

QUANTITATIVE RIETVELD ANALYSIS OF QUARRIES FOR BUILDING PURPOSE FROM LOCALITIES AROUND ZACATECAS CITY, MEXICO

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Rietveld phase analysis of X-ray powder diffraction patterns (XRD) and chemical analysis by particle induced X-ray emission (PIXE); have been used to characterize a series of quarries for building purpose, from localities around Zacatecas City, Mexico and from a quarry from a building at the historical centre of this city. Zacatecas belongs to the UNESCO Cultural Heritage and its colonial architecture is characterized by the use of pink quarry stone.

The analysis of a powdered sample from a quarry block removed from a building located at the historical centre, was found to be composed (in weight percent) by 52.7% of quartz (PDF 46-1045, ICSD-174); 34.6% of orthoclase (PDF 31-966, ICSD-10270); 12% of meta-halloysite (PDF 74-1023, ICSD-26717); and a small amount (0.7%) of hematite (PDF 33-664, ICSD-43465).

Similar composition was obtained for the other quarries analyzed whose pink colour tonalities were characterized by their CIELAB (L^* , a^* , b^*) colour space coordinates.