.1 Commissioning testing

When you set up your plant to produce biomethane, you must complete initial commissioning testing to analyse the gas you are producing.

You must do the same initial testing if you later change your plant in a way that could affect production.

When you reach stable levels of gas production, you must take and analyse gas samples so you can:

- check that you comply with this resource framework
- work out your operational monitoring requirements

You must be able to prove that the biomethane does not include levels of compounds greater than the maximum limits in section 7.3.

7.2 Operational monitoring

You must set up a process so you can monitor the gas you produce for all of the compounds listed in section 7.3. You will need to define:

- how you will sample (your sampling methods)

- how often you will sample (the sampling frequency)
- how you'll analyse what you sample (your analytical method)
- how you'll keep records

If your analysis proves your product is meeting the limits in section 7.3, taking into account the risk of inaccuracy and imprecision, you can sample once a year.

If you cannot prove this, then you must increase how often you sample and analyse. This must be to a level that gives confidence that the biomethane is meeting the limits in section 7.3.

7.3 Specification for biomethane for injection into the gas grid and for use in appliances

Biomethane for injection into the gas grid and for use in appliances must comply with the following limits. These are given as the concentration of the components in biomethane at:

- a temperature of 288 Kelvin (K)
- 101.3 kilopascals (kPa)
- 5% volume per volume (v/v) oxygen and dry gas (0% v/v moisture)

Sulphur containing compounds

Compound	Maximum limit
Total sulphur	30 mg m^3
Hydrogen sulphide	5 mg m^3

Inorganic gases

Compound	Maximum limit
Ammonia	20 mg m^3
Hydrogen chloride	1.5mg m^3
Hydrogen fluoride	5 mg m^3

Halogenated hydrocarbons

Compound	Maximum limit
Total halogenated hydrocarbons	1.5 mg m^3

Atomic hydrocarbons

Compound	Maximum limit
Xylenes (all isomers)	100 mg m^3

Metals

Compound	Maximum limit
Arsenic	0.1 mg m^3

8. Updates to this resource framework

The Environment Agency will review this resource framework in 2028, with support from industry. The Environment Agency may update or withdraw this resource framework before this date because of:

- pollution incidents
- the resource framework being used incorrectly
- developments in scientific understanding
- a change in the market
- a change in legislation or case law
- a change to the agreed industry standard or input materials

You can subscribe to email updates about this resource framework. These will tell you if it has changed and when it has been withdrawn. Use the ‘Get emails about this page’ link on this page.

9. If you have questions about this resource framework

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