

DATA BULLETIN

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

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 analyzed.

The samples were weighed into tin boats. Each sample was analyzed twice. The C, H and N 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.

| SAMPLE | WEIGHT | C [%] | DIFF C | H [%] | DIFF H | N [%] | DIFF N |
|-----------|--------|----------------|--------|----------------|--------|----------------|--------|
| coal-1 | 100 | 57.28 57.22 | 0.06 | 3.151 3.157 | 0.006 | 1.053 1.059 | 0.006 |
| coal-2 | 100 | 78.82 78.80 | 0.02 | 4.689 4.673 | 0.016 | 2.050 2.043 | 0.007 |
| coal-3 | 40 | 79.82 79.84 | 0.02 | 4.517 4.521 | 0.004 | 1.751 1.759 | 0.008 |
| fly ash-1 | 150 | 3.47 3.41 | 0.06 | 0.038 0.037 | 0.001 | 0.039 0.039 | 0.000 |
| fly ash-2 | 150 | 1.33 1.36 | 0.03 | 0.252 0.264 | 0.012 | 0.102 0.113 | 0.011 |

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 resulting repeatability is well within the required limits of ASTM D5373.

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

INSTRUMENT:

vario MACRO cube

DETAILS:

mode: CHN

sample: 40-150 mg coal



STANDARD:

ASTM D5373

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