ETICS & HARMONIZATION

The challenges

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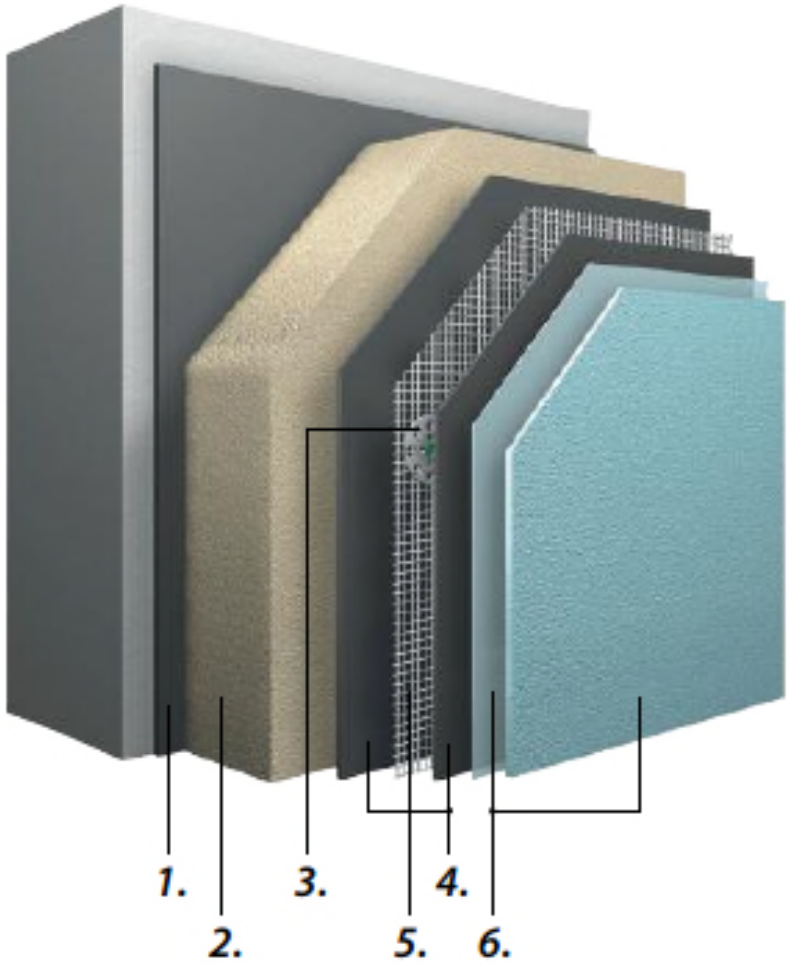
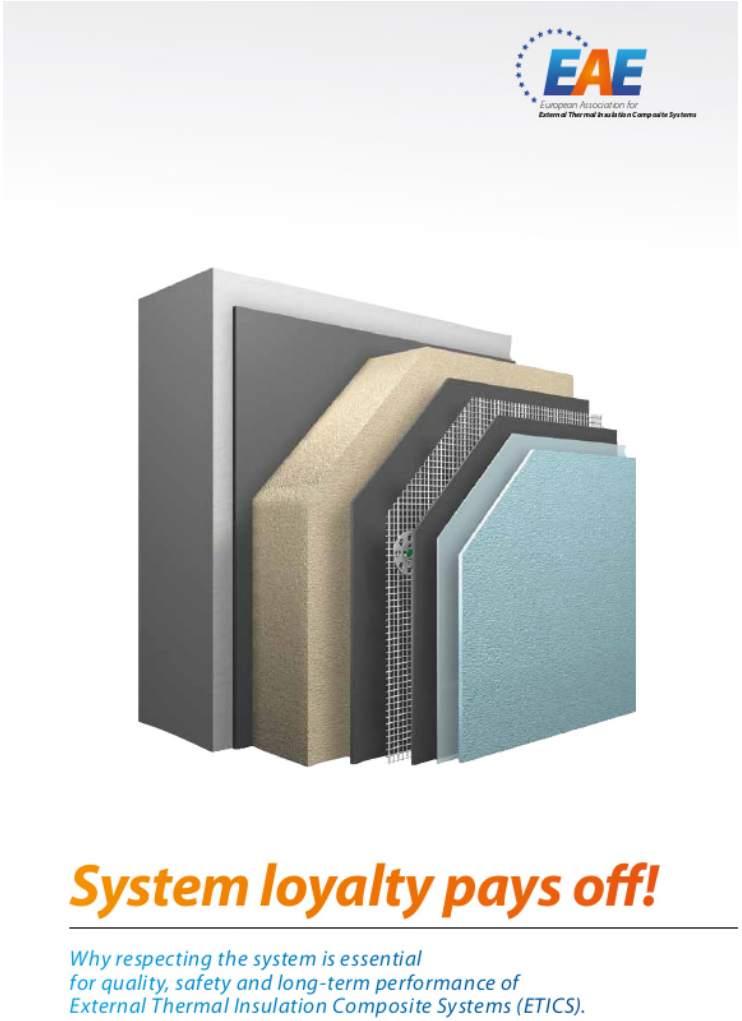


Components of an ETICS

1. Adhesive
2. Thermal insulation material
3. Anchors
4. Base coat
5. Reinforcement, glass fibre or metal mesh
6. Finishing layer: finishing coat with a key coat (optional) and/or a decorative coat (optional)
7. Accessories, e.g. fabricated corner beads, connection and edge profiles, expansion joint profiles, base profiles, etc.

Quality and durability of ETICS depend on the careful choice of system components, done and assessed by system holders.



System loyalty is essential

“Selection of components and consideration of their interaction is essential for long-term function and durability”

Georg Pommer, testing, inspection and certification body of City of Vienna/Austria

“This approach helps to avoid problems caused by building physics and to reduce the risk of failures early in the design stage”

Luc Dedeyne, architect, bcba BENERGIE Architectuur en Energie, Torhout/Belgium

History

Assessments and building regulation are different in Member States:

- Company „standards“
- National approvals and assessements
- National standards
- No regulation at all

⇨ **No barrier free trade due to**

  – Lack of harmonised assessments

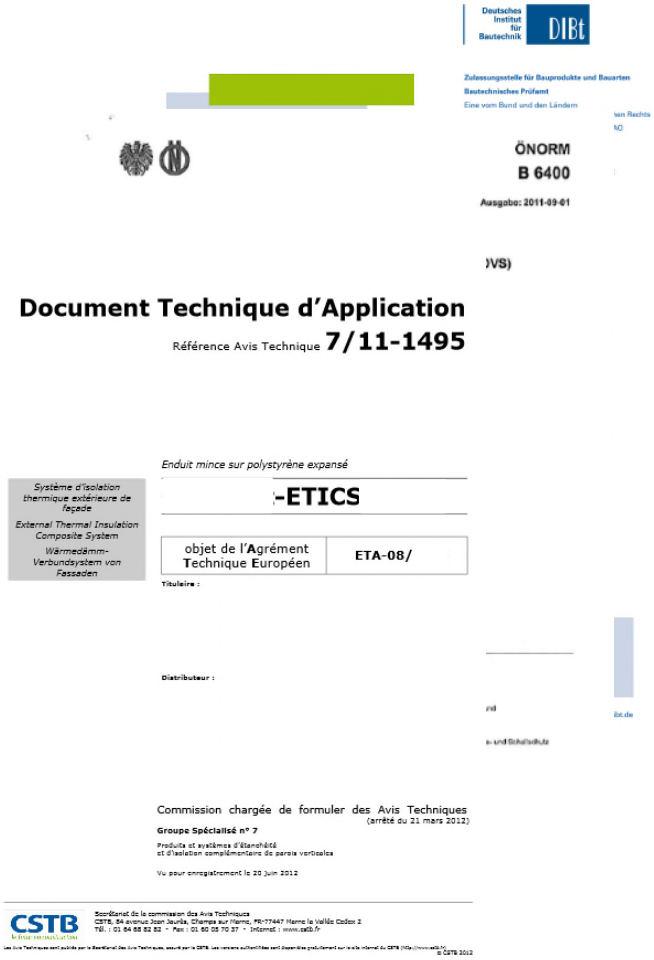
  – Lack of comparability

⇨ **Additional costs for manufacturers**

  – to comply with national requirements

⇨ **Additional costs for designers**

  – Have to consider national requirements

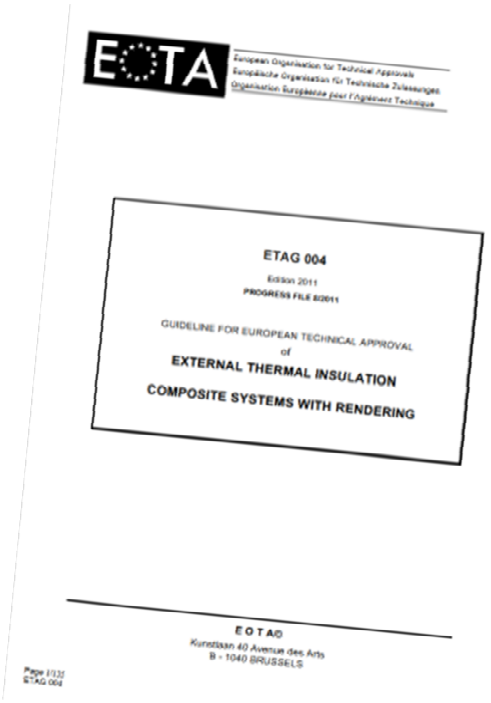


History

- European Technical Approval Guideline ETAG 004
  - Endorsed in 2001 (final update 2013)
  - First European technical specification for ETICS
  - 1,000 ETAs issued since then
  - Might be used for European Technical Assessments until December 2018 at latest

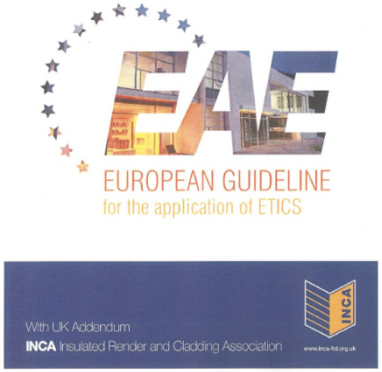
⇨ **First step towards harmonized assessments of ETICS**

- In parallel national regulation still exists
  - National approvals often consider ETAG 004
  - National application rules or application standards



History

- EAE‘s European Application Guideline (2011)
  - Share of experience to improve the quality of application European wide
  - Translated in a number of languages



History

- EAE‘s European Application Guideline (2011)
  - Well recognized even abroad

China

Japan

European Standardisation

European Commission/CEN

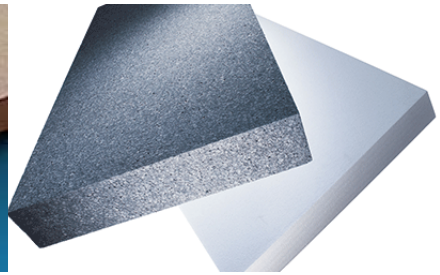
- Mandate M/489 to CEN to develop European harmonized standards for ETICS (March 2011)
- Discussions about the scope of the mandate, especially insulation materials to be covered
- CEN/TC88‘s answer to the mandate (December 2012)
- Consultation between EC, CEN, EOTA and EAE (April 2013)
- CEN/TC88/WG18 answers to final questions (May 2014)

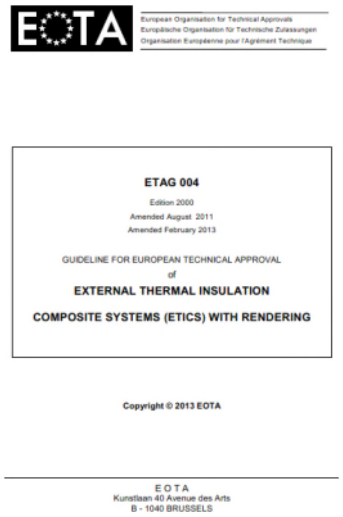
European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

European Standardisation

Scope as agreed

- Adhesives: powders (dry mortars), pastes, PU foams
- Insulation materials:
  - polystyrene (EPS, XPS)
  - mineral wool (MW)
  - wood fibre (WF)
  - wood wool (WW)
  - phenolic foam (PF)
  - polyurethane (PU)
  - cork (ICB)
- Substrates:
  - concrete and masonry
  - timber frame at later stage

ETAG 004

<u>one</u> document describing necessary assessments and test procedures

Core standard

ETICS Specification including worst case definitions and requirements

+

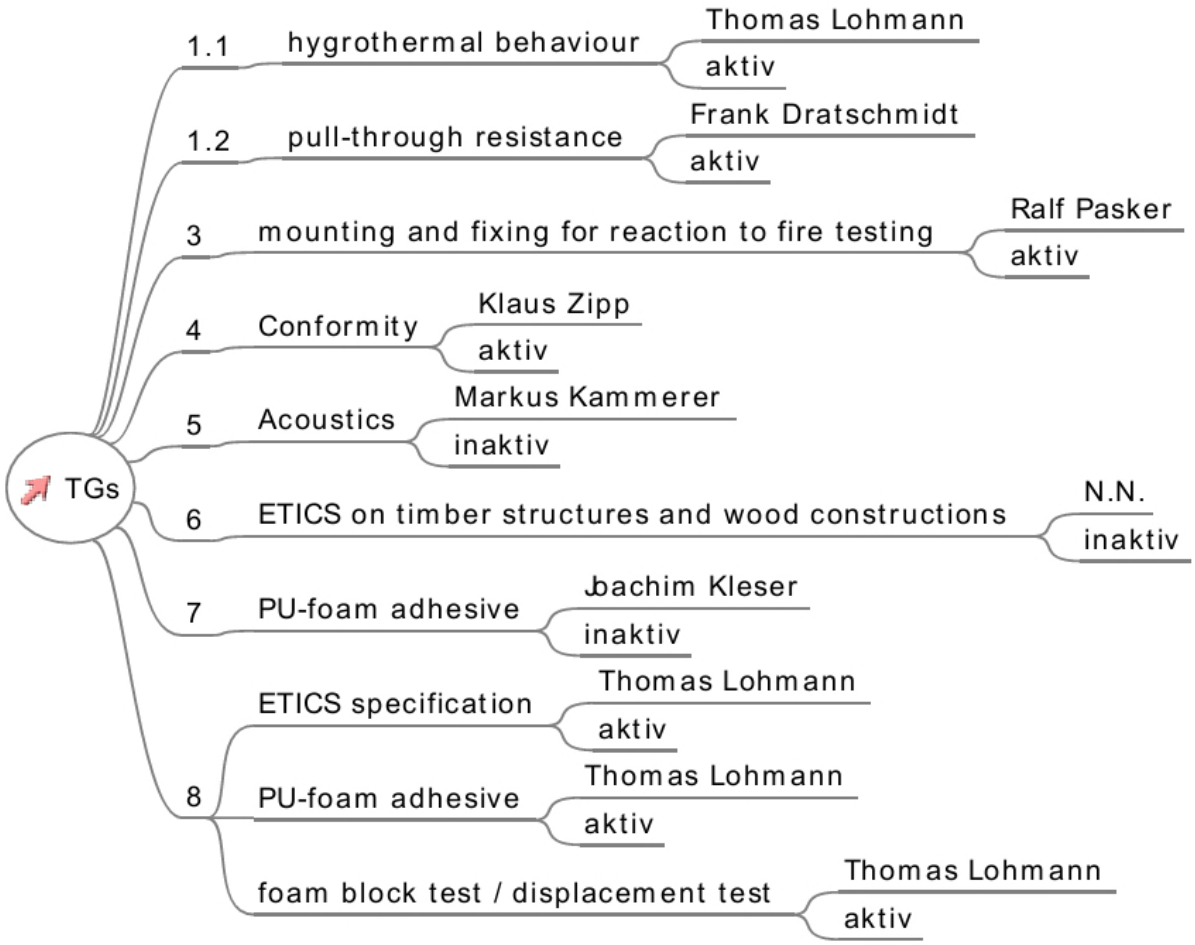
Series of supporting standards, e.g.

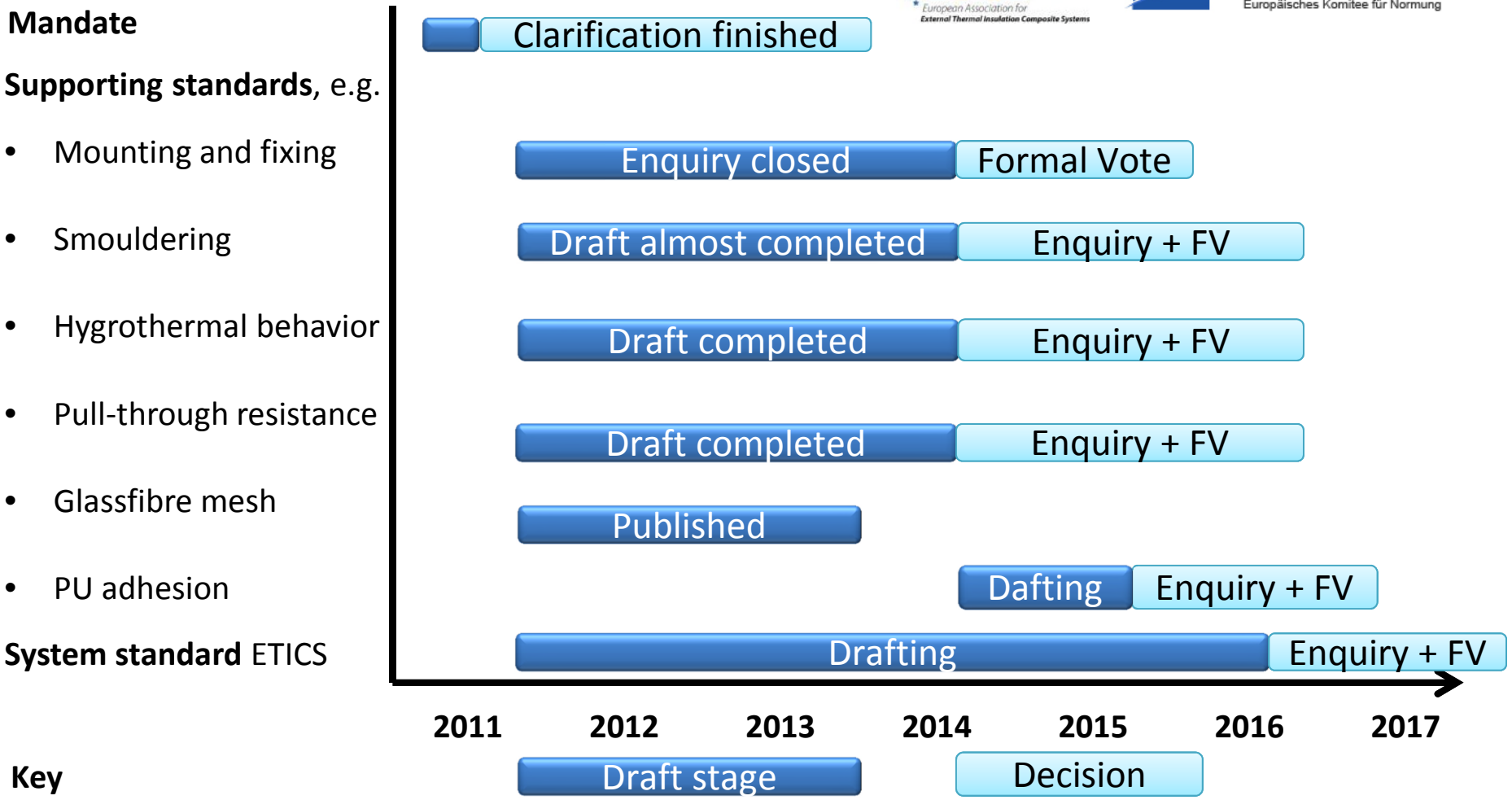
- Reaction to fire
- (smouldering)
- Hygrothermal behavior
- Pull-through resistance
- Glasfibre mesh
- PU foam adhesives
- Foam block test
- …

Series of standards to be elaborated or revised

- ETICS specification
  - Will replace non-harmonized standards EN 13499 (ETICS wth EPS) and EN 13500 (ETICS with MW)
  - Resistance to penetration EN 13498: to be withdrawn once ETICS specification is cited
- Foam block test EN 13495: to be revised
- Glass fibre meshes and reinforcement EN 13496: published
- PU foam adhesives: currently in preparation
- Mounting and fixing for reaction to fire testing prEN 16724: final vote
- Tensile strength EN 13494
- Resistance to impact EN 13497
- Pull-through resistance prEN 16382: inquiry
- Hygrothermal behavior prEN 16383: inquiry

Existing task groups of CEN/TC88/WG18



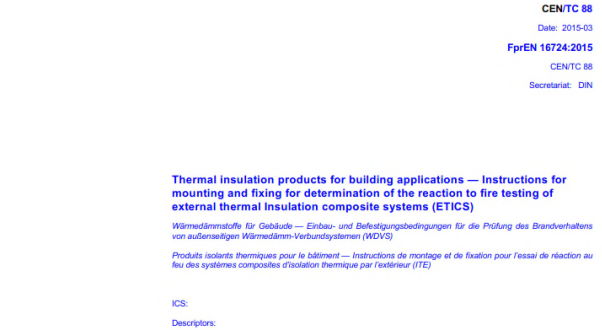

Mandate
Supporting standards, e.g.
• Mounting and fixing
• Smouldering
• Hygrothermal behavior
• Pull-through resistance
• Glassfibre mesh
• PU adhesion
System standard ETICS
Clarification finished
Enquiry closed
Formal Vote
Draft almost completed
Enquiry + FV
Draft completed
Enquiry + FV
Draft completed
Enquiry + FV
Published
Dafting
Enquiry + FV
Drafting
Enquiry + FV
2011
2012
2013
2014
2015
2016
2017
Key
Draft stage
Decision

Experience

- **First European harmonised standard for kits**
  - Huge complexity: assessment of single components plus interaction between system components means
  - Elaboration of ETICS specification and series of test standards and
  - revisions of existing test standards.
  - Transfer from ETAG to hEN requires much more efforts than expected due to different structure of documents
  - Not everything is written in ETAGs
    - Experience of companies and TABs has to be collected
    - Agreements between TABs and companies how characteristics have to be tested in detail
    - Are ETAG 004 assessments comparable in all Member States?

Challenges – example 1

- **ETICS mounting & fixing standard (prEN 16724)**
  - Instructions for mounting and fixing for determination of the reaction to fire testing of (ETICS) - analogue to EN 15715
  - Draft developed in cooperation with CEN/TC127 experts
    - Discussions due to different national regulation
    - Revision of first draft after enquiry: 142 comments solved
    - Final vote almost completed



CEN/TC 88

Date: 2015-03

FprEN 16724:2015

CEN/TC 88

Secretariat: DIN

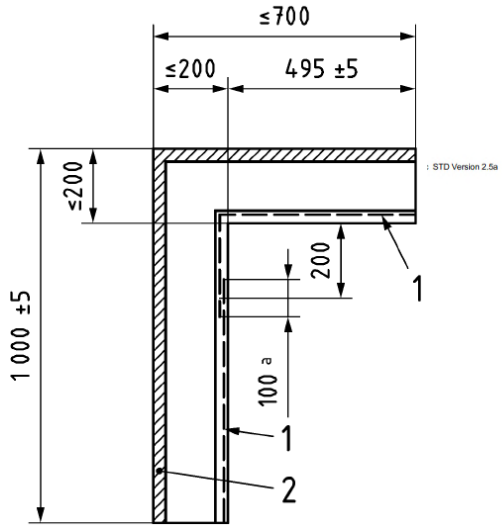
Thermal insulation products for building applications — Instructions for mounting and fixing for determination of the reaction to fire testing of external thermal Insulation composite systems (ETICS)

Wärmedämmstoffe für Gebäude — Einbau- und Befestigungsbedingungen für die Prüfung des Brandverhaltens von außenseitigen Wärmedämm-Verbundsystemen (WDVS)

Produits isolants thermiques pour le bâtiment — Instructions de montage et de fixation pour l'essai de réaction au feu des systèmes composites d'isolation thermique par l'extérieur (ITE)

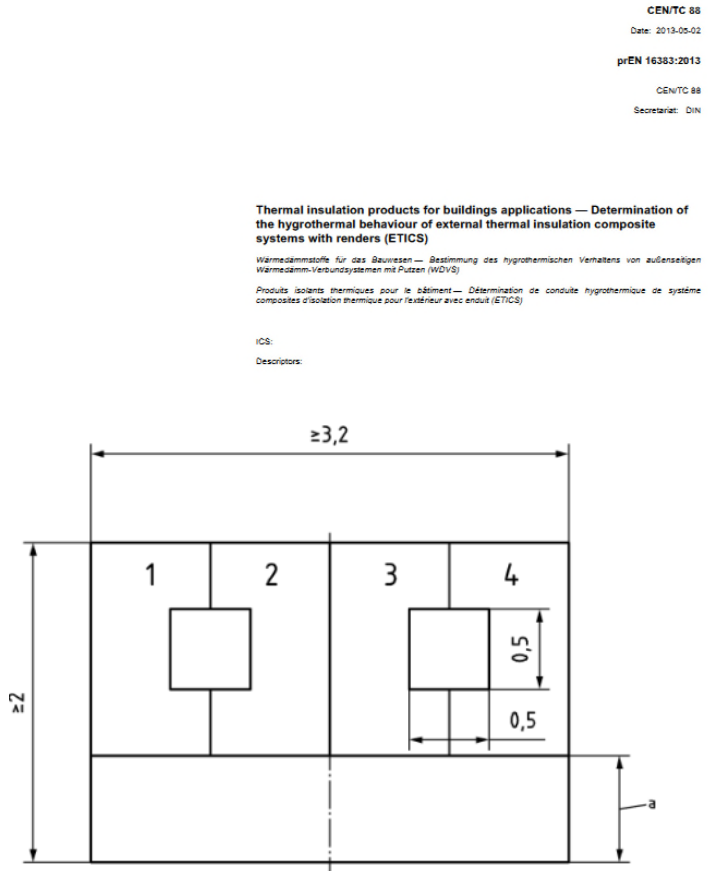
ICS:

Descriptors:



Challenges – example 2

- **ETICS hygrothermal behaviour (prEN 16383)**
  - Assessment of water tightness of ETICS
  - Drafting procedure longer than expected
    - Size and design of hygrothermal rigs different all over Europe
    - Definition of different test cycles to cover variety of climates in Europe (in ETICS specification)
    - To be launched for enquiry soon



CEN/TC 88

Date: 2013-05-02

prEN 16383:2013

CEN/TC 88

Secretariat: DIN

Thermal insulation products for buildings applications — Determination of the hygrothermal behaviour of external thermal insulation composite systems with renders (ETICS)

Wärmedämmstoffe für das Bauwesen — Bestimmung des hygrothermischen Verhaltens von außenseitigen Wärmedämm-Verbundsystemen mit Putzen (WDVS)

Produits isolants thermiques pour le bâtiment — Détermination de conduite hygrothermique de système composites d'isolation thermique pour l'extérieur avec enduit (ETICS)

ICS:

Descriptors:

Challenges – example 3

- **Worst case definition**
  - Required to reduce test efforts and costs
  - Worst case definition means
    - Identification of combination of system components assumed to be most critical when tested
    - Worst case definition may be different per essential characteristic or specific test
  - Objectives:
    - test results of one test will be valid for a variety of further system configurations
    - Existing test results based upon ETAG 004 can be used for future hEN
    - Limitation of test efforts and costs


CEN/TC88/WG18/TG4_048

CEN/TC 88
Date: 2015-08-14
TC 88 WI 00088330
CEN/TC 88
Secretariat: DIN

Thermal insulation products for buildings — External thermal insulation composite systems with renders (ETICS) — Specification

Wärmedämmstoffe für Gebäude — Außenseitige Wärmedämm-Verbundsysteme mit Putzen (WDVS) — Spezifikation

Produits isolants thermiques pour bâtiments — Systèmes composites d'isolation thermique par l'extérieur — Spécification

ICS:

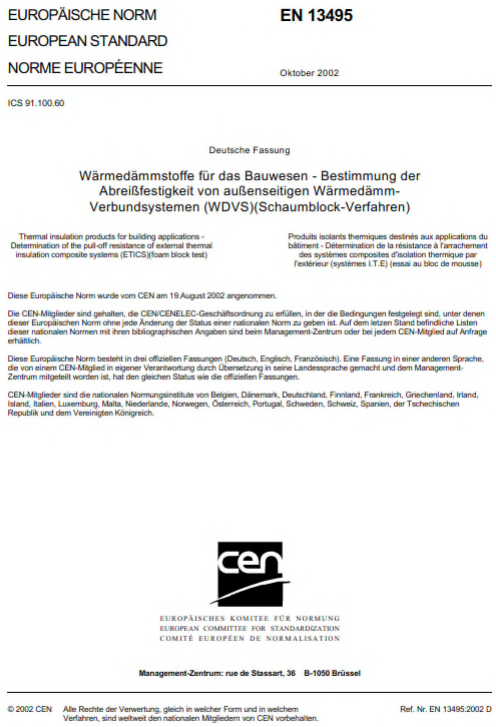
Descriptors:

Document type: European Standard
Document subtype:
Document stage: Working Document
Document language: E

C:\Users\jng\Desktop\TC_88_WI_00088330_(E).doc STD Version 2.5a

Challenges – example 4

- **Increasing complexity**
  - Inclusion of purely mechanically fixed systems
  - Inclusion of PU foam adhesives
    - Elaboration of test standard based on EOTA Technical Report
  - Revision of existing test standards
    - Foam block test EN 13495: last revision in 2002



EUROPÄISCHE NORM **EN 13495**
EUROPEAN STANDARD
NORME EUROPÉENNE Oktober 2002

ICS 91.100.60

Deutsche Fassung

Wärmedämmstoffe für das Bauwesen - Bestimmung der Abreißfestigkeit von außenseitigen Wärmedämm-Verbundsystemen (WDVS)(Schaumblock-Verfahren)

Thermal insulation products for building applications - Determination of the pull-off resistance of external thermal insulation composite systems (ETICS)(foam block test)

Produits isolants thermiques destinés aux applications du bâtiment - Détermination de la résistance à l'arrachement des systèmes composites d'isolation thermique par l'extérieur (systèmes I.T.E) (essai au bloc de mousse)

Diese Europäische Norm wurde vom CEN am 19.August 2002 angenommen.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION

Management-Zentrum: rue de Stassart, 36 B-1050 Brüssel

Ref. Nr. EN 13495:2002 D

Lessons learnt

- European harmonised technical specification is necessary to ensure a **common Union market**
- Procedure described in the Construction Products Regulation seems to be useful:
  - First draw up European Assessment Documents (EAD)
  - Later transition to harmonsised European standards (hEN) once kits have approved in practice and sufficient experience is available
  - EOTA route (EAD) for kits not falling under the scope of hEN paves the way to CE marking

Lessons learnt

- **Standardisation of kits** is **much more complex** than standardisation of single construction products
  - Consideration of interaction between system components
  - Variety of test standards for assessment of essential characteristics
  - Worst case definition to limit test efforts
  - Only launch draft standards for enquiry when sufficient quality has been achieved
- every input to support the system approach is welcome
- Close **cooperation between CEN and EOTA** useful to gather experience
- However: still no harmonised technical specification for large scale fire tests

Thanks for your kind attention.

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