

Order form for biogas analysis (2012)

Analysis No.:

Date of receipt:

To be filled by LUFA

Sample container:

Principal = invoice recipient

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LUFA customer ID (if ready to hand)

Name, first name (company)

Street

Postcode/City

Telephone

Fax

E-mail

Duplicate of the test report for:

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LUFA customer ID (if ready to hand)

Name, first name (company)

Street

Postcode/City

Telephone

Fax

E-mail

Kind of sample:

Sample identifier:

Sample taker:

Date of sampling:

Please mark required analyses with a cross:

Methods

- | | | |
|--------------------------|---|--|
| <input type="checkbox"/> | 1. Acetic acid equivalent
Tantamount to volatile organic acids (VOA-value) - preparation and analysis | methodology handbook ¹⁾ III, C3 |
| <input type="checkbox"/> | 2. Spectrum of acids – IC method
Acetic acid equivalent and spectrum of acids (acetic acid, propionic acid, butyric acid) - preparation and analysis
<input type="checkbox"/> only if acetic acid equivalent $\geq 2,00$ g/kg | methodology handbook ¹⁾ III, C3
LUFA Nord-West AA 1/3A-046 |
| <input type="checkbox"/> | 3. Spectrum of acids – GC method
Acetic acid equivalent and spectrum of acids (acetic acid, propionic acid, butyric acid, iso-butyric acid, valeric acid, iso-valeric acid, caproic acid, iso-caproic acid) - preparation and analysis
<input type="checkbox"/> only if acetic acid equivalent $\geq 2,00$ g/kg | methodology handbook ¹⁾ III, C3
LUFA Nord-West AA 1/3A-034 |
| <input type="checkbox"/> | 4. Dry matter (DM) | VDLUFA I, 2.1.1 |
| <input type="checkbox"/> | 5. Organic dry matter (oDM) | VDLUFA II, 10.1 |
| <input type="checkbox"/> | 6. pH value | VDLUFA I A 5.1.1 |
| <input type="checkbox"/> | 7. Ammonium nitrogen | VDLUFA II, 3.2.6 |
| <input type="checkbox"/> | 8. Buffer capacity (TIC value)
Tantamount to total inorganic carbon (TIC) - incl. calculation of VOA/TIC value, only in combination with analysis of acetic acid equivalent according to analyses 1, 2, or 3 | DIN 38409-7 (H 7) |
| <input type="checkbox"/> | 9.1 Trace elements (small package)
nickel (Ni), cobalt (Co), Molybdenum (Mo), selenium (Se)
incl. dry matter and decomposition | DIN EN ISO 11885
DIN EN ISO 17294 |
| <input type="checkbox"/> | 9.2 Trace elements (large package)
nickel (Ni), cobalt (Co), molybdenum (Mo), selenium (Se), iron (Fe), manganese (Mn), copper (Cu), zinc (Zn), boron (B), vanadium (V)
incl. dry matter and decomposition | |

¹⁾ issued by the German Federal Quality Association for Compost

Prices are exclusive of VAT and subject to change. Subject to prior agreement, an allowance will be charged for extra work. The GTC of LUFA Nord-West apply (see Internet: www.lufa-nord-west.de). LUFA Nord-West is a company of the Chamber of Agriculture of Lower Saxony.

location

date

signature

- | | | |
|--------------------------|---|--|
| <input type="checkbox"/> | 10. Salt content | VDLUFA II, 11.14 |
| <input type="checkbox"/> | 11. Determination of C/N-ratio
specification of total carbon and total nitrogen on request | DIN ISO 10694
DIN ISO 13878 |
| <input type="checkbox"/> | 12. NIR analysis of energy content
maize silage, LKS, grass-silage, hay, CCM, corn maize, barley whole plant silage, rey whole plant silage, wheat whole plant silage, oat whole plant silage, triticale whole plant silage, crop - barley, rey, wheat, triticale, soya grist (not any mixtures). | VDLUFA III, 31.2 |
| <input type="checkbox"/> | 13. NIR analysis of energy content incl. calculation of the theoretical gas yield according to Baserga
Maize-silage, ground ear maize, grass silage, hay, CCM, grain maize, barley whole plant silage, rye whole plant silage, wheat whole plant silage, oat whole plant silage, triticale whole plant silage; cereals like barley, rye, wheat, triticale, soybean meal (no mixtures).
Specification of the theoretically possible gas yield as l/kg FM, l/kg DM, l/kg organic DM and % methane. | VDLUFA III, 31.2
calculated according to Baserga |
| | Additional analysis of | |
| | <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
<input type="checkbox"/> Zn <input type="checkbox"/> Mn <input type="checkbox"/> Fe <input type="checkbox"/> Al | DIN EN ISO 11885 |
| <input type="checkbox"/> | 14. theoretical gas yield according to Baserga – wet chemical analysis
Duration approx. 7-10 working days; Specification of the theoretically possible gas yield as l/kg FM, l/kg DM, l/kg organic DM and % methane; specification of dry matter, organic dry matter, crude fibre, crude protein, crude fat and nitrogen free extractives (NFE) | Weender analysis
calculated according to Baserga |
| <input type="checkbox"/> | 15. Fermenting quality / fermenting acids | LUFA Nord-West AA 1/3A-047 |
| <input type="checkbox"/> | 16. Determination of total nitrogen (N_{tot}) | VDLUFA II, 3.5.1.1
VDLUFA III, 4.1.1 |
| <input type="checkbox"/> | 17. Sulphur | DIN EN ISO 11885 |
| <input type="checkbox"/> | 18. Screening test of antibacterial substances | VDLUFA III, 28.4.1 |
| <input type="checkbox"/> | 19. Analysis of nutrients – fermentation residues from renewables biogas plants
DM, oDM, N _{tot} , amonium N, P ₂ O ₅ , K ₂ O, MgO, CaO, S, Cu, Zn | VDLUFA II
DIN 38414 (S3)
DIN 38414 (S2)
DIN EN ISO 11732 (E23)
DIN ISO 11261
DIN EN ISO 11885 |
| <input type="checkbox"/> | 20. Analysis of nutrients – fermentation residue of co-fermentation biogas plants
DM, oDM, N _{tot} , amonium N, P ₂ O ₅ , K ₂ O, MgO, CaO, S, Cu, Zn, alkaline active components | |
| <input type="checkbox"/> | 21. Heavy metals according to the German biowaste regulation
lead (Pb), cadmium (Cd), chromium (Cr), copper (Cu), nickel (Ni), mercury (Hg) and zinc (Zn) – incl. dry matter and decomposition | according to the German biowaste regulation |
| <input type="checkbox"/> | 22. Analysis according to the regulation of bio waste (complete) | |
| <input type="checkbox"/> | 23. Salmonellae | methodology handbook ¹⁾ IV, C1
ASU L 00.00-20 (mod.) |
| <input type="checkbox"/> | 24. Germinable seeds and parts of plants capable of sprouting | methodology handbook ¹⁾ IV, B1 |
| <input type="checkbox"/> | 25. Fermenting test for substrates
Duration approx. 35 days; Specification of the gas yield as l _N /kg FM, l _N /kg DM, l _N /kg organic DM and % methane; daily maintenance over the whole period - Prior consultation of the laboratory is necessary (phone: +49 (0) 441-801-836)! | |
| <input type="checkbox"/> | 26. Fermenting test of residual gas potential
Duration approx. 90 days; Specification of the gas yield as l _N /kg FM, l _N /kg DM, l _N /kg organic DM and % methane; daily maintenance over the complete period - Prior consultation of the laboratory is necessary (phone: +49 (0) 441-801-836)! | VDI guide line 4630 |
| <input type="checkbox"/> | 27. Measurement of biogas composition
CH ₄ , CO ₂ , H ₂ S, O ₂ , NH ₃ (specified as vol. %) | |

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