SECTOR ENVIRONMENTAL PRODUCT DECLARATION: FRITS, GLAZES, COLOURS, AND CERAMIC INKS

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INTRODUCTION

At present, the growing awareness of environmental impacts and sustainability has led to heightened interest in the development of specific environmental studies for the ceramic glaze manufacturing sector.

The competitiveness of member companies in the Spanish Association of Frit, Glaze, and Ceramic Colour Manufacturers (ANFFECC) is closely linked to the sustainable development of their activities in the framework of the Industrial Emissions Directive. Companies manufacturing decoration materials increasingly receive requests for information of an environmental nature by the authorities and by business customers, the latter mainly involving ceramic tile manufacturers. In particular, the most sought-after information is that required for drawing up Environmental Product Declarations (EPDs), the most widely demanded labels, particularly for construction materials.

The information requested relates to raw materials extraction and consumption, means of transport, the consumption of energy (electric and thermal), water, and other consumables, as well as the generation of air emissions, waste, and wastewater. Companies currently face difficulties in obtaining this information in an agile, personalised way, since data collection involves a long, costly, complicated process, in addition to part of the information requested being deemed sensitive and confidential.

This project therefore plays an important role in obtaining quality information on products from the frit, glaze, and ceramic colour sector, which will undoubtedly benefit other related sectors, such as the ceramic floor and wall tile sector and the building sector.

1. OBJECTIVES

The main aim of the project being presented is to draw up objective, quantified, and scientifically valid environmental information at sector level on the environmental impacts and aspects of the products made and marketed by ANFFECC member companies, for use as a baseline for improvement, while at the same time enabling companies to respond more quickly to the demands for environmental information by customers and society in general, expediting the process, shortening the times needed, ensuring published data are consistent, and safeguarding the confidentiality of sensitive data.

To this end, studies have been conducted on life cycle assessment, environmental product declarations, and carbon footprints of company products at sector level. In addition a specific computer tool for the sector has been developed, called DAPFFECC, this tool will allow companies, in a simple way, to assess the impacts derived from new technological scenarios. The specific products included in the scope of the study are as follows: frits, glazes in dry form, milled glazes, micronised glazes, ceramic colours, and inks.

2. METHODOLOGY

In addition to LCA standards ISO 14040 and ISO 14044, the following standards have been followed for the above purpose: EN 15804+A2 Sustainability of construction works. Environmental product declarations. Core rules for the product category of construction products, and when needed, EN 17160 Product category rules for ceramic tiles and ISO 14067:2019 Greenhouse gases. Carbon footprint of products. Requirements and guidelines for quantification.

Regarding the scope of the study, cradle-to-gate has been considered. That is, the impacts of extraction and transport of the necessary raw materials and of the manufacturing stage have been assessed, so that the successive life cycle stages are evaluated in an integrated form with the ceramic products.

With regard to the collection of information from manufacturers, questionnaires have been drawn up and adapted for the manufacturing companies, enabling collection of the necessary information to be simplified. All ANFFECC member companies have participated in the study.

At the same time, a highly parameterised model has been drawn up that simulates the manufacture of each product being studied, using the latest version of the LCA for Experts (Sphera-GaBi) software and its associated databases (Sphera and Ecoinvent) for each product, in which the key inputs and outputs of each process stage considered are integrated.

The information compiled from the companies participating in the study has been introduced into the models, thus yielding the results of the environmental impacts. Note that the results obtained are relative expressions and do not predict impacts in end-point categories, exceedance of certain levels, safety margins, or risks.

3. CONCLUSIONS

The study represents the entire Spanish frit, glaze, ceramic colour, and ink manufacturers' sector. At the time of this writing, the results of the environmental impact assessment are not yet available. This situation will be remedied at the QUALICER Congress, when the draft Environmental Product Declarations will be available, therefore enabling the most noteworthy results, as well as the conclusions of the results analysis, to be presented.

The performance of this work will provide a sector study of life cycle assessment and environmental product declarations, for each product included in the scope, in addition to the carbon footprints of frits, glazes in dry form, milled glazes, micronised glazes, ceramic colours, and inks. A further major milestone is the obtainment of a specific computer tool to enable the sector, expeditiously, to semi-quantitatively assess possible technological alternatives from an environmental standpoint.

4. ACKNOWLEDGEMENTS

The study has enjoyed the support of the Valencia Regional Department of Industry, under the programme for sector associations INENTI/2023/28.

The authors thank the frit, glaze, ceramic colour, and ink manufacturing companies for their collaboration and for providing all the necessary environmental information for the performance of these sector studies.

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