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Authorized and notified according to article 10 of the Council Directive of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States related to construction products (89/106/EEC)

INTRON CERTIFICATIE

MEMBER OF EOTA

EUROPEAN TECHNICAL APPROVAL ETA-06/0007

English translation prepared by INTRON Certificatie B.V. - Original version in Dutch language

Handelsnaam *Trade name*	**EUROFAST®**
Houder van de goedkeuring *Holder of approval*	**VAN ROIJ FASTENERS EUROPE B.V.** **Jan Tooropstraat 16** **5753 DK DEURNE Nederland**
Onderwerp en toepassing van het bouwproduct *Generic type and use of construction product:*	**Bevestigingsmiddelen voor mechanische bevestigde dakbedekkingsystemen** Fasteners for mechanically fastened flexible roof waterproofing systems.
Geldigheidstermijn van : **tot :** *Validity from / to:*	**01-03-2006** **01-03-2011**
Fabrieken: *Manufacturing plants:*	**Vermeld in niet-gepubliceerd supplement bij deze ETA** Laid down in non-published supplement to this ETA
Deze Europese Technische Goedkeuring omvat: *This European Technical Approval contains:*	**13 bladzijden, inclusief 2 bijlagen die een integraal onderdeel vormen van dit document** 13 pages including 2 Annexes which form an integral part of this document

I. LEGAL BASES AND GENERAL CONDITIONS

1. This European Technical Approval is issued by INTRON Certificatie B.V. in accordance with:

   - Council Directive (89/106/EEC)[1] of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products, modified by the Council Directive 93/68/EEC of July 1993[2] and Regulation (EC) No 1882/2003 of the European Parliament and of the Council[3].

   - Regulation of the Minister of Housing (VROM) of 19 November 2002, nr MJZ20020858861 on settlement of further prescriptions for works (Regulation Building Decree), published in Staatscourant 2002, 241, with amendments published in Staatscourant 2003, 101, Staatscourant 2005, 163 and Staatscourant 2005, 249.

   - Common Procedural Rules for Requesting, Preparing and the Granting of European Technical Approvals set out in the Annex of Commission Decision 94/23/EEC[4].

   - Guideline for European Technical Approval of "Systems of mechanically fastened flexible roof waterproofing membranes", ETAG 006, edition 2000.

2. INTRON Certificatie B.V. is authorised to check whether the provisions of this European Technical Approval are met. Checking may take place in the manufacturing plants. Nevertheless, the responsibility for the conformity of the products to the ETA and for their fitness for intended use remains with the holder of the European Technical Approval.

3. This ETA is not to be transferred to other manufacturers or agents of manufacturers other than those indicated on page 1, or manufacturing plants other than those laid down in the context of this European Technical Approval.

4. This ETA may be withdrawn by INTRON Certificatie B.V. pursuant to Article 5.1 of the Council Directive 89/106/EEC.

5. Reproduction of this European Technical Approval including transmission by electronic means shall be in full. However, partial reproduction can be made with the written consent of INTRON Certificatie B.V.. In this case partial reproduction has to be designated as such. Texts and drawings of advertising brochures shall not contradict or misuse the European Technical Approval.

6. The European Technical Approval is issued by the Approval Body in its official language. This version corresponds to the version circulated within EOTA. Translations into other languages have to be designated as such.

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[1] Official Journal of the European Communities nº L 40, 11.2.1989, p.12
[2] Official Journal of the European Communities nº L 220, 30.8.1993, p.1
[3] Official Journal of the European Union nº L 284, 31-10-2003, p.25
[4] Official Journal of the European Communities nº L 17, 20.1.1994, p.34

II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

1 Definition of product and intended use

1.1 Definition of the product

The products are mechanical fasteners Eurofast® for fastening of flexible roof waterproofing membranes according to ETAG 006 to various substrates. A survey of the products is given in annex 1.

This ETA is issued in accordance with paragraph 2.2 iii) Component Approval of ETA Guideline 006, which means the fastening system is marketed separately from the other components of the kit (membranes and possibly thermal insulation).

1.2 Intended use

The intended use of the fasteners Eurofast® is the fastening of flexible roof waterproofing membranes according to ETAG 006 and thus the waterproofing of roofs.

The component Eurofast® contributes in complying of mechanically fastened flexible roof waterproofing systems with Essential Requirements 3 and 4: Hygiene, health and environment and safety in use of directive 89/106/EEC.

The provisions made in this ETA are based on an assumed intended working life of the component of at least 10 years. The actual working life is also dependant on the design of the roof and the waterproofing systems.

The indication given on the working life cannot be interpreted as a guarantee given by the manufacturer, but are only to be regarded as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

2 Performance of the product and methods of verification

Assessment of the fitness of the component Eurofast® for the intended use, with regard to Essential Requirements 2, 3, 4 and 6, as far as applicable, was performed in compliance with the "Guideline of systems of mechanically fastened flexible roof waterproofing membranes" (ETAG 006).

This ETA only comprises the performance characteristics of the fasteners Eurofast® determined for fastening of flexible roof waterproofing membranes according to ETAG 006. The performance characteristics of the corresponding mechanically fastened roof waterproofing system as well as of the components membrane and insulation (only if insulation is part of the system) shall be determined according to ETAG 006 and shall be covered by a separate ETA. The characteristics of this component show values, which are within the requirements and tolerances established in the Manufacturer's Technical Dossier (MTD), and which are shown below.

This ETA is issued for the component Eurofast® on the basis of the product composition deposited at INTRON Certificatie B.V. Changes to the components of the fastener or in the production process of the components, which could result in the production process and/or the properties of the product deposited being incorrect should be notified to INTRON Certificatie B.V. before the changes are introduced. INTRON Certificatie B.V. will decide whether or not such changes affect the ETA and consequently the validity of the CE marking on the basis of the ETA and if further assessment/alterations to the ETA shall be necessary.

2.1 Performance of the System

2.1.1 *ER.2 Safety in case of fire*

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External fire performance

The influence of the fasteners to the fire performance of the kits is determined by other components of the kit. For this reason this item has not been assessed for the component fastener.

2.1.2 *ER.3 Hygiene, health and environment*

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Release of dangerous substances

According to the manufacturer's declaration these products do not contain any dangerous substances according to the EU database.

2.1.2 *ER.4 Safety in use*

Resistance to wind uplift

All fastening systems have been subject to wind-uplift tests according to EOTA 006 guideline, totally 27 mechanically fastened waterproofing systems; the performance of the kit is mainly determined by the roofing membranes. Details of specific kits and test results may be obtained at the holder of the ETA.

2.1.2 *ER.6 Energy consumption and Heat retention*

Possible thermal insulation has not been assessed in the framework of this component ETA.

2.2 Performance of mechanical fasteners

2.2.1 ER.4 Safety in use

Axial load

The possible combinations of screws and washers for the applicable substructures are given in the following table. The axial load in N/fastener is specified. The values are mean values, obtained at axial loading tests

WASHERS	SCREWS				
	EDS-S	EDS-BZ/BG (T)	EDS-B	EDS-H	EFHD
- DVP-EF/DF-8240D		1390			2790
- DVP-EFB/DFB-8240D		1410			
- DVP-EFB/DFB-8040D		1430			
- DVP-EF-4010N/N3				1460	
- DVP-EF-5010N/D	1510		1460		
- DVP-EF-7007N/D/H	1520				
- DVP-EF-7010 N/D	1520				
- DVP-EF-8040N	1570		1410		
- DVP-EF-8040D	1570	1440	1410		
SUBSTRUCTURE	**Steel deck 0,7 – 0,88 mm**	**Steel deck 0,7 – 2x 1,25 mm**	**Steel deck 0,7 – 2x 1,25 mm**	**Wood**	**Concrete**

= possible combination	= no combination

Resistance to unwinding

According to item 5.3.4.2 of EOTA 006 Guideline, the fastening systems do not show unwinding phenomena, taking into account the satisfactory field experience.

2.2.2 Aspects related to durability, serviceability and identification

Resistance to corrosion of metallic fasteners

The metal screws and washers used offer a corrosion resistance of 15 cycles according to EN-ISO 6988 and the interpretation of ETAG 006.

3. Evaluation of Conformity and CE marking

3.1 Attestation of the System of conformity

The European Commission according to the decision (98/143/EC of February 1998, Official Journal of the European Communities No. L 42, 14.02.1998) on the Procedures of Attestation of Conformity has, for this type of product, laid down a:

System 2+

for the procedure of attestation of conformity (Annex III, clause 2(ii) first possibility of Directive 89/106/EEC) for systems of mechanically fastened flexible roof waterproofing membranes.

The system 2+ provides:

a) Tasks of the manufacturer
- Factory production control.
- Initial type-testing of the product.

b) Tasks of the approved body
- Initial inspection of the factory and production control.
- Continuous surveillance, assessment and approval of factory production control.

3.2 Responsibilities

3.2.1 Tasks of the manufacturer

3.2.1.1. Factory production control

The manufacturer shall exercise permanent internal control of production and ensure that the results obtained comply with the quality level required. All the elements, requirements and provisions adopted by the manufacturer are documented in a systematic manner in the form of written procedures and regulations. This control production system documentation ensures a common understanding of quality assurance and enables the achievement of the required product characteristics according to the ETA.

The manufacturer shall only use raw materials or components that comply with the indications in the MTD.

The results of the factory production control shall be recorded and evaluated. The records shall include at least the following information.

- Name of the product and of the raw materials,
- Type of inspection or control,
- Date of manufacture of the product, batch number, and date of inspection or control of the product,
- Result of inspections or controls and, as far as applicable, comparison with requirements,
- Signature of the person responsible for factory production control.

The records shall be kept for at least five years.

Further information concerning tests, their frequency and tolerances, is included in the controle plan, which forms part of the MTD to this ETA deposited at INTRON Certificatie B.V. This information shall be supplied to the approved body for the evaluation of attestation of conformity.

3.2.1.2. Initial type-testing of the product

Initial type-testing carried out by the approval body INTRON Certificatie B.V. is that set out in chapter 5 of ETAG 006 as far as relevant for the component mechanical fasteners.

The INTRON Certificatie B.V. assessed the results of these tests in accordance with chapter 6 of this ETAG, as part of the ETA issuing procedure.

3.2.2. *Tasks of the Approved Body*

3.2.2.1 Initial inspection of factory and production control.

The approved Body ascertains that, in accordance with the MTD, factory conditions and production control allow the manufacturer to ensure the consistency and homogeneity of the manufactured product and its traceability, thus guaranteeing that the final characteristics of the product are those indicated in chapter 2.

3.2.2.2 Continuous surveillance, assessment and approval of Factory Production Control

The Approved Body shall visit the producer at least twice a year. If the results of the first inspection are satisfactory, the inspection interval can be reduced to one per year.

Surveillance of the manufacturing process shall include:

- Checking the documentation of factory production control, to ensure continuing compliance with the provisions of the ETA,
- Identification of changes by comparing data obtained during the initial inspection or during the last inspection.

In cases where the ETA provisions and the control plan are no longer fulfilled, the certificate of conformity shall be withdrawn.

3.3 CE marking

CE marking[5] shall be shown on the product or on a label applied on the packaging; in addition to the "CE" symbol, the following information shall be given on the label or on the commercial documentation supplied by the manufacturer:

- name or identifying mark of the manufacturer and of the factory,
- the last two digits of the year in which the CE marking was affixed,
- trade name of the product,
- number of the European technical approval (valid for identification of the characteristics of the System and the "NPD" characteristics).

4 Assumptions under which the fitness for use of the product is assessed

Substrates

The substrate onto which the waterproofing kit is to be laid should be sufficiently rigid, dense and dimensionally stable to support the system (membrane and insulation).

In order to support the loads imposed by traffic, insulation materials for use in warm decks should be capable of resisting permanent deformation or damage when subjected to concentrated loads. They should have a dust-free surface and sufficient laminar strength to resist with a margin of safety any stress imposed by wind uplift forces.

When insulation materials with a compressibility of $<0.1 Nmm^{-2}$ (at 10% compression) are used, the membrane may be penetrated by the fastener. This may be prevented by using the "Treadfast" fastener.

Roof materials

The following is a list of recommendations for roof deck materials to receive the mechanically fastened roof waterproofing system.

- *Reinforced concrete.* Where a roof slab of reinforced concrete is designed as the deck, which will directly support the waterproofing, it is preferable to lay the slab to provide adequate drainage falls and adequate provision should be made for drying out the slab. A concrete surface, which is not adequately smooth, or does not provide even drainage falls, should be screeded. The surface of the concrete should be finished with a wood float to provide a reasonably smooth surface free from ridges and hollows.

- *Profiled metal decking.* Metal decking does not provide a continuous supporting surface for the waterproofing system; therefore metal decking shall always be used in conjunction with a continuous support, e.g. insulation material. The thickness of the metal decking shall not be less than 0,70 mm.

- *Timber boarding, including OSB*. Roof decks of timber boarding should be designed using naturally durable wood or durably treated wood. Any method of treatment should be compatible with the kit components. Boarding should not be less than 19 mm nominal thickness, planed, closely clamped together with tongued and grooved joints or closely butted and secured by nailing with nail heads not protruding.

- *Plywood*. Roof decks of plywood should be specified as "water boil proof" bonded veneer plywood and durable or treated with a compatible preservative and should

[5] Notes on the CE marking are stated in Guidance Paper D of the European Commission "CE marking under the Construction Products Directive", Brussels 01 January 2002.

not be less than 19 mm nominal thickness. Plywood for roof decks may be square edged or tongued and grooved. Longitudinal joints should occur on the centre of supporting joists. Cross joists should be staggered and in the case of square edged boarding additional support is required, such as the use of noggins.

If there is doubt about the suitability of the substrate, e.g. on a construction site, a pullout test on site should be performed to verify the performance of the kit (see Annex D of ETAG 006). Furthermore, care should be taken during design that bimetallic corrosion between metal parts, especially between the substrate and the screw, does not occur. Likewise, the use of insulation materials containing substances which can affect the performance of the fasteners shall be avoided.

Packaging, transport and storage

The fasteners shall be handled and stored with care and be protected from accidental damage.

Execution of works

The fasteners shall be installed in accordance with the installation instructions from Van Roij Fasteners Europe B.V. by competent roofing contractors.

Maintenance and repair

The fasteners need no special maintenance.

When replacing fasteners they shall be approved by the manufacturer and covered by the ETA.

4.2. Installation and design

4.2.1 General

The fitness for use of this component can only be assumed if installation is carried out according to the manufacturer's instructions. The manufacturer's installation guide forms part of this ETA.

It is the responsibility of the manufacturer to guarantee that the information on the application of its products is correctly given to the users.

4.2.2 Fasteners

In annex 2 the installation instructions for the screws are given. These refer to depth in or below the substructure, the tools and the weight of the tools and the speed (rounds per minute). Care should be taken to vertical positioning of the screws.

4.2.3 Membranes

The combinations of fastening systems and membranes (brands) are deposited in the MTD together with the performance of the mechanically fastened systems regarding resistance to wind loads. Data concerning specific kits are available upon request at Van Roij Fasteners B.V..

5 Recommendations

5.1 Information on packing, transport and storage

This product is neither toxic nor inflammable, so it is not necessary to follow any safety instructions for transport and handling.

De fasteners shall be stored in dry, ventilated premises, and protected against direct sunlight.

5.2 Recommendations on use, maintenance and repair

For the fastening systems there are no particular recommendations on use, maintenance and repair, because the systems are integrated in the mechanically fastened roofing systems and can not be inspected in a non-destructive way. So the appearance of the fastening systems should be inspected at the inspection of the mechanically fastened roofing systems. More information may be derived from recommendations of the manufacturer of the roofing membrane and, eventually, the insulation material belonging to the kit.

For INTRON Certificatie B.V.

ing. R. Woonink
Certification manager

ANNEX 1 SURVEY OF EUROFAST® RANGE

1. Steel Washers

Eurofast® Code	Dimensions[1)2)] mm (L x W) or (∅) x T - ∅ hole
- DVP-DF-8240D	82 x 40 x 1,0 – 7,0
- DVP-EF-8240D	82 x 40 x 1,0 – 4,85
- DVP-DFB-8240D	82 x 40 x 1,0 – 7,0
- DVP-EFB-8240D	82 x 40 x 1,0 – 4,85
- DVP-DFB-8040D	80 x 40 x 1,0 – 7,0
- DVP-EFB-8040D	80 x 40 x 1,0 – 4,85
- DVP-EF-4010N	∅ 40 x 1,0 – 6,0
- DVPEF4010N3	∅ 40 x 1,0 – Starsh.
- DVP-EF-5010N	∅ 50 x 1,0 – 6,3
- DVP-EF-5010D	∅ 50 x 1,0 – 6,3
- DVP-EF-7007N	∅ 70 x 0,7 – 6,0
- DVP-EF-7007D	∅ 70 x 0,7 – 6,0
- DVP-EF-7007H	∅ 70 x 0,7 – 6,0
- DVP-EF-7010N	∅ 70 x 1,0 – 7,0
- DVP-EF-7010D	∅ 70 x 1,0 – 7,0
- DVP-EF-8040N	80 x 40 x 1,0 – 7,0
- DVP-EF-8040D	80 x 40 x 1,0 – 7,0

1) Detailed drawings, included tolerances are deposited in the MTD
2) Characters refer to profile type:
N = normal; D = deep; H = high

DVP-DF/EF-8240D

VP-DFB/EFB8040D

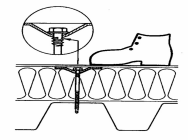
DVP-EF-5010N

ANNEX 1 SURVEY OF EUROFAST® RANGE

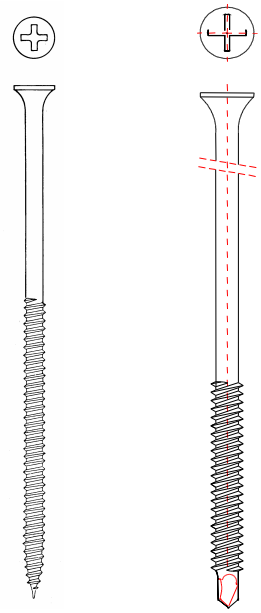
4. Screws

Eurofast® Code	Dimensions[1)] Ø (mm) L range (mm)	Head	Point	Application
- EDS-S	Ø 4,8 30 – 300	PH 2 Bugle	Sharp 25°	Steel decks 0,7 – 0,88 mm
- EDS-B	Ø 4,8 50 – 240	PH 2 Bugle	Self drilling	Steel decks 0,7 - 2 x 1,25 mm
- EDS – BZ/BG	Ø 4,8 70 – 220	HWH 8 mm	Self drilling	Steel decks 0,7 - 2 x 1,25 mm
- EDS – BZT/BGT [2)]	Ø 4,8 70 – 300	HWH 8 mm	Self drilling	Steel decks 0,7 - 2 x 1,25 mm
- EDS-H	Ø 5,0 20 - 120	PH 2 Bugle	Sharp 25°	Wood, min. thickness 19 mm
- EFHD	Ø 6,3 50 - 300	Torx T-25 RSD Bugle	Ricoh point	Concrete

1) Detailed drawings, included tolerances are deposited in the MTD.
2) T refers to safe tread



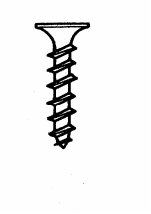
Illustrations



EDS-S

EDS-B

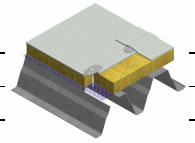
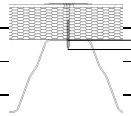
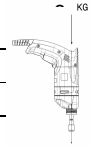
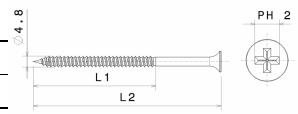
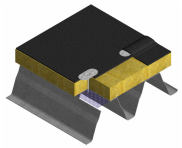
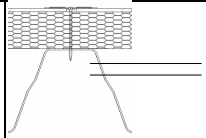
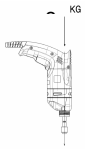
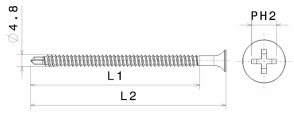
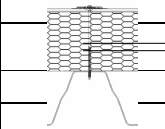
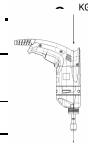
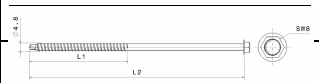
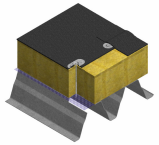
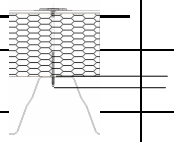
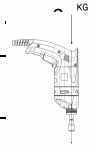
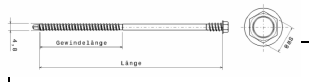
EDS-BZT



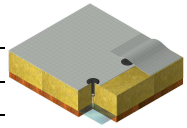
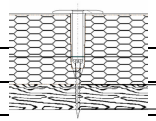
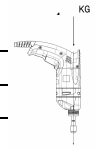
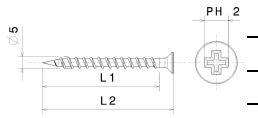
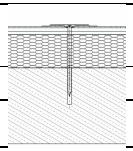
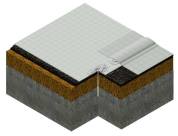
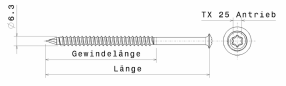
EDS-H

EFHD

ANNEX 2 INSTALLATION INSTRUCTIONS

Description	View	Crossection	Penetration	Tool	R/min	Scetch	L2
Eurofast Deck Screw S-Point Bugle-head, Ph2 EDS-S			P=20 mm		~ 2500		25-300
Eurofast Deck Screw Red. drill-point, Bugle-head, Ph2 EDS-B			P=20 mm		~ 2500		50 - 210 mm
Eurofast Deck Screw Red. drill-point, Hex-washer head EDS-BZ			P=20 mm		~ 2500		70 - 200 mm
Eurofast Deck Screw Red. drill-point, Hex-washer head "step-secure" EDS-BZT			P=20 mm		~ 2500		70 - 300 mm

ANNEX 2 INSTALLATION INSTRUCTIONS

Eurofast Deck Screw	5,0 x Length			P=min 18 mm				20 - 120
S-Point, Ph2	Carbonsteel							
Bugle-head						~ 2500		
EDS-H								
Eurofast Heavy Duty Screw	6,3 x Length							
RSD-Bugle head	Carbonsteel					~ 1000		
Ricoh-point								60 - 300 mm
EFHD								