

## Visual grading in wood flooring sector in Greece

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### ABSTRACT

*The aim of this work was to investigate the classification systems used by wood flooring enterprises in Greece, using a questionnaire. After 56 answers, the results showed that there are deviations in grades and in the criteria that are currently used for the classification of wood flooring. There were reported very different grading systems, adopting 3 to more than 6 grading categories. The majority (40 %) was adopting 5 grading categories, but there were also enterprises using a few main (3 or 4) and also a number of subcategories. Deviations were also observed among the producers who claim that apply the same criteria and different trade names may be used for the same or similar qualities. All the above cause difficulties in the product exchanges. Although it seems to be difficult, it is imperative need either the acceptance of common national standards or the conformation with the European standards. Information and common education of the evaluators is also a prerequisite, in order to achieve this goal.*

### INTRODUCTION

The application of classification systems used by solid wood conversing enterprises is based to a great extent on visual characteristics and therefore it depends on subjective and personal factors. These factors may include the clearness of the imposed criteria, the education and the experience of the evaluators and the needs of the market. This causes difficulties in distribution and promotion of the final products. The aim of this paper therefore, was to investigate the classification systems used in one of the solid wood conversing sectors, as it is wood flooring enterprises. The work took place in Greece during 2006, a year before the compulsory application of the EN 14342 standard (Wood flooring - Characteristics, evaluation of conformity and marking), in order to discuss about the problems that emerge from the lack of common standards for a specific product. A second target was to point out problems that occur applying subjective and personal criteria, which in case of wood may be too many (e.g. uniformity in colour, position and size of knots, slope of grain, appearance of silver grain, etc.).

In Greece so far, there are no national standards for the classification of wood flooring, although during the past some producers started themselves to apply a type of quality control. This attempt was made in early 60's and classified the wood flooring into three classes, namely A', A-B' and B-B' (Kartasis, 1978). A second (semi-official) attempt was made recently, bearing in mind some CEN standards, which also classified the wood flooring into three classes (YPEXODE, 2004). However, it became clear very soon that this temporary solution was not applicable, since many producers and merchants classified their products in to four or more grading categories; it is interesting to mention that nowadays there are enterprises that classified their products up to eight categories.

Relevant examples exist also in other European countries, where it is very common to use three grading categories for solid wood flooring, but there maybe found in the market up to six grading categories in the same country. Some European countries were equipped with National Standards many years ago and it is also common for some countries' market to "borrow" Standards from a different country, depending on (common) language or whether there was a large amount of trade in the specific product.

### MATERIALS AND METHODS

The investigation of the classification systems took place during the period 2006 - 2007, using a questionnaire which was distributed nationwide by personal interviews and by postal and electronic means. A total of 56 questionnaires were collected, a significant high number for the Greek market.

The most effective way of data collection was found to be the personal interviews (85%). The recorded data refer to: the property of the asked people, the size and the production of the enterprises and the number of the quality classes used by them. Finally, a crucial question which included photographs of five different grades of oak wood flooring, was incorporated in the questionnaire, in order to estimate the effectiveness of the criteria that are currently used.

### DISCUSSION

The property of the asked people is depicted in Figure 1. From this, it can be seen that the majority of these were merchants (83.9%), followed by importers (69.6%) whereas a significant share were producers (44.6%). At this point, it has to be mentioned that the asked people occupied more than one property and therefore their opinion about the product and the current situation in the Greek wood flooring market was more spherical.

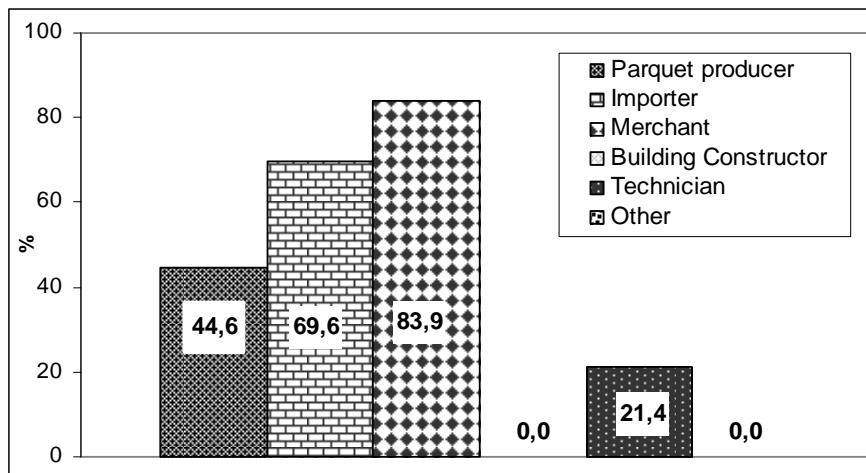


Figure 1. Asked people's property

Figure 2 shows, that the one third of the asked enterprises can be characterized as small ones (1 to 5 employees). This type of enterprise is a family type enterprise and is very common in Greece. It is interesting to mention that the small size is the main characteristic of the Greek wood industry since 69% these employ less than 5 people (Kakaras, 1999). The medium enterprises (5 to 50 employees) were found to be more uniformly distributed. It is quite impressive that the percentage of the big enterprises (more than 50 employees) is very low. However, the number of employees of the enterprises did not seem to affect their annual production, which shows a uniform distribution as Figure 3 reveals. This is due to the fact that the wood flooring is not the only sector that the big enterprises are being involved.

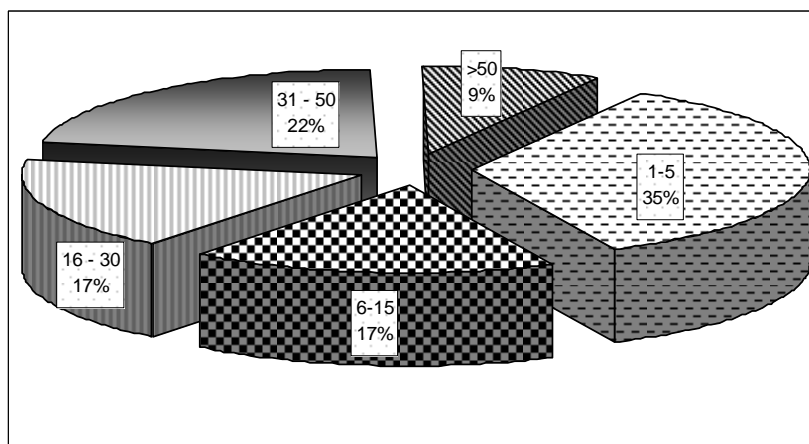


Figure 2. Number of employees in asked enterprises

As far as the raw material is concerned, it was found that the most popular wood species used by Greek enterprises are oak and iroko. A total of thirteen wood species of the temperate zone were recorded (oak, pine, cypress, pitch-pine, black locust, beech, walnut, chestnut, cherry, eucalyptus, ash, cedar, larch) and twenty four tropical woods.

Most popular length of the wood flooring was found to be the 25 – 30 cm, whereas figures of 2 m and even 6.5 m (in softwoods) were also mentioned. Width varied from 3.5 to 20 cm. A significant number of enterprises (82.2%) produce wood flooring 22 mm in thickness, although figures of 18 mm (26.7%) were also observed. This contradicts earlier findings where the common thickness was 18 and 20 mm (Kartasis, 1978).

As depicted in Figure 4, there are significant deviations in quality classes that are currently used for the classification of wood flooring. There were reported different grading systems, adopting 3 to more than 6 classes. The majority (36.4%) was adopting 5 classes, but there were also enterprises using 3 (3.6%) or more than 6 classes (7.3%). From the data processing, it is also revealed that serious deviations exist even among the enterprises which apply the same number of quality classes; in these cases the significance of each criterion used varies, since the criteria are numerous (silver grain existence, sap existence in lower face, sap existence in upper face, knots in lower face, knots in upper face, pin knots in upper face, flat sawn, quarter sawn, slope of grain, diagonal grain, uniformity in colour).

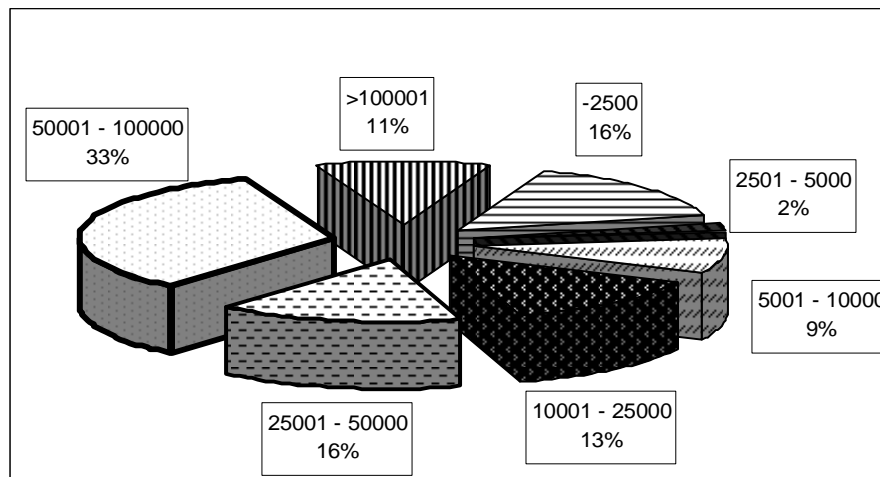


Figure 3. Annual production (in m<sup>2</sup>)

It is worth to mention, that only one case was recorded where the enterprises which apply the same number of quality classes, they used the same criteria.

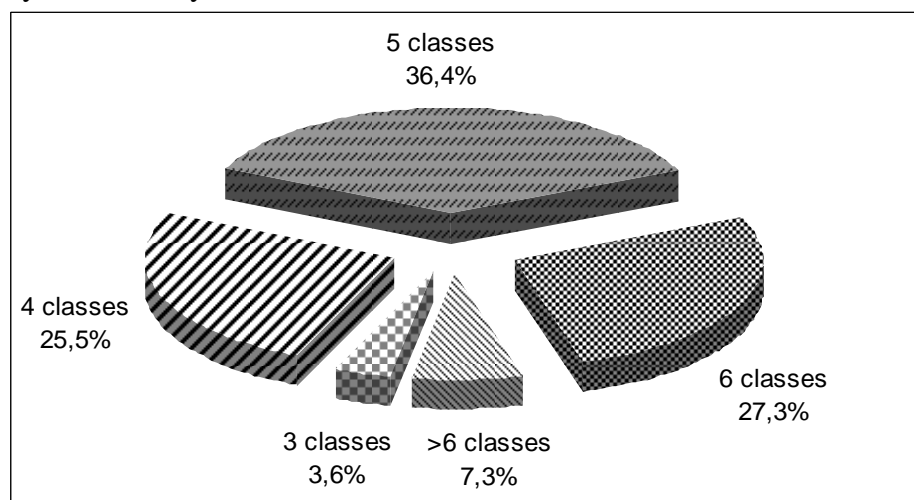


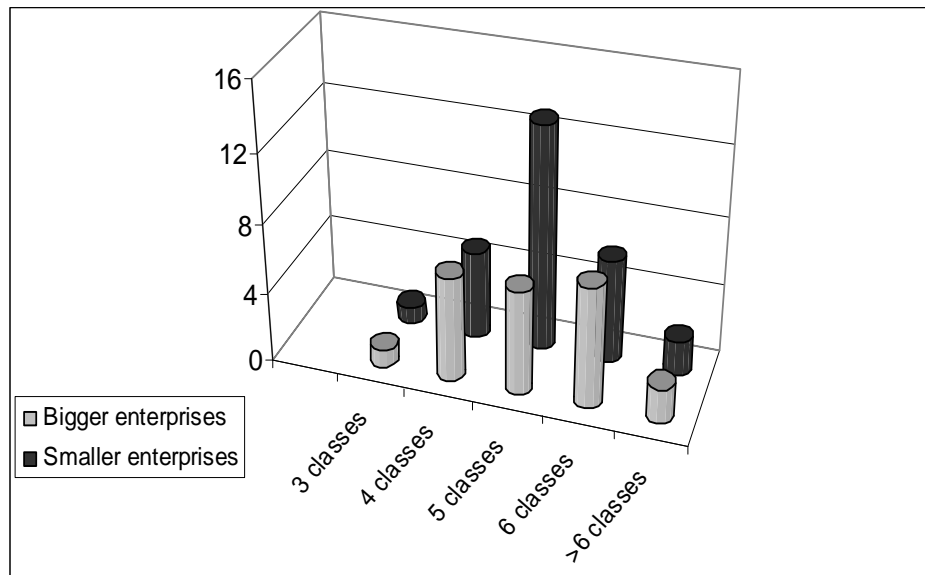
Figure 4. Number of quality classes used by the enterprises

All the enterprises that classified their products in to higher classes applied mainly desirable and aesthetic criteria; this is more noticeable when 5 or more classes were adopted. On the other hand, when the products were classified in to lower classes, non desirable criteria were applied (knots, silver grain, sap existence). In order to estimate the effectiveness of the criteria that are currently applied, a crucial question which included photographs of five different grades of oak wood flooring, was incorporated in the questionnaire. The enterprises asked to order them in classes according to their own criteria and the data analysis showed that:

- ❖ The adopted criteria were not applied completely by the enterprises. This was obvious since the collected answers were not given by the director of the quality control sector. It is expected therefore lower deviations in real life than those recorded by this research, but we have to point out that personal decisions may affect the result since a lot of criteria could not be measured exactly.
- ❖ Even when the adopted criteria among the enterprises were similar, they were not applied with the same magnitude.
- ❖ It was found that some enterprises which claim to apply 3 or 4 classes they also apply a number of subcategories for the classification. This causes difficulties in the market and increases the number of classes to 5 or 6 and therefore leads to non comparable results.
- ❖ It is impressive that for the classification of the five different grades of oak wood flooring, 35 different classification answers were recorded by the 56 asked enterprises.
- ❖ Another problem which leads to non comparable results seems to be the name of the classes, even if the applied criteria are the same. The name of the classes is usually given by some physical characteristics of wood (e.g. "Straight grain", "Sap") or imposed by the needs of the market (e.g. "Royal", "Rustic"). However, there were cases where a simple trade name is used ("AA", "AB") or a combination of the above ("Extra -Silver grain").
- ❖ It was found that the driving force for the classification systems that are currently in use, is the needs of the market and therefore the promotion of the sales. This is true for both big and small enterprises, as depicted in Figure 5, since there was found no deviations in the number of classes used.
- ❖ In some cases where criteria -although not the same - were similar, very similar results were given. It was noticed mainly where 5 or 6 classes were used. The opposite was also noticed: in some cases with very similar criteria, very different results were reported. So, we believe that in many cases there is very varying approach on the same feature and a need for common education of the evaluators is present, in order to minimize subjective decisions.

Enterprises stated that they are forced to these different classification systems through market conditions and their experience, but to a percentage of 22% they confess that they use them for sales promotion purposes. This seems to be true for all enterprises: according to their production we named them "Big enterprises" (> 50.000 m<sup>2</sup>/year) and "Small enterprises" (<50.000 m<sup>2</sup>/year). With the exception of enterprises applying 5 classes (Fig. 5), where "small" enterprises are much more, in all other cases there are no serious differentiations among small and big enterprises.

Finally, it is generally admitted to a percentage of 70% that the different classification systems cause difficulties in distribution and promotion of the final products. Although it seems to be difficult, it is imperative need either the acceptance of common national standards or the soonest conformation with the European standards. Information and common education of the evaluators is also a prerequisite, in order to achieve this goal.



**Figure 5. Number of classes used by “small” and “big” enterprises (Production/consumption less or more than 50.000 m<sup>2</sup>/year respectively).**

## CONCLUSIONS

Investigating the classification systems used by wood flooring enterprises in Greece, using a questionnaire, the results showed that there are deviations in grades and in the criteria that are currently used for the classification of wood flooring. There were reported very different grading systems, adopting 3 to more than 6 grading categories. The majority (40 %) was adopting 5 grading categories, but there were also enterprises using a few main (3 or 4) and also a number of subcategories. Deviations were also observed among the producers who claim that apply the same criteria and different trade names may be used for the same or similar qualities. All the above mentioned causes difficulties in the product exchanges. Although it seems to be difficult, it is imperative need either the acceptance of common national standards or the conformation with the European standards. Information and common education of the evaluators is also a prerequisite, in order to achieve this goal.

## REFERENCES

- CEN. 2005. EN 14342: Wood flooring - Characteristics, evaluation of conformity and marking. CEN, May 2005, p. 24.
- Kartasis I. 1978. Xylina Dapeda (Parketa). Greek Min. of Agric., Forest Serv., Individ. Edit. No. 41, 1978, p. 83.
- YPEXODE. 2004. Temporary National Technical Standards: 01 Wooden nailed floors. Greek Min. for the Envir., Physical planning and Public Works, Inst. of Construction Economy, Athens, 2004, p. 41.
- Kakaras I. 1999. Furniture and wood construction industries in Larisa area. Existing situation and perspectives. Proceedings of the International Conference on Wood Science, London, UK. Pp: 218-224.