

of **Incolab Services B.V.**

**oud-BEIJERLAND**

Valid from: **23-10-2007** to **11-11-2009**

Replaces annex d.d.: **09-11-2006**

Nr.	Material or product	Parameter / Analytical method	Internal reference number
<b>Sample preparation</b>			
A	Solid fuels	Grinding and preparation on behalf of all mentioned tests	WS 25 in accordance with ASTM 2013, NEN 3010 and ISO 18283
B	Biomass Fuel: -wood residues -energy crops -residues from: -pruning -bark -straw; -shells and kernels: -agricultural -fruit industry -refuse derived fuel -poultry/pig litter	Grinding and preparation on behalf of all mentioned test	WS 25 in accordance with NTA-8200
<b>Analysis</b>			
1	Coal and Coke	Determination of total moisture, by gravimetric method	WS 1 in accordance with ISO 589 method B2, ISO 579, ASTM D 2961 or ASTM D 3302
2	Coal	Determination of air-dry moisture, by gravimetric method	WS 2 in accordance with ASTM D 3302 procedure B or ISO 589 method A2
3	Solid mineral fuels	Determination of inherent moisture, by gravimetric method	WS 3 in accordance with ASTM D 3173 or ISO 11722

This annex is approved by:

Ir. J.C. van der Poel  
Chief Executive

of **Incolab Services B.V.**

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4	Solid mineral fuels	Determination of ash content, by gravimetric method	WS 4 in accordance with ISO 1171 or ASTM D 3174
5	Coal and coke	Determination of volatile matter content, by gravimetric method	WS 5 in accordance with ISO 562 or ASTM D 3175
6	Solid mineral fuels	Determination of gross calorific value by bomb calorimetric method	WS 6 in accordance with ISO 1928 or ASTM D 5865
7		Determination of net calorific value by bomb calorimetric method	WS 6 in accordance with ISO 1928 or ASTM D 5865
8		Determination of sulphur content, by high temperature combustion IR method	WS 19 in accordance with ASTM D 4239B
9	Coal	Determination of free-swelling index by heating in a covered crucible	WS 8 in accordance with ISO 501 or ASTM D 720
10		Determination of grindability by using a hard grove machine	WS 9 in accordance with ISO 5074 or ASTM D 409
11	Coal and coke	Determination of carbon, hydrogen by IR Method and nitrogen by Thermal Conductivity method. Calculation oxygen by difference: 100 - (ash + sulphur + carbon + hydrogen + nitrogen) in weight percent	WS 10 C, H, N: in accordance with ASTM D 5373 or ISO/TS 12902 O: in accordance with ISO 1170 or ASTM D 3180
12		Determination of boron content by ICP-AES method	WS 11 in accordance with AS 1038.10.3
13	Coal	Determination of chlorine by microcoulometric method	WS 12.1 in accordance with ASTM D 6721
14		Determination of chlorine and fluorine by ion chromatography method	WS12.2 Cl: in-house method F: equal to ISO 11724 or ASTM D 5987
15		Determination of sulphur forms (sulfate, pyretic, organic) by gravimetric/ICP-AES method	Equal to ASTM D 2492

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16	Coal	Determination of total mercury by direct combustion and atomic absorption spectroscopy	WS 18 in accordance with ASTM D 6722
17	Ash from Coal or Coke	Determination of fusibility by high temperature tube method	WS 15 in accordance with ISO 540 or ASTM D 1857
18		Determination of sulphur content by high temperature combustion IR method	WS 19 in accordance with ASTM D 5016
19		Determination of following major elements by inductively coupled plasma atomic emission (ICP-AES): Al, Ba, Ca, Fe, K, Mg, Mn, Na, P, Si, Sr, Ti	WS16 in accordance with ASTM D 6349
20		Determination of following minor elements by inductively coupled plasma atomic emission (ICP-AES): Ba, Be, Co, Cr, Cu, Mo, Mn, Ni, Pb, V, Zn	WS 17 in accordance with ASTM D 6357
21		Determination of following trace elements by ICP-AES, graphite furnace and hydride atomic emission method Cd, Tl, Sn (=GFAAS) As, Sb, Se, Te (=HG – ICP-AES)	WS 17 in accordance with ASTM D 6357
22	Biomass Fuel: -wood residues -energy crops -residues from: -pruning -bark -straw; -shells and kernels: -agricultural -fruit industry -refuse derived fuel -poultry/pig litter	Determination of total moisture by gravimetric method	WS 1.1 in accordance with NTA 8200
23		Determination of inherent moisture by gravimetric method	WS 3 in accordance with NTA 8200
24		Determination of ash content by gravimetric method	WS 4 in accordance with NTA 8200
25		Determination of gross calorific value by bomb calorimetric method	WS 6 in accordance with NTA 8200
26		Determination of net calorific value by bomb calorimetric method	WS 6 in accordance with NTA 8200
27		Determination of sulphur content by high temperature combustion IR method	WS 19 in-house method
28		Determination of chlorine by microcoulometric method	WS 12.1 in-house method

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29	Biomass Fuel: -wood residues -energy crops -residues from:	Determination of chlorine and fluorine by ion chromatography method	WS12.2 in-house method
30	-pruning -bark -straw;	Determination of total mercury by direct combustion and atomic absorption spectroscopy	WS 18 in-house method
31	-shells and kernels: -agricultural -fruit industry -refuse derived fuel -poultry/pig litter	Determination of carbon, hydrogen by IR Method and nitrogen by Thermal Conductivity method. Calculation oxygen by difference: 100 - (ash + sulphur + carbon + hydrogen + nitrogen) in weight percent	WS 10 in accordance with NTA 8200
32	Ash from Biomass Fuel	Determination of following major elements by inductively coupled plasma atomic emission (ICP-AES) method Al, Ba, Ca, Fe, K, Mg, Mn, Na, P, Si, Sr, Ti	WS 16 in accordance with NTA 8200
33		Determination of following minor elements by inductively coupled plasma atomic emission (ICP-AES) method Ba, Be, Co, Cr, Cu, Mo, Mn, Ni, Pb, V, Zn	WS 17 in accordance with NTA 8200, digestion in accordance with ASTM D 6357
34		Determination of following trace elements by ICP-AES, graphite furnace and hydride atomic emission method Cd, Tl, Sn (=GFAAS) As, Sb, Se, Te (=HG – ICP-AES)	WS 17 in accordance with NTA 8200, digestion in accordance with ASTM D 6357
35		Determination of sulphur content by high temperature combustion IR method	WS 19 in-house method