

DATA BULLETIN

Analysis of nitrocellulose with the rapid MICRO N cube

Nitrocellulose is not only known as an explosive, but it also has applications in the pharmaceutical industry. For example, it is one ingredient for the "Western Blot" in biochemical laboratories. The nitrogen content of nitrocellulose is one of the most important parameters determining its physical and chemical properties. In order to determine the rate of nitration of nitrocellulose, the total nitrogen content can be analyzed using different chromatographic or wet-chemical methods, mostly requiring long and tedious sample treatment and complex calibrations. A fast routine method for quantifying the absolute nitrogen content is high temperature combustion followed by detection of nitrogen by a thermal conductivity detector, for example using the rapid MICRO N cube.

Two different nitrocellulose samples were wrapped in tin foil and analyzed with the rapid MICRO N cube. Both samples were analyzed five times using a standard method. Acetanilide was used to determine the daily calibration factor.

SAMPLE	N [%]	SAMPLE	N [%]
Nitrocellulose 1	12.65	Nitrocellulose 2	13.58
	12.63		13.57
	12.65		13.59
	12.65		13.58
	12.69		13.56
mean	12.65	mean	13.58
SD	0.02	SD	0.01

The high pressure which builds up during the combustion of an explosive has no influence on the result of the analysis. The large sample size of 10 mg enables the analysis of inhomogeneous samples without the potentially problematic need for milling the sample before the analysis.

INSTRUMENT:

rapid MICRO N cube

DETAILS:

carrier gas: helium

sample: 10 mg nitrocellulose



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