

## Analysis order for biogas

Analyses no.:

Date of receipt:

Sampling vessel:

### Contractor = Invoice recipient

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LUFA Customer no. (if available)

### Copy of the test report for:

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LUFA Customer no. (if available)

Name, first name (company)

Name, first name (company)

Street, House no.

Street, House no.

Town / Postcode

Town / Postcode

Telephone:

Fax:

Telephone:

Fax:

E-mail address:

E-mail address:

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Town

Date

Signature

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# Institute for Soil and Environment

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26121 Oldenburg  
www.lufa-nord-west.de

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<p><input type="checkbox"/> 1. <b>Acetic acid equivalent</b>..... (preparation and measurement)</p> <p><b>Sampler:</b> .....</p>	<p><b>Sample designation:</b> BGK Methodenbuch, Chpt. III, C3.....</p> <p><b>Sampling date:</b> .....</p>
<p><input checked="" type="checkbox"/> 2. <b>Acid spectrum IC method</b>..... Acetic acid equivalent and acid spectrum (acetic acid, propionic acid, butyric acid) preparation and measurement <input type="checkbox"/> <b>only</b> for acetic acid equivalent <math>\geq 2.00</math> g/kg</p>	<p>BGK Methodenbuch, Chpt. III, C3 LUFA Nord-West AA 1/3A-046</p>
<p><input type="checkbox"/> 3. <b>Acid spectrum GC method</b>..... Acetic acid equivalent and acid spectrum (acetic acid, propionic acid, butyric acid, iso-butyric acid, valerianic acid, iso-valerianic acid, capronic acid, iso-capronic acid) preparation and measurement</p>	<p>BGK Methodenbuch, Chpt. III, C3 LUFA Nord-West AA 1/3A-034</p>

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**only** for acetic acid equivalent  $\geq 2.00$  g/kg

- |                          |   |   |
|--------------------------|---|---|
| <input type="checkbox"/> | 4. <b>Dry matter</b>  | VDLUFA I, 2.1.1   |
| <input type="checkbox"/> | 5. <b>Organic dry matter</b>  | VDLUFA II, 10.1   |
| <input type="checkbox"/> | 6. <b>pH-value</b>  | VDLUFA I A 5.1.1  |
| <input type="checkbox"/> | 7. <b>Determination of ammonia nitrogen (NH<sub>4</sub>-N)</b>  | VDLUFA II, 3.2.6  |
| <input type="checkbox"/> | 8. <b>Buffer capacity determination (TAC-value)</b><br>Incl. calculation of the FOS/TAC-value, <b>only</b> during determination of the acetic acid equivalent from 1., 2., or 3.  | DIN 38409-7 H 7   |
| <input type="checkbox"/> | 9.1 <b>Trace nutrients (small package)</b><br>Nickel (Ni), cobalt (Co), molybdenum (Mo), selenium (Se)<br>incl. digestion and dry matter  | DIN EN ISO 11885<br>DIN EN ISO 17294                        |
| <input type="checkbox"/> | 9.2 <b>Trace nutrients (large package)</b><br>Nickel (Ni), cobalt (Co), molybdenum (Mo), selenium (Se), iron (Fe), manganese (Mn), copper (Cu), zinc (Zn), boron (B), vanadium (V)<br>incl. digestion and dry matter  |   |
| <input type="checkbox"/> | 10. <b>Salt content</b>   | VDLUFA II, 11.14  |
| <input type="checkbox"/> | 11. <b>Determination of C/N-ratio</b><br>Determination of total C and N on request  | DIN EN ISO 10694<br>DIN EN ISO 13878                        |
| <input type="checkbox"/> | 12. <b>Energy content NIRS method in</b><br>Maize silage, LKS, grass silage, hay, CCM, whole grain maize, WPS-barley, WPS-rye, WPS-wheat, WPS-oats, WPS-triticale, cereals (no mixes) – barley, rye, wheat, triticale, shredded soy   | VDLUFA III, 31.2  |
| <input type="checkbox"/> | 13. <b>Energy content NIRS method and calculation of the theoretical gas yield according to Baserga</b><br>Maize silage, LKS, grass silage, hay, CCM, whole grain maize, WPS-barley, WPS-rye, WPS-wheat, WPS-oats, WPS-triticale, cereals (no mixes) – barley, rye, wheat, triticale, shredded soy. Determination of the theoretically possible gas yield in l <sub>N</sub> /kg feed, l <sub>N</sub> /kg dry matter, l <sub>N</sub> /kg organic dry matter and % methane. | VDLUFA III, 31.2<br>In-house method                         |
| <input type="checkbox"/> | <b>Possible in addition to pos: 12 and 13</b><br><input type="checkbox"/> Ca <input type="checkbox"/> P <input type="checkbox"/> Na <input type="checkbox"/> Mg <input type="checkbox"/> K <input type="checkbox"/> S <input type="checkbox"/> Cu<br><br><input type="checkbox"/> Zn <input type="checkbox"/> Mn <input type="checkbox"/> Fe <input type="checkbox"/> Al  | DIN EN ISO 11885  |
| <input type="checkbox"/> | 14. <b>Theoretical gas yield according to Baserga (wet chemical tests)</b><br>Duration approx. 7-10 work days, determination of the possible gas yield l <sub>N</sub> /kg feed, l <sub>N</sub> /kg dry matter, l <sub>N</sub> /kg organic dry matter and % methane. Also statement of the dry matter, organic dry matter, crude fibre, crude protein, crude fat, NFE  | In-house method   |
| <input type="checkbox"/> | 15. <b>Fermentation quality / fermentation acids</b>  | LUFA Nord-West AA 1/3A-046                                  |
| <input type="checkbox"/> | 16. <b>Determination of total nitrogen (N<sub>tot</sub>)</b>  | VDLUFA II, 3.5.1.1<br>VDLUFA III, 4.1.1                     |
| <input type="checkbox"/> | 17. <b>Sulphur</b>  | DIN EN ISO 11885  |
| <input type="checkbox"/> | 18. <b>Inhibitors</b>   | VDLUFA III, 28.4.1  |
| <input type="checkbox"/> | 19. <b>Nutrient analysis – fermentation residues from NawaRo-plant and fermentation substrates</b><br>Dry matter, organic dry matter, total N, NH <sub>4</sub> -N, P <sub>2</sub> O <sub>5</sub> , K <sub>2</sub> O, MgO, CaO, S, Cu, Zn  | According to<br>DüVO;<br>DIN 38414, S2;<br>DIN 19684, S2;   |
| <input type="checkbox"/> | 20. <b>Nutrient analysis – fermentation residues from co-fermentation plant</b><br>Dry matter, organic dry matter, total N, NH <sub>4</sub> -N, P <sub>2</sub> O <sub>5</sub> , K <sub>2</sub> O, MgO, CaO, S,  | VDLUFA II<br>DIN 38414, S3;<br>ISO 11732 E23;<br>ISO 11885; |

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Cu, Zn, alkaline ingredients

- |                          |   |   |
|--------------------------|---|---|
| <input type="checkbox"/> | 21. <b>Heavy metals according to the Biological waste ordinance</b><br>Lead (Pb), cadmium (Cd), chromium (Cr), copper (Cu), nickel (Ni), mercury (Hg), zinc (Zn) incl. dry matter   | According to the Biological waste ordinance             |
| <input type="checkbox"/> | 22. <b>Test according to the Biological waste ordinance (complete)</b>  |   |
| <input type="checkbox"/> | 23. <b>Salmonella</b>   | BGK Methodenbuch, Chpt. IV, C1<br>ASU L 00.00-20 (mod.) |
| <input type="checkbox"/> | 24. <b>Germinable seeds and plant parts</b>   | BGK Methodenbuch, Chpt. IV, B1                          |
| <input type="checkbox"/> | 25. <b>Practical fermentation test according to VDI 4630</b><br>Duration approx. 35 days, determination of the gas amount in l <sub>N</sub> /kg feed, l <sub>N</sub> /kg dry matter, l <sub>N</sub> /kg organic dry matter and % methane, daily monitoring throughout the entire period.<br><b>Consultation with the test laboratory (0441-801-836) necessary</b> | VDI guideline 4630                                      |
| <input type="checkbox"/> | 26. <b>Gassing test / rest gas potential</b><br>Duration approx. 90 days, determination of the gas amount in l <sub>N</sub> /kg feed, l <sub>N</sub> /kg dry matter, l <sub>N</sub> /kg organic dry matter and % methane, daily monitoring throughout the entire period.<br><b>Consultation with the test laboratory (0441-801-836) necessary</b>                 |   |
| <input type="checkbox"/> | 27. <b>Gas measurement</b><br>Measurement of the gas composition (CH <sub>4</sub> , CO <sub>2</sub> and further components on request - readings in vol %)  |   |

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