

DATA BULLETIN

Analysis of nitrocellulose with the rapid N exceed®

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 N exceed.

Three different nitrocellulose samples were weighed in tin boats and analyzed with the rapid N exceed. Both samples were analyzed ten times using a standard method. Acetanilide was used to determine the daily calibration factor.

INSTRUMENT:

rapid N exceed®

DETAILS:

carrier gas: CO₂

sample: 50 mg nitrocellulose

SAMPLE	N [%]	SAMPLE	N [%]	SAMPLE	N [%]
Nitro-cellulose #1	13.561	Nitro-cellulose #2	12.118	Nitro-cellulose #3	11.131
	13.520		12.124		11.116
	13.573		12.139		11.055
	13.515		12.156		11.080
	13.514		12.129		11.044
	13.529		12.119		11.008
	13.561		12.107		11.082
	13.517		12.113		11.046
	13.487		12.136		11.102
	13.550		12.098		11.148
mean	13.533	mean	12.124	mean	11.081
SD	0.027	SD	0.017	SD	0.044



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 50 mg enables the analysis of inhomogeneous samples without the potentially problematic need for milling the sample before the analysis.

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