

## **Drying quality - an important topic for business and research**

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### **Extended abstract**

In a living tree water is an indispensable and integral part of the organism. Without sufficient water no transport processes would be possible and the metabolism of the tree would come to an end. When a tree is felled and processed the transformation of wood into timber takes place. Starting from this point water is not anymore a desired and needed component of the raw material but rather an obstacle for further processing and utilisation. It causes various types of problems and must be removed from the material. The technical term we normally use for this physical process is "WOOD DRYING". We do not anymore speak about water in wood but rather about wood moisture content.

The technical process drying does not only involve the removal of water, it strongly influences the properties and usability of the timber. Drying needs a lot of energy and time, it is costly and involves high risk, it requires a lot of expertise and practical experience. False drying conditions may lead to serious devaluation or even complete loss of the timber.

In the context of timber drying, the term "Drying Quality" was first introduced by the European Drying Group (EDG) in the 80-ties of the last century. At that time the only available standard relating to the drying process was the standard describing the oven dry test for determination of moisture content. Starting in the 50-ties many scientific publications were produced describing the drying process of wood, predicting drying time and moisture distribution within the material during drying, describing and explaining stress development during the drying, investigating the reasons for deformation and discolouration during drying.

The so-called "EDG Recommendation on Assessment of Drying Quality of Timber", which was published in 1996, was the first approach to provide a written guideline with respect to drying quality to industrial practice. The EDG Recommendation was a combination of text book, standard and manual for practitioners. It was written in a form which was understandable to practitioners, it described all methods needed to assess the various aspects of drying quality and - most important - for the first time ever - formed a framework which allowed practitioners to specify and control drying quality of timber.

In the middle of the 90-ties, CEN took up the task to harmonise the manifold standards in the various countries of the European Union. Common standards were considered important for free trade and exchange of goods between

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European nations. Trade barriers within Europe caused by national standards were reduced and, at the same time, a protective system against import of low quality goods from Non-European countries was built up. Nowadays importers have to accept EN standards.

Within the framework of the activities of the CEN Technical Committee 175 "Round and Sawn Timber" a series of EN standards related to moisture content (EN 13183 Part 1-3), casehardening (ENV 14464), drying quality (EN 14298) and acceptance control (ENV 12169) was developed over a period of approximately 10 years. Timber industry and users of timber now have all the tools necessary to specify and control drying quality in production, further processing, trade and end use.

Even though the system of standards is available now for almost 10 years, diffusion into and application by industrial practice has not sufficiently happened in all European countries. It is quite clear that new standards need a long time until they are accepted by practitioners. But, taking into account how important moisture content and drying quality are for the application of wood in the various fields of end use, the question must be posed, why practitioners have not yet fully implemented the drying quality concept in their daily business.

Reasons for this are manifold: new standards are not sufficiently visible to practitioners, new standards are not fully understood, practitioners hesitate to change their attitude towards specification and quality control, additional requirements might lead to additional cost, customers (buyers) are not aware of the necessity or of the advantages of specifying drying quality for timber and timber products, practitioners do not fully understand how to use the new EN standards, European product standards do not refer to the drying quality standards (revision needed!).

Working Group 2 in COST Action E53 has taken up this topic and dedicated a good deal of its activities to overcome this situation. Besides the "normal" COST activities, comprising in providing a platform for exchanging scientific information in a specific field of interest, three COST E53 task groups were created which have produced tailor made publications for practitioners.

The drying quality task group has taken up the job to review the TRÄTEK publication "Torkat virke" dating back to 1998. This publication was a valuable tool to instruct practitioners on how to specify moisture content and drying quality. The disadvantage of this brochure was that it only existed in Swedish language and that it was not up-to-date anymore because of several new EN standards. "Torkat virke" referred to the EDG Recommendation, but with the existence of the new EN standards the brochure had to be up-dated. Now, at the end of COST Action E53, the 38-page coloured leaflet is available in English language, several other European languages will follow.

A second task group concentrated on distortions which can be observed during drying. Wood scientists, and also the sawn timber producing practitioners, know that most distortions of timber develop during drying and/or while moisture

content changes. But, in most cases, inherent wood properties are the reasons for the distortions. Therefore, distortion are a problem of wood/timber quality and not so much of drying quality. The COST E53 task group produced a leaflet which will help producers and users of sawn timber to better understand the processes, conditions and inherent properties leading to distortions.

Task group number three concentrated on discolourations of sawn timber. Many discolourations occur during drying, some can be avoided if certain protective measures are taken. The discolouration leaflet produced by the task group addresses the most important types of discolourations present in European and tropical sawn timber. It explains how these discolourations develop and how they can be avoided.

COST Action E53 will provide these publications free of cost via its web-page ([www.costE53.net](http://www.costE53.net)). After the end of COST E53 the European Drying Group (EDG) will take over dissemination and up-dating of the brochures. Therefore, the documents will also be available via the EDG web-page ([www.timberdry.net](http://www.timberdry.net)).

With the support of Cost Action E53 the existing information gap with respect to standardisation, assessment and control of drying quality will be closed. The wood sector and - which is considered very important – the buyers (users) of sawn timber will be given the chance to use the information contained in three leaflets to install a more profound quality thinking in the field of wood drying and utilisation of dried sawn timber and derived products.

## References

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