

Drift Monitors - Control of Element Concentration Example: Analyzing Milk Powder using XRF



Introduction to drift monitors:

After establishing a calibration on an x-ray fluorescence instrument everybody likes to use it as long as possible. This wouldn't be any problem if the instrument would not show any changes over time. But the opposite is the case. The x-ray tube loses intensity and the detector loses sensitivity over time. Service works, like change of an x-ray tube or a crystal, might have an influence on the sensitivity as well. The loss on intensity is not constant for all elements. Light elements from Be to Zn normally show a higher influence than heavy elements.

To use an existing calibration over a long time the change in sensitivity for an element has to be detected by a drift monitor and then used to correct for it. Such samples are called drift monitors, monitor samples, reference samples or monitor standards.

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Control of element concentration in milk powder

FLUXANA® developed 4 drift monitor samples to control XRF spectrometers for the analysis of milk powder. Since these drift monitors do not show any change of element composition over a long time and are therefore excellent for long-term stability tests in the control of milk powder.

Concentration values:

Elements	Concentration weight%			
	FLX-K10-O	FLX-K10-M	FLX-K10-H	FLX-K10-NN
Na ₂ O	0.544	0.476	0.590	0.269
MgO	0.259	0.216	0.341	0.199
SiO ₂	27.4	29.0	28.1	30.0
P ₂ O ₅	1.17	0.92	1.24	0.92
Cl	0.495	0.220	0.600	0.450
K ₂ O	0.954	0.870	1.310	0.840
CaO	1.01	0.740	0.930	0.769
MnO	0.001	0.002	0.004	0.002
Fe ₂ O ₃	0.005	0.007	0.015	0.128
CuO	<0.0006	0.015	0.011	0.012
ZnO	<0.0006	0.010	0.016	0.112

Literature

[1] www.fluxana.com