

DATA BULLETIN

CHNS determination in coal using the vario MACRO cube

The vario MACRO cube is optimized for the analysis of large sample weights which is especially important when coal samples or other inhomogeneous materials are analyzed. CHNS determinations in coal are part of the standard methods when it comes to determine the quality of solid fossil fuels.

The samples were weighed into tin foil cups with the addition of WO_3 and were analyzed twice. The C, H, N and S content and the difference in element concentration between the two measurements (repeatability) are shown below.

According to the international standard ASTM D5373 the repeatability limit for C, H and N are 0.45%, 0.10% and 0.05%, respectively. ASTM D4239 defines the repeatability limit for S to be 0.10% for the analyzed concentration range.

SAMPLE	C [%]	DIFF C	H [%]	DIFF H	N [%]	DIFF N	S [%]	DIFF S
coal-1	60.25	0.11	3.605	0.032	1.208	0.008	1.213	0.034
	60.14		3.572		1.200		1.247	
coal-2	78.77	0.13	4.782	0.020	2.092	0.002	0.548	0.007
	78.90		4.802		2.090		0.541	
coal-3	63.59	0.03	4.041	0.020	1.352	0.007	1.329	0.071
	63.68		4.021		1.359		1.258	

The results show that the CHNS content can be determined simultaneously from only one sample with a very high precision. The resulting repeatability is well within the required limits of ASTM D5373 and ASTM D4239.

The vario MACRO cube is very suitable for applications in the coal industry. Due to the special design of the oxidation zone of the instrument a 100% recovery rate of the sulfur in the sample is achieved. No standards of similar matrix are required.

INSTRUMENT:

vario MACRO cube

DETAILS:

mode: CHNS

sample: 100 mg coal



STANDARD:

ASTM D5373

ASTM D4239

Elementar Analysensysteme GmbH

Elementar-Straße 1

63505 Langenselbold (Germany)

phone: +49 (0) 6184 9393-0

info@elementar.de | www.elementar.de

