SLOVENSKI STANDARD
SIST-TP CEN/TR 14723:2005

01-marec-2005

Odpornost lesa in lesnih proizvodov - Terenski preskusi in preskusi s pospešenim kondicioniranjem (FACT) zaščitnih sredstvev za les brez stika z zemljo

Durability of wood and wood-based products - Field and accelerated conditioning tests (FACT) for wood preservative out of ground contact

Dauerhauftigkeit von Holz und Holzwerkstoffen - Freiland- und beschleunigte Alterungsprüfverfahren (FACT)

Durabilité du bois et des matériaux dérivés du bois - Essais de champ et de conditionnement accéléré (FACT) pour les produits de préservation du bois hors contact du sol

Ta slovenski standard je istoveten z: **CEN/TR 14723:2003**

ICS:

71.100.50 Kemikalije za zaščito lesa Wood-protecting chemicals

SIST-TP CEN/TR 14723:2005 **en**

TECHNICAL REPORT

RAPPORT TECHNIQUE

TECHNISCHER BERICHT

CEN/TR 14723

December 2003

ICS 71.100.50

English version

Durability of wood and wood-based products - Field and accelerated conditioning tests (FACT) for wood preservative out of ground contact

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Dauerhauftigkeit von Holz und Holzwerkstoffen – Freiland- und beschleunigte Alterungsprüfverfahren (FACT)

This Technical Report was approved by CEN on 26 November 2003. It has been drawn up by the Technical Committee CEN/TC 38.

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Ref. No. CEN/TR 14723:2003 E

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Foreword

This document (CEN/TR 14723:2003) has been prepared by Technical Committee CEN/TC 38 “Durability of wood and wood-based products”, the secretariat of which is held by AFNOR.

This status of this document as Technical Report has been chosen because its content is the result of the co-normative research as field tests for wood preservatives out of ground contact in conjunction with methods for preconditioning test specimens prior to test.

This co-normative research has been undertaken in the framework of the SMT Project: F.A.C.T SMT4 CT96 2135. (Co-ordinators: Dr D.J. DICKINSON and Dr S. MOLNAR from Imperial College of Science, Technology and Medicine (London)).

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this Technical Report : Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This Technical Report presents a summary of the research of the S.M.T. Project: F.A.C.T, SMT4 CT96 2135. As such it details the supporting information for the proposals for a new conditioning standard to replace EN 73 and EN 84 and for modification and validation of ENV 12037. The full report is presented and referenced to Technical annexes, which are available on request.

The FACT project involved the study of the fate of chosen wood preservatives in field and laboratory tests and the affect on biological performance. The work consisted of four core tasks and associated sub-tasks designed to provide the scientific background to the proposals made.

— **Task 1**

This consisted of a study of artificial weathering techniques for the conditioning of treated test blocks prior to biological test. It was originally hoped that it might be possible to relate different weathering cycles to the different climatic conditions found within Europe. However this did not prove possible but it is possible to recommend a single weathering cycle to replace the use of EN 73 and EN 84. A draft experimental standard has been prepared based on the findings of this work.

All the supporting data and associated studies are summarised in this Technical report in clauses 5 and 6.

— **Task 2**

This task consisted of an extensive field test based on ENV 12037 and associated sub-tasks. The method proved very robust but significant modifications are recommended and the ENV is to be redrafted in the light of results contained in this report. This field test should be considered as 'simulated service trial' rather than an accelerated field test; a concept that needs careful consideration within the EN 599 framework.

Sub-tasks 2.3 and 2.4 examined the suitability of the method for composites and the testing of naturally durable timbers. At this stage it is too early to make recommendation for their inclusion in the standard but the results look promising and the method will probably be modified at a later revision.

— **Tasks 3 and 4**

These tasks examined the role of bio-conditioning of test samples in 'use class' 3 and 4. The results are presented in clauses 8 and 9 and clearly indicate the importance of this subject. It is recommended that urgent attention is given to taking this work further particularly for the testing of organic based preservatives. Although not yet ready for standardisation, the results presented here will prove invaluable to industry in designing development programmes for the new generation of organic based preservatives.

In summary:

— a new experimental standard will be produced to replace EN 73 and EN 84 for the physical conditioning of test blocks;

— ENV 12037 will be modified to take into account the extensive findings of the project;

— the use of ENV 12037 for natural durability and composite testing will be considered when more results are available;

— further work on biological conditions is urgently recommended.

2 Acronyms

a.i	Active ingredient (biocide)
EUC	European Use Class
HDO	N-Cyclohexyldiazeniumdioxid
UC	use class
ICP	induction coupled plasma atomic emission spectroscopy
m.c or MC	moisture content
m/*m*	mass/mass
nr of reps	number of replicates
OSB	oriented strand board
QUV	UV artificial weathering machine manufactured by Q-panel Co. Cleveland, Ohio, USA
r.h	relative humidity
SD	standard deviation
TM	trademark
TBTO/TnBTO	tri n-butyltin oxide
UVS-Cabinet	cabinet with UV-light and spray option for artificial weathering of treated wood
WHC	water holding capacity
WMC	wood moisture content in %

3 Description of the project, background and objectives

CEN TC38 WG25 (ex WG 5) has clearly identified important gaps in the test methods necessary for testing wood preservatives. There is an urgent need for new wood preservatives, particularly in the above ground, exposed situation, (Use Class 3). No suitable field test exists for this use class for unpainted timber. Also current pre-conditioning systems are inadequate and in some cases are not relevant to certain use classes or industry's needs. There exists therefore, a need to establish a suitable field test and a single progressive, preconditioning system suitable for each of the use classes in which construction timbers are exposed. The development of new, environmentally safe wood preservatives is urgently needed as the pressure on the older systems increases and the use of durable, tropical timbers become less acceptable.

In summary the objectives consist of:

a) to identify and quantify the role of leaching, light, hydrolysis and non-decay, biological factors in the long term performance of wood preservatives. These factors are to be related directly to the specific European Use Classes i.e.:

   — EUC 1 (Dry timber in building, subjected to insect attack);

   — EUC 2 (Timber in building subjected to occasional wetting and at risk from insects and brown rot fungi);