

THE PRODUCTION OF A LIGHTWEIGHT AGGREGATE FROM QUARRY WASTE

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Summary

This project is based on the production of lightweight aggregate from quarry waste. It is part of an ongoing industrial research program, which is in collaboration with a number of sponsors including the University Of Wales Swansea, EcoMat Technologies Ltd and quarries in North Wales. The main focus of this project is on how to produce a lightweight aggregate from slate waste found in quarries in North Wales. Up until now the production of lightweight aggregate from slate waste has been produced using manufacturing processes such as rotary kilns and sintering grates but these methods have proven to have their drawbacks. It was the aim of this MRes project to develop and manufacture a more efficient and cost effective process of transforming waste slate into a usable structural lightweight aggregate. This new novel process was achieved through a number of experiments starting with the production of slate pellets. The project involved designing and constructing both a series of room temperature and high temperature chambers through experimentation, which led to process optimisation, resulting in a final product using a novelty concept developed by The University of Wales, Swansea, known as Flash Bloating. This novelty concept proved successful in producing a lightweight aggregate from slate quarry waste.