Building stone potential of the Eastern Black Sea Region, NE Turkey

HAKAN ERSOY, BÜLENT YALÇINALP AND MEHMET ARSLAN

Karadeniz Technical University, Department of Geology, 61080, Trabzon, Turkey, (ersoy@ktu.edu.tr, arslan@ktu.edu.tr, bulent@ktu.edu.tr)

Turkey is located in the orogenic belt of the Alpin-Himalayan that has the world's richest natural stone formations. The country has rich marble and limestone formations on the one hand, travertine and onyx formations on the other hand. More than 500 natural stone sites, 800 factories operating in the sector and 90 % of the sites are located in the western Anatolia, mainly in Aegean and Marmara Region of Turkey. In all parts of Turkey, mainly Marmara and Aegean Region, there are good quality natural stone reserves. Although the eastern Black Sea region has limited number of natural stone variety it has a considerable number of natural stone reserves mainly granites. Total natural stone reserves are about 450 million tons and operated reserves were about one percent of this. However, there are more than 30 important natural stone sites in operation in the region. The reserve of the natural stones is about 13 million tons. The most important carbonate bearing marbles are travertines with the reserves of about 1.6 million meters cubes in total carbonate natural stones. In this study carbonate bearing natural stone potential of the eastern Black Sea region was revealed and their geological and geomechanical properties were investigated in terms of marbling sector.

Do melt inclusions record the pre-eruptive volatile content of magmas?

R. ESPOSITO* AND R. J. BODNAR

Virginia Polytechnic Institute & State University, Department of Geosciences, Blacksburg, VA, USA (*correspondence: rosario@vt.edu)

In the last several decades the number of publications describing the use of melt inclusions (MI) to determine the pre-eruptive volatile contents of magmas has increased significantly. However, in most MI studies, the volatile contents of the MI within a single sample or even within a single phenocryst vary widely, and it is often not possible to assess the reliability of the data. In order for MI to provide reliable information concerning the pre-eruptive volatile content, the MI must obey Roedder's (Sorby's) Rules. Namely, the MI must have trapped a single homogeneous melt phase, the volume of the MI must remain constant after trapping, and nothing can be added or lost from the MI after trapping. The adherence to Roedder's Rules is tested by examining two or more melt inclusions from a Melt Inclusion Assemblage (MIA), representing a group of MI that were all trapped at the same time. If all of the MI in the assemblage show the same room temperature phase relations and the same composition, then it is highly likely that the MI in the assemblage obey Roedder's Rules.

In this study, the volatile contents of MI from well-characterized MIAs hosted in phenocrysts from White Island (New Zealand) and from Solchiaro (Italy) were analyzed by Secondary Ion Mass Spectrometry (SIMS). In some MIA, abundances of all of the volatiles (H_2O, F, Cl, CO_2 and S) were consistent in all MI within the MIA. In other MIAs, CO_2 and S abundances showed wide variation, with CO_2 most often showing large variability within an MIA. The reason for the wide range in CO_2 content is unknown, but could reflect small-scale heterogeneities in the melt during inclusion trapping or varying degrees of post-entrapment crystallization for MI in the MIA.