

Coatings, the technical standards in the wood and furniture sector

Franco Bulian

Starting from the '80 the companies of the wood and furniture sector have realized that it was essential to establish some reference standards in order both to measure the performance of coated surfaces and to share the minimum requirements for such products. This goal was not easy to reach and even after some decades the activities cannot be considered completed.

In some cases we can actually observe a well structured and shared standardization system, while in others some national resistances are still present. Indeed, in few cases, such obstacles to the definition of common references refer also to some specific productive categories which consider standards as a possible obstacle to their autonomy and creativity.

After this short introduction, this article is intended to briefly summarize the current standard situation on coating materials. Obviously, we will primarily analyse the European standards but we will also consider the Italian situation which, as it will be highlighted below, appears very rich on this subject. Three specific sectors will be here considered, namely: wood for outdoor use, furniture surfaces and wood floors.

Coatings for outdoor wood

Wood coatings for exterior wood (windows, furniture, etc.) are specifically treated by the Working Group 2 of the Technical Committee 139 of the CEN.

The work is going on for many years with the participation of experts from many European countries having already produced several standards representing an important reference point for all this sector. In the following table the documents already published are listed:

Property	Standard
Selection and Classification	EN 927-1
Performance specifications	EN 927-2
Natural weathering	EN 927-3
Liquid water permeability	EN 927-5
Artificial weathering	EN 927-6
Knot staining	CEN/TS 16359
Tannin Staining	CEN/TS 16498
Micro-foam in coating films	CEN/TS 16358
Film extensibility by indentation	CEN/TS 16360
Blocking resistance	CEN/TS 16399
End grain sealing	CEN/TS 16369
Impact Resistance	CEN/TS 16700

What is important to especially emphasize is the existence of Part 2 of EN 927, which defines the minimum requirements that must be fulfilled by a coating material intended for wood for outdoor use, to be declared “compliant” with the European Standard.

This is in reality an area of voluntary rules but, very often, the “compliance” has a important and decisive “weight” in the market both for the operator choices but also in any case of problems or claims.

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Despite the presence of this standard which precisely establishes the minimum requirements shared in whole Europe, in some Countries there are still some national certification schemes that, very often, are very well structured and consolidated in those territories. The work of CEN 139 is useful, at least, to unify all test methods used in Europe in order to measure the coating properties with the same methods and then allowing the coating producers to easily compare these values with the limits defined by the various national certification schemes mentioned above.

Furniture surfaces

In this case the activity, at European level, is carried out by another Working Group, the WG 7 of the Technical Committee TC 207 (furniture). However this group deals with the furniture surfaces without distinguishing the type of material (laminates, plastics, paints, etc.) used to produce them.

The work already done, also in this case in many years of activity, is represented by a series of standardised methods intended to be used for the characterization of the furniture surfaces in terms of resistance to the stresses arising from their daily use (scratches, impacts, etc.). Moreover it was prepared a specific document, the CEN/TS 16209, defining a classification system for furniture surfaces ranking them in five classes from A, the most durable, to E, the less performing surface.

Nevertheless, this standard does not define any minimum requirement.

The lack of a European document defining the minimum acceptable values for furniture surfaces is the consequence of the difficulty to establish reliable values, given the variability of materials mentioned above, and also considering the strong opposition of some countries having already a well-established and consolidated tradition in such field. In Italy the need to have a standard especially covering the coated surfaces of domestic furniture was particularly sensitive in the last years.

One of the main factors driving the attention towards such exigency was the relatively recent market changes having brought many companies to adopt “environmental friendly” coating systems (e.g. water based coatings). The lack of references to base their choices represented a particularly serious problem for many companies. For this reason the Italian standardization body for the chemical industry UNICHIM started to prepare a specific document that was finally adopted also by UNI as UNI 112016 Paint and Varnishes. Minimum requirements for coated surfaces of domestic furniture.

During the development of the standard, we firstly proceeded by splitting the domestic environments into three categories: kitchen, bathroom, living-rooms/bedrooms. For each environment different requirements for horizontal and vertical surfaces have been then defined assuming that the first are evidently much more stressed than the latter. The test considered are those deriving from the work of WG7 of CEN/TC 207 but also some Italian methods were added, e.g. the dirt retention test and the resistance to temperature variations. The following table shows the whole list of methods included in the UNI 11216. The requirement established for each end-use category must be directly checked in the official standard.



Picture 1. Natural exposure according to EN 927-3

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Property	Standard
Scratch resistance	UNI EN 15186 (method B)
Resistance to temperature changes	UNI 9429 (method B)
Resistance to dry heat	UNI EN 12722
Resistance to wet heat	UNI EN 12721
Resistance to cold liquids	UNI EN 12720
Cross-cut	EN ISO 2409
Light fastness	UNI EN 15187
Tendency to retain dirt	UNI 9300
Abrasion resistance	UNI EN 15185



Pictures 2 and 3. Resistance to cold liquids and scratch

Paints for wood floors

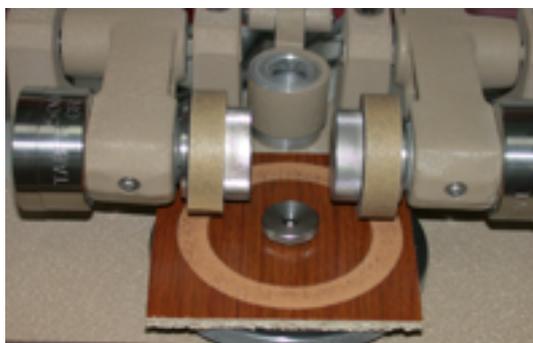
The Italian standardization body UNI, and in particular the working group on wood finishes, has recently published a new standard, the UNI 11622-1 Wood flooring. Surface protection treatments - Part 1: Minimum requirements of coating systems. It is a document that sets out the minimum requirements that a coating system for parquet must have to be used, according to a different degree of flooring attendance (low, medium and high). The tests specified by the standard are listed in the table below.

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Tendency to retain dirt	UNI 9300
Abrasion resistance	UNI EN 15185

It is important to emphasize that the classification concerns the coating system applied on a standard substrate and not the finished wood floor. The purpose of the standard is in fact to provide the coating manufacturers a tool for the development of their products and the users an important reference for their selection. The classification of a coating system can be easily identified by some pictograms specified in the UNI 11622.



Pictures 4 e 5. Resistance to abrasion and to rubbing

It is possible to finally summarize that the present standardization landscape, although can be further improved, already represent an important reference point for the wood industry, substantially covering all operational areas. The efforts made and those still in place by standardization bodies are essential in order to improve the products of this important industrial sector and also to possibly declare what are the precautions to be taken in use in order to avoid disputes, misunderstandings and many other problems of various nature.