

DATA BULLETIN

Highly accurate CHNS analysis of NIST Standard Reference Materials

For the evaluation of elemental analysis results, pure chemical substances with defined elemental composition are widely accepted and in use as calibration as well as performance monitoring standards. These substances often are specified only regarding purity and not specified regarding elemental concentrations. This is fine as long as a robust elemental analyzer is used. In order to demonstrate the analytical accuracy of UNICUBE®, two certified standard reference materials distributed by NIST were analyzed.

The standards were weighed into tin boats and analyzed with a standard method. Commercially available sulfanilic acid was used for calibration of the instrument. The table below shows the average CHNS content and standard deviation of fivefold measurements of both standards and the certified ranges of the chemical composition.

SAMPLE	(n=5)	C [%]	H [%]	N [%]	S [%]
NIST 141e acetanilide	theory	70.99 - 71.28	6.63 - 6.91	10.25 - 10.42	-
	analysis	71.15 ± 0.02	6.78 ± 0.01	10.41 ± 0.02	
NIST 143d cystine	theory	29.83 - 30.01	4.94 - 5.19	11.52 - 11.76	26.60 - 26.96
	analysis	29.85 ± 0.02	5.04 ± 0.01	11.79 ± 0.01	26.72 ± 0.06

The evaluation of accuracy in elemental analysis is of highest importance for robust analytical practice. The factory calibration of UNICUBE, which covers a wide measurement range, is a perfect foundation for quick and straightforward acquisition of highly accurate elemental concentration data.

As the factory calibration can remain stable up to several years, UNICUBE saves a lot of time that would otherwise be wasted on analyzer preparation and calibration. In combination with tool-free maintenance and functional design, UNICUBE therefore becomes a true workhorse for elemental analysis laboratories.

INSTRUMENT:

UNICUBE®

DETAILS:

mode: CHNS

sample: 2-3 mg NIST standards



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