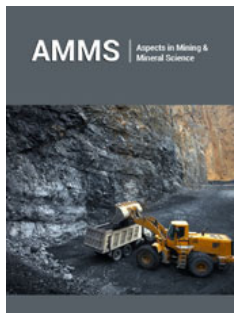


Use of By-Products of Volcanic Materials in Italy: A Ceramic Case

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Opinion

In Italy, as in all countries producing industrial minerals, even significant quantities of waste products are accumulated in the production sites, which therefore do not respond to the characteristics of merchant minerals. Since the beginning of my activity in the mining sector I have been involved in finding applications for these by-products as well, which are in any case subject to the same production costs as the so-called commercial products and, moreover, often represent a problem that is solved by landfill disposal, thus adding other operating costs to the mining activity. With the arrival of the issue of the circular economy, the problem of mining waste has officially entered the vocabulary of European and national community projects. In fact, there are several research and development projects encouraged by the European Community and also by national and regional institutions, which aim to encourage the use of these by-products. Even before having “institutionalized” this theme within these research and development projects, I want to describe how a collaboration was born from the will of a mining company, and of a possible user to face and solve a problem, which, in addition to reduce an environmental problem, has also led to a twofold reduction in costs: the cost of managing the mining production waste, in this case a pumice sand under screen from the production of grains intended for floriculture, and the savings by a producer of ceramic tiles, which replaced a fair percentage of feldspars imported from abroad with these by-products.

Obviously, it has not been an easy road, but one that with clear converging objectives of savings and recovery of by-products, has led to the industrialization of a type of economic tile without changing the technical parameters necessary to be defined as “Glazed Porcelain Stoneware”. In fact, this production technique allows the use of raw materials which give the ceramic body a dark colour, which is generally not appreciated by the market.

However, with glazing it is also possible to obtain clear surfaces, also satisfying these needs without having to use clear raw materials even in the entire ceramic body of the body. I say this because pumice is a raw material with much higher iron content than feldspar. The Ferric Oxide which determines a dark brown color in fusion is in fact present in a percentage of 2.6% [1], while in Turkish imported feldspars this percentage can even drop below 0.1% [2]. I’m talking about percentage substitutions which in this case are in the order of 3-4% by weight on the approximately 18kg/m² of total raw materials used, but which in any case represent around 7,000 tons/year of product purchasable on the national market for this tile’s producer. In the wake of this first experience, today studies and experiments are boosting in order to increase the use of these volcanic sands in ceramic bodies. The boost coming from the tax breaks provided for 4.0 economy projects, national and regional funding, and collaboration with research institutes and universities, allows us to progress along this line in harmony with the principles of a sustainable economy also in terms of materials non-renewable raw materials.

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