



TECHNICKÝ A SKÚŠOBNÝ ÚSTAV STAVEBNÝ  
BUILDING TESTING AND RESEARCH INSTITUTE



# CURRENT STATUS AND PLANNED CHANGES OF EAD 040083-00-0404

**Ing. Dana Bellušová**

Building Testing and Research Institute  
Technický a skúšobný ústav stavebný, n. o. (TSÚS)  
Bratislava, Slovak republic

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# CURRENT STATUS in EÚ LEGISLATION

- » **European Commission (EC) regulates European market on construction products**
- » **Within the CPR 305/2011 framework**
  - » **ETA procedure offers a **voluntary route to CE marking** for non-standard products (products not covered by harmonized technical specification/harmonized standards)**
- » **The route is managed by EOTA and TABs that form the organization**
- » **EADs are harmonized specification underlying the ETA procedure**
- » **Reference to published EADs - EK, but**
- » **Wording of EADs – EOTA ([www.eota.eu](http://www.eota.eu))**
- » **EAD – base for issuing European Technical Assessment (ETA)**
- » **ETA – states the performance for essential characteristics assessed by harmonized assessment methods**
- » **Assessment method – harmonized test standard or method agreed within members of EOTA**

# PROCEDURE for ETICS manufacturer to CE marking

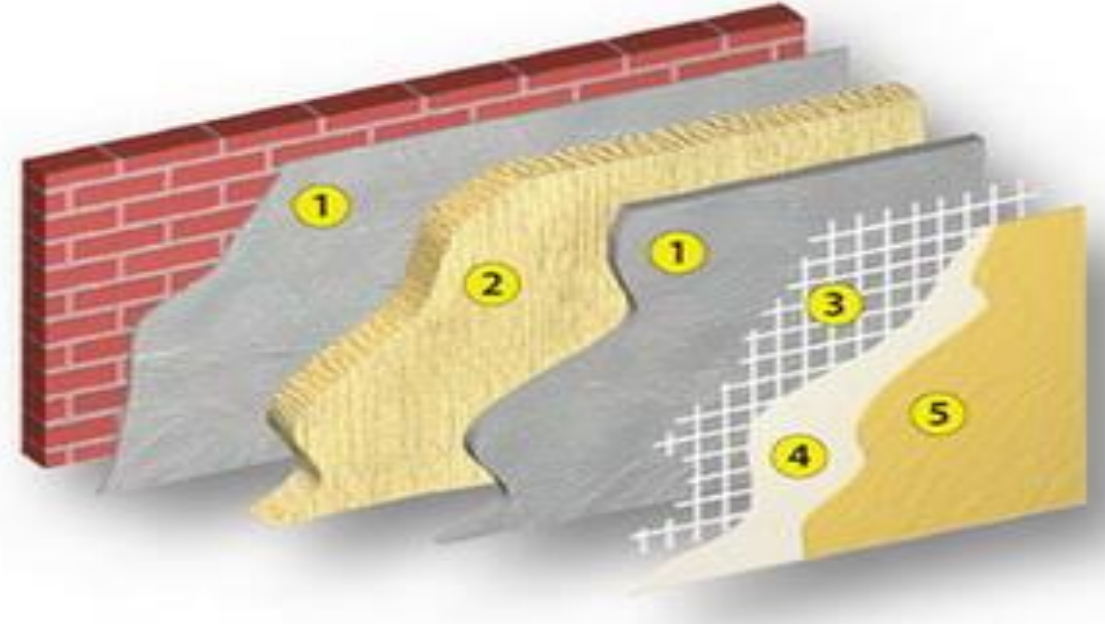
Manufacturer of product (ETICS) – design ETICS composition

Technical Assessment Body (TAB)

EAD 040083-00-0404 EOTA ([www.eota.eu](http://www.eota.eu))

ETA – European Technical Assessment

Notified Body (NB) – Assessment and verification of constancy of performance of ETICS (AVCP1 – reaction to fire, AVCP2+)



DoP



CE marking

# Overview of valid EADs applicable for ETICS

*EAD developed based on agreement EK-EOTA converted from ETAG 004*

» *EAD 040083-00-0404 – 98 ETAs*

*External Thermal Insulation Composite Systems with renderings*

EADs developed based on individual manufacturer's requests

» EAD 040089-00-0404 - 24 ETAs

External Thermal Insulation Composite Systems with renderings for the use on timber frame buildings

» EAD 040287-00-0404 - 15 ETAs (040287-01-0404 under preparation)

Kits for external thermal insulation composite system (ETICS) with panels as thermal insulation and discontinuous claddings as exterior skin

» EAD 040465-00-0404 – ETA 18/0802, FAST Sp. z o.o.

ETICS with renderings on mono-layer or multi-layer wall made of timber

» (in next occasion merges with EAD 040089-00-0404)

» EAD 040759-00-0404 – ETA 11/0108

External thermal insulation composite system (ETICS) with rendering on boards based on polystyrene and cement

# Statistics on EADs – high demand for CE marking of non-standard products

- » Since **2013 till 2022** (under CPR regime) – 1059 registered requests for EADs
- » 317 EADs published by EK 30 % available for issuing ETA
- » 145 EADs pending for citation 14 % available for issuing ETA
- » 112 EADs adopted 7c Annex II CPR 11 % available for issuing ETA
- » 289 EADs under development 27 %
- » **2020** published 44 EADs 040083-00-0404 External thermal insulation composite systems (ETICS) with renderings Decision (EU) 2020/1574 Cited  
[Download](#)
- » **2021** published 30 EADs a adopted 69 EADs
- » ETA issued – top product areas
  - » Product area 33 Fixings
  - » Product area 04 **Thermal insulation products. Composite insulating kits/systems.**
  - » Product area 13 Structural timber products / elements and ancillaries.
  - » Product area 20 Structural metallic products and ancillaries.
  - » Product area 34 Buidling kits, units and prefabricated elements.

# ETAG 004 SUPERSEDED BY EAD 040083-00-0404



European Organisation for Technical Approvals  
Europäische Organisation für Technische Zulassungen  
Organisation Européenne pour l'Agrément Technique

## ETAG 004

Edition 2000  
Amended August 2011  
Amended February 2013

GUIDELINE FOR EUROPEAN TECHNICAL APPROVAL  
of  
**EXTERNAL THERMAL INSULATION  
COMPOSITE SYSTEMS (ETICS) WITH RENDERING**

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EOTA  
Kunstlaan 40 Avenue des Arts  
B - 1040 BRUSSELS

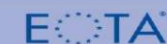


EUROPEAN ASSESSMENT DOCUMENT

EAD 040083-00-0404

January 2019

**EXTERNAL THERMAL INSULATION  
COMPOSITE SYSTEMS (ETICS)  
WITH RENDERINGS**



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[www.eota.eu](http://www.eota.eu)



- » **Current valid EAD for External Thermal Insulation Composite System (ETICS) with rendering**
- » **Validity since 1st November 2020**
- » **Supersedes ETAG 004: 2013 without transitional period**
- » **Base for**
  - » new ETA xx/xxxx-version 01,
  - » amendment already existing ETA xx/xxxx-version 02 (next versions 03, 04, 05...).
- » **No impact on ETA validity based on ETAG 004: 2013 till next version requested by ETA holder/manufacture**
- » **Impact on new process of certification / DoP ?**
- » **Role of Notified Body.**

# Options for deviating products from EAD 040083-00-0404

## Assessment procedure for ETICS deviating from EAD 040083-00-0404

Extended scope of EAD 040083-00-0404

Variant EAD 040083-00-0404

- Possible EAD 040083-00-0404-v01
- Possible EAD 040083-00-0404-v02,
- Possible EAD 040083-00-0404-v0x



# Extended scope of EAD 040083-00-0404

## » **Example: deviating ETICS**

- » ETICS description outside scope EAD 040083-00-0404
- » Assessment methods in EAD 040083-00-0404 apply
- » No need for revision EAD
- » Need for consultation/agreement with other TABs

## » **Advantage for manufacturer**

- » No need to modify EAD 040083-00-0404
- » Not loose time with additional commenting periods
- » To issue ETA according to standard procedure/established assessment methods

## » **Conclusion**

- » EOTA (not EK) keeps records of all approved EAD extended scope in order to be included in next EAD version

# Use of EAD type - variants EAD 040083-00-0404

## » Variant EAD

- » New concept/option to many industry stakeholders
- » Reduced document
  - » created for specific technical addition(s) to an existing EAD
  - » Coexisting with original EAD
  - » Not replacing or superseded original EAD
- » Conditions for developing EAD
  - » Defined by EK
    - » original document (EAD) results from the conversion of ETAG
    - » or
      - » at least 10 ETAs have been issued based on original EAD in last 3 years
  - » EAD 040083-00-0404-v01, EAD 040083-00-0404-v02..
- » Not yet issued any EAD 040083-00-0404-v01, EAD 040083-00-0404-v02...
- » EAD variant shall be published by EK in the same way as EAD (not short process)

# Substantial changes in EAD 040083-00-0404 in comparison with ETAG 004

- » **Extended scope of EAD**
- » **New essential characteristics**
- » **Propensity to undergo continuous smouldering of ETICS**
- » **Shear strength and shear modulus of ETICS**
- » **Assessment methods – new**
- » **Threshold values – implement under scope**

# Substantial changes in EAD 040083-00-0404 in comparison with ETAG 004

## » **Extended scope of EAD**

### » Thermal insulation products

» Cellular plastic (EPS, XPS, PU, PF)

» Mineral and wood wool

» Expanded cork and natural cork

» Wood fibres

» Cellular glass

» Vegetable and animal fibres

» Mineral material

» Other thermal insulation products that can be assessed according to the methods listed in this EAD. These thermal insulation products may be covered by their harmonized technical specification

# Substantial changes in EAD 040083-00-0404 in comparison with ETAG

## New essential characteristics of ETICS

### 2 ESSENTIAL CHARACTERISTICS AND RELEVANT ASSESSMENT METHODS AND CRITERIA

#### 2.1 Essential characteristics of the product

Table 1 shows how the performance of ETICS with renderings is assessed in relation to the essential characteristics.

**Table 1** Essential characteristics of the External Thermal Insulation Composite systems (ETICS) with rendering and methods and criteria for assessing the performance of the External Thermal Insulation Composite systems (ETICS) with rendering in relation to those essential characteristics

No	Essential characteristic	Assessment method	Type of expression of product performance (level, class, description)
<b>Basic Works Requirement 2: Safety in case of fire</b>			
1	Reaction to fire	2.2.1	
	- reaction to fire of ETICS	2.2.1.1	class
	- reaction to fire of thermal insulation material	2.2.1.2	class
	- reaction to fire of PU foam adhesive	2.2.1.3	class
2	Facade fire performance	2.2.2	description
3	Propensity to undergo continuous smouldering of ETICS	2.2.3	description
<b>Basic Works Requirement 3: Hygiene, health and the environment</b>			
4	Content, emission and/or release of dangerous substances – leachable substances	2.2.4	description
5	Water absorption	2.2.5	-
	- of the base coat and the rendering system	2.2.5.1	level
	- of the thermal insulation product	2.2.5.2	level
6	Water-tightness of the ETICS: Hygrothermal behaviour	2.2.6	description
7	Water-tightness: Freeze thaw performance	2.2.7	description
8	Impact resistance	2.2.8	level

No	Essential characteristic	Assessment method	Type of expression of product performance (level, class, description)
9	Water vapour permeability	2.2.9	-
	- of the rendering system (equivalent air thickness $s_d$ )	2.2.9.1	level
	- of thermal insulation product (water-vapour resistance factor)	2.2.9.2	level
<b>Basic Works Requirement 4: Safety and accessibility in use</b>			
10	Bond strength	2.2.11	-
	- bond strength between the base coat and the thermal insulation product (mortar or paste)	2.2.11.1	level
	- bond strength between the adhesive and the substrate	2.2.11.2	level
	- bond strength between the adhesive and the thermal insulation product	2.2.11.3	level
	- bond strength of foam adhesives	2.2.11.4	level
11	Fixing strength (transverse displacement test)	2.2.12	level
12	Wind load resistance of ETICS	2.2.13	-
	- pull-through tests of fixings	2.2.13.1	level
	- static foam block test	2.2.13.2	level
	- dynamic wind uplift test	2.2.13.3	level
13	Tensile test perpendicular to the faces of the thermal insulation product	2.2.14	-
	- in dry conditions	2.2.14.1	level
	- in wet conditions	2.2.14.2	level
14	Shear strength and shear modulus of elasticity test of ETICS	2.2.15	level
15	Pull-through resistance of fixings from profiles	2.2.16	level

# Substantial changes in EAD 040083-00-0404 in comparison with ETAG 004

## » New essential characteristics of ETICS

Basic Works Requirement 2: Safety in case of fire			
1	Reaction to fire	2.2.1	
	- reaction to fire of ETICS	2.2.1.1	class
	- reaction to fire of thermal insulation material	2.2.1.2	class
	- reaction to fire of PU foam adhesive	2.2.1.3	class
2	Facade fire performance	2.2.2	description
3	Propensity to undergo continuous smouldering of ETICS	2.2.3	description

# Substantial changes in EAD 040083-00-0404 in comparison with ETAG 004

## » Facade fire performance

Country	Assessment method
Austria	ÖNORM B 3800-5
Czech Republic	ČSN ISO 13785-1
Denmark, Sweden, Norway	SP Fire 105
Finland	<ul style="list-style-type: none"><li>• SP Fire 105</li><li>• BS 8414</li></ul>
France	LEPIR 2
Germany	<ul style="list-style-type: none"><li>• DIN 4102-20 Complementary reaction-to-fire test for claddings of exterior walls,</li><li>• Technical building regulation A 2.2.1.5</li></ul>
Hungary	MSZ 14800-6:2009 Fire resistance tests. Part 6: Fire propagation test for building facades
Ireland	BS 8414 (BR 135)
Poland	PN-B-02867:2013
Switzerland, Liechtenstein	<ul style="list-style-type: none"><li>• DIN 4102-20</li><li>• ÖNORM B 3800-5</li><li>• Prüfbestimmung für Aussenwandbekleidungssysteme</li></ul>
UK	BS 8414 -1:2015 and BS 8414-2:2015



# Substantial changes in EAD 040083-00-0404 in comparison with ETAG 004

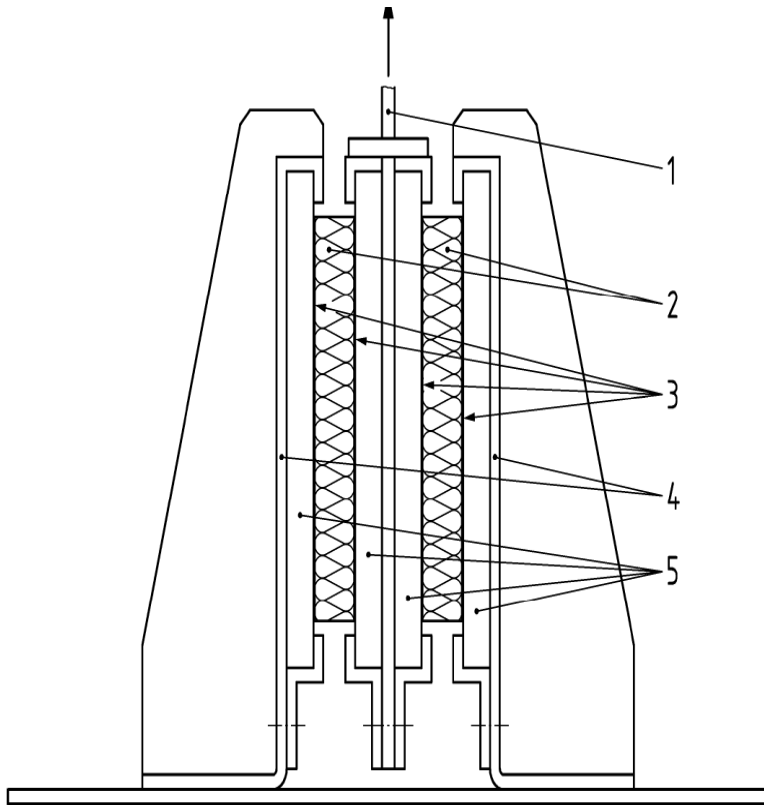
## » Propensity to undergo continuous smouldering of ETICS

- » Legal requirement as least in Germany
- » Only relevant for thermal insulation material made from mineral wool, wood based products, vegetable/animal fibres and cork (i.e. currently under standards EN 13162, EN 13168, EN 13170, EN 13171
- » Assessment method according to EN 16733
- » This standard specifies a test method to determine the ability of a building product to smoulder continuously when exposed to an open flame under the influence of natural convective airflow.

It is intended for all building products classified according to EN 13501-1. Details as to how the products shall be mounted and fixed for this test are given in the relevant product standard. The field of application of the test results shall be defined in the product standard.

- » In ETA declares as NPA no performance assessed
- » In DoP declared as NPD no performance determined

## » Shear strength and shear modulus of ETICS



The test is required for bonded ETICS.

Only if no test method is defined in the appropriate harmonized technical specification (harmonized standard or European Assessment Document with accompanying ETA) for the relevant thermal insulation products defined in ETICS and if no related values accompany the CE marking and Declaration of Performance of the product, the assessment of the shear strength and the shear modulus of elasticity of the thermal insulation product shall be performed in accordance with EN 12090 on a 60 mm thick sample.

# Substantial changes in EAD 040083-00-0404 in comparison with ETAG 004

## » Expression of the product performance

No	Essential characteristic	Assessment method	Type of expression of product performance <i>(level, class, description)</i>

## » Expression of the product performance under ETAG 004 regime

ER	ETAG paragraph on product performance to be assessed	Class, use category, criterion

## » Assessment method

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1	Reaction to fire	2.2.1	
	- reaction to fire of ETICS	2.2.1.1	class

# Substantial changes in EAD 040083-00-0404 in comparison with ETAG 004

## » **Assessment method**

- » No change for assessment methods for old characteristics
- » Including assessment methods for new essential characteristics
- » Created Annexes with assessment methods
  - » EOTA Technical reports implemented into Annexes of EAD

## **Threshold values**

**remain in EAD, but in different chapter**

This EAD applies to ETICS

- with thermal insulation product of the same material according to 1.3.7 applied onto the wall
- with rendering system with the water absorption after 1 hour less than  $1 \text{ kg/m}^2$  and if the water absorption of the reinforced base coat itself after 1 hour is less than  $1 \text{ kg/m}^2$  (limit of water absorption) in line with 2.2.5,
- with performance on water-tightness of the ETICS: hygrothermal behaviour in line with 2.2.6
- where the performances are in range defined for bond strength between base coat and thermal insulation product in clause 2.2.11.1
- where the performances are in range defined for bond strength between adhesive and thermal insulation product in clause 2.2.11.3

# Stability of bonded ETICS with supplementary anchors

## » Secured by

### » adhesive

» By sufficient bond strength between thermal insulation and substrate  
(limit values are in EAD)

### » Thermal insulation product

#### » Sufficient mechanical properties

» Shear strength 20 kPa (STN EN 12 090)

» Shear modulus 1 000 kPa (STN EN 12 090)

» Limit values 20 kPa a 1000 kPa have to be kept through whole thickness

» Problem: mechanical properties decrease with thickness

» Test results on thickness TI 60 mm, are not representative for thickness 200 mm

# Stability of mechanically ETICS with supplementary adhesive

## » Secured by

### » Anchors

» Transmits/resists the wind load (see EAD 330196-01-0604)

» Do not transfer the vertical load

The EAD covers plastic anchors only be used for tension loads resulting from wind loads only. The dead load of the ETICS is transmitted by the adhesion of the ETICS.

### » adhesive

» By sufficient bond strength between thermal insulation and substrate /between adhesive and substrate (test not required, limit values are not specified in EAD)

### » Thermal insulation product

#### » Sufficient mechanical properties

» Shear strength (STN EN 12 090) not required test , no limit values in EAD

» Shear modulus (STN EN 12 090) not required test , no limit value in EAD

» Compression test CS(10) not required

» Problem: mechanical properties decrease with thickness

» Test results on thickness TI 60 mm, are not representative for thickness 200 mm



# Conclusion

- » As current EAD could not solve all **technical problems** of ETICS / **leftovers** already discussed during preparation conversion from ETAG 004 into EAD 00083-00-0404, where (significant) changes are possible
- » EOTA starts/agreed on continuing task – drafting amendment EAD
  - » EAD 040083-01-0404

## » **Collection of all leftovers during EAD 040083-00-0404**

» Priority A

» Priority B

» Priority C

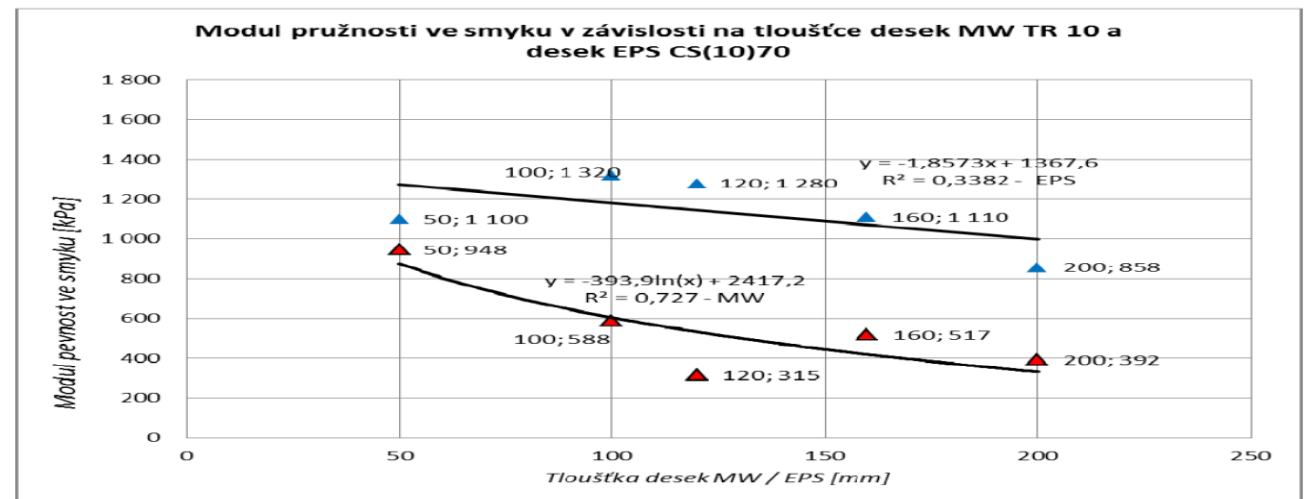
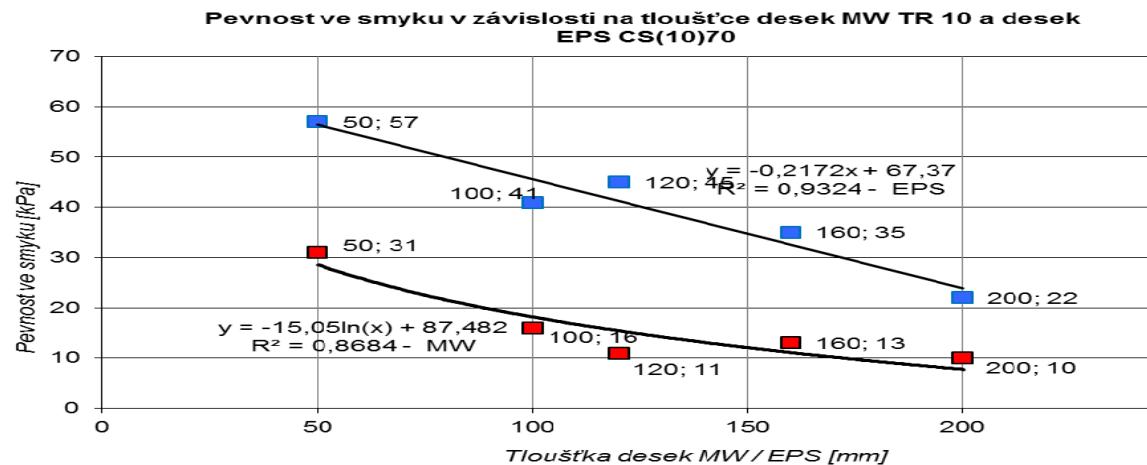
# Planned changes in EAD 040083-00-0404

- » **EOTA Technical Board agreed on new task**
- » **EAD DP 20-04-1810                      EAD 040083-01-0404**
- » **Working group EOTA + stakeholders**
- » **Circulation of 1st draft EAD-01**
  - » 28.02.2022 – 28.03.2022
  - » Comments
    - » TABs (DIBT, CSTB, ICiMB, ITeC, TZUS, UBAtc,
    - » Observers (CFE, EAE, Eurima, EUMEPS)
- » **Circulation of 2nd draft EAD-01**
  - » 06.2022 - 2 weeks
- » **Final EAD on EOTA level**
  - » Expected 10/2022

# Main changes in EAD 040083-00-0404

## » Priority A tasks

- » Maximal thickness of introduced thermal insulation product – 400 mm
- » Increasing the minimal bonded area of all ETICS types to 40 %
- » Shear strength and shear modulus will test not only on 60 mm thickness but also on maximal thickness of thermal insulation product introduced in ETA (max. 200 mm)
  - » Test method EN 12090, size test specimen (100 mm – 200 mm) deviates from EN 12090
  - » Test required for mechanically fixed ETICS with supplementary anchors
    - » Declared by level, without need to fulfil any limitation



# Main changes in EAD 040083-00-0404

## » Priority A tasks

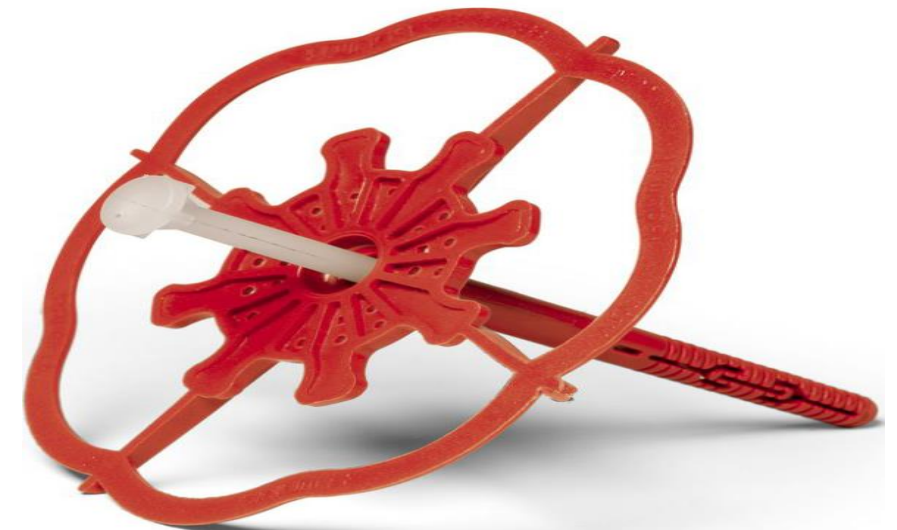
» Tensile strength perpendicular to the faces for thermal insulation product

» Ratio value (wet condition)/ value (dry condition) expressed by option 1 (Category A, B or C or by option 2 (in %)

» **Category A (80-100)%** , Category B (50-80)%, Category C (0-50)%

» Including under scope

» **Injected anchors** (EAD 331433-00-0601) **Powder actuated fastener** (EAD 330965-00-0601)



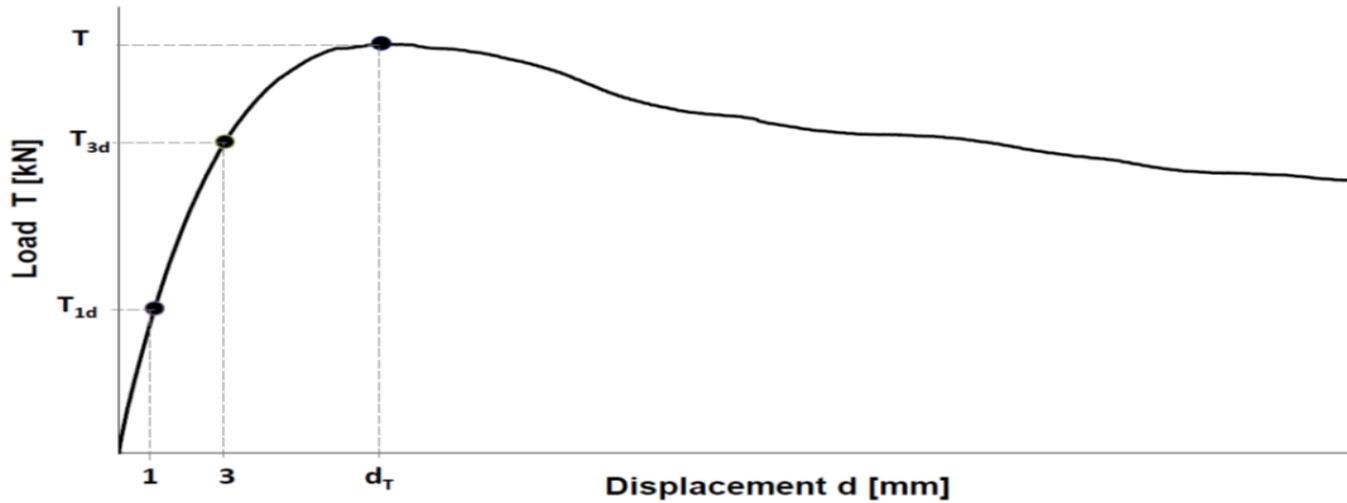
# Main changes in EAD 040083-00-0404

## » Priority A tasks

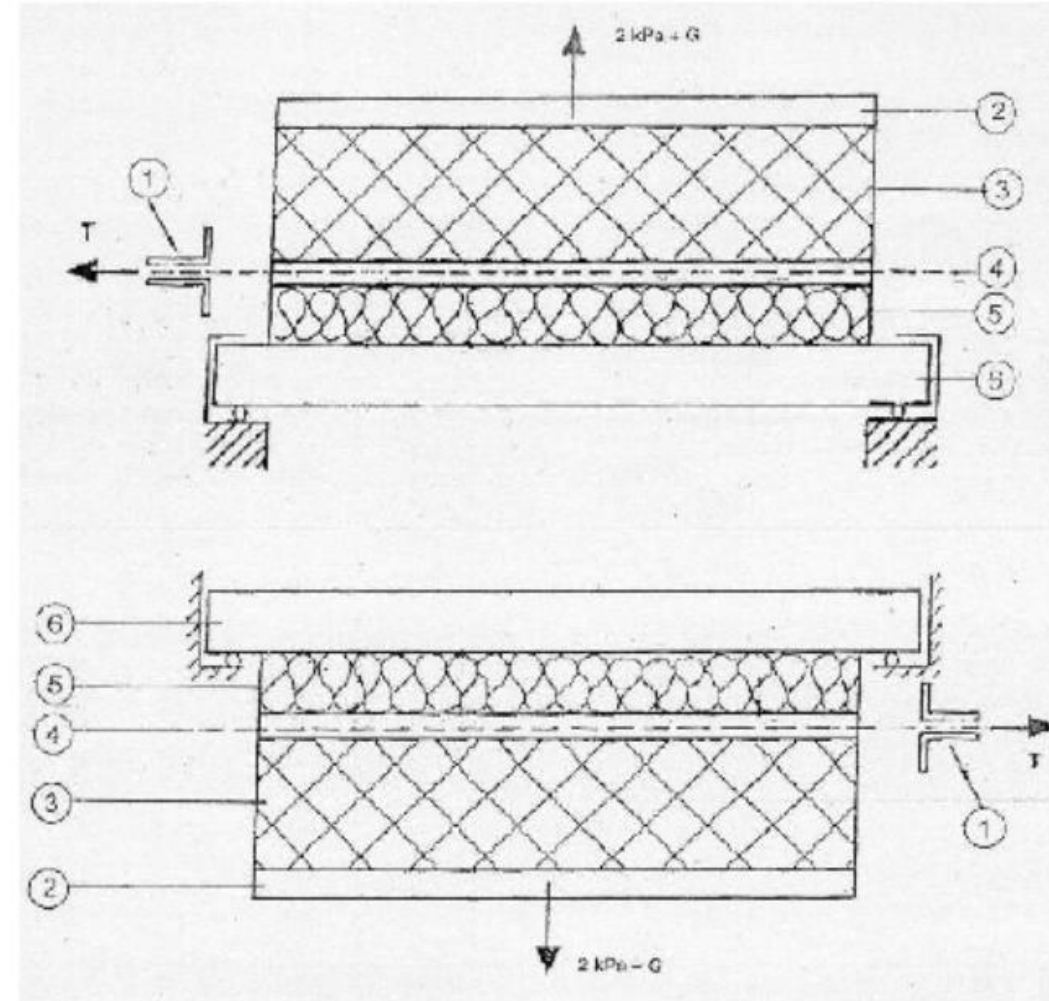
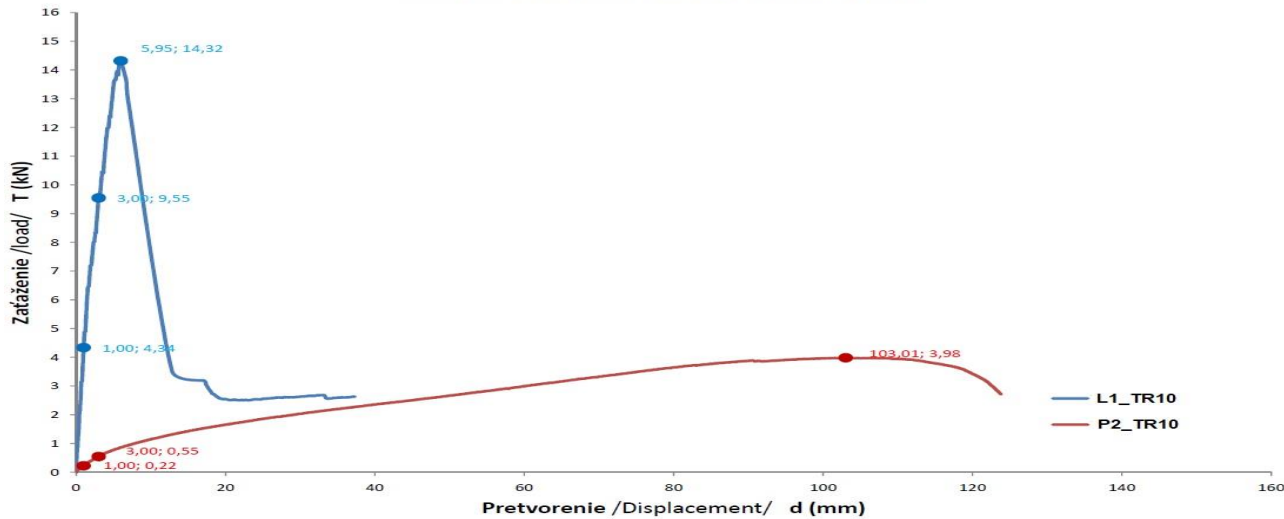
- » Bond strength between thermal insulation product and substrate
- » Bond strength between thermal insulation product and adhesive
  - » Test required for mechanically fixed ETICS with supplementary anchors,
  - » Declared by level, **without need to fulfil any limitation**
  
- » Displacement test – above thickness 100 mm or 160 mm?
  - » Mechanically fixed ETICS with supplementary adhesive
  - » Bonded ETICS with supplementary anchors
  - » Method A: EAD-00
  - » combination horizontal (wind) load 2000 Pa + vertical (dead) load
  - » Method B: EN 13495 Determination of the pull-off resistance of ETICS(foam block test)/Method D
    - » Lateral force / Displacement rate (3±1) mm/min



# Displacement test



EDISON - skúška pretvorenia MW 200 mm (TR10)





# Main changes in EAD 040083-00-0404

## » Priority A tasks

### » Wind load resistance / pull through

» Adding the alternative method EN 16382

» Calculation added

» Step 1  $\frac{TR_{\text{declared,dry}}}{TR_{\text{measured,dry}}}$

» Step 2  $F_{\text{corrected,max load}}$   $F_{\text{measured, 5 mm}}$

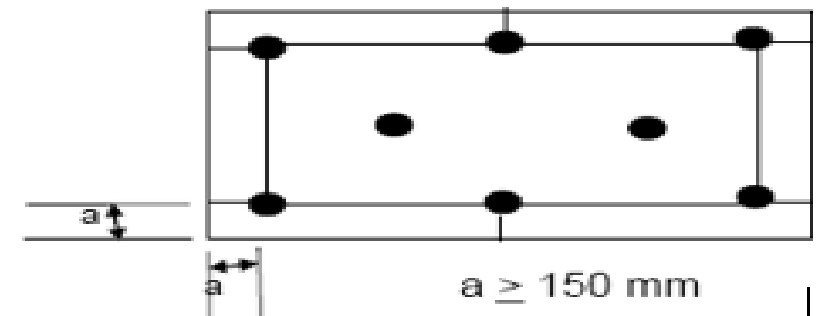
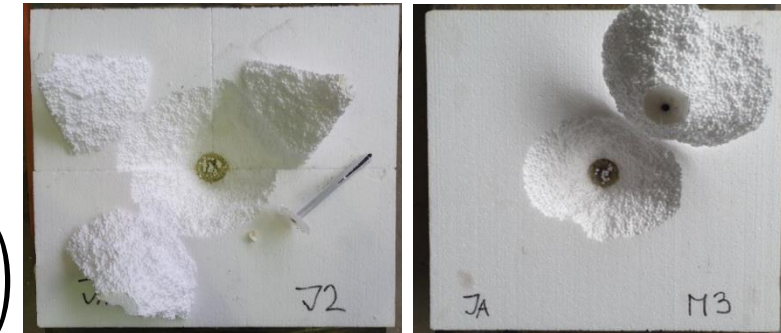
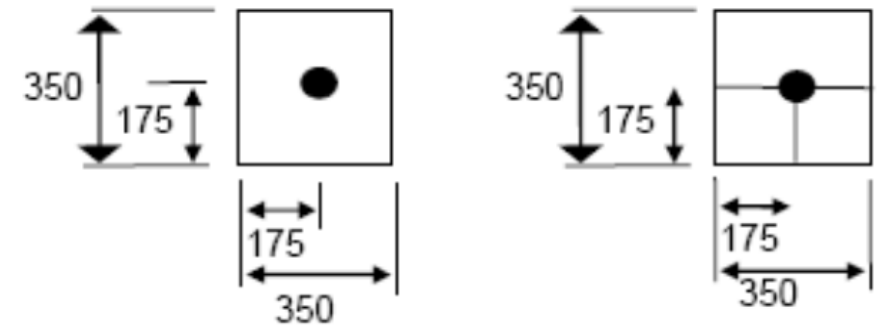
» Step 3  $F_{\text{corrected}} = F_{\text{measured}} \times \left( 1 - \left( 1 - \frac{TR_{\text{declared,dry}}}{TR_{\text{measured,dry}}} \right)^2 \right)$

» Different expression of performance

»  $R_{\text{"position", "displacement", "conditions"}}$

» example:  $R_{\text{joint, 35 mm, wet}}$

» TR measured + CS(10) measured



# Main changes in EAD 040083-00-0404

## » Priority B tasks

### » Water vapour permeability

- » Option 1: limitation only ETICS with EPS and MW (remaining requirements EAD-00), not limitation for other thermal insulation product
  - » Option 2: deletion of limitation
  - » **Option 3**: introducing limitation for ETICS with all thermal insulation types  
The test results of the resistance to water vapour diffusion of the rendering systems ( $s_d$ -rendering) shall not exceed
    - » 2,0 metres if  $s_d$ - thermal insulation  $> 3$  m (EPS for examples)
    - » 1,0 metre if  $s_d$ - thermal insulation  $< 3$  m (MW for examples)
- » In EAD-01 is introduced Option 3

# Main changes in EAD 040083-00-0404

## » Priority B tasks

- » Hygrothermal behaviour – extension of CEN method
  - » One of the combination 1 and 2 shall be selected
  - » Combination 1
    - » HWC conditionings (HW+ HC)
    - » HWC: heating and wetting (HW) + heating and cooling (HC)
    - » EAD-00 or alternative method EN 16383-clause 7 – part a and b
  - » Combination 2
    - » HWCFT: heating and wetting (HW) – 80 cycles + heating and cooling (HC) – 5 cycles + wetting, freezing and thawing (WFT) 30 cycles
    - » Test method EN 16383 clause 7 parts a, b and c
    - » Testing according to EN 16383 part c) can not be performed without testing according to EN 16383, clause 7 – parts a) and b)
- » For Combination 1 – no failure described in EAD-00/EAD/01 is accepted



# Main changes in EAD 040083-00-0404

## » Priority B tasks

### » Impact resistance of ETICS

3J a 10J

#### » EN ISO 7892

15 J, 20 J, 30 J, 40 J, 60 J, 80 J, 100 J, 125 J, 150 J, 175 J, 200 J

#### » EN 13497

### Expression of results

EAD 040083-00-0404 Category I, II, II

EAD 040083-01-0404 Category II<sub>100,hwc</sub>, II<sub>100,hwcft</sub>

#### » load 100 J

#### » after hygrothermal behaviour HWC / HWCFT

EAD 040083-01-0404 Category II<sub>120,w</sub>

#### » load 125 J

#### » after artificial ageing (immersion in water)



## » Priority C tasks

- » Definition of thermal insulation type
  - » One or more insulation products that are made from the same material (e.g. EPS or MW) and share general structural characteristics, like fibre orientation, surface treatment (faced, unfaced) and structure (multi-layered, composite).
  - » Examples of different insulation product types are: EPS without added graphite, EPS with added graphite, MW board, MW lamella.
- » Updated control test plan + for thermal insulation products
  - » Shear strength
  - » Shear modulus
  - » Compression strength CS(10)
- » Expression of results in ETA
- » Extended application rules

## » **Priority C tasks**

- » Extension of EAD scope about „render elastic strips“ as new finishing layer of ETICS
  - » EAE requested EOTA
  - » WG EOTA ETICS agreement
  - » New task for WG members to set up precise definition, which characteristics to be added and assessment methods – need for help from TABs and stakeholder/industry
    - » available test reports ?

# Conclusions

- » **EÚ market today with ETICS**
  - » ETAs based on ETAG 004
  - » ETAs based on EAD 040083-00-0404
- » **ETA based ETAG 040083-00-0404 is not the same as ETA based on ETAG 004**
- » **ETA based on EAD 040083-01-0404 will not the same as ETA based on ETAG 040083-00-0404**
- » **In DoP**
  - » 1 product (ETICS) – 1 ETA – 1 DoP
  - » To set up for all essential characteristics
  - » NPD option can be used



# Conclusions

## » RISK WARNING

### » In list of EAD 040083-00-0404

- » No stated such essential characteristics to be assessed for ETICS resistance against vertical load (shear load), mainly for mechanically fixed ETICS with supplementary adhesive with bigger thicknesses of thermal insulation products.
- » Anchors are not assessed for transmission vertical load to the substrate

**Thank you for attention**

**ĎAKUJEM ZA POZORNOSTĚ**  
**Ing. Dana Bellušová**  
**bellusova@tsus.sk**