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El contexto actual del mercado CE. El caso de la pizarra en Galicia. Grado de aplicación de los fabricantes.

The current context of CE marking. The case of slate in Galicia. Degree of implementation by manufacturers.

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Resumen— El mercado CE reconoce el cumplimiento de los requisitos legales y técnicos en materia de seguridad general para cualquier producto dentro de la Unión Europea, permitiendo su libre circulación en todo el territorio gracias al Reglamento UE nº 305/2011 de Productos de Construcción. Uno de los productos de la construcción regulados por el RPC es la pizarra. El fabricante es el responsable de completar una serie de procedimientos y documentarlos para poder entregar a los receptores el marcado CE preceptivo, así como la documentación que permitirá la libre circulación del producto. Con esta ponencia se pretende conocer el grado de aplicación del procedimiento del marcado CE en los productores de pizarra de Galicia. Para se ha realizado una encuesta a los productores de pizarra en la que se desglosan las obligaciones de los fabricantes. Las conclusiones alcanzadas desvelan resultados inesperados que impiden la libre circulación de la pizarra en el territorio de la UE.

Palabras clave— marcado CE; pizarra; libre mercado; Ejecución de la obra.

Abstract— The CE marking recognises compliance with the legal and technical requirements in terms of general safety for any product within the European Union, allowing its free circulation throughout the territory thanks to EU Regulation No 305/2011 on Construction Products. One of the construction products regulated by the CPR is slate. The manufacturer is responsible for completing a series of procedures and documenting them in order to be able to deliver to the recipients the mandatory CE marking, as well as the documentation that will allow the free circulation of the product. The aim of this presentation is to find out the degree of application of the CE marking procedure in slate producers in Galicia. In order to do so, a survey was carried out among slate producers in which the obligations of the manufacturers were broken down. The conclusions reached reveal unexpected results that impede the free circulation of slate in the EU territory.

Index Terms— CE Mark; Slate; Free market; Execution.

I. INTRODUCTION

THE implementation of the CE marking system for construction products in the EU - and not only for construction products, but for a multitude of products - stems

from the fulfilment of one of the fundamental objectives of the EU: the free movement of people, goods and capital within its territory.

This system consequently brought about the implementation of a free market in such a way that any manufacturer of construction products (not necessarily from the EU) could

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market its products throughout the territory, if they met certain requirements. These requirements were to ensure that construction works were designed and executed in a way that did not compromise the safety of people, domestic animals, and property, or damage the environment and, furthermore, these requirements were to be common throughout the EU in order to facilitate and not hinder trade within the EU.

This implied, in addition to the elimination of borders between the Member States, achieving consensus on certain technical characteristics for construction products that would guarantee compliance with the essential requirements that the works had to fulfil during an economically reasonable life span. To achieve this, after defining what these essential requirements would be, the harmonisation of the technical provisions throughout Europe was undertaken by creating "harmonised standards", where a procedure was established to certify the conformity of the products manufactured with the standard through an evaluation system, as well as a market surveillance structure, all of which constitutes the CE marking system, as shown in Fig. 1:



Fig. 1. Functioning of the CE marking system for construction products. Source: own elaboration.

The basic requirements are not determined by the EU, but the EU limits itself to creating harmonised conditions for the marketing of products, leaving it up to the manufacturers to comply with the harmonised standard.

It is the manufacturers of construction products who must comply with the procedure determined in the corresponding harmonised standard depending on the construction product they manufacture, after which their product may bear the CE marking and may circulate freely in the European market with the advantages that this entails.

The procedure to be applied is regulated by the EU Construction Products Regulation No 305/2011 (Parlamento Europeo, 2011) (hereinafter CPR) and involves the following steps as shown in Fig. 2 below:



Fig. 2. Summary of manufacturers' responsibilities. Source: own elaboration.

At the end of the process, the necessary documentation shall be drawn up, in which the Declaration of Performance, regulated by Article 4, paragraph 1 of the CPR (Parlamento Europeo, 2011), is the most important. In this document, the manufacturer shall indicate, under his responsibility, which

essential characteristics his product complies with based on the corresponding harmonised standard regulating the product. It is the most important document because it contains all the information about the manufacturer, the product, and its performance.

The CE marking may be affixed to the product provided it is accompanied by the Declaration of Performance.

As the documentation resulting from the whole process, the manufacturer will provide the buyer with the required Declaration of Performance, the CE marking on the product and the instructions and information on safety and information on registration, evaluation, authorisation, and restriction of chemicals, the latter two if applicable. All documentation is summarised in Fig. 3:



Fig. 3. Documentation to be handed over to the customer. Source: "CE marking of construction products step by step" published by the European Commission, p. 13).

All this documentation is the only one necessary and compulsory for products to be able to circulate freely throughout the EU market and must accompany the product from the time it leaves the factory until the final delivery of the work, at which point it will be in the hands of the end user of the construction.

Today there are approximately 600 construction products regulated by harmonised standards, and one of the most representative in Galicia is slate, which is also one of the world's largest exporters.

II. SLATE IN GALICIA

There are currently eight harmonised standards that regulate slate as a construction product under the CPR. Therefore, when a manufacturer produces any of the formats regulated under these standards, he is obliged to place the CE marking on the product when it leaves the factory.

Both granite and slate marketed in Spain come mainly from Galicia, since Galicia is where the largest deposits of these rocks are found. Although there are numerous slate outcrops in the peninsula, only some very restricted levels of the Lower Palaeozoic are exploited, specifically in the east of Galicia, León, and in isolated points of the Central System: Bernardos in Segovia and Villar del Rey in Extremadura.

Among all the existing deposits, the geological structure known as the Truchas Synclorium, located between León and Orense, stands out for its quantity and quality. Also the Dominio del Caurel, between Lugo and León. There are similar formations in the north of La Coruña (Monte Rande), in Los

Oscos (Lugo-Asturias) and in Asturias-León the Alto Sil, as indicated by López Jimeno (López Jimeno et al., 1995).

According to Enciclonet (2021), a synclinorium (From sinclinal) is defined as: "sust. m. 1. A set of successive synclinal and anticlinal folds that define a large-scale synclinal structure. [Tectonic] Association of a whole set of folds, both anticlinal and synclinal, which generates a large-scale synclinal morphology consequently".

According to Moscoso Camer (2006), Galicia is home to the largest Spanish slate deposits, occupying a third of the region's surface area, and Orense concentrates the largest and best extractive areas at present (Cárdenes Van der Eynde, 2008).

Such is the scale of slate production in the area that Spanish production, according to data from the Slate Cluster (Galician Slate Producers' Association, 2020), estimated at more than 450,000 tonnes in 2018, represents 85% of the world's total slate production, of which 60% corresponds to natural slate from Galicia. Due to the pandemic ravaging the world, the most recent official data are prior to 2020.

Lindoso Tato (2013), argues that 90% of world exports of slate for roofing and cladding come from north-west Spain, where two companies, Cupa Pizarras and Pizarras Samaca, are the leading producers.

According to data from the Slate Cluster (2020), exports of the Galician sector abroad in tonnes in 2019 are shown in the graph in Fig. 4:

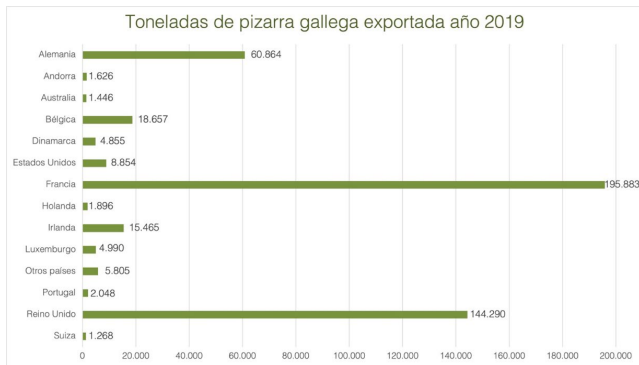


Fig. 4. Exports of Galician slate in 2019. Source: (Galician Slate Producers' Association, 2020).

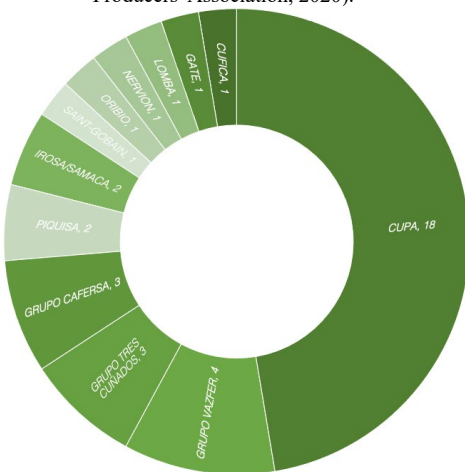


Fig. 5. Groupings of slate companies and number of companies in each (Source: Clúster de la Pizarra de Galicia [6]).

The uniqueness of the area favours the association of manufacturers in the so-called Clúster de la pizarra de Galicia (Galician Slate Producers' Association, 2020), an association with almost 40 associated companies. Most of the companies are grouped into six large business groups that bring together small companies that remain with their own name and activity, as shown in Fig. 5.

Based on the above, the main objective of the presentation is to know the degree of application of the CE marking procedure in slate producers in Galicia.

III. EXPERIMENTAL PROCEDURE

To find out the degree of application of the CE marking in the manufacturers' sector in Galicia, the methodology applied consisted of carrying out a survey in which the manufacturers' obligations were broken down.

First, the problem was defined as a quantitative approach, as this is the most appropriate for an in-depth study of a phenomenon. Hernández Sampieri (2014) states that the quantitative approach is sequential and evidential, starting from an idea that is delimited by means of research questions that form a theoretical framework. From the questions, hypotheses, and a plan for testing them are established, analysing the results obtained by statistical methods to draw conclusions.

Also, according to Sampieri, this is a non-experimental problem, since it consists of observing the phenomena resulting from the imposition of a procedure - the CE marking - on manufacturers, and then analysing them and drawing conclusions.

And finally, it is a "social research", as it attempts to reflect rigorously on the implications of a compulsory procedure, by collecting data to measure the acceptance and functioning of the CE marking on slate by the sector concerned (Quivy, 1992).

The choice of slate as the object of study is the result of the analysis of the main manufacturers of construction products in Galicia, concluding that the variety and dispersion of these was such that a product with a "centralised" manufacture was sought. The geology of Galicia is composed almost exclusively of granite and slate, the other typologies being derived from these. Slate is the older of the two rocks and has an unequalled worldwide production, so the characteristics of both its market and its use in construction favoured the centralisation of the problem (Moscoso Camer, 2006).

Therefore, the best system to address the approach is to carry out a survey of the manufacturers of the Galician Association of Slate Producers, for which a form was designed, as indicated by Cea D'Ancona (2005), who states that "the quality of the data extracted from it depends on its correct design".

The final form consists of 41 questions organised into 5 sections, which were transferred to the Microsoft 365 Forms software application, which facilitates the reading and completion of the resulting form, and which can be sent via a link to the recipients. This application also allows the user to set an opening and closing date for the form response period and, once the period is over, the results can be exported to an Excel spreadsheet for easy analysis.

Once the form was created in Forms, the link to the form was

sent by mail on 20 April 2021 to the 38 companies of the Association located in Galicia and remained open until 31 May.

Of the 38 companies belonging to the Galician Association of Slaters surveyed, 35 responded. Considering the population of 38, the sample obtained is those who responded, 35.

When the size of the population is known, as in this case, the mathematical expression that allows the sample size to be calculated with a certain degree of confidence is as follows:

$$n = \frac{z^2 \cdot p \cdot q \cdot N}{e^2 \cdot (N - 1) + z^2 \cdot p \cdot q} \quad (1)$$

Where:

- n: sample size sought.
- N: known size of the population, i.e. the total number in each group surveyed.
- Z: standardised value of the reliability percentage for the sample. For a confidence level of 95%, "Z" takes the value 1.96.
- e: maximum permissible error for the sample mean. Sampling errors are due to the randomness of the sample. As a reference, errors in the region of 5% are accepted, although higher errors are also allowed.
- p: percentage of times a phenomenon is assumed to occur in the population. The value p= 0.5 is usually taken.
- q: percentage of times it is assumed that a phenomenon does not occur in the population (q=1-p). The value q=p=0.5 is usually taken, which corresponds to the worst-case scenario.

The usual level in research practice is 95.5%, although values around this value are acceptable (Cea D'Ancona, 2006). The larger the sample size, the higher the precision obtained.

Applying this formula, the resulting error is as shown in Fig. 6:

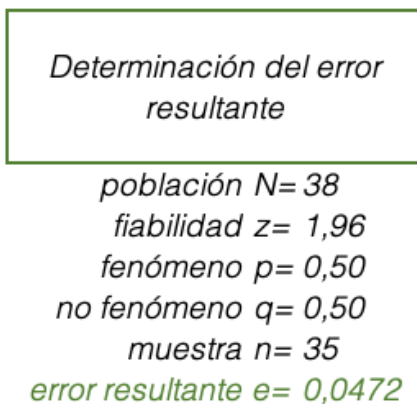


Fig. 6. Reliability of the survey (Source: Own elaboration).

IV. RESULTS

Analysing the results obtained, of the 35 companies that responded, 2 are distributors. Therefore, 33 are manufacturers. Of the 33 manufacturers, 100% manufacture roofing slate, regulated by UNE-EN 12326-1:2004. The statements of the most revealing questions are listed below:

QUESTION N° 30: What documentation is delivered to the

customer together with the product?

- QUESTION N° 31: Before the implementation of the CE marking, did you, as a manufacturer and/or supplier, detect any problems in marketing the slate in the countries of the European Union?
- QUESTION N° 32: Has the implementation of the CE marking solved these problems?
- QUESTION N° 33: Which EU countries require more than CE marking?
- QUESTION NO. 34: If you compare the situation before and after the implementation of the CE marking system, how would you consider the expected benefits derived in relation to the costs necessary for its implementation?
- QUESTION NO. 37: Please rate the following actions from 1 to 5:
- 37a: Information from the Public Administration to carry out CE marking.
- 37b: Implementing the process is complicated and expensive.
- 37c: Operation of the CE marking process.

Fig. 7 shows the results of the following questions.

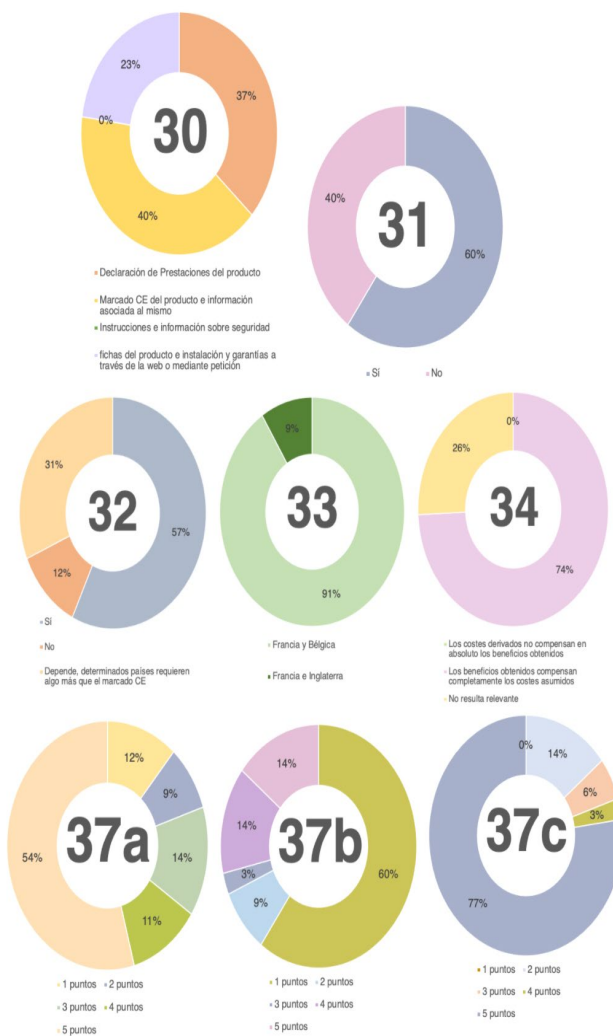


Fig. 7. Results obtained for the related questions (Source: Own elaboration).

V. CONCLUSIONS

In general, manufacturers are satisfied with the CE marking system, with 74% indicating that the benefits obtained far outweigh the costs of implementing the system.

The documentation provided to the customer is mostly the CE marking of the product with the associated product information.

The most important conclusion is that before the implementation of the CE marking, manufacturers had problems in marketing their products in EU countries, but these problems have been solved thanks to the system.

However, 31% of companies indicate that certain EU countries require more documentation in addition to the CE marking.

The countries, according to 91% of respondents, are France and Belgium and 9% indicate that England also requires other documentation, thus revealing the non-compliance of some EU countries with the CE marking system and thus defeating the purpose of the system itself.

This defeats the purpose of the CE marking system, which is, paradoxically, the free movement of construction products throughout the EU.

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