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EDXRF1626 - Dolomite



Scope

The measurement of CaCO_3 , MgCO_3 , Fe_2O_3 , Al_2O_3 , and SiO_2 in dolomite is demonstrated using empirical calibration.

Background

Dolomite (calcium magnesium carbonate) is mainly used as an aggregate in concrete and asphalt for building roads. During mining and processing operations, it is important to monitor and control the dolomite composition to ensure proper quality and characteristics desired for the various products. Rigaku meets this industry need with a high-performance, affordable benchtop EDXRF system. Rugged and reliable, the [NEX QC+](#) is an ideal tool for measuring major carbonate and oxide components in dolomite, with simple and intuitive software designed for the non-technical at-line operator and for use in quality control labs.

Calibration

A set of 14 assayed site-specific standards were provided by an industry user for this demonstration. Regression fits are made using alpha corrections that automatically compensate for variations in X-ray absorption and enhancement effects within the sample.

Compound	Concentration range
CaCO_3	57 – 84%
MgCO_3	15 – 40%
Fe_2O_3	0.2 – 1.0%

Al ₂ O ₃	0.1 – 1.3%
SiO ₂	0.3 – 2.2%

Precision

Typical precision is shown here. Ten repeat analyses of each sample were performed with the sample in static position.

Sample: D4				
Units: %				
Compound	Standard value	Average value	Std. dev	% Relative
CaCO ₃	62.731	62.651	0.082	0.1
MgCO ₃	36.476	36.225	0.121	0.3
Fe ₂ O ₃	0.236	0.252	0.007	3.0
Al ₂ O ₃	(0.061)*	(0.072)	0.006	9.8
SiO ₂	0.31	0.3362	0.011	3.5

Sample: H14				
Units: %				
Compound	Standard value	Average value	Std. dev	% Relative
CaCO ₃	74.953	75.261	0.077	0.1
MgCO ₃	23.347	23.147	0.085	0.4
Fe ₂ O ₃	0.32	0.314	0.005	1.6
Al ₂ O ₃	0.256	0.258	0.005	2.0
SiO ₂	0.844	0.821	0.017	2.0

Conclusion

The performance shown here demonstrates NEX QC+ provides excellent sensitivity and performance for the measurement of carbonates and major oxides in dolomite. Self-contained with simple touch screen operation, NEX QC+ is an excellent tool for at-line control and quality checks throughout the mining and processing of dolomite.

Related products



NEX QC Series

Combines quality, affordability, and performance for a wide range of applications