

CHN analysis in coal and fly ash using the vario MACRO cube

Task

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

Instrument	Sample
Basis: vario MACRO cube	Quantity: 40-150 mg
Mode: CHN	Consistency: solid
Periphery: manual pressing tool	Preparation: not necessary

Specification

The samples have been weighed into tin boats and have been analysed five times. The average values and its absolute standard deviations are given below.

Procedure

sample	weight [mg]	C [%]	H [%]	N [%]
coal-1	100	57.3 ± 0.05	3.15 ± 0.003	1.06 ± 0.012
coal-2	100	78.8 ± 0.09	4.67 ± 0.012	2.04 ± 0.009
coal-3	40	79.8 ± 0.01	4.52 ± 0.010	1.76 ± 0.012
fly ash-1	150	3.41 ± 0.09	0.039 ± 0.001	0.041 ± 0.003
fly ash-2	150	1.36 ± 0.04	0.258 ± 0.006	0.108 ± 0.005

Results

The CHN content of coal and fly ash can be determined simultaneously from only one sample with a very high precision, even for the low CHN content in fly ash.

The results show that the vario MACRO cube is very suitable for applications in the coal industry.