

# FIRE SPRINKLER INTERNATIONAL 2022

31<sup>ST</sup> MAY – SESSION 2 - TESTING AND INSTALLATIONS



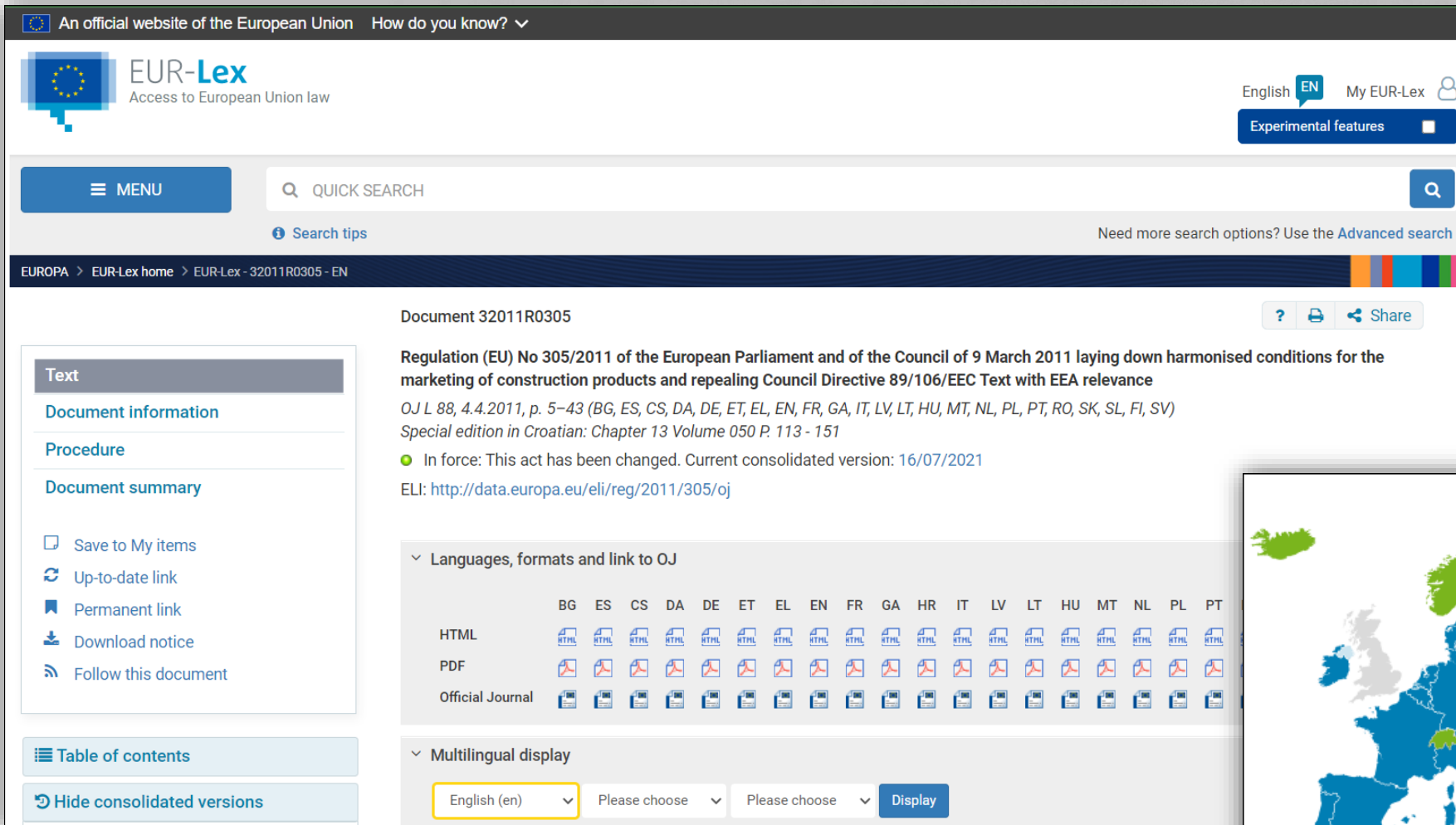
# CE MARKING THROUGH THE EOTA ROUTE

WITALI ENGELHARDT



1. **Construction Products Regulation and CE marking**
2. **Relevance of the EOTA route to CE marking**
3. **Introduction to EOTA route**
4. **Status of current EOTA projects under product area 10**
5. **EN-EAD concept to introduce “pass-fail criteria” under CPR**
6. **Conclusion**

# CONSTRUCTION PRODUCTS REGULATION AND CE MARKING



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EUROPA > EUR-Lex home > EUR-Lex - 32011R0305 - EN

Document 32011R0305

Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC Text with EEA relevance

OJ L 88, 4.4.2011, p. 5–43 (BG, ES, CS, DA, DE, ET, EL, EN, FR, GA, IT, LV, LT, HU, MT, NL, PL, PT, RO, SK, SL, FI, SV)

Special edition in Croatian: Chapter 13 Volume 050 P. 113 - 151

In force: This act has been changed. Current consolidated version: 16/07/2021

ELI: <http://data.europa.eu/eli/reg/2011/305/oj>

Languages, formats and link to OJ

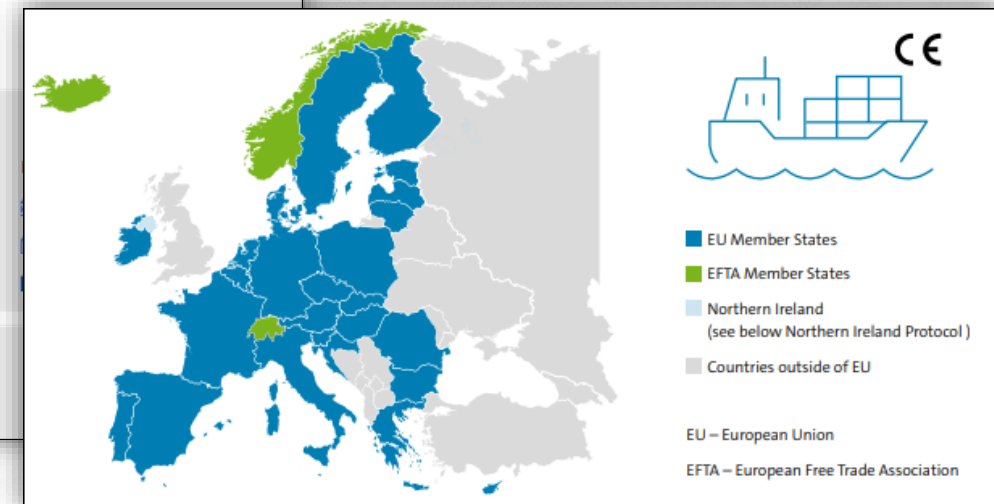
	BG	ES	CS	DA	DE	ET	EL	EN	FR	GA	HR	IT	LV	LT	HU	MT	NL	PL	PT
HTML																			
PDF																			
Official Journal																			

Multilingual display

English (en) Please choose Please choose Display

Harmonised Standards  
Article 17 - 18

EAD, ETA, TAB, EOTA  
Article 19 - 34



# RELEVANCE OF THE EOTA ROUTE

- **Some member states and other relevant stakeholders require CE or a national mark**
- **The current situation is a deadlock in publication of new and revised hENs under CPR**
- **No harmonised EN standards under CPR are currently being cited at all**
- **Last citation of a hEN in the OJEU under the CPR was more than 3 years ago**
- **Last citation of a hEN in the OJEU proposed by TC 191 is more than 15 years ago**
- **EADs can be developed in parallel to EN as long as the EN is not cited in OJEU**
- **No EC mandate necessary to develop an EAD**

## CE-marking via EAD

- ❖ Costs to develop the EAD must be borne by TAB
- ❖ Process to achieve CE-mark takes 1-2 years, without testing:
  - Technical review of file
  - Developing EAD
  - Developing the ETA report and FPC certificate
  - Internal technical review

## Next steps – try it!

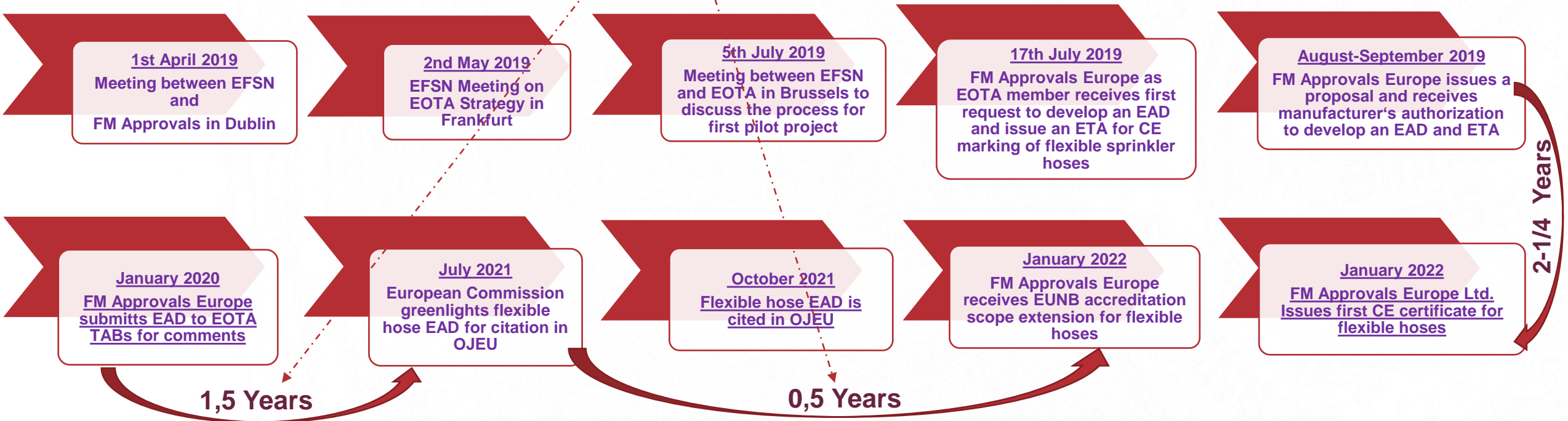
1. EFSN members agree to try it, through EFSN
2. Form EFSN working group to take it forward
  - a) Choose a simple product which **already has a quality mark (FM, LPC, UL, VdS) but no hEN,**
  - b) Product chosen should **minimize re-testing**
3. Run a pilot to test the concept

CPVC pipe	1 vote
CPVC fittings	1
Upright K-160 sprinkler	1
Pendent K-160 sprinkler	2
Butterfly valves	3
Fittings	1
Pressure switch	1
EC HSW sprinklers	3
Flexible hoses	4
Grooved couplings	1
Gate valves	2
Check valves	2
Deluge valves	1

# PROJECT JOURNEY – FLEXIBLE SPRINKLER HOSE

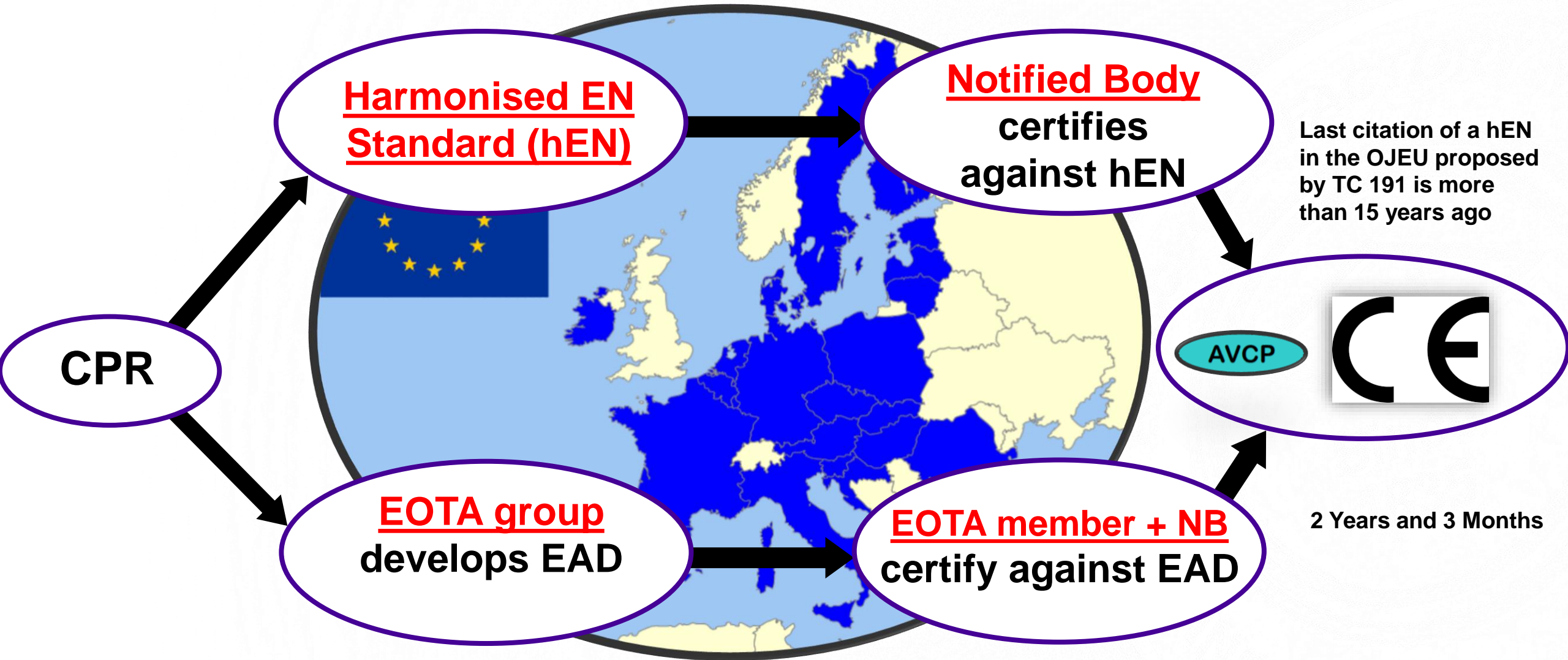


**2 Years and 3 Months**





# TWO ROUTES TO CE MARKING UNDER CPR



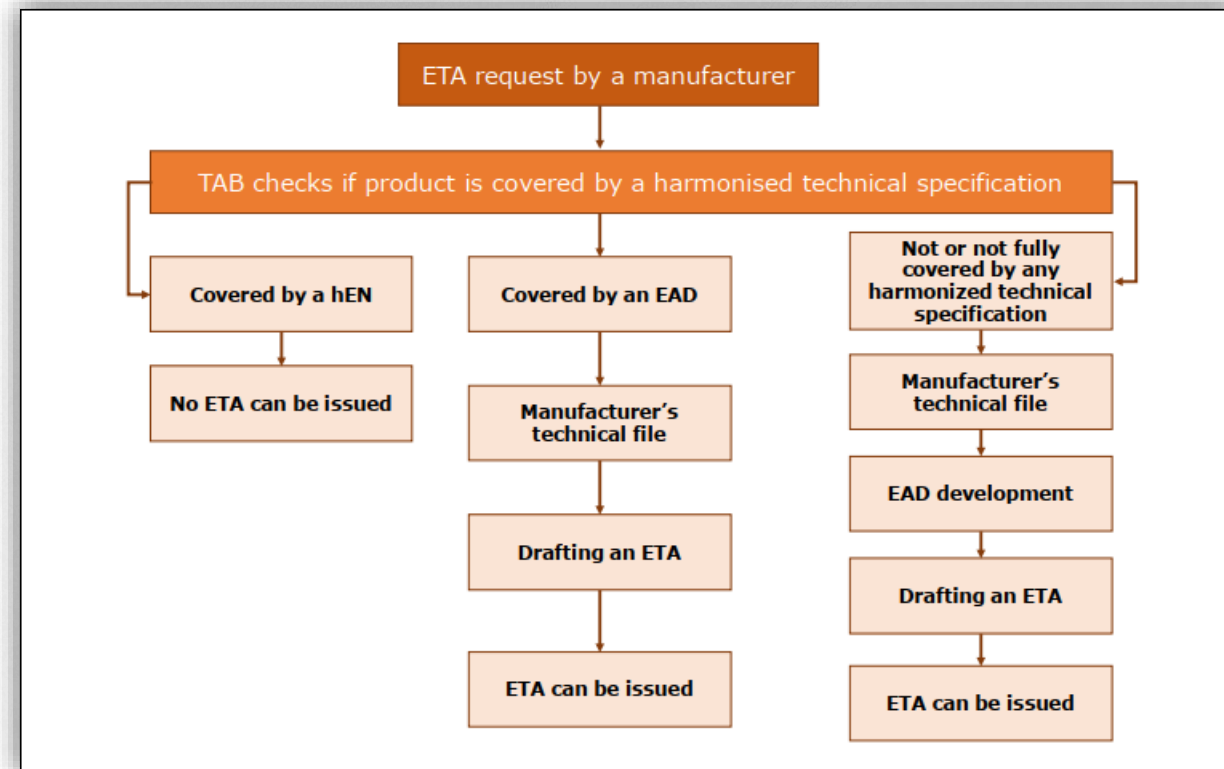
# WHEN IS THE EOTA ROUTE POSSIBLE?

## Reasons for ETA according to CPR Art. 19 and 21\*:

- Product does not fall within the scope of any existing harmonised standard (hEN)
- For a product where the hEN does not provide appropriate assessment method(s) for one/more essential characteristics

## Possible reasons from manufacturer's point of view:

- Regulator requires CE mark or national mark
- Efficient process compared to experiences with hEN approach
- Competition with other similar products that are CE marked
- Demonstration of certain product performance
- Technical specification for new and innovative product
- Demonstration of qualified production process (AVCP)
- No EC mandate necessary



# THE EOTA ROUTE STEPS TO CE MARKING

## The 8 stages of the EAD development

	Stage designation	Who is involved?
1.	ETA request	Manufacturer & responsible TAB (RTAB)
2.	Consultation of work and assessment programme and contract between TAB and manufacturer	RTAB, EOTA
3.	Agreed final work programme & information to the European Commission (EC)	Manufacturer & RTAB & EOTA
4.	EAD drafting	Manufacturer & RTAB & EOTA
5.	Adoption of draft EAD	Manufacturer & RTAB & EOTA
6.	Extensions and delays for the finalisation of EU legislative procedures, where relevant	European Commission, Standing Committee on Construction (SCC), Council, European Parliament
7.	EAD adoption	EOTA & European Commission
8.	Issuing of ETA and publication of reference of final EAD in Official Journal of the European Union	RTAB & EOTA & European Commission

Source: EOTA

## The ETA procedure

### Facts to know about the ETA procedure

- The ETA procedure is open to construction product manufacturers in all product areas, irrespective of whether or in which manner the products are nationally regulated.
- Manufacturers may use the voluntary ETA route to CE mark their product if it is not fully covered by an already existing harmonised standard (hEN).
- Manufacturers can submit an ETA request to any **Technical Assessment Body (TAB)** designated for the product area in question by a Member State. The TAB will guide the manufacturer through the procedure as the responsible TAB (RTAB)
- The ETA will be based on a **European Assessment Document (EAD)**, which is a harmonised technical specification developed by EOTA as a basis for the ETA.
- If the product in question is not yet (completely) covered by an existing EAD, EOTA will develop a new, or adapt an existing, European Assessment Document.

# THREE FURTHER KEY MILESTONES TO CE MARKING

## Citation in OJEU – 10/21

11.10.2021 EN Official Journal of the European Union L 359/117

**COMMISSION IMPLEMENTING DECISION (EU) 2021/1789**  
of 8 October 2021  
amending Implementing Decision (EU) 2019/450 as regards the publication of references of European Assessment Documents for flexible sprinkler hose with end fittings and other construction products  
(Text with EEA relevance)

11.10.2021 EN Official Journal of the European Union L 359/119

ANNEX

In the Annex, the following rows are inserted in sequential order following the order of the reference numbers:

'100012-00-1106	Flexible sprinkler hose with end fittings
130348-00-0304	Laminated segment timber with rectangular cross section made from radially cut logs
130484-00-0304	Tension proof loaded structural finger jointed solid timber which may be processed to glued laminated timber and glued solid timber
130661-00-0304	Glued laminated timber with full cross section finger joint
210134-00-1202	Soundproofing boards/dry screed and load bearing strips made of corrugated cardboard filled with quartz sand
230145-00-0105	Compound for bitumen and bituminous mixtures made of crumb rubber powder
260067-00-0301	Polymer macro fibres reinforced with basalt fibre for the use in concrete
280004-00-0702	Flanged balancing valves
330008-03-0601	Anchor channels (superseding technical specification 'EAD 330008-02-0601')
330087-01-0601	Systems for post-installed rebar connections with mortar (superseding technical specification 'EAD 330087-00-0601')
330232-01-0601	Mechanical fasteners for use in concrete (superseding technical specification 'EAD 330232-00-0601')
330232-01-0601 -v01	Torque-controlled expansion fasteners for use in concrete with variable working life up to 50 years
330250-00-0601	Post-installed fasteners in concrete under fatigue cyclic loading
340309-00-0305	Non load-bearing permanent shuttering kits/systems based on hollow blocks or panels of insulating materials and sometimes concrete (superseding technical specification 'ETAG 009')

## NANDO Scope Extension – 01/22

### Designation of a Notified Body pursuant to the Construction Products Regulation

**From :** Department of Housing, Local Government and Heritage  
Custom House  
Dublin 1  
Ireland

**To :** European Commission  
GROWTH Directorate-General  
200 Rue de la Loi,  
B-1049 Brussels.  
Other Member States

**Reference :** Regulation (EU) No 305/2011 - Construction products

**Body name, address, telephone, fax, email, website :**

FM Approvals Europe Limited  
Element 78, Ground Floor Block A, One Georges Quay Plaza, Dublin 2 D02 E440  
Dublin  
Ireland  
Phone : +353 1 761 4200  
Fax :  
Email : [andrew.was@fmaprovals.com](mailto:andrew.was@fmaprovals.com) [richard.zammit@fmaprovals.com](mailto:richard.zammit@fmaprovals.com)  
Website : [www.fmaprovals.com](http://www.fmaprovals.com)

**Body :** **NB 2809**

Created : 11/02/2019 | Last update : 06/11/2019

**The body is formally accredited against :**  
EN ISO/IEC 17065 - Product certification

**Name of National Accreditation Body (NAB) :** Irish National Accreditation Board

**Tasks performed by the Body :**  
Last approval date : 12/04/2022

Decision	Product family, product/Intended use	AVCP system	Technical specification
96/577/EC	Fire alarm/detection, fixed fire-fighting, fire and smoke control and explosion suppression products (1/1) : - Sprinklers and water spray systems-kits (fire safety).	Product Certification Body (System 1)	EAD 100012-00-1106 EN 12259-4:2000/A1:2001
96/577/EC	Fire alarm/detection, fixed fire-fighting, fire and smoke control and explosion suppression products (1/1) : - Dry alarm valve assemblies (fire safety).	Product Certification Body (System 1)	EN 12259-3:2000/A1:2001 EN 12259-3:2000/A2:2005

## CE Certificate and Report – 01/22



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**FM Approvals Europe Limited**  
One Georges Quay Plaza,  
Dublin, Ireland. D02 E440  
Email: [csr@fmaprovals.com](mailto:csr@fmaprovals.com) Web: [www.fmaprovals.com](http://www.fmaprovals.com)

### CERTIFICATE OF CONSTANCY OF PERFORMANCE

**2809 - CPR – F0020**

In compliance with Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 (the Construction Products Regulation or CPR), this certificate applies to the construction product

**Victaulic Model AH1, AH1-CC, AH2, AH2-CC, AH3 and AH4 Vic-Flex™ Braided Flexible Hoses**

Connection of sprinklers in a clean room, commercial suspended ceiling, duct or other location in a land-based building or structure to rigid pipework within a wet or dry automatic sprinkler system

placed on the market under the name or trade mark of

Victaulic Company  
4901 Kesslersville Road, Easton, PA 18040, United States of America

and produced in the manufacturing plants

Victaulic Company  
Leland, NC 28451, United States of America

Victaulic Piping Products (Dalian) Co. Ltd.  
No. 13 Tie Shan Dong Road, Dalian Development Zone, Dalian, China, 116630

Ningbo Hongwu Pipe Industry Co. Ltd.  
Xiaolin Industrial Development Zone, Cixi Town, Zhejiang Province, China, 315321

This certificate attests that all provisions concerning the assessment and verification of constancy of performance described in the:

**ETA 20/0312 issued on 24/01/2022**

And

**EAD 100012-00-1106 dated April 2020**

under system 1 for the performances set out in the ETA are applied and that the factory production control conducted by the manufacturer is assessed to ensure the

**constancy of performance of the construction product.**

This certificate was first issued on 26<sup>th</sup> January 2022 and will remain valid as long as neither the ETA, the EAD, the construction product, the AVCP methods nor the manufacturing conditions in the plant are modified significantly, unless suspended or withdrawn by the notified product certification body.

Digitally signed by Richard Zammit  
E-mail: [richard.zammit@fmaprovals.com](mailto:richard.zammit@fmaprovals.com)  
DN: cn=Richard Zammit, o=FM Approvals Europe Limited, ou=Certification Manager, email=richard.zammit@fmaprovals.com, c=IE

Issue 1, Dublin, dated 26<sup>th</sup> January 2022  
Page 1 of 1

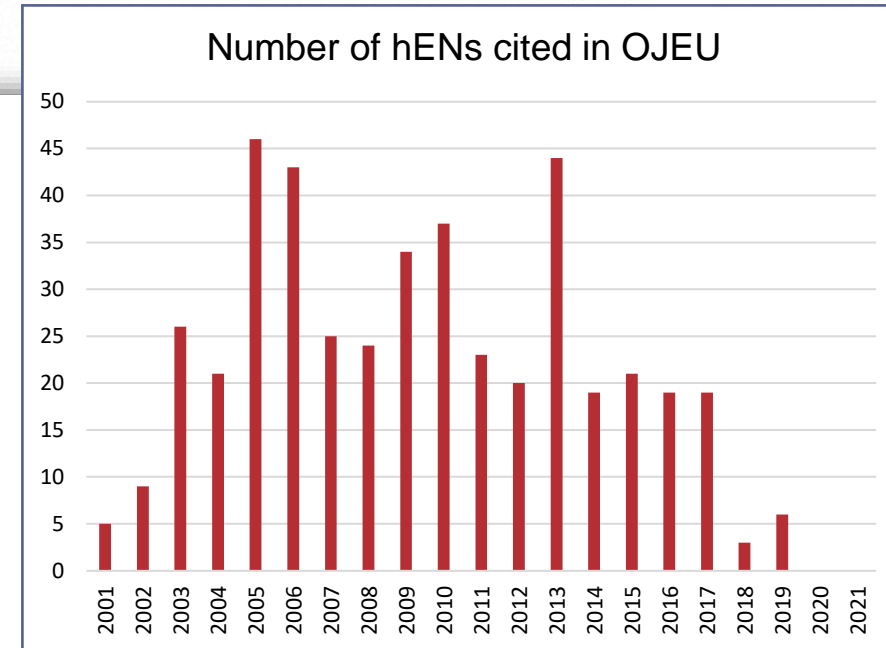
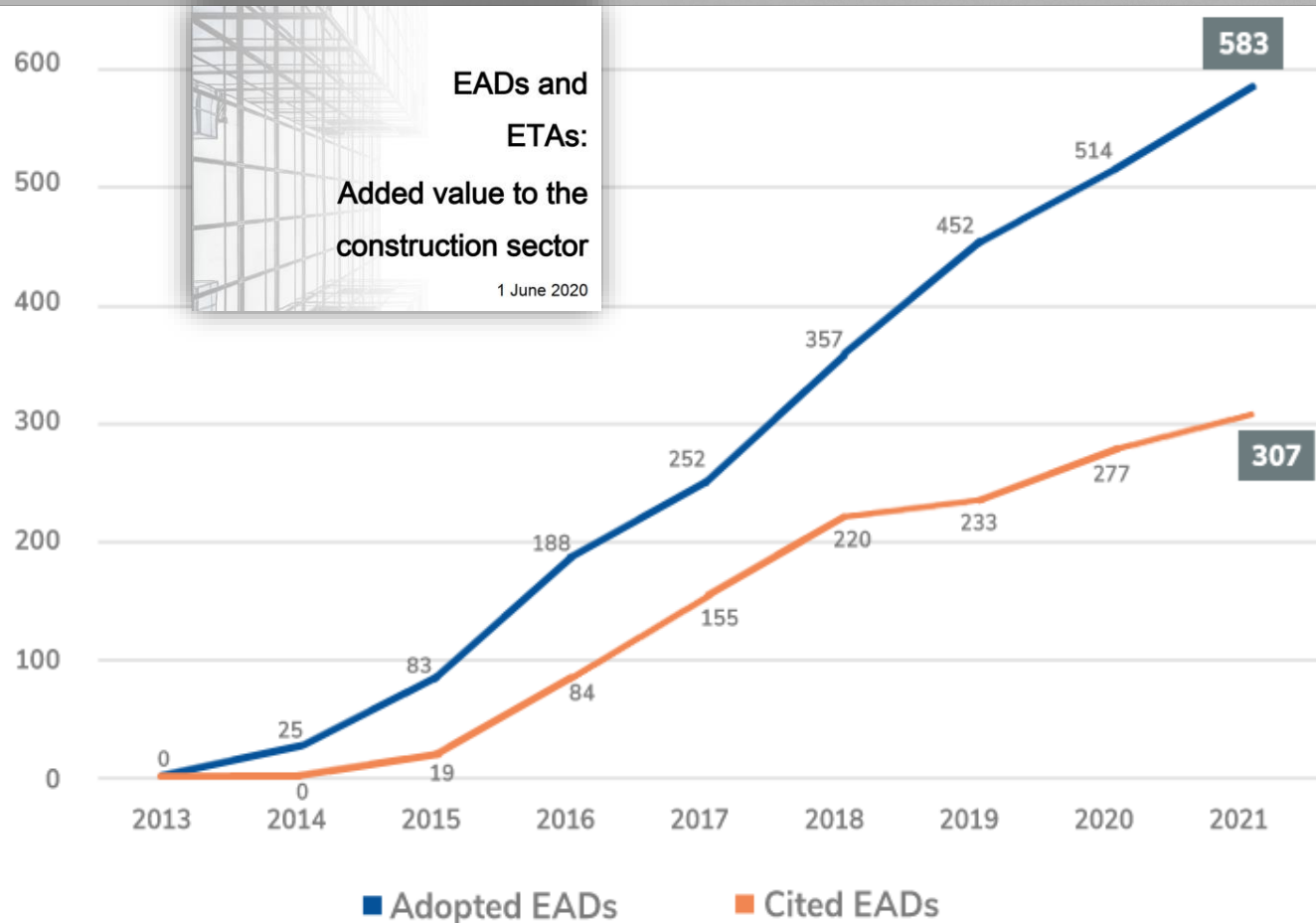
F CPR 030(Dec2020)

Certification Manager  
On behalf of FM Approvals Europe Limited (PR454008)



This certificate remains the property of FM Approvals and has been issued in accordance with FM Approvals CPR Certification Scheme.

# EAD STATUS AS OF 31<sup>ST</sup> DECEMBER 2021



# ETA STATUS AS OF 31<sup>ST</sup> DECEMBER 2021

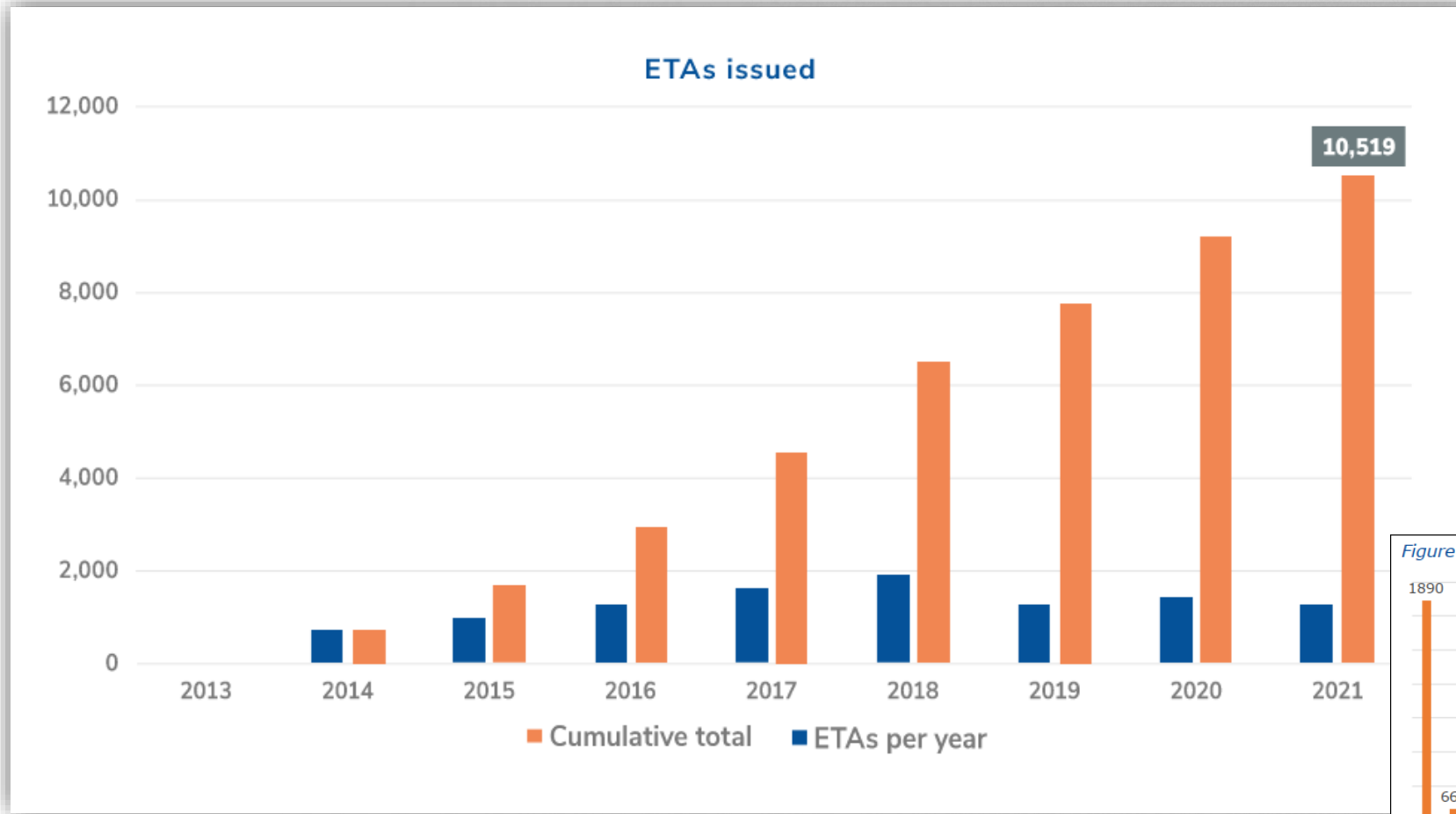
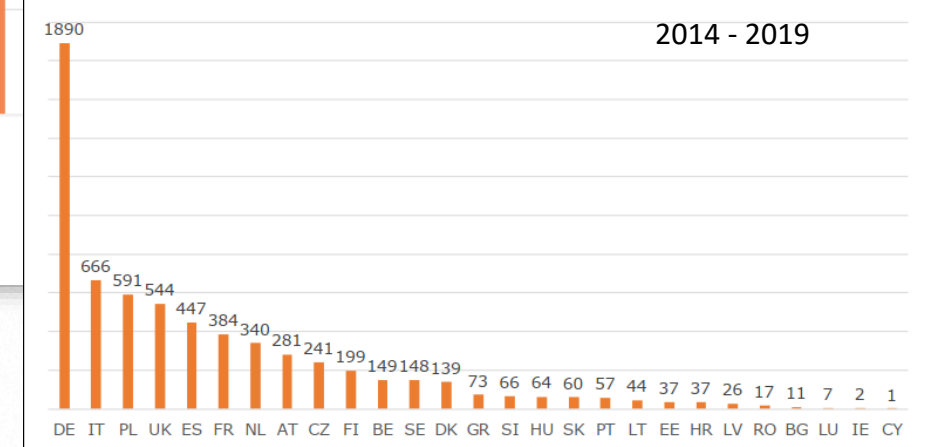
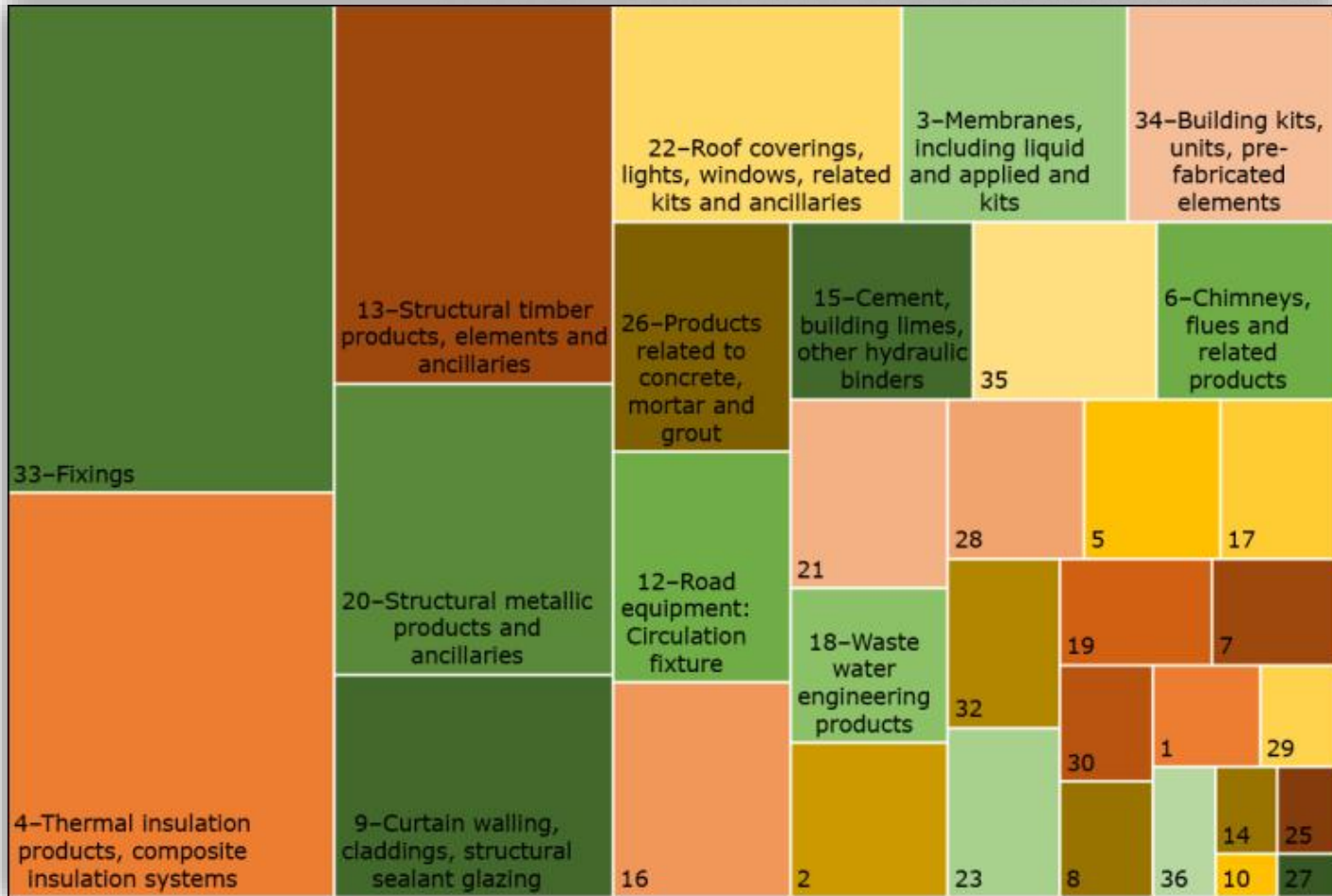


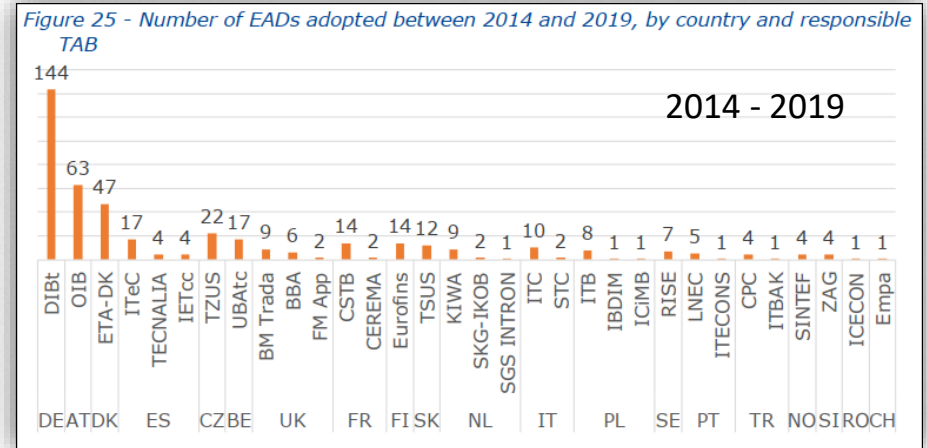
Figure 20 - Number of ETAs issued, by manufacturer's country (only EU28 Member States)



# DISTRIBUTION OF EADs BY PRODUCT AREA 2014 - 2019



- 1 - Pre-cast concrete products
- 2 - Doors, windows, shutters, gates and ancillaries
- 3 - Membranes, including liquid and applied and kits
- 4 - Thermal insulation products, composite insulation systems
- 5 - Structural bearings, pins for structural joints
- 6 - Chimneys, flues and related products
- 7 - Gypsum products
- 8 - Geotextile, geo-membranes and related products
- 9 - Curtain walling, claddings, structural sealant glazing
- 10 - Fixed firefighting equipment
- 11 - Sanitary appliances
- 12 - Road equipment: Circulation fixture
- 13 - Structural timber products, elements and ancillaries
- 14 - Wood based panels and elements
- 15 - Cement, building limes, other hydraulic binders
- 16 - Reinforcing and pre-stressing steel for concrete and ancillaries, post tensioning kits
- 17 - Masonry and related products, including units, mortars and ancillaries
- 18 - Waste water engineering products
- 19 - Floorings
- 20 - Structural metallic products and ancillaries
- 21 - Wall and ceiling finishes (external and internal), internal partition kits
- 22 - Roof coverings, lights, windows, related kits and ancillaries
- 23 - Road construction products
- 24 - Aggregates
- 25 - Construction adhesives
- 26 - Products related to concrete, mortar and grout
- 27 - Space heating appliances
- 28 - Pipes, tanks and ancillaries (not in contact with water for human consumption)
- 29 - Construction products in contact with water for human consumption
- 30 - Glass products (flat, profiled or blocks)
- 31 - Power, control and communication cables
- 32 - Sealants for joints
- 33 - Fixings
- 34 - Building kits, units, pre-fabricated elements
- 35 - Fire stopping, fire sealing, fire protective or retardant products
- 36 - Other



# EAD STATUS UPDATE FOR PRODUCT AREA 10 AND 18

## Flexible Sprinkler Hose (FM 1637 – EAD 100012-00-1106)

- European Standard for Flexible Sprinkler Hoses based on FM 1637 cited in OJEU
- First CE Certificate issued
- TAB and Notified Body working on further projects

## ESFR Sprinkler (FM 2008 – EAD 100002-00-1106)

- European Standard for ESFR Sprinklers based on FM 2008 adopted by EOTA and greenlighted for citation by EC
- EAD greenlighted by European Commission
- Citation in the Official Journal of the European Union pending

## Seismic Sway Bracing (FM 1950 – EAD 100005-00-1106)

- EAD for Seismic Sway Bracing adopted by EOTA
- First Approval Report (ETA) for Seismic Sway Bracing issued
- Waiting for EC Service's green light for citation in OJEU

## Flood Barriers (FM 2510 – EAD 180002-00-0706)

- EAD for Flood Barriers based adopted by EOTA
- First Approval Report (ETA) for Flood Barriers issued
- Waiting for EC Service's green light for citation in OJEU





# ETA STATUS UPDATE FOR PRODUCT AREA 10 AND 18



Member of the FM Global Group

## ETA Projects Status in Steps

	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8	Step 9	Step 10	Step 11	Step 12	Step 13	Step 14	Step 15	Step 16	Step 17	Step 18
	Request from manufacturer to TAB; NDA between manufacturer and TAB; technical file and FPC info	Contract between manufacturer and RTAB for production of ETA	Information from EOTA to EC on work programme for EAD	Information to and comments from other TABs on the application and their advise whether or not they want to	Complete draft EAD by RTAB and submit to manufacturer and EOTA ==> EC	Review of the draft EAD and commenting by manufacturer, relevant sector TABs in EOTA	Adoption of EAD by EOTA and submission of EAD to EC by EOTA	Comments from EC (consultant)	Amend EAD based on EC comments and submit EAD to manufacturer and EC for verification	Complete draft ETA and submit for comments to EOTA TABs in relevant product area and manufacturer	Adapt ETA based on comments and issue to manufacturer	FPC audits under AYCP	Green light from EC	EAD citation in OJ	Adoption of final EAD by EOTA	NB accreditation for the relevant EAD if AYCP system 1, 1+ and 2+	ETA Revision if necessary and Certificate issuance if AYCP system 1, 1+ and 2+	CE marking
	No timing	1 month	No timing	1 month	5 months	1 month + 2 weeks for second review after adaption based on first	No timing	15 working days	No timing	1 month	No timing	No timing	No timing	No timing	No timing	No timing	NB	Manufacturer
ESFR Sprinkler (EAD 100002-00-1106)	completed	completed	completed	completed	completed	completed	completed	completed	completed	completed	completed	completed	completed	completed	completed	completed	completed	completed
Flexible Sprinkler Hose (EAD DP 19-10-0012-11.06)	completed	completed	completed	completed	completed	completed	completed	completed	completed	completed	completed	completed	completed	completed	completed	completed	completed	completed
Flood Mitigation (EAD 180002-00-)	completed	completed	completed	completed	completed	completed	completed	completed	completed	completed	completed	completed	completed	completed	completed	completed	completed	completed
Seismic Sway Bracing (EAD 100005-)	completed	completed	completed	completed	completed	completed	completed	completed	completed	completed	completed	completed	completed	completed	completed	completed	completed	completed

Free search Product area Published

10. Fixed firefighting equipment All Filter

EAD Number	EAD Title	OJEU	Status	Comment
100002-00-1106	Early Suppression, Fast Response (ESFR), K240 to 480, Upright and Pendent Automatic Fire Sprinkler		Pending for citation in OJEU	
100005-00-1106	Rigid seismic sway brace components for fire sprinkler pipe work		Pending for citation in OJEU	
100012-00-1106	Flexible sprinkler hose with end fittings <a href="#">Download</a>	Decision (EU) 2021/1789	Cited	

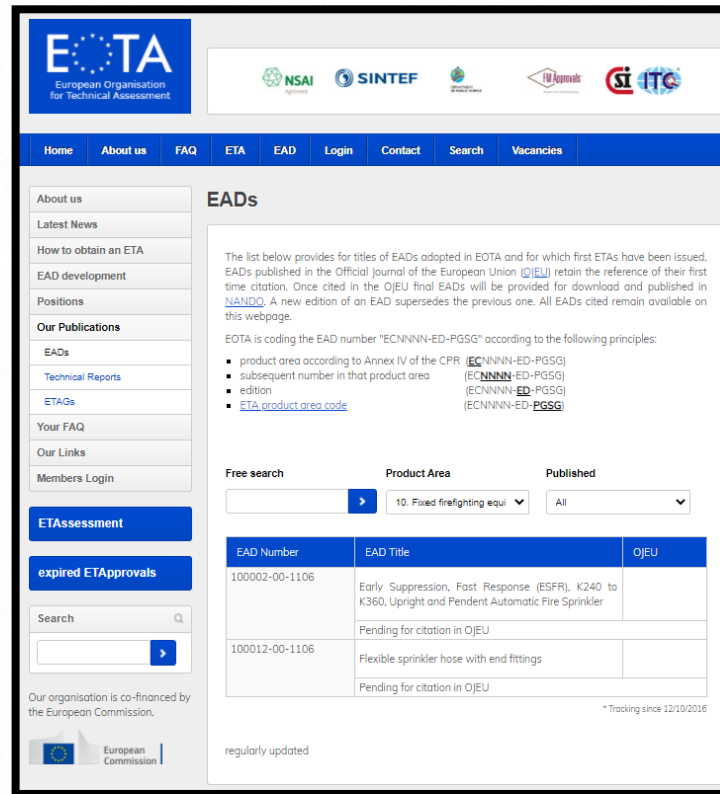
Free search Product area Published

18. Waste water engineering products Pending for citation in OJEU Filter

EAD Number	EAD Title	OJEU	Status	Comment
180002-00-0706	Opening and perimeter barriers for flood protection of a building or other structure		Pending for citation in OJEU	

# EN 12259-13 >>> ESFR SPRINKLERS

## FM Approvals ESFR-EAD became the Basis for the ESFR EN Standard



The screenshot shows the EOTA website with the following content:

- Navigation menu: Home, About us, FAQ, ETA, EAD, Login, Contact, Search, Vacancies
- Left sidebar: About us, Latest News, How to obtain an ETA, EAD development, Positions, Our Publications (EADs, Technical Reports, ETAGs, Your FAQ, Our Links, Members Login), ETAssessment, expired ETApprovals, Search
- Main content: EADs section with a list of EADs and a search filter.

EAD Number	EAD Title	OJEU
100002-00-1106	Early Suppression, Fast Response (ESFR), K240 to K360, Upright and Pendent Automatic Fire Sprinkler	
100012-00-1106	Flexible sprinkler hose with end fittings	



TC 191 WG5 TG1



Fixed firefighting systems — Components for sprinkler and water spray systems — Part 13: ESFR sprinklers

Einführendes Element — Haupt-Element — Ergänzendes Element  
Élément introductif — Élément central — Élément complémentaire

EAD 100002-00-1106

February 2021

EARLY SUPPRESSION, FAST RESPONSE (ESFR), K202 TO 480, UPRIGHT AND PENDENT AUTOMATIC FIRE SPRINKLER

Adopted European Assessment Documents according to Regulation (EU) No 305/2011, Annex B 7.



European Organisation for Technical Assessment | www.eota.eu

# THE EN-EAD CONCEPT TO CE MARKING WITH PASS/FAIL CRITERIA

## EN 12259-13 with pass-fail values and reference in 12845

### 4.13 Discharge coefficient

#### 4.13.1 Assessment method

Four samples shall be individually tested using the test apparatus shown in Figure 1 at increasing and decreasing pressures over the complete operating range, 1,7 to 12,1 bar in  $0,7 \pm 3\%$  bar increments.

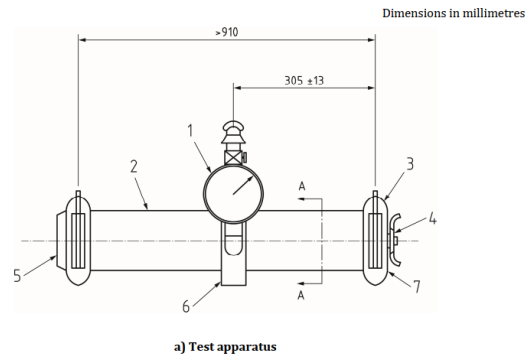


Table 3 — Discharge coefficient ranges

Nominal discharge coefficient l/min/(bar) <sup>1/2</sup>	Nominal discharge coefficient range l/min/(bar) <sup>1/2</sup>
200	195-209
240	231-254
320	305-336
360	344-382
400	380-420
480	456-504

#### 4.13.2 Criteria

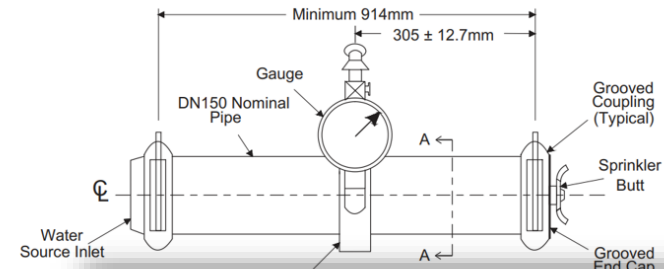
Mean value of the discharge coefficient shall be between the range in Table 3. When sprinklers are tested, for each sample and pressure, not more than one individual value falls outside of the stated range in Table 3.

## EAD 100002-00-1106 for CE marking – no threshold value

European Assessment Document – EAD 100002-00-1106

56/59

### ANNEX D: TEST APPARATUS FOR MEASURING NOMINAL DISCHARGE COEFFICIENT



#### 2.2.1 Distribution of extinguishing media

##### 2.2.1.1 Discharge coefficient (k-factor)

###### Purpose of the assessment

To determine the relationship between water flow and discharge pressure over the intended range of application of the sprinkler.

###### Assessment method

Four samples shall be individually tested using the test apparatus for determining K-factor shown in Annex D at increasing and decreasing pressures over the complete operating range, 1,7 to 12,1 bar in  $0,7 \pm 0,02$  bar increments.

With the deflector removed to facilitate testing, each sample shall be inserted into the test fixture and tightened to  $180 \pm 5^\circ$  beyond "hand tight" using an appropriate wrench.

The discharge coefficient ( $K$ ) shall be determined using the expression:

$$K = \frac{Q}{\sqrt{P}}$$

Where  $Q$  is the flow rate in l/min and  $P$  is the pressure in bar.

The accuracy of the pressure measuring equipment shall be within  $\pm 3\%$  of measured value.

The accuracy of the flow measuring equipment shall be within  $\pm 5\%$  of measured value.

###### Expression of results

The ETA shall state the level of the calculated average discharge coefficient in l/min/(bar)<sup>1/2</sup>.

# CONCLUSION

- **The CPR offers two routes for CE marking**
- **hEN is the mandatory route, while EAD is the voluntary route**
- **The current hEN situation is a deadlock in publication of new and revised hENs**
- **No EC mandate necessary to develop an EAD**
- **EADs can even be developed in parallel to hEN as long as the hEN is not cited in OJEU**
- **The EOTA route is an efficient way to CE marking**



Thank you!

