

Application Note

Determination of Calcite/Dolomite content in Greek Mine Ores

Determining the percentage ratio of calcite and dolomite in mineral rocks is an important research tool for the research and interpretation of geological processes that defined their mineralogical composition. The physicochemical processes and color varieties of marbles are the criteria of their classification and usage, and are largely determined by the percentage distribution of carbonate minerals thus directly shaping the commercial purposes and objectives of the marble mining industry.

MAL-22 Mud Logging Analyser™



The MAL-22 Mud Logging Analyser with patented automatic temperature compensation offers dramatically improved levels of performance, productivity, reliability, ease of use, and flexibility.

MAL-22 Mud Logging Analyser provides the best accuracy of carbonate content (calcite/dolomite ratio) measurements. High quality data, easy handling, and featuring data export capabilities.

Two measurement modes:

- Expert Mode (Continues measurements) and
- Fixed Mode (3-points measurements
@ 1 min, 6 min, 15 min)

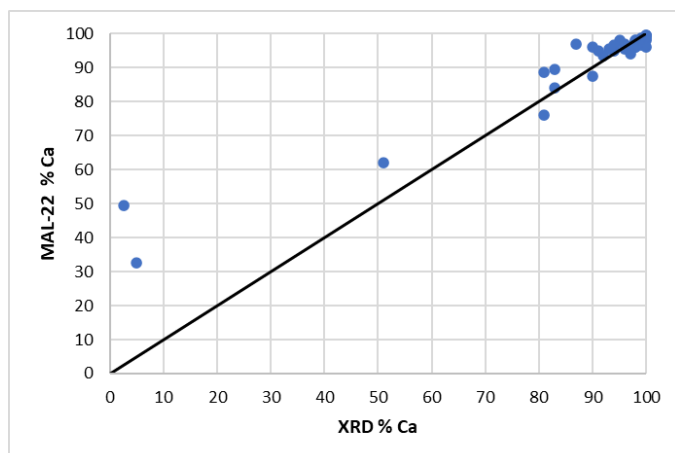
During the present project, 55 samples of marbles from ancient quarries, as well as, from active and inactive modern quarries, were studied by the method of calcimeter in order to determine the main carbonate mineral fractions, calcite and dolomite.

The results of test measurements of control and adequacy of the device showed small deviations from the nominal values of the samples. Excellent overall performance while testing has shown that the MAL-22 Mud Logging Analyser can easily replace other analog devices for total soil carbonate testing. The device is portable and can be easily transported for field work. The MAL-22 Mud Logging Analyser offers drastically improved levels of performance, productivity, reliability, ease of use and flexibility.

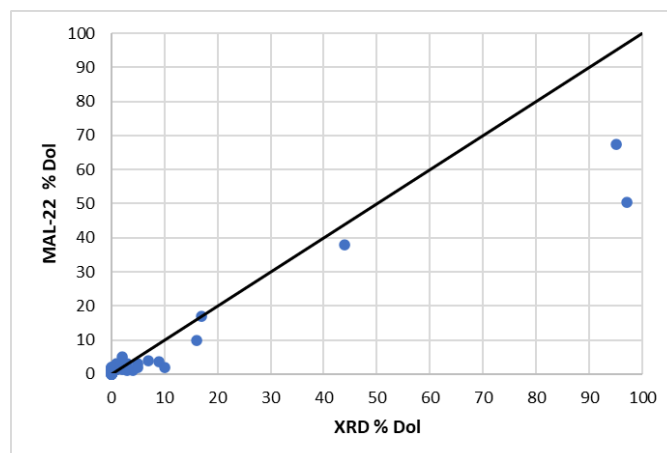
The results of the tests from the 43 samples were evaluated after comparing them with the results of the quantitative X-ray diffraction analysis made with the Philips PW18403 diffractometer.

In more detail, the results of the calcimeter measurements for the 39 calcite and cipollinic marbles, from the 43 compared samples, are very similar to those of the quantitative X-ray diffraction analysis.

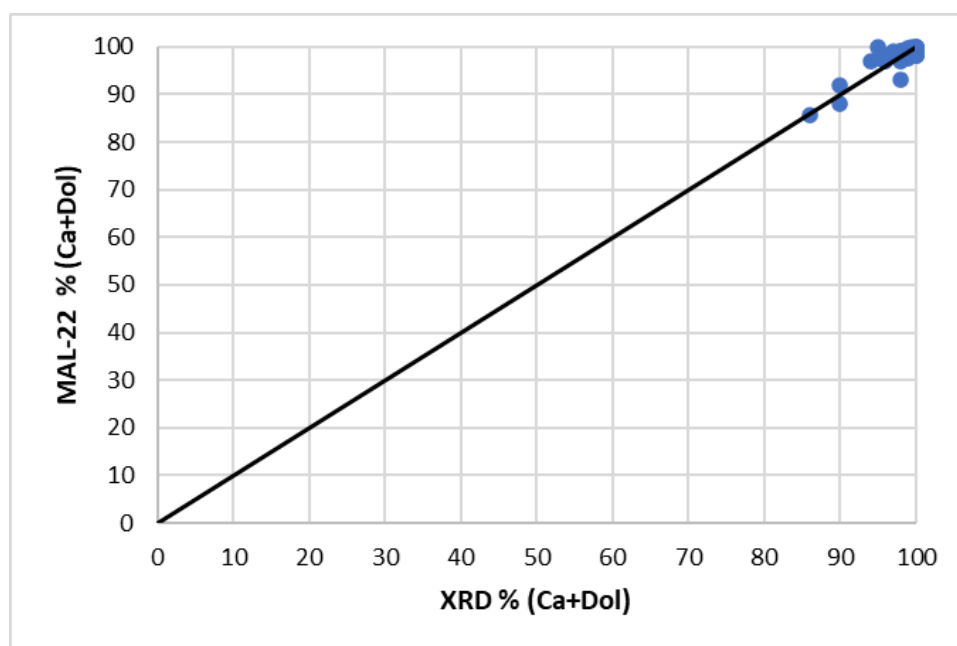
In summary, it is appropriate to note that the determination of calcite and dolomite contents in marbles using the digital MAL-22 Mud Logging Analyser, with the evaluation of its results and the suggestions of how to improve its reliability, can be used in petrographic and mineralogical studies of marbles.



Figures 1. Dispersion of calcite values (% Ca) with X-ray diffraction method (XRD) and MAL-22 Mud Logging Analyser



Figures 2. Dispersion of dolomite values (% Dol) with X-ray diffraction method (XRD) and MAL-22 Mud Logging Analyser



Figures 3. Dispersion of total carbonates values %(Ca+Dol) with X-ray diffraction method (XRD) and MAL-22 Mud Logging Analyser

Reference

Sarafis D., "Determination of calcite and dolomite concentrations in Greek marbles with the method of Calcimeter"
Post Graduate Theses, Aristotle University of Thessaloniki, Department of Geology, Faculty of Science, 2022