

Application note

Version 1

Determination of nitrate in milk and milk powder

Overview	
Parameter	Nitrate
Test	QUANTOFIX® Nitrate 250 (REF 91366)
General	The determination of nitrate in dairy products is necessary for dairies in order to detect and, if necessary, remove undesirable nitrate levels. In order to obtain correct results with the test strip QUANTOFIX® Nitrate 250, we recommend an adapted measuring method for measurements in milk and milk powder.



When it has to be quick

A special application note without additional reagents offers an uncomplicated alternative. The accuracy of the results depends heavily on the reaction medium.

This application can be found on page 3!

Sample preparation, performance and calculation of the result

Implementation	Liquid sample	Powder sample
	Mix 20 mL of the sample to be analyzed with 3 mL each of Carrez solution 1 and 2 (REF 918937) and then dilute to 100 mL with distilled water. Filter the resulting solution through a pleated filter and use the filtrate for analysis.	Prepare a 6% aqueous solution with the sample to be analyzed. Add 3 mL each of Carrez solution 1 and 2 (REF 918937) to 70 mL of this solution and then dilute to 100 mL with distilled water. Filter the resulting solution through a pleated filter and use the filtrate for analysis.
Evaluation		
Visual evaluation	- dip the test strip into the sample for 3 s. - shake off excess liquid. - wait for 60 s. - compare the test strip to the color scale and recalculate result.	- dip the test strip into the sample for 3 s. - shake off excess liquid. - wait for 60 s. - compare the test strip to the color scale and recalculate result.
	Calculation: Nitrate content [mg/L] = measured color scale value [mg/L] × 5	Calculation: Nitrate content [mg/L] = measured color scale value [mg/L] × 1.4
On the QUANTOFIX® Relax (version 3)	- select the NO₃ 250 method. - dip the test strip into the sample for 3 s. - shake off excess liquid. - place the test strip on the test strip holder (with the reaction time of 60 s switched on). - compare the test strip to the color scale and recalculate result.	- select the NO₃ 250 method. - dip the test strip into the sample for 3 s. - shake off excess liquid. - place the test strip on the test strip holder (with the reaction time of 60 s switched on). - compare the test strip to the color scale and recalculate result.
	Calculation: Nitrate content [mg/L] = QUANTOFIX® Relax measurement result [mg/L] × 5	Calculation: Nitrate content [mg/L] = QUANTOFIX® Relax measurement result [mg/L] × 1.4

Contact

If you have any further questions, please do not hesitate to contact us:

Technical support and customer service	tel.:	+49 24 21 969-333
	e-mail:	support@mn-net.com
Orders	e-mail:	sales@mn-net.com

Measurement results for spiked milk samples determined on the QUANTOFIX® Relax:

Sample	Doped quantity [mg/L]	Quantity shown on the display [mg/L]	Corresponds to calculated quantity [mg/L]	Recovery rate [%]
1	25	5	25	100
1	50	11	55	110
1	75	16	80	107
1	100	22	110	110
2	25	5	25	100
2	50	10	50	100
2	75	15	75	100
2	100	21	105	105
3	25	5	25	100
3	50	10	50	100
3	75	16	80	107
3	100	21	105	105

Measurement results for spiked milk powder samples determined on the QUANTOFIX® Relax:

Sample	Doped quantity [mg/L]	Quantity shown on the display [mg/L]	Corresponds to calculated quantity [mg/L]	Recovery rate [%]
1	7	6	8	114
1	14	10	14	100
1	21	15	21	100
1	29	20	28	97
2	7	6	8	114
2	14	11	15	107
2	21	17	24	114
2	29	21	29	100
3	7	5	7	100
3	14	10	14	100
3	21	14	20	95
3	29	18	25	86

Determination of nitrate in milk and milk powder without additional reagent

Overview

Parameter	Nitrate
Test	QUANTOFIX® Nitrate 250 (REF 91366)
General	The determination of nitrate in dairy products is necessary for dairies in order to detect and, if necessary, remove undesirable nitrate levels. Complex sample preparation is not always possible. In order to obtain correct results with the QUANTOFIX® Nitrate 250 test strip without the use of additional reagents, we recommend an adapted measuring method for measurements in milk and milk powder.



Sample preparation, performance and calculation of the result

Implementation	Liquid sample	Powder sample
	Dilute the sample to be analyzed 1:1 with distilled water.	Prepare a 6% aqueous solution with the sample to be analyzed.
Evaluation		
Visual evaluation	- dip the test strip into the sample for 3 s. - shake off excess liquid. - wait for 60 s. - compare the test strip to the color scale and recalculate result. Calculation: Nitrate content [mg/L] = measured color scale value [mg/L] × 2.2	- dip the test strip into the sample for 3 s. - shake off excess liquid. - wait for 60 s. - compare the test strip to the color scale and recalculate result. Calculation: Nitrate content [mg/L] = measured color scale value [mg/L] × 1.1
On the QUANTOFIX® Relax (version 3)	- select the NO₃ 250 method. - dip the test strip into the sample for 3 s. - shake off excess liquid. - place the test strip on the test strip holder (with the reaction time of 60 s switched on). - compare the test strip to the color scale and recalculate result. Calculation: Nitrate content [mg/L] = QUANTOFIX® Relax measurement result [mg/L] × 2.2	- select the NO₃ 250 method. - dip the test strip into the sample for 3 s. - shake off excess liquid. - place the test strip on the test strip holder (with the reaction time of 60 s switched on). - compare the test strip to the color scale and recalculate result. Calculation: Nitrate content [mg/L] = QUANTOFIX® Relax measurement result [mg/L] × 1.1

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Measurement results for spiked milk samples determined on the QUANTOFIX® Relax:

Sample	Doped quantity [mg/L]	Quantity shown on the display [mg/L]	Corresponds to calculated quantity [mg/L]	Recovery rate [%]
1	20	10	22	110
1	100	49	108	108
1	200	94	207	104
1	400	193	425	106
2	20	10	22	110
2	100	47	104	104
2	200	96	211	106
2	400	183	402	101
3	20	9	19	95
3	100	46	100	100
3	200	90	198	99
3	400	173	381	95

Measurement results for spiked milk powder samples determined on the QUANTOFIX® Relax:

Sample	Doped quantity [mg/L]	Quantity shown on the display [mg/L]	Corresponds to calculated quantity [mg/L]	Recovery rate [%]
1	10	9	10	100
1	50	47	52	104
1	100	90	99	99
1	200	193	212	106
2	10	8	9	90
2	50	47	52	104
2	100	117	129	129
2	200	181	199	100
3	10	9	10	100
3	50	49	54	108
3	100	98	108	108
3	200	184	202	101