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DECKING FIXING ASSEMBLIES

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1 SCOPE OF THE EAD

1.1 Description of the Construction Product

The product is an individually designed composite decking fixing to suit individual manufacturer's composite decking. It is assembled into the dovetail shaped re-entrant of the composite decking and is secured by tightening the hexagon nut on a threaded rod used to hang building services.

Three types of assembly are covered by this EAD:

- Type 1: Decking fixing comprising of a locking plate and wedge (individual based on a wedge and locking plate designs on the size and shape of the dovetail.)
- Type 2: Decking fixing comprising of a bracket assembly, cam and V-nut.
- Type 3: V shaped V Nut with a threaded hole.

1. Type 1 Fixing

The wedge is a nut with chamfered ends that in some instances act as cams, when rotated horizontally during assembly will locate and lock into the sides of the dovetail. The cams are designed to facilitate unidirectional installation into the re-entrant by clockwise rotation. The wedge has a threaded hole in the centre to allow a screwed rod to be assembled. The locking plate is a pre galvanized/mild steel formed steel plate, generally U shaped that fits over the wedge allowing it to be locked into place by means of a hexagon nut. The tightening procedure is torque controlled. The range of Type 1 included are M6 to M10.

Figure 1: Type 1 Fixing



2. Type 2 Fixing

The assembly comprises of a pre galvanized V shaped formed main body and inner body whereby the inner body is designed to slide along the inside of the main body. The opposing ends of the assembly are chamfered to allow them to locate into the side walls of the dovetail. A cam is assembled on the inside of the main body that when rotated using a metric spanner slides the inner body along the main body until the chamfered ends firmly locate against the sides of the dovetail. A malleable iron V-Nut is assembled into the fixing allowing services to be hung. The tightening procedure is torque controlled. The range of Type 2 included are M6 to M10.

Figure 2: Type 2 Fixing

3. Type 3 Fixing

The product is a V shaped V Nut with a threaded hole whereby the sides of the nut engage with the sides of the re entrant. The tightening procedure is torque controlled. The range of Type 3 included are M06 to M10.

Figure 3: Type 3 Fixing

The product is not covered by a harmonised European standard (hEN).

Concerning product packaging, transport, storage, maintenance, replacement and repair it is the responsibility of the manufacturer to undertake the appropriate measures and to advise his clients on the transport, storage, maintenance, replacement and repair of the product as he considers necessary.

It is assumed that the product will be installed according to the manufacturer's instructions or (in absence of such instructions) according to the usual practice of the building professionals.

Relevant manufacturer's stipulations having influence on the performance of the product covered by this European Assessment Document shall be considered for the determination of the performance and detailed in the ETA.

1.2 Information on the Intended Use(s) of the Construction Product

1.2.1 Intended Use(s)

The products are intended to fit inside the dovetail shaped re-entrant channel of the composite decking which is common throughout the various profiles and give a secure point from which building services can be suspended.

Figure 4: Typical Type 1 Fixing after Installation

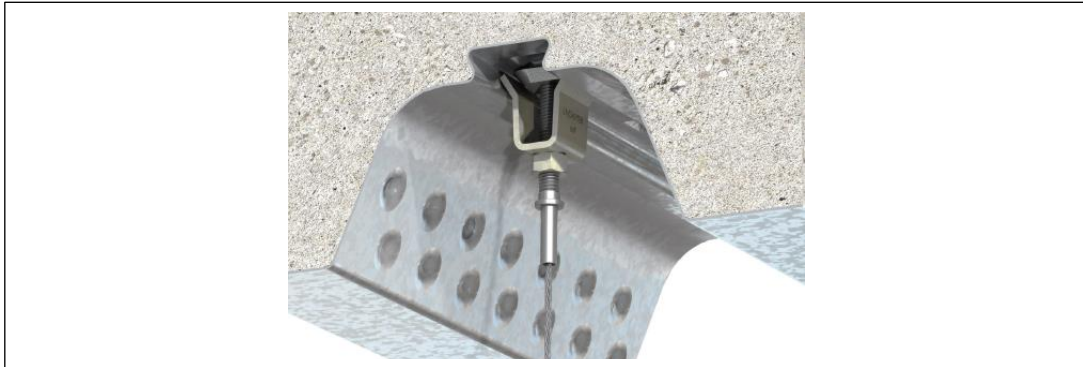


Figure 5: Type 2 Fixing after Installation



Figure 6: Type 3 Fixing after Installation



1.2.2 Working Life/Durability

The assessment methods included or referred to in this EAD have been written based on the manufacturer's request to take into account a working life of the product is the same as that for the composite decking which is assumed to be 50 years when installed in the works, provided that the Decking Fixing Assembly is subject to appropriate installation. These provisions are based upon the current state of the art and the available knowledge and experience.

When assessing the product the intended use as foreseen by the manufacturer shall be taken into account. The real working life may be, in normal use conditions, considerably longer without major degradation affecting the basic requirements for works¹.

The indications given as to the working life of the construction product cannot be interpreted as a guarantee neither given by the product manufacturer or his representative nor by EOTA when drafting this EAD nor by the Technical Assessment Body issuing an ETA based on this EAD, but are regarded only as a means for expressing the expected economically reasonable working life of the product.

¹ The real working life of a product incorporated in a specific works depends on the environmental conditions to which that works is subject, as well as on the particular conditions of the design, execution, use and maintenance of that works. Therefore, it cannot be excluded that in certain cases the real working life of the product may also be shorter than referred to above.

2 ESSENTIAL CHARACTERISTICS AND RELEVANT ASSESSMENT METHODS AND CRITERIA

2.1 Essential Characteristics of the Product

Table 1 shows how the performance of the Decking Fixing Assemblies is assessed in relation to the Essential Characteristics.

Table 1: Essential Characteristics of the Product and Methods and Criteria for Assessing the Performance of the Product in Relation to those Essential Characteristics

No.	Essential Characteristic	Assessment Method	Type of Expression of Product Performance (level, class, description)
Basic Works Requirement 1: Mechanical Resistance and Stability			
1	Tension Resistance of Assembly	2.2.1.1	$F_{t,Rk}$ [kN]
2	Durability	2.2.1.2	Classification
Basic Works Requirement 2: Safety in Case of Fire			
3	Reaction to Fire	2.2.2.1	Classification

2.2 Methods and Criteria for Assessing the Performance of the Product in Relation to Essential Characteristics of the Product

2.2.1 Mechanical Resistance and Stability

2.2.1.1 Tension Resistance of the Assembly

Tension resistance of the assembly shall be determined from test. A minimum of four tests shall be carried out for each nominal bolt size. The assemblies shall be tightened with a torque moment specified for each bolt type and size. The test load shall be increased until failure of either the rod or fixing occurs. The respective failure modes for each nominal size of fixing shall be documented in the test report.

An example for the test principle is shown in Annex A.

The results of the tests, according to 2.2.1.1 (failure loads), shall be evaluated statistically (determination of the 5% fractile, confidence level 75%). Generally a normal distribution can be assumed.

The corrected and statistically evaluated test results (5% fractile) of the tests according to 2.2.1.1 are the characteristic values of the tension resistance of the assembly.

2.2.1.2 Durability

The product shall have a verified durability expressed as a Corrosivity Classification (C1 to C5) in accordance with EN ISO 9223. The durability of the product in relevant environmental conditions shall be stated in the ETA.

2.2.2 Safety in Case of Fire

2.2.2.1 Reaction to Fire

The product shall be Classified according to EN 13501-1. The Decking Fixing Assemblies are considered to satisfy the requirements for performance Class A1 of the characteristic reaction to fire, in accordance with the EC decision 96/603/EC (as amended) without the need for further testing on the basis of its conformity with the specification of the product detailed in that Decision and its intended end use application being covered by that Decision.

3 ASSESSMENT AND VERIFICATION OF CONSTANCY OF PERFORMANCE

3.1 System(s) of Assessment and Verification of Constancy of Performance to be Applied

For the products covered by this EAD the applicable European Legal Act is: Decision 1997/176/EC (EU).

The System is 3.

3.2 Tasks of the Manufacturer

The cornerstones of the actions to be undertaken by the manufacturer of the product in the procedure of assessment and verification of constancy of performance are laid down in Table 2.

Table 2: Control Plan for the Manufacturer; Cornerstones

No.	Subject/Type of Control (<i>product, raw/constituent material, component - indicating characteristic concerned</i>)	Test or Control Method (<i>Refer to 2.2 or 3.4</i>)	Criteria, if any	Minimum Number of Samples	Minimum Frequency of Control
Factory Production Control (FPC) [including testing of samples taken at the factory in accordance with a prescribed test plan]*					
1	Check of Material Properties	Inspection Document 3.1 according to EN 10204 (to be - furnished by the supplier)	Results have to fulfil requirements of relevant material standard	Every Batch	Inspection level criteria in accordance with EN ISO 2859-1
2	Geometry and Dimensions	Check of Geometry, Dimensions and Tolerances	Results have to fulfil requirements stated on the manufacturing drawing	As per QMS	Inspection level criteria in accordance with EN ISO 2859-1
3	External and Internal Soundness of Cast Iron Parts	Check according to test plan	Results have to fulfil performance outlined in ETA	As per QMS	Inspection level criteria in accordance with EN ISO 2859-1

4 REFERENCE DOCUMENTS

As far as no edition date is given in the list of standards thereafter, the standard in its current version at the time of issuing the European Technical Assessment, is of relevance.

CPR	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/ECC
EN 1090-2	Execution of steel structures and aluminium structures - Part 2: Technical requirements for steel structures
EN 1562	Founding - Malleable cast iron
EN 1993-1-8	Eurocode 3: Design of steel structures- Part 1-8: Design of Joints
EN 10025-1	Hot rolled products of structural steels - Part 1: General technical delivery conditions
EN 10204	Metallic products - Types of inspection documents
EN ISO 898-1	Mechanical properties of fasteners made of carbon and alloy steel
EN ISO 2859-1	Part Sampling schemes indexed by AQL for Lot-by- Lot inspection
EN ISO 9223	Corrosion of metals and alloys
EN 1990	Basis of structural design
BS 1449	Carbon steel plate, sheet & strip. General specification
EN 10346	Continuously hot-dip coated steel flat products for cold forming
EN 10087	Free cutting steels. Delivery conditions for semi-finished products, hot rolled bars & rods
DIN 1654	For cold heading & cold extruding steels

ANNEX A: TENSILE TEST FOR THE DECKING FIXING ASSEMBLY

The intention of the design of the assembly is to provide a connection that would, after installation in accordance with a defined procedure, resist a tensile load that is at least equal to the characteristic tensile resistance of the Decking Fixing Assembly determined in accordance with 2.2.1.1.

The test apparatus shall be a tensile test machine of appropriate capacity, a test assembly and the necessary components to apply a tensile load to the assembly. The test assembly shall comprise of a test block with a re-entrant of similar shape to the decking fixing into which a single fixing is installed. Tensile load shall be applied to the decking fixing via the threaded rod.

A minimum four tests shall be carried out for each nominal size.

The results of the tests shall be evaluated to demonstrate that the minimum tensile failure load of the installed assembly (the maximum load sustained during a test to failure) is at least the value specified in the ETA. The ETA shall specify the minimum information to be included in the test documentation.

