

VitroGeoWaste III

Rejected brick waste from an industrial Ceramic Plant (Alhabia, Almería, Spain) as raw material for plant substrates

Oral presentation / Poster presentation

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Abstract: : Bricks and tile bodies, as traditional ceramics, are produced using illite-chlorite-kaolinitic clays as raw materials fired between 1050-1150 °C. Carbonates (calcite, dolomite and siderite) can be present besides mixed-layer minerals, smectites, quartz, feldspars, iron oxide, and gypsum. Alhabia clays are important in the province of Almería (Spain) with deposits estimated between 140 and 180 m (alternation of sandstones, marls and mainly argillites). They are constituted by illite-chlorite clays (20-25 %), calcite (15 %) and quartz (30 %). Gypsum and hematite can be present. These clays are being applied as ceramic raw materials in local industries with firing temperatures in the range 900-1200 °C. “Cerámica de Alhabia S.L” is a Company which uses these clays. It is interested in the application of all the fired materials generated as rejected waste. These materials were crushed and sieved before this investigation (crushed brick waste, CBW), being characterized using XRD, XRF, DSC-TGA and SEM-EDX. Textural properties of selected CBW powders were determined after a physisorption study. The main results are presented in this communication. The purpose of this investigation was the preparation of agricultural plant substrates using the CBW powders as raw material. Perlite and other materials were combined with CBW powders as layers. Thus, the porosity of this fired waste was modified in the different substrates. Experiments using *Solanum lycopersicum* L. (tomato, Daniella variety) have been performed. The results were promising after the study of the main productive parameters under controlled greenhouse conditions of the crops.