INSTITUTE FOR SOIL AND ENVIRONMENT Jägerstr. 23-27, 26121 Oldenburg, Germany

DAkkS Deutsche Akkreditierungsstelle D-PL-14165-01-00

LUFA NORD-WEST

Order form

BIOGAS ANALYSIS

115BG26B

Technical advice: 0441 801-830
Information on order form: 0441 801-836
E-mail: biogas@lufa-nord-west.de

CLIENT invoice recipient

Name, first name (company)

Address

Postcode / Place

LUFA client ID

Phone

E-Mail

DUPLICATE of test report for

Name, first name (company)

Address

Postcode / Place

LUFA client ID

Phone

E-Mail

Sample identification

Date of sampling

Sample type:

Sampler:

REQUIRED ANALYSES - PLEASE CHECK ACCORDING BOX -

☐	1	**Acetic acid equivalent** (preparation and analysis)	methodology handbook[1] III, C3 (2021-09)
☐	2	**Spectrum of acids – IC method |** Acetic acid equivalent and spectrum of acids (acetic acid, propionic acid, butyric acid) – preparation and analysis ☐ only if acetic acid equivalent ≥ 2,0 g/kg	methodology handbook[1] III, C3 (2021-09) LUFA Nord-West AA 1/3A-046 (2022-04), #6
☐	3	**Spectrum of acids – IC method incl. isoacids |** 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 ☐ only if acetic acid equivalent ≥ 2,0 g/kg	methodology handbook[1] III, C3 (2021-09) LUFA Nord-West AA 1/3A-046 (2022-04), #6
☐	4	**Dry matter (DM)**	VDLUFA I, 2.1.1 (mod.) (1991)
☐	5	**Organic dry matter (oDM)**	VDLUFA II, 10.1 (2014)
☐	6	**pH value**	DIN EN ISO 10523 (2012-04), #6
☐	7	**Ammonium nitrogen (NH_4-N)**	VDLUFA II, 3.2.6 (1995), #6
☐	8	**Buffer capacity (TIC value) |** Incl. calculation of VOA/TIC value, only in combination with analysis of acetic acid equivalent according to analysis 1, 2 or 3	DIN 38409 - H7 (2005-12), #6
☐	9.1	**Trace elements (small package) |** Nickel (Ni), cobalt (Co), molybdenum (Mo), selenium (Se) incl. dry matter and decomposition	DIN EN ISO 17294 (2017-01)
☐	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	DIN EN ISO 17294 (2017-01) DIN EN ISO 11885 (2009-09), #6
☐	9.3	**Soluble trace nutrients |** incl. extraction and dry matter ☐ Cobalt (Co) ☐ Iron (Fe)	DIN EN ISO 17294 (2017-01) (mod.), #6 DIN EN ISO 11885 (2009-09), #6
☐	10	**Sulphur**	DIN EN ISO 11885 (2009-09), #6
☐	11	**Salt content**	VDLUFA II, 11.14 (1995), #6

This form is double-sided, please also note page 2

1) issued by the German Federal Quality Association for Compost

The prices do not include the statutory value added tax. Prices are subject to change without notice. Surcharges may be levied by arrangement for special expenditure. The General Terms and Conditions of LUFA Nord-West apply (see www.lufa-nord-west.com). The accreditation is valid for the scope specified in the certificate D-PL-14165-01-00. The results of this analysis are stored and evaluated anonymously for advisory and statistical purposes and published as a statistical evaluation (e. g. mean value, standard deviation, minimum and maximum values). For further information on data security, please visit www.lufa-nord-west.com. #6 not subject of the accreditations.

Place Date Signature

Technical advice: 0441 801-830
Information on order form: 0441 801-836
E-mail: biogas@lufa-nord-west.de

DAkkS Deutsche Akkreditierungsstelle D-PL-14165-01-00

LUFA NORD-WEST

☐ 12	**NIR analysis of energy |** Maize silage, 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 (no mixtures), barley, rye wheat, triticale, soya grist	VDLUFA III, 31.2 (2004)
☐ 13	**NIR analysis of energy incl. calculation of the theoretical gas yield according to Baserga |** Maize silage, 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 (2004) calculated by Baserga, #6
+	**Additional analysis of:**	DIN EN ISO 11885 (2009-09), #6

☐ Ca ☐ P ☐ Na ☐ Mg ☐ K ☐ S ☐ Cu ☐ Zn ☐ Mn ☐ Fe ☐ Al (basic price plus each element)

☐ package of minerals (Ca, P, Na, Mg, K incl. basic price) ☐ package of trace elements (S, Cu, Zn, Mn, Fe incl. basic price)

☐ 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)	VO EG 152/2009 Annex III A, M, I, H and C (2009) calculated by Baserga, #6
☐ 15	**Fermenting quality/fermenting acids**	LUFA Nord-West AA 1/3A-046 (2022-04), #6
☐ 16	**Determination of total nitrogen (N_{total})**	VDLUFA II, 3.5.1.1 (2004)
☐ 17	**Determination of C/N ratio |** Specification of total carbon and total nitrogen on request	DIN EN 15936 (2012-11), #6 DIN EN 16168 (2012-11), #6
☐ 18	**Screening test of antibacterial substances**	VDLUFA III, 28.4.1 (2007), #6
☐ 19	**Analysis of nutrients – fermentation residues from renewables biogas plants |** DM, oDM, N_{total}, NH_4-N, P_2O_5, K_2O, MgO, CaO, S, Cu, Zn **Pay attention to declaration note!**	According to DüVO; VDLUFA II; DIN EN 12880-S2a (2001-02); DIN EN ISO 11732 (2005-05); DIN EN ISO 11885 (2009-09); VDLUFA II.1, 6.3 (2008)
☐ 20	**Analysis of nutrients – fermentation residues of co-fermentation biogas plants |** DM, oDM, N_{total}, NH_4-N, P_2O_5, K_2O, MgO, CaO, S, Cu, Zn, alcaline active constituents	
☐ 21	**Heavy metals according to 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 german biowaste regulation (2022-04)
☐ 22	**Analysis according to the regulation of biowaste (complete)** **Pay attention to declaration note!**	according to german biowaste regulation (2022-04)
☐ 23	**Salmonellae**	methodology handbook[1], IV C1 (2013-05)
☐ 24	**Germinable seeds and parts of plants capable of sprouting**	methodology handbook[1], IV B1 (2006-09)

IMPORTANT – declaration note – referred to items 19 and 22
Declaration suggestion for farm manure brought into market:

☐ Yes, additional cost 5.– € (not necessary when spreading on own land)

This declaration can only be made for the use of plant and animal inputs in form of manure or fecal matter! In case of a declaration preparation, the indication of input materials and quantity proportion is mandatory. If filled out by hand, please enter legibly into the table.

	input material	quantity in %
1.		
2.		
3.		
4.		
5.		

In case of more than five input materials please use the back or a separate sheet. The sum has to be 100%.

☐ Specification of the measurement uncertainty in the test report

The prices do not include the statutory value added tax. Prices are subject to change without notice. Surcharges may be levied by arrangement for special expenditure. The General Terms and Conditions of LUFA Nord-West apply (see www.lufa-nord-west.com). The accreditation is valid for the scope specified in the certificate D-PL-14165-01-00. The results of this analysis are stored and evaluated anonymously for advisory and statistical purposes and published as a statistical evaluation (e. g. mean value, standard deviation, minimum and maximum values). For further information on data security, please visit www.lufa-nord-west.com. #6 not subject of the accreditations.

Place Date Signature