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Desenvolvimento de rocha artificial a partir de resíduo siderúrgico e areia de quartzo aglutinados em matriz epóxi.

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Artificial stones (AS) developed with industrial waste as raw material can be an economically and ecologically viable alternative. Steel industry wastes are composed of metallic oxides and carbonaceous materials, which allows its use in the development of AS. Therefore, this work's main goal is to develop two different types of AS plates with high purity material. The first one, AS85QS, using only quartzite, and the other one, AS82PS, using quartzite and 17% of steel waste (AS82PB). First, the best packed granulometric composition was determined. The plates were produced with compression, vibration and vacuum methods. The physical and mechanical properties such as apparent density, water absorption and apparent porosity and bend strength were evaluated and the microstructure was analyzed by SEM. The results showed that AS82PB had superior properties compared to AS85QS. The density, water absorption and porosity values for AS82PB were 2.29 g/cm3, 0.07%, 0.14%, respectively. As for bend strength, it was 31.0 ± 2.5 MPa for AS82PB and 18.5 ± 1.5 MPa for AS85QS. The excellent physical and mechanical properties of the stones were confirmed by the SEM micrographs. These results, in addition to being within expectations, point out that the best performance the developed AS was achieved by the stone produced with steel waste.