

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

ETAG 005

Edition March 2000

GUIDELINE FOR EUROPEAN TECHNICAL APPROVAL
OF
LIQUID APPLIED ROOF WATERPROOFING KITS

Revision March 2004

Part 1: GENERAL

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FOREWORD

General

This ETA-GUIDELINE has been established by the EOTA WG 4.02/01 dealing with liquid applied roof waterproofing kits (LARWK).

Since the LARWKs are based on different materials, which might necessitate additional specific verification and / or assessment, the kits are divided into families of products, dealt with in Complementary Parts.

This ETA-GUIDELINE Part 1 - General shall be used in conjunction with one of the Complementary Parts for a family of products (see Annex I).

Normative references

This ETA-Guideline incorporates, by dated or undated references, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. Other than ISO/CEN standards, the documents shall be in an authorised English translation. For dated references, subsequent amendments to or revisions of these publications apply to this ETA-Guideline only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

Commission Decision 98/599/EC
of 12 October 1998

On the procedure for attesting the conformity of construction products pursuant to Article 20(0) of Council Directive 89/106/EEC as regards liquid applied roof waterproofing kits.

Commission Decision 2001/596/EC
of 8 January 2001, amending
Commission Decision 98/599/EC

On the procedure for attesting the conformity of construction products pursuant to Article 20(0) of Council Directive 89/106/EEC as regards liquid applied roof waterproofing kits.

CONSTRUCT 95/135
(Revision August 2002)

Guidance Paper B. The definition of Factory Production Control in Technical Specifications for Construction Products.

CONSTRUCT 96/175/EC
(Revision August 2002)

Guidance Paper C. The treatment of kits and systems under the Construction Products Directive.

CONSTRUCT 97/220/EC
(Revision August 2002)

Guidance Paper D. CE marking under the Construction Products Directive.

CONSTRUCT 99/363/EC
(Revision August 2002)

Guidance Paper H. A harmonised approach relating to dangerous substances under the Construction Products Directive.

CONSTRUCT 97/571/EC
(22 July 1997)

Commission Decision of 22 July 1997 on the general format of the European Technical Approval
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	for Construction Products.
CONSTRUCT 98/269/EC (final version March 1998)	Annex 3 – EC decision on Attestation of Conformity.
COUNCIL DIRECTIVE 76/769/EEC (27 July 1976)	Council Directive on the approximation of the laws, regulations and administrative provisions of the Member States relating to restrictions on the marketing and use of certain dangerous substances and preparations.
COUNCIL DIRECTIVE 89/106/EEC (21 December 1988)	Directive relating to Construction Products (CPD) (including the 6 Interpretative Documents – IDs)
COUNCIL DIRECTIVE 89/106/EEC (21 December 1988)	Annex III.2 - Systems of Conformity Attestation.
COMMISSION DECISION 96/603/EC of 4 October 1996 amended by COMMISSION DECISION 200/605/EC of 26 September 2000	Establishing the list of products belonging to classes A ‘ contribution to fire ‘.
COMMISSION DECISION 2000/553/EC of 6 September 2000	Implementing Council Directive 89/106/EC as regards the external fire performance of roof coverings.
ENV 1187	Test methods for external fire exposure to roofs.
EN 1931 (+corr.1)	Flexible sheets for waterproofing - Bitumen, plastic and rubber sheets for roof waterproofing – Determination of water vapour transmission properties.
EN 1990	Eurocodes – Basis of structural design.
ENV 1991-2-4	Guidelines for the application of ENV 1991-2-4. Eurocode 1: Basis of design and actions on structures Part 2-4: Actions on structures – Wind actions.
EN 13238	Reaction to fire tests for building products – Conditioning procedures and general rules for selection of substrates.
EN 13501-1	Fire classification of construction products and building elements – Part 1: Classification using test data from reaction to fire tests.
prEN 13501-5 (2002)	Fire classification of construction products and building elements – Part 5: Classification using test data from external fire exposure to roof tests.
EN 13823	Reaction to fire tests for building products – Building products excluding floorings exposed to thermal attack by a single burning item.
EN 13893	Resilient, laminate and textile floor coverings – Measurement of dynamic coefficient of friction on dry surfaces.

prEN 13948 (2000)	Flexible sheets for waterproofing – Bitumen, plastic and rubber sheets for roof waterproofing – Determination of resistance to root penetration.
EN ISO 1182	Reaction to fire tests for building products – Non combustibility test.
EN ISO 1716	Reaction to fire tests for building products – Determination of the heat combustion.
EN ISO 11925-2	Reaction to fire tests – Ignitability of building products subject to direct impingement of flame – Part 2:Single-flame source test.
EOTA TR – 003	Determination of the watertightness.
EOTA TR – 004	Determination of the resistance to delamination.
EOTA TR – 005	Determination of the resistance to wind loads of partially bonded roof waterproofing membranes.
EOTA TR – 006	Determination of the resistance to dynamic indentation.
EOTA TR – 007	Determination of the resistance to static indentation.
EOTA TR – 008	Determination of the resistance to fatigue movement.
EOTA TR – 009	Determination of the resistance to sliding.
EOTA TR – 010	Exposure procedure for artificial weathering. Annex TR – 010.A (informative) Annex TR – 010.B (informative) Annex TR – 010.C (normative)
EOTA TR – 011	Exposure procedure for accelerated ageing by heat.
EOTA TR – 012	Exposure procedure for accelerated ageing by hot water.
EOTA TR – 013	Determination of crack bridging capability
EOTA TR – 014	Exposure procedure for accelerated ageing by two-hour water boil.

SECTION ONE

INTRODUCTION

1. PRELIMINARIES

1.1 Legal basis

This Guideline for European Technical Approvals has been established in full compliance with the provisions of the Council Directive 89/106/EEC (CPD) and has been established taking into account the following steps:

- Issuing of the final mandate by the EC: 16 April 1998
- Issuing of the final mandate by EFTA: 16 April 1998
- Adoption of the Guideline by EOTA: (Executive Commission) 13 October 1999
- Endorsement of the document by the EC: SCC opinion of 9-10 December 1999
EC letter of 11 August 2000
- Endorsement of the document by EFTA: idem

This document is published by the Member States in their official language or languages according to Art. 11/3 of the CPD

No existing ETA-Guideline is superseded.

1.2 Status of the ETA-Guidelines

1.2.1 **An ETA is one of the two types of technical specifications**

in the sense of the CPD, which means that Member States shall presume the approved products fit for their intended use, e.g. that they enable works in which they are employed to satisfy the Essential Requirements during an economically reasonable working life, provided that:

- the works are properly designed and built;
- the conformity of the products with the ETA has been properly attested.

1.2.2 **An ETA-Guideline is a basis for ETAs,**

that is a basis for technical assessment of the fitness for use of a product for an intended use. *)

ETA-Guidelines express the common understanding of the Approval Bodies of the provisions of the EC-Construction Products Directive 89/106 (CPD) and of the Interpretative Documents to the CPD, with regard to the products and uses concerned, established within the framework of a mandate given by the Commission after consulting the EC-Standing Committee for Construction.

1.2.3 **ETA-Guidelines are binding**

for the issuing of ETAs of the products concerned for an intended use, when accepted by the EC-Commission after consultation with the Standing Committee for Construction and published by the Member States in their official language or languages.

*) *An ETA-Guideline is not in itself a technical specification in the sense of the CPD.*

The applicability to, and the satisfaction of, the ETA-Guideline for a product and its intended use have to be assessed in a case-by-case evaluation by an authorised Approval Body.

Satisfaction of the provisions of an ETA-Guideline (examinations, tests and evaluation methods) leads to a presumption of fitness for use only through this case-by-case evaluation.

Products outside of the scope of an ETA-Guideline may be considered, where appropriate, through the approval procedure without guidelines according to Art. 9.2. of the CPD.

The requirements in ETA-Guidelines are set out in terms of objectives and of relevant actions to be taken into account. ETA-Guidelines specify values and characteristics, the conformity with which gives the presumption that the requirements set out are satisfied, whenever the state of art permits. The ETA-Guidelines may indicate alternate possibilities for the demonstration of the satisfaction of the requirements.

2. SCOPE

This ETA-Guideline Part 1: General specifies the terminology and definitions, classification, categorisation, requirements, methods of verification, assessment procedures, product characteristics, attestation of conformity and content of the ETA for liquid applied roof waterproofing kits (LARWK).

It also gives guidance for the assessment of the application methods and design rules, based on the present "State of the Art". Consequently it will be updated in case of justifiable reasons.

This ETA-Guideline is applicable to in-situ applied liquid roof waterproofing kits which, as an assembled system being part of the works, are supposed to meet the Essential Requirements for a period of:

- a - 5 years as indicated by the Applicant for ETA
- b - 10 years;
- c - 25 years as indicated by the Applicant for ETA

This ETA-Guideline is NOT applicable to LARWK(s) for use on roofs accessible to vehicles.

This ETA-Guideline Part 1 - General shall be used in conjunction with one of the Complementary Parts which amplifies the scope with respect to a particular family of products.

- Annex I, list of the Complementary Parts for the particular family of products.
- Annex II, list of Common Definitions (and clarifications) and Common Abbreviations.
- Annex III guidance on the preparation of free samples of the assembled system of a LARWK to be used for specific tests and/or verification..
- Annex IV, bibliography.

3. TERMINOLOGY

3.1 Particular Definitions

For the purpose of this ETA-Guideline the following definitions apply:

- 3.1.1 **assembled system:** The assembled system is the roof waterproofing membrane, obtained by installing a liquid applied roof waterproofing kit (LARWK) (3.1.27). The kit may incorporate non-liquid components, such as a supporting layer, an internal layer, reinforcement fibres, fillers, a finish layer etc..
- 3.1.2 **ballast layer:** One or more layers of materials applied on the liquid applied assembled system (roof waterproofing membrane) to serve as ballast against the system being blown away. It may also have additional functions, e.g. protection of the system against ageing, mechanical damage and/or as an aesthetic and/or foot traffic resistant finish.
- 3.1.3 **building:** A construction works that has the provision of shelter for its occupants or contents as one of its main purposes and is normally designed to stand permanently in once place
- 3.1.4 **component:** A defined constituent part of a kit.
- 3.1.5 **construction product:** a designed roof waterproofing kit (LARWK), resulting in an assembled system (liquid applied roof waterproofing membrane) after being correctly assembled, installed and cured in the works (see also 3.1.1 and Annex II.1.4).
- 3.1.6 **detail:** A special feature occurring in the main roof area or at the sides of a roof. Special features include upstands (e.g. at parapets, kerbs, rooflights), expansion joints, edge details (e.g. drips, flashing), gutters, drains, penetrations, etc.
- 3.1.7 **fall:** The slope of the substrate in the direction of the rainwater outlets.
- 3.1.8 **finish layer:** One or more layers of material (e.g. slate chips, solar protective coating, etc.), applied as a component of the liquid applied roof waterproofing kit (LARWK), on top of the assembled system . The finish layer may have several functions, e.g. protection of the system against the effects of weathering or as an aesthetic finish.
- 3.1.9 **green roof:** A roof consisting of the structural deck and all the layers on it, including a (liquid applied) roof waterproofing membrane, a thin layer of vegetable matter planted with an extensive vegetation of mosses, succulents, herbaceous plants, etc. (see also 3.1.17).
- 3.1.10 **internal layer:** a layer of fabric scrim, non-woven mat of synthetic material , glass fibres or other material used as a component of the liquid applied roof waterproofing kit (LARWK). This layer may constitute a reinforcement.
- 3.1.11 **inverted roof:** A special type of roof with the thermal insulating material on top of the (liquid applied) roof waterproofing membrane.
- 3.1.12 **liquid material:** A material or a combination of materials that can be poured, spread or sprayed.

- 3.1.13 **manufacturer's technical dossier (MTD):** A document, or collection of documents, consisting of the Factory Production Control (setting out the specific quality practices, resources and sequence of activities), the design rules, the application methods (including procedures for quality control on site) and the directions concerning maintenance and repair of the assembled system, relevant to a particular product or a range of products.
- 3.1.14 **non-accessible:** The qualification (in respect of the categorisation according to user load) of any roof only accessible, with the use of specific equipment due to features such as slope, shape, nature of materials used, etc..
- 3.1.15 **protection layer:** One or more layers of materials applied on top of the assembled system to control the effects of physical, mechanical and chemical stresses. Examples are ballast layer (see 3.1.2), finish layer (see 3.1.8) and separation sheet (see 3.1.19).
- 3.1.16 **roof:** The structural deck and all the layers on it, including the surface exposed to the weather and including the necessary details.
- 3.1.17 **roof garden:** A roof consisting of the structural deck and all the layers on it, including a (liquid applied) waterproofing membrane, a substantial layer of vegetable matter, planted with an intensive vegetation of plants, shrubs, trees and possibly including paving, etc. (see also 3.1.9)
- 3.1.18 **sample:** a representative part of (one or more) of the components of a liquid applied roof waterproofing kit (LARWK) or a representative part of the LARWK (as an assembled and cured system) for the purpose of identification and/or verification of its characteristics.
- 3.1.19 **separation sheet:** A layer of material applied between parts of the roof as a protection against mechanical and/or chemical effects.
- 3.1.20 **standing water:** A puddle on the roof waterproofing membrane due to ineffective drainage and/or slope, dissipating only by evaporation.
- 3.1.21 **structural deck:** The part of the roof that, as a construction element, has to transfer both permanent and variable loads to the other parts of the building.
- 3.1.22 **substrate:** The layer of material immediately under the liquid applied roof waterproofing membrane.
- 3.1.23 **supporting layer:** A layer of material forming the base of the assembled system; a supporting layer is a component of the liquid applied roof waterproofing kit.
- 3.1.24 **test specimen:** Part of a sample taken as defined by a specific method of verification and/or test method.
- 3.1.25 **user load:** The load associated with the accessibility of the roof.
- 3.1.26 **waterproofing:** The act of preventing or controlling the passage of water from one plane to another.
- 3.1.27 **waterproofing kit:** A particular combination of a defined set of components, to be installed in the works by application and/or incorporation and/or assembly of its components in conformity with particular design methods and/or particular execution procedures.

3.2 **Particular Abbreviations:**

For the purpose of this ETA-Guideline the following abbreviations apply:

MTD: Manufacturer's Technical Dossiers.

LARWK: Liquid Applied Roof Waterproofing Kit.

SECTION TWO

GUIDANCE FOR THE ASSESSMENT OF THE FITNESS FOR USE

4. REQUIREMENTS

4.0 General

This chapter identifies the aspects of performance to be examined to satisfy the relevant Essential Requirements, by:

- i) expressing in more detail, and in terms applicable to the scope of the guideline, the relevant Essential Requirements of the CPD (given concrete form in the Interpretative Documents and further specified in the mandates), for works or parts of works, taking into account the durability and serviceability of the works, and
- ii) applying them to the scope of the ETA-Guideline (product/system and intended use), and indicating the relevant product characteristics and eventually other aspects (see 4.7).

The aspects of performance to be examined to satisfy the Essential Requirements, as defined by the CPD and amplified by the appropriate ID, relevant to LARWKs are summarised in Table 1.

Table 1 - Relationship between the ER, ID and aspects of performance

ER and ID	ID reference		ETA-Guideline Clause reference (see table 7)
	Performance of the Works	Performance of the Products	
2	4.2.4 : Limitation of spread of fire to neighbouring construction works 4.2.4.1 : Statement of principle 4.2.4.2 : Parts of works concerned (a) – roof coverings	4.3.1.2 : Products for roofs subject to fire requirements 4.3.1.2.2 : Roofs exposed to an external fire 4.3.2 : Performance of products	4.2.1 : Roofs exposed to an external fire 4.2.2 : reaction to fire
		5 : Working life, durability	4.2.3 : Working life, durability
3	3.3.1 : Indoor environment 3.3.1.2 : Dampness 3.3.1.2.2.2 : Dampness on indoor and/or inside building products	3.3.1.2.3.2 : Construction Products : (cat B) e.3 - Roof, roofing materials	4.3.1 : Indoor environment
	3.3.5 : Outdoor environments 3.3.5.0 : General 3.3.5.2 : Control of impacts of construction works on outdoor environment	3.3.5.3 : Technical Specification for Construction Products : - Roofs	4.3.2 : Outdoor environment
		5: Working life, durability	4.3.3 : Working life, durability
4	3.3.2 : Direct impact 3.3.2.1 : Impacts of falling objects, forming part of the work upon users	3.3.2.3 : Mechanical resistance and stability	4.4 : Safety in use 4.4.1 : Resistance to wind load 4.4.2 : Slipperiness
		5: Working life, durability	4.4.3 : Working life, durability

Part 1 of this Guideline shall be used in conjunction with one of the Complementary Parts which amplify the requirements in the context of a particular family of products.

The assessment of fitness for use is made on the assumption that the LARWK is installed, used and maintained in accordance with the specifications laid down by the Applicant, lodged with, accepted and registered by the Approval Body.

4.1 **ER1: Mechanical resistance and stability**

Liquid applied roof waterproofing kits (LARWK), as an assembled system, make no contribution towards enabling a construction works to meet the requirements of ER1 Mechanical resistance and stability.

There are therefore no requirements.

4.2 **ER2: Safety in case of fire**

The Essential Requirement laid down in the Council Directive 89/106/EEC is as follows:
The construction works must be designed and built in such a way that in the event of an outbreak of fire:

- the load bearing capacity of the construction can be assumed for a specific period of time
- the generation and spread of fire and smoke within the works are limited
- the spread of fire to neighbouring construction works is limited
- occupants can leave the works or be rescued by other means
- the safety of rescue teams is taken into consideration

The following aspects of performance are relevant to this Essential Requirement for Liquid Applied Roof Waterproofing Kits:

4.2.1 **External fire performance**

The external fire performance of the roof of which the applied roof waterproofing kit form part shall be in accordance with laws, regulations and administrative provisions applicable to the roof of which the applied roof waterproofing kit form part in its intended end use application. This performance shall be expressed in the form of a classification specified in accordance with the relevant EC decision and the appropriate CEN classification standards.

4.2.2 **Reaction to fire**

The reaction to fire performance of the liquid applied roof waterproof kit as applied as an assembled system shall be in accordance with laws, regulations and administrative provisions applicable to the liquid applied roof waterproof kit as applied as an assembled system in its intended end use application. This performance shall be expressed in the form of a classification specified in accordance with the relevant EC decision and the appropriate CEN classification standards.

4.2.3 **Working Life, Durability**

Compliance with the Essential Requirement throughout the working life requires that, during the intended use, the assembled system remains undamaged and that the properties are not subject to unacceptable changes due to external agencies in such a way as to affect the reaction to fire and the external fire performance of the assembled system.

4.3 **ER3: Hygiene, health and the environment**

4.3.1 **Indoor environment**

In conjunction with the other elements of the roof construction, an assembled system of a LARWK shall control the ingress of moisture from the outside into the building, in both liquid and vapour form, to control the presence of damp in parts of the works or on surfaces within the works.

4.3.2 **Outdoor environment**

4.3.2.1. Release of dangerous substances

The product/kit must be such that, when installed according to the appropriate provisions of the Member States, it allows for the satisfaction of the ER3 of the CPD as expressed by the national provisions of the Member States and in particular does not cause harmful emission of toxic gases, dangerous particles or radiation to the indoor environment nor contamination of the outdoor environment (air, soil or water).

4.3.3 **Working Life, Durability**

Compliance with the Essential Requirement throughout the working life requires that, during the intended use, the assembled system remains undamaged and that the properties are not subject to unacceptable changes due to external agencies. The assembled system shall be resistant to the effects of:

- i) wind loads;
- ii) mechanical damage;
- iii) movement;
- iv) surface temperature extremes during use;
- v) ageing media, including heat, UV radiation and water;
- vi) plant roots

4.4 **ER4: Safety in use**

4.4.1 **Resistance to wind load**

The assembled system of a LARWK shall have sufficient mechanical resistance and stability against wind loads to avoid detachment of parts of the work that, by falling down, might form the risk of injury or death of users in or around the work.

The aspects of performance that can influence the meeting of the Essential Requirements are dealt with under ER3 - Hygiene, health and the environment. (see 4.3.1 Indoor environment and 4.3.3 Working life / durability)

4.4.2 **Slipperiness**

The surface of the LARWK shall not be slippery due to either the inherent surface conditions or the presence of water or grease on the surface so that it will influence the probability of falling after slipping and thereby causing a risk for the occupants/users.

4.4.3 **Working life, durability**

Compliance with the Essential Requirement throughout the working life requires that, during the intended use, the assembled system remains attached. This aspect is dealt with under ER3 – Hygiene, health and the environment (see 4.3.3 Working life / durability)

4.5 **ER5: Protection against noise**

The assembled system of a LARWK makes no contribution towards enabling a construction works to meet the requirements of ER5 - Protection against noise.
There are therefore no requirements.

4.6 **ER6: Energy economy and heat retention**

The assembled system of a LARWK makes no direct contribution towards enabling a construction works to meet the requirements of ER6 - Energy economy and heat retention.
There are therefore no requirements.

The aspects of performance related to moisture ingress that can influence the meeting of this Essential Requirement are dealt with under ER3 - Hygiene, health and the environment.
(See 4.3.1 Indoor environment.)

4.7 **Related aspects of serviceability**

4.7.0 **General**

Account shall be taken of all aspects of use, specification and expected working life that will affect the assessment of fitness for use at the local level. These will include climatic zone in which the assembled system of a LARWK will be used (influencing surface temperatures, levels of UV radiation, durability etc.), accessibility and slope of the roof etc. This will necessitate the use of categorisations for the systems.

4.7.1 **Effects of application conditions**

Where the Applicant declares a range of permitted weather conditions or permits variations in proportions and/or the nature of constituent parts, it must be verified that the LARWK and its assembled system satisfies the performance requirements over the whole range of conditions.

4.7.2 **Classification according to safety in case of fire**

4.7.2.0 **General**

The Applicant shall classify each of the kits according to clause 4.7.2.2.
Classification will facilitate the assessment of fitness for use of the assembled system and the satisfaction of the Essential Requirement where differences in performance are expected due to reaction to fire. The declared classifications shall be taken into account in the verification of performance against the Essential Requirement ER2.

4.7.2.1 **Classification according to external fire performance.**

Classification of the LARWK with respect to external fire performance is undertaken in accordance with prEN 13501-5.

Commission Decision 2000/553/EC shall be taken into account.

4.7.2.2 **Classification according to reaction to fire**

Classification of the LARWK with respect to reaction to fire is undertaken in accordance with:

EN 13501-1: Reaction to fire - Classification

The following range of Euroclasses is used:

A1, A2, B, C, D, E, F

4.7.3 **Categorisation according to use**

4.7.3.0 General

The Applicant shall categorise each of his kits according to the categories given in 4.7.3.1 to 4.7.3.5. Categorisation will facilitate the assessment of fitness for use of the assembled systems and of the satisfaction of the Essential Requirements for different expected working lives or where differences in performance are expected due to the intended use. The declared categorisation shall be taken into account in the verification of performance against the Essential Requirements.

4.7.3.1 Categorisation according to working life

This Guideline is written on the assumption that the estimated working life of assembled systems for the intended use is 10 years. In special circumstances, where indicated by the Applicant, this may be modified to 5 or 25 years.

An estimated working life of assembled systems of 5 years shall only be assumed in the case of LARWKs intended for use as a repair, renovation or maintenance medium only, or for use solely in construction works which have a limited intended life.

An estimated working life of 25 years shall only be assumed in the case where the Applicant can offer, for examination by the Approval Body, examples of satisfactory use of that assembled system for a period of at least 5 years in a relevant situation and/or climate. All product specifications and assessment methods shall take account of this expected working life of 25 years.

The categories according to working life are given in Table 2.

Table 2 - Categorisation according to working life

	Category W1	Category W2	Category W3
Expected working life (years)	5	10	25

The indication given on the working life of assembled system(s) cannot be interpreted as a guarantee by the Applicant (or the Approval Body) but is regarded only as a means of choosing the appropriate products in relation to the expected economically reasonable working life of the works (ID par. 5.2.2).

4.7.3.2 Categorisation according to climatic zone of use

The assembled system, including its support and protection (if any) shall be resistant to the solar exposure effects (solar energy, temperature, etc) occurring during its expected working life which will depend on the geographical location of use. Two categories of climatic zone have been established (Moderate and Severe) and the limiting values for mean annual radiant exposure and the mean air temperature during the warmest month are defined in Table 3.

Table 3 - Categorisation according to climatic zone

	Category M Moderate climate	Category S Severe climate
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Annual radiant exposure on horizontal surface	< 5 GJ/m ²	≥ 5 GJ/m ²
Average temperature of the warmest month per year	and < 22°C	and/or ≥ 22°C

Note 1: The annual radiant exposure is the total amount of solar energy received by horizontal global surface within a defined geographical region, calculated as a mean measured value over a period of five years. The average temperature of the warmest month is the calculated mean value over a period of five years for the average measured maximum air temperature of that month.

Note 2: The "isoline 5" (see map of TR-010.C - mean UV radiant exposure) can be used as an indicative dividing line between "moderate" and "severe" climatic zones of use, related to temperatures.

For a Category M kit to be suitable for use in a particular location both the parameters at that location (derived from national meteorological statistics) shall comply with the limiting values given in Table 3. If one of the parameters exceeds the limiting values for Category M then only kits of Category S may be used.

The appropriate climatic zone category required may be declared by Member States [see CPD art. 3(2)]. Kits assessed as fit for use only in the Moderate zone may not be used in those climates categorised as Severe for the same expected working life.

4.7.3.3 Categorisation of user loads

The assembled systems, including their support and protection (if any), shall be capable of withstanding mechanical damage due to the user loads likely to occur during their working life. The risk of mechanical damage will depend on the accessibility of the roof and the frequency of the traffic envisaged. The appropriate categories of user loads and examples of the related accessibility are given in Table 4.

Table 4 - Categorisation according to user loads

Category	User load	Examples of accessibility
P1	Low	non-accessible
P2	Moderate	accessible for maintenance of the roofing only
P3	Normal	accessible for maintenance of plant and equipment and to pedestrian traffic
P4	Special	roof gardens, inverted roofs, green roofs

4.7.3.4 Categorisation of roof slope

The assembled system, including its support and protection (if any), shall be capable of withstanding the effects originating from its slope. The appropriate categories of roof slopes and examples of the related effects which can influence the fitness for use are given in Table 5.

Table 5 - Categorisation according to roof slopes

Category	Slope (%)	Examples of possible related effects
S1	< 5	<ul style="list-style-type: none"> - frost (thickness of ice layer) - UV/standing water - user loads (accessibility) - effects of standing water - fire behaviour - plant roots (roof gardens and green roofs)
S2	5 - 10	<ul style="list-style-type: none"> - frost (thickness of ice layer) - UV - user loads (accessibility) - fire behaviour - plant roots (green roofs only)
S3	10 - 30	<ul style="list-style-type: none"> - sliding - frost (freezing snow) - UV - user loads (accessibility) - fire behaviour - plant roots (green roofs only)
S4	> 30	<ul style="list-style-type: none"> - sliding - UV - user loads (accessibility) - fire behaviour

4.7.3.5 Categorisation according to surface temperature

The assembled system, including its support and protection (if any) shall be resistant to the maximum and minimum surface temperatures occurring during its expected working life which will depend on the geographical location of use (see Table 3) and the levels of protection. Tables 6(a) and 6(b) define the appropriate categories.

Table 6(a) - Categorisation according to minimum surface temperature of the assembled system

Category	Climatic zone	Surface protection	Minimum surface Temperature (°C)
TL1	All climatic zones	Inverted roofs and roof gardens (excluding "green" roofs)	+ 5
TL2	Moderate low temperature	All other protected assembled systems or exposed roofs	- 10
TL3	Severe low temperature		- 20
TL4	Extreme low temperature *		- 30

* **Note:** The particular location(s) for which Category TL4 has to be taken into account may be declared by Member States (see CPD - art. 3.2)

Table 6(b) - Categorisation according to maximum surface temperature of the assembled system

Category	Climatic zone	Surface protection	Maximum surface Temperature (°C)
TH1	All climatic zones	Inverted roofs and roof gardens	30
TH2	Moderate high temperature	Exposed, un insulated roofs or heavily protected roofs including "green roofs"	60
TH3		Exposed, insulated roofs	80
TH4	Severe high temperature *	Exposed, insulated roofs	90

* **Note:** For southern European regions considered as having "severe" climatic conditions related to high surface temperatures (area south of indicative "isoline 5" - see map of EOTA technical report TR-010, Annex TR-010.C)

5. METHODS OF VERIFICATION

5.0 General

The methods of verification given in this section shall be applied, where appropriate, to the kits proposed by the Applicant. Where possible the Approval Body shall select the kits and levels to be tested so that extrapolation and interpolation are possible, thereby reducing the number of necessary tests. In general a satisfactory performance at a severe level will assure acceptance at a less severe level.

It is the responsibility of the Approval Body to identify the most unfavourable conditions e.g. thickness of samples etc..

Reference shall also be made to the appropriate Complementary Part relevant to the family of products which may identify tests omitted or include additional requirements specific to that family of products.

The verification of performances shall take into account the declared classification and categorisation of the kit(s) and may also include inspection of existing works.

The relationship between the requirements as defined in clause 4, the product performance and the methods of verification listed below, are summarised in Table 7.

Identification

(1) Depending upon the nature and type of products, the text of the ETAG shall provide indications as to how products shall be identified for approval and other purposes. However what is written shall be flexible because of differences in manufacturing techniques, the possible range of sizes of factories/manufacturing facilities, size of batches and amount of product produced in a given time.

(2) Example techniques and procedures to be considered either individually or in combination (not exhaustive)

- Fingerprinting (infrared, gas chromatography,
- Formulation (chemical constitution, recipes, composition of raw materials, amounts, components specified by characteristics, compliance with other specifications eg. ENs or by weight, volume, percentage.....)
- Manufacturing process parameters (temperature, pressure, time ... product/production codes)
- Testing of physical characteristics - data (geometry, density, mechanical strength.....)
- Calculations, detailing, drawings

(3) Whichever method(s) is/are used it is necessary to recognise practical tolerances in relation to results/data collected.

(4) It is however also essential that these techniques/methods shall be introduced only as far as they have or could have an influence on the fulfilment of the Essential Requirements, including aspects of durability.

Table 7 - Relationship between requirements and methods of verification

ER and ID	ETAG Clause reference (see table 1)	Product characteristics according to Mandate	Product characteristics according to Work Program and ETAG	ETAG clause on verification methods
2	4.2.1 :Roof exposed to an external fire	External fire performance	<ul style="list-style-type: none"> - fire penetration - fire spread over surface - production of flaming droplets - fire spread within the roof 	5.2.1 : External fire performance (classification according prEN 13501-5)
	4.2.2: Reaction to fire	Reaction to fire	<ul style="list-style-type: none"> - reaction to fire 	5.2.2 : Reaction to fire (classification according to EN 13501-1)
		Durability	<ul style="list-style-type: none"> - effects of external agencies 	No verification
3	4.3.1 :Indoor environment	Water vapour permeability Watertightness Resistance to perforation	<ul style="list-style-type: none"> - water vapour resistance - watertightness 	5.3.1.1 : Resistance to water vapour (EN 1931) 5.3.1.2 : Watertightness (EOTA TR-003)
	4.3.2 : Outdoor environment	Release of dangerous substances	<ul style="list-style-type: none"> - chemical nature - release of dangerous substances - leaching of dangerous substances 	5.3.2.1 : Release of dangerous substances

	4.3.3 Working life, durability	Durability	<ul style="list-style-type: none"> - resistance to wind loads - resistance to mechanical damage (perforation) - resistance to fatigue movement - resistance to temperature effects - resistance to ageing media - resistance to actions of biological agents 	<p>5.3.3.1 : Resistance to wind loads (EOTA TR-005)</p> <p>5.3.3.2.1 : Resistance to dynamic indentation (EOTA TR-006)</p> <p>5.3.3.2.2 : Resistance to static indentation (EOTA TR-007)</p> <p>5.3.3.3 : Resistance to fatigue movement (EOTA TR-008)</p> <p>5.3.3.4.1 : Low temperatures (EOTA TR-006 and TR-013)</p> <p>5.3.3.4.3 : High temperatures (EOTA TR-004, TR-007 and TR-009)</p> <p>5.3.3.5.1 : Resistance to heat ageing (EOTA TR-011)</p> <p>5.3.3.5.2 : UV-radiation in the presence of moisture (EOTA TR-010)</p> <p>5.3.3.5.3 : Resistance to water ageing (EOTA TR-012)</p> <p>5.3.3.6 : Resistance to plant roots (prEN 13948)</p>
4	4.4 : Safety in use	Mechanical resistance	- resistance to wind loads	5.3.3.1 : Resistance to wind loads (EOTA TR-005)
		Slipperiness	- slipperiness	5.4.2 : Slipperiness (EN 13893)
		Durability	- resistance to ageing media	5.3.3.5.3 : Resistance to water ageing (EOTA TR-012)

5.1 **ER1 Mechanical resistance and stability**
No requirements.

5.2 **ER 2: Safety in case of fire**

5.2.1 **External fire performance**

5.2.1.1 The Liquid Applied Roof Waterproofing Kit as an assembled system shall be tested using the method relevant for the corresponding external performance roof class, in order to be classified according to pr EN 13501-5[1].

5.2.1.2 External fire performance cannot be claimed for individual products alone, since it is a characteristic of a complete roof system. When the product is not a kit, the manufacturer will need to fully define the assembled system of which the product will form part in order to make any external fire performance claim.

5.2.1.3 The liquid applied roof waterproofing kit as an assembled system, may form as part of a roof, may be considered “deemed to satisfy” all the provisions for external fire performance of all National regulations of the Member States without the need for testing. This on the basis that is included within the definitions given Commission Decision 2000/553/EC and provided that any national provisions on the design and executions of works are fulfilled.

5.2.1.4 Where more than one assembled system is possible for an individual Liquid Applied Roof Waterproofing Kit a minimum of one ‘typical’ roof system shall be tested in accordance with ENV 1187:2002, except where the assembled system can be classified without further testing (CWFT) [2].

5.2.1.5 All other possible assembled systems shall be Classified as ‘No Performance Determined’.

[1] This does not preclude the possibility of other assembled systems being tested, at the request of the manufacturer.

[2] Where assembled systems are protected by a durable protection layer, the external fire performance can be controlled by the nature of this protection layer. Therefore verification of the external fire performance may be omitted, provided the effect of the protection layer is assessed and/or stipulated by Commission Decision (2000/553/EC).

5.2.2 **Reaction to fire**

The liquid applied roof waterproof kit as an assembled system shall be tested, using the test method(s) relevant for the corresponding reaction to fire class, in order to be classified according to EN 13501-1:2002.

Details are given in Annex IV, Reaction to Fire – Test Procedures

5.3 **ER3: Hygiene, health and the environment**

5.3.1 **Indoor environment**

5.3.1.1 Resistance to water vapour

To establish the resistance to the passage of water vapour through the assembled system, the water vapour permeability of the assembled system shall be determined in accordance with EN 1931, using a free sample according to Annex III.4. The value shall be declared by the Applicant and verified by the Approval Body. From this value the water vapour resistance shall be calculated for use in the design of the roof.

5.3.1.2 Watertightness

The watertightness of the assembled system shall be determined by testing in accordance with the test method given in EOTA technical report TR 003.

5.3.2. Release of dangerous substances

5.3.2.1. – Presence of dangerous substances in the product

The applicant shall submit a written declaration stating whether or not the product/kit

contains dangerous substances according to European and national regulations, when and where relevant in the Member States of destination, and shall list these substances.

5.3.2.2 – Compliance with the applicable regulations

If the product/kit contains dangerous substances as declared above, the ETA will provide the method(s) which has been used for demonstrating compliance with the applicable regulations in the Member States of destination, according to the dated EU data-base (method(s) of content or release, as appropriate).

5.3.2.3 – Application of the precautionary principle

An EOTA member has the possibility to provide to the other members, through the Secretary General, warning about substances which, according to Health authorities of its country, are considered to be dangerous under sound scientific evidence, but are not yet regulated. Complete references about this evidence will be provided.

This information once agreed upon, will be kept in an EOTA data base, and will be transferred to the Commission services.

The information contained in this EOTA data base will also be communicated to any ETA applicant. On the basis of this information, a protocol of assessment of the product, regarding this substance, could be established on request of a manufacturer with the participation of the Approval Body which raised the issue.

5.3.3 **Working Life, Durability**

5.3.3.0 General

i) Previous use

For kits categorised W3 (25 years) the Approval Body shall take into account, by examination where appropriate, existing examples of use of the assembled system. Such examples of the assembled system shall be:

- a) in the same, or more severe categorisation as that required for the kit to be assessed and
- b) as old as possible, with a minimum of 5 years.

Where such examples of previous use are not available, it may be possible to utilise existing knowledge of the performance on sites of assembled systems from the same family of products, meeting the above conditions. The Approval Body shall satisfy itself that such indirect evidence of previous use is applicable to the kit under assessment.

ii) Durability assessment

The procedures given in sections 5.3.3.1 to 5.3.3.6 are based on performance tests. To obtain a more complete assessment of durability, changes in material characteristics after exposure to ageing media shall be examined. Ageing media used shall be as described in 5.3.3.5 with the possibility of performing tests on intermediate time periods. The methods of verification for the relevant material characteristics are given in the Complementary Parts.

The nature of the substrate may influence the durability of the assembled system. Therefore the compatibility of the assembled system with the substrate shall be assessed. This may be done by comparative testing before and after ageing by water or heat.

5.3.3.1 Resistance to wind loads

To continue to comply with the Essential Requirements the assembled system shall resist

the effects of wind loads.

- i) If the assembled system is loose laid and ballasted the resistance to wind loads is provided by the mass of the ballast used. Verification of performance shall be based on calculations of the mass of ballast and the weight of the system.
Note: Information in that respect can be obtained from national regulations or from EN 1990 together with ENV 1991-2-4.
- ii) The resistance to wind loads of partially or fully bonded assembled systems shall be verified by measuring the delamination strength at 23°C in accordance with the test method given in EOTA technical report TR-004 for all proposed substrates.
- iii) In the case of a assembled system incorporating a partially bonded supporting layer, a wind uplift test in accordance with the method given in EOTA technical report TR-005 shall be performed. This test shall be performed on the substrate giving the lowest delamination strength at 23°C {see (ii) above}.
- iv) Verification of performances of mechanically fastened supporting layer, including the durability of the fasteners, will be covered by guideline 006 - MEFAWAME (Systems of Mechanically Fastened Flexible Roof Waterproofing Membranes).

5.3.3.2 Resistance to mechanical damage (perforation)

The resistance to mechanical damage shall be verified by subjecting the assembled system to dynamic indentation and to static indentation.

5.3.3.2.1 Resistance to dynamic indentation

The resistance to dynamic indentation at 23°C shall be determined in accordance with the test method given in EOTA technical report TR-006, using the indenter size appropriate to the level of performance required and defined by the relevant user load category (see Table 4). The relationship between the user load category and the levels of resistance to dynamic indentation is given in Table 8.

These tests shall be performed on the most and least compressible of the substrates specified by the Applicant for the kit in question.

5.3.3.2.2 Resistance to static indentation

The resistance to static indentation at 23°C shall be determined in accordance with the test method given in EOTA technical report TR-007, using the load appropriate to the level of performance required and defined by the relevant user load category (see Table 4). The relationship between the user load category and the levels of resistance to static indentation is given in Table 8.

These tests shall be performed on the most and least compressible of the substrates specified by the Applicant for the kit in question.

Table 8 - Relationship between user load category and levels of performance

User load category (see table 4)	Minimum level of resistance	
	Dynamic indentation	Static indentation
P1	I ₁	L ₁

P2	l_2	L_2
P3	l_3	L_3
P4	l_4	L_4

5.3.3.3 Resistance to fatigue movement

A fully bonded assembled system shall be subjected to fatigue movements at - 10°C, in accordance with the method given in EOTA technical report TR-008. The number of cycles to which the assembled system shall be subjected will be determined by the categorisation of the kit according to the expected working life (see table 2) and is defined in Table 9.

Table 9 - Number of cycles of fatigue movement

Categorisation of expected working life	Number of cycles
W1	250
W2	500
W3	1000

5.3.3.4 Resistance to the effects of low and high surface temperatures

5.3.3.4.1 Low temperatures

- i) The effect of the minimum surface temperatures on the resistance to mechanical damage shall be determined by performing the dynamic indentation test in accordance with the method given in EOTA technical report TR-006 on the least compressible substrate at the appropriate minimum surface temperature defined by the categorisation of the kit (see Table 6(a)).
- ii) To determine the possible decrease in flexibility of the assembled system, as a result of exposure to low temperature, the appropriate tests, if defined in the relevant Complementary Part, shall be performed.

5.3.3.4.2 Extreme low temperatures

For kits categorised according to minimum surface temperature TL 4 (see Table 6(a)) the crack bridging capability of the assembled system shall be determined according to the method given in EOTA technical report TR-013 at a temperature of - 30° C.

5.3.3.4.3 High temperatures

- i) The effect of the maximum surface temperatures on the resistance to wind load shall be determined by performing the delamination strength test in accordance with the method given in EOTA technical report TR-004 at a temperature of + 40°C.
- ii) The effect of the maximum surface temperatures on the resistance to mechanical damage shall be determined by performing the static indentation test in accordance with the method given in EOTA technical report TR-007 on the least compressible substrate at the appropriate

maximum surface temperature (see Table 6(b)) and the level of resistance (see Table 8), defined by the categorisation of the kit.

- iii) The effects of high temperatures on the stability of assembled systems from kits categorised S3 and S4 only, shall be determined by performing the resistance to sliding test in accordance with the method given in EOTA technical report TR-009 at the appropriate maximum surface temperature defined by the categorisation of the kit (see Table 6(b)) and at the maximum slope as defined by the categorisation of the kit according to roof slope (see Table 5).

This test is not required for assembled systems from kits categorised according to slope as S1 or S2. However for all kits used on vertical or near vertical parts of details, this test shall be performed at a slope of 90°.

- iv) Where an assembled system contains a supporting layer which is not fully bonded, the effects of high temperatures are governed by the dimensional stability of that supporting layer. Measurement of the dimensional stability of the supporting layer shall be part of the identification of components, elaborated in the relevant Complementary Part.

5.3.3.5 Resistance to ageing media

5.3.3.5.1 Resistance to heat ageing

- i) The effects of heat ageing on the resistance to mechanical damage shall be verified by subjecting an assembled system (according to Annex III) to heat ageing in accordance with EOTA technical report TR-011 at 80 +/- 2 °C for a period defined by the categorisation according to climatic zone (see Table 3) and the categorisation according to expected working life (see Table 2). The relationship between these aspects and the period of exposure is given in Table 10.

Depending on the nature of different families of products specific ageing conditions, defined in the relevant Complementary Part, may apply.

Table 10 - Relationship between climatic zone, working life and period of exposure to heat.

Climatic zone category	Moderate (M)			Severe (S)		
	W1	W2	W3	W1	W2	W3
Working life category						
Exposure period (days)	25	50	100	50	100	200

Following the heat ageing period the resistance to dynamic indentation at the surface temperature according to the TL categorisation as defined in 5.3.3.4.1 (i) shall be performed.

- ii) The effects of heat ageing on the resistance to fatigue movement of fully bonded assembled systems shall be verified by subjecting an assembled system (according to Annex III) to heat ageing in accordance with EOTA technical report TR-011 at 80 +/- 2°C for a period defined by the categorisation according to the climatic zone (see Table 3) and the categorisation according to expected working life (see Table 2). The relationship between these aspects and the period of exposure is given in Table 10.

Following the heat ageing period the resistance to fatigue movement at - 10°C, as defined in 5.3.3.3, shall be performed. The number of cycles shall be 50 for all categories W1, W2 and W3.

- iii) Additional specific verification after heat ageing
Any additional characteristic as defined in the appropriate Complementary Part shall be measured following the heat ageing/UV ageing/water ageing period.

5.3.3.5.2 UV radiation in the presence of moisture

The effects of ageing by UV in the presence of moisture shall be determined by testing the defined characteristics of the assembled system before and after subjecting it to artificial weathering according to the exposure procedure defined in EOTA technical report TR-010. The precise exposure conditions are determined by the categorisation to climatic zone of the kit (see Table 11); the radiant exposure is related to the categorisation to expected working life.

Table 11 - Relationship between categorisation to climatic zone and UV-exposure conditions

Categorisation to climatic zone (see table 3)	Exposure conditions (see EOTA technical report TR-010)
Category "M"	Conditions "M": UV + spraying
Category "S"	Conditions "S": UV + spraying

Note: The exposure to UV radiation is performed by using artificial weathering apparatuses with either a Xenon-arc or a fluorescent UV lightsource.

The exposure doses, expressed in a year's equivalent radiant exposure, related to the categorisation to working life of the kit, are given in Table 12

Table 12 - Relationship between UV radiant exposure doses and estimated working life

UV (300-400 nm)	Category W 1	Category W 2	Category W 3
radiant exposure (MJ/m ²)	200	400	1000

The UV ageing procedure is not required for assembled systems incorporating a permanent heavy protection layer (see 3.1.15) like ballast or tiles (see 3.1.2).

- i) Following the UV ageing procedure the resistance to dynamic indentation as defined in 5.3.3.4.1 (i) shall be performed at a temperature of - 10° C.
- ii) Additional specific verification after ageing by UV
Any additional characteristic as defined in the appropriate Complementary Part shall be measured following the heat ageing/UV ageing/water ageing period.

5.3.3.5.3 Resistance to water ageing

The effects of water ageing shall be determined in accordance with the method as given in EOTA technical report TR-012 by exposing the upper surface of the assembled system to water at 60 +/- 2°C. The period of exposure will be determined by the categorisation of working

life and of the roof slope of the kit.

The relationship between working life categorisation and period of exposure is given in Table 13.

For certain applications (ie roof gardens and inverted roofs) the assembled system will be expected to remain wet for a greater proportion of its life, consequently an extended period of exposure is specified in the relevant Complementary Part.

Related to the nature of different families of products different ageing conditions, defined in the relevant Complementary Part, may apply.

Table 13 - Relationship between application, working life and exposure period

Application	Exposure period (days)		
Category	W1	W2	W3
S1 or S2	15	30	60
P4	Not applicable *	90	180

Note: The categorisation according to expected working life of kits for applicaion in roof gardens, inverted roofs and green roofs (P4) shall be at least 10 years (W2)

- i) Following the water ageing period the resistance to static indentation at the surface temperature according to the TH-categorisation as defined in 5.3.3.4.3 (ii) shall be performed
- ii) Additional specific verification after water ageing
Any additional characteristic as defined in the appropriate Complementary Part shall be measured following the heat ageing/UV ageing/water ageing period.

5.3.3.6 Resistance to plant roots

The resistance to plant roots of an assembled system of a kit in user load category P4 (inverted roofs, roof gardens and green roofs) shall be verified according to prEN 13948(2000).

5.4 **ER4: Safety in use**

5.4.1 **Resistance to wind loads**

The methods of verification of the resistance to wind loads are given in 5.3.3.1

5.4.2 **Slipperiness**

The coefficient of friction is determined in accordance with EN 13893

Roof surfaces of bituminous products are considered deemed to satisfy the requirements and the test is not performed on these materials.

5.4.3 **Working life, durability**

The methods of verification of the resistance to ageing media are given in 5.3.3.5.3 “resistance to water ageing”, or where relevant in the Complementary Parts.

5.5 **ER5 Protection against noise**

No requirements.

5.6 **ER6 Energy economy and heat retention**

The aspects of performance that can influence the meeting of this Essential Requirement are covered by 5.3 Hygiene, health and the environment - 5.3.1 Indoor environment.

There are no specific methods of verification.

5.7 **Related aspects of serviceability**

The effects of the classification and/or categorisation are covered in the methods of verification given above.

5.7.1 **Application conditions**

The methods of verification are given in the relevant Complementary Part.

5.8 **Identification**

It is necessary to verify that components comply with the specification (including tolerances) of the Applicant. This is achieved by measuring relevant characteristics, preferably by using EN or ISO Standards. Where no appropriate EN or ISO Standard is available the use of an approved national standard is permitted

6. ASSESSING AND JUDGING THE FITNESS OF PRODUCTS FOR INTENDED USE

6.0 **General**

Assessment of the performance of a LARWK in the context of the assembled system, satisfying the Essential Requirements comprises:

- i) verification of the identity of the product and/or its components and of the conformity with the registration in the Manufacturer's Technical Dossier;
- ii) the possible effects of the tolerances declared by the Applicant in 6.0 (i) above;
- iii) verification as elaborated in clause 5 of the aspects of performance mentioned in clause 6, in conjunction with any specific performances elaborated in the relevant Complementary Part;
- iv) judging the results of these verifications in relation to the requirements given in this clause 6 and the specific requirements, if any, given in the relevant Complementary Part;
- v) retesting, if necessary, and/or re-assessing the results, in the event of a LARWK **not** meeting the levels of performance required, and therefore being modified, re-classified or re-categorised by the Applicant.

To enable the Approval Body to assess and judge the fitness for use of the LARWK, the Applicant for ETA shall submit the necessary information to the Approval Body, by using the **Composition Information Form** as shown in Table 14 of this document.

Each product, where relevant, shall be subdivided into different kits, related to methods of application, components utilised, suitable substrates, etc.. The Applicant shall define the relevant characteristics with tolerances, if applicable, of each kit offered for assessment.

Each kit shall be identifiable.

Judging the results as satisfactory justifies the assessment of the liquid applied roof waterproofing kit (LARWK) as "fit for use" in relation to the declared classes and categories of use.

In addition the assessment, acceptance and registration of the MTD by the Approval Body allows the issuing of an ETA.

Each (LARWK) shall be **classified** according to Part 1 - clause 4.7.2 as follows:

1. external fire performance
2. reaction to fire

Each (LARWK) shall be **categorised** according to Part 1 - clause 4.7.3 as follows:

3. expected working life
4. climatic zone of use
5. user loads
6. roof slopes
7. minimum surface temperatures
8. maximum surface temperatures

Each (LARWK) shall have, according to Part 1 – clause 5.3.1

9. a declared value regarding water vapour permeability

Each (LARWK) shall have, according to Part 1 – clause 5.3.2

10. a declaration regarding presence of dangerous substances

Table 14. COMPOSITION INFORMATION FORM

Name:..... Trade mark:.....
 Address: Type of LARWK:.....
 Country:.....
 tel.: fax:..... E-mail address:

Constituent parts: a.
 b.
 c.
 d.
 e.

Method of blending:.....

Method of application: (including thickness and tolerances)

Suitable substrates: a.
 b.
 c.
 d.
 e.

Suitable protection layer:.....

Classification according to the intended use:

External fire performance	Euroclass.....
Reaction to fire	Euroclass

Categorisation according to the intended use

Expected working life	Category.....
Climatic zone of use	Category
User loads	Category.....
Roof slopes	Category.....
Minimum surface temperatures	Category.....
Maximum surface temperatures	Category.....

Declared initial value of water vapour permeability :
 Presence of restricted substances : yes / no
 Presence of prohibited substances : yes / no

Further remarks:.....

6.1 **ER1: Mechanical resistance and stability**

No requirements.

6.2 **ER2: Safety in case of fire**

6.2.1 **External fire performance**

6.2.1.1 The results of tests in accordance with EN 1187:2002 shall be used to classify the relevant roof of which the Liquid Applied Roof Waterproofing Kit forms part as an assembled system in accordance with pr EN 13501-5. Any classification relates only to the roof tested so the ETA shall define clearly the build-up of the roof receiving the classification.

6.2.1.2 Where appropriate roofs may be classified in accordance with the EC Decision 2000/553/EC without the need for testing. The ETA shall define clearly the build-up of the roof(s) that is (are) subject to classification without further testing.

The ETA shall also draw to the attention of Regulators that all other possible assembled systems are classified as 'No Performance Determined' and shall note that these assembled systems should be assessed or tested prior to use, on a case by case basis.[1]

[1] It will be up to the Regulators in each Member State to decide what additional assessment or testing shall be required before the use of 'no performance determined' assembled systems is permitted.

6.2.2 **Reaction to fire**

The product/kit and/or components shall be classified according to EN 13501-1:2002.

6.3 **ER3: Hygiene, health and the environment**

6.3.1 **Indoor environment**

6.3.1.1 Resistance to moisture vapour

The resistance of moisture vapour, calculated on the basis of the declared value for water vapour permeability of the assembled system, shall be such that a user of the product is able to carry out the necessary hygrothermal analysis to ensure that the roof is capable of meeting the Essential Requirement.

The value for water vapour resistance, assessed by the Approval Body, shall be within the range as declared by the Applicant.

6.3.1.2 Watertightness

After testing in accordance with 5.3.1.2 the assembled system(s) shall be watertight.

6.3.2 **Release of dangerous substances**

The product/kit shall comply with all relevant European and national provisions applicable for the uses for which it is brought to the market. The attention of the applicant should be drawn on the fact that for other uses or other Member States of destination there may be other requirements which would have to be respected. For dangerous substances contained in the product but not covered by the ETA, the NPD option (no performance determined) is applicable.

The ETA shall indicate whether or not the assembled system of the LARWK contains restricted or prohibited products, according clause 5.3.2.

When an assembled system does contain restricted or prohibited substances, this shall be identified by nature and content

If chemicals are added to prevent root penetration this chemicals shall be listed in consideration to Biocide Directive (Directive 98/8/EC) in the ETA.

6.3.3 **Working life, durability**

6.3.3.0 General

The guidance given on the assessment of working life is based on the 'state of the art' and a knowledge of current products within the defined family of products. It is possible that, during the assessment of a product, an Approval Body may obtain information which gives concerns relating to the durability of that product, despite the guidance given.

In such cases the Approval Body, in consultation with Working Group 4.02/01, may require additional justification relating to the expected working life of the product. This may include additional testing, additional evidence of satisfactory performance in use, etc..

The Approval Body shall satisfy itself that the expected working life, based on the data gathered in accordance with 5.3.3.0 (ii), is consistent with the defined working life category.

Note: *the data gathered will be reviewed and, in the light of experience, may enable the recommendation of specific requirements.*

6.3.3.1 Previous use

For kits categorised "W 3" (25 years), the evidence of previous use of the assembled system (or similar systems) for a minimum period of 5 years shall demonstrate continued satisfactory performance. The Approval Body shall be satisfied that the existing use in terms of categorisation (eg situation, climatic zone, etc.) is relevant to the proposed use.

6.3.3.2 Resistance to wind loads

- i) In the case of loose laid and ballasted assembled systems the mass of the proposed minimum thickness of ballast layer shall be declared in the ETA to enable the user to judge whether or not the assembled system is suitable for use under local conditions.

If the Applicant proposes a calculation method to enable unrestricted use, this shall be declared in the ETA and included in the Manufacturer's Technical Dossier.

- ii) The delamination strength of partially or fully bonded assembled systems determined in accordance with 5.3.3.1 (ii) shall exceed 50 kPa.

Note: The value of 50 kPa is derived from the maximum load applied by wind. In practice the delamination strength will be significantly in excess of this load.

- iii) The wind uplift resistance, determined in accordance with 5.3.3.1 (iii), shall be declared in the ETA to enable the user to judge whether or not the assembled system is suitable for use under local conditions.

6.3.3.3 Resistance to mechanical damage

6.3.3.3.1 Resistance to dynamic indentation (perforation)

After testing in accordance with 5.3.3.2.1 the assembled system(s) shall remain watertight.

6.3.3.3.2 Resistance to static indentation (perforation)

After testing in accordance with 5.3.3.2.2 the assembled system(s) shall remain watertight.

6.3.3.4 Resistance to fatigue movement

After testing in accordance with 5.3.3.3 the assembled system(s) shall remain watertight and the debonding, if any, shall not exceed a total of 75 mm and shall not exceed 50 mm on one side of the gap.

6.3.3.5 Resistance to the effects of low and high temperatures

6.3.3.5.1 Low temperatures

After testing in accordance with 5.3.3.4.1 (i) (dynamic indentation) the assembled system(s) shall remain watertight.

6.3.3.5.2 Extreme low temperatures

Assembled systems categorised according to minimum surface temperatures "TL 4", after testing in accordance with 5.3.3.4.2 (crack bridging capability), shall show no visible cracks and no loss of adhesion to the substrate at either side of the gap.

6.3.3.5.3 High temperatures

- i) The delamination strength of the assembled system(s), determined in accordance with 5.3.3.4.3 (i), shall exceed 50 kPa.
- ii) The assembled system, after testing in accordance with 5.3.3.4.3 (ii) (static indentation), shall remain watertight.
- iii) The calculated mean displacement of the assembled system, after testing in accordance with 5.3.3.4.3 (iii) (sliding), shall not exceed 2 mm.

6.3.3.6 Resistance to ageing media

6.3.3.6.1 Resistance to heat ageing

- i) The assembled system, after testing in accordance with 5.3.3.5.1(i) (dynamic indentation), shall remain watertight.
- ii) The assembled system after testing in accordance with 5.3.3.5.1(ii) (fatigue movement), shall remain watertight.
- iii) When the assembled system does **not** remain watertight the Approval Body shall satisfy itself:
 - either by following the procedure given in 6.0. v)
 - or, although NOT given in the relevant Complementary Part, by performing an additional specific relevant method of verification after heat ageing, where comparison in property of aged and unaged samples is defined. The results of this specific additional test shall be taken into account for further judgement.

6.3.3.6.2 UV radiation in the presence of moisture

- i) The assembled system, after testing in accordance with 5.3.3.5.2 (i) (dynamic indentation), shall remain watertight.
- ii) When the assembled system does **not** remain watertight the Approval Body shall satisfy itself by following the procedure given in 6.0. v) or perform an additional specific relevant method of verification after UV ageing where a comparison in property of aged and unaged samples is defined.

6.3.3.6.3 Resistance to water ageing

- i) The assembled system after testing in accordance with 5.3.3.5.3 (static indentation), shall remain watertight.
- ii) When the assembled system does **not** remain watertight the Approval Body shall satisfy itself by following the procedure given in 6.0. v) or perform an additional specific relevant method of verification after water ageing where a comparison in property of aged and unaged samples is defined.
- iii) To determine the possible effect of ageing by water (5.3.3.5.3) on the adhesion to the substrate or on the cohesion, the assembled system may be subjected to the delamination test in accordance with 5.3.3.1 (ii) as specified in the Complementary Part for a specific family of products.

6.3.3.7 Resistance to plant roots

Roots shall not penetrate the assembled system after testing in accordance with 5.3.3.6. In case of doubt the watertightness of the assembled system shall be verified according to EOTA technical report TR-003. The assembled system shall remain watertight..

6.4 **ER4: Safety in use**

6.4.1 **Resistance to wind loads**

See 6.3.3.2 – Resistance to wind loads.

6.4.2 **Slipperiness**

Indication of the characteristic value obtained from the test according to 5.4.2 or no performance determined.

6.4.3 **Resistance to ageing media**

See 6.3.3.6.3 (ii) – Resistance to water ageing.

6.5 **ER5: Protection against noise**

No requirements.

6.6 **ER6: Energy economy and heat retention**

See 6.3.1 - Indoor environment.

6.7 **Related aspects of serviceability**

The Approval Body shall assess the possible effects on the performance of the assembled system due to the declared limits.

6.8 **Identification of components**

Identification of the characteristics of the components of a LARWK shall be as defined in the Complementary Part of this ETA-Guideline relevant to the specific family of products.

The Approval Body shall assess the possible effects on the performance of the assembled system, due to the declared tolerancies.

7. PRECONDITIONS CONCERNING THE INCORPORATION OF THE PRODUCTS IN THE WORKS

7.0 General

The works in which a liquid applied roof waterproofing kit (LARWK), is deemed to satisfy the 'Essential Requirements' when that kit is assessed and declared "fit for use" (see 6.0) and when the application methods and design rules, specified by the Applicant, are fulfilled. Since the application method of kit(s) is the spraying, spreading or brushing of liquid components, whether or not blended in advance, the "incorporation in the works" is in fact the manufacturing of the roof waterproofing as an "assembled system". In general the proper incorporation, assembly, application and installation therefore shall be possible under practical circumstances. Specific provisions related to incorporation in the works shall be indicated in the relevant Complementary Part.

7.1 Application methods and design rules

The application methods and design rules for each liquid applied roof waterproofing kit (LARWK) shall be part of the Manufacturer's Technical Dossier (see 8.3.4) and, as a minimum shall address:

7.1.1 **Transport and storage**

Storage temperature, way of storage (tanks, drums); for all kits the instructions shall contain the necessary information on minimum and maximum temperature for transport and storage. Where kits incorporate chemicals, flammable components or other potentially hazardous materials the instructions shall contain specific guidance on restrictions and/or conditions for handling, transport and storage of these components.

7.1.2 **Influence of weather conditions**

Temperature and moisture conditions before, during and after application; the installation instructions shall contain the necessary recommendations on measures to be taken in order to accommodate the effects of the weather, such as excessive moisture, wind and temperature. The proportions in which components are mixed may be adjusted to cope with prevailing weather conditions. The Applicant's installation instructions shall include precise and detailed information.

7.1.3 **Application of components**

The Applicant's installation instructions shall contain information on the:

- list of suitable substrates;
- definition of an acceptable surface;
- preparation of the substrate (cleanness, moisture content, flatness, texture, maximum allowed cracks etc.);
- definition and application rate of suitable primer for each substrate;
- method of application, overlaps (if any), order of application and finish layers;
- field of use of internal layer (on the whole surface, or joints,) and its incorporation in the assembled system;
- required minimum thickness of the various layers;
- period of time between the application of each components, taking account of weather conditions;
- total drying time of the whole assembled system.

Where kits are applied by mixing components while spraying, the installation instructions shall contain specific guidance on process control on site (during applications):

- adjustment of machinery and devices used for mixing of components;
- adjustment of mixing ratio related to temperature, moisture, absorption capacity of the substrate;
- adjustment of pressure related to height of the works, viscosity of components etc.

7.1.4 **Details**

Recommended details at upstands, drains, penetrations, elevation, etc.; the installation instructions shall (where appropriate) contain precise information on particular measures with regard to the application of the kit at various details.

7.1.5 **Auxiliaries**

Ballast layer used, provisions at corner and side zones; where assembled systems are partially bonded to the substrate it may be necessary, in special cases, that additional ballast is required to assure the resistance to wind loads. In that respect the installation instructions shall give precise information on suitable measures for installation of the ballast material.

7.1.6 **Product waste**

Handling, environmental aspects; where the kits involve the use of chemicals and other potentially hazardous materials, the installation instructions shall give precise information on their safe disposal in accordance with national regulations, if applicable.

7.1.7 **Special measures**

In case a kit can be used as a waterproofing in roof gardens, green roofs or in inverted roofs, the design rules shall give information on protective measures to prevent damage to the assembled system as a consequence of installation or maintenance of those additional upper layers.

7.1.8 **Safety measures**

Where the kits incorporate flammable or hazardous components, the installation instructions shall give precise information to allow safe use and application.

Where kits can be spray applied, the installation instructions shall contain guidance on protective measure regarding personnel and the direct environment.

7.2 **Maintenance and repair**

Guidelines for maintenance and repair, including inspection sequences and specific measures related to maintenance of protective finish layers, if any, shall be part of the Manufacturer's Technical Dossier for each family of liquid applied roof waterproofing kits (LARWKs) (see 8.3.4).

SECTION THREE

ATTESTATION AND EVALUATION OF CONFORMITY

8. ATTESTATION AND EVALUATION OF CONFORMITY

8.1 EC-decision on attestation of conformity

The system of attestation of conformity, specified by the Commission Decision 98/599/EC (Mandate) and amended by Commission Decision 2001/596/EC related to liquid applied waterproofing kits for roofs are stated in tables 15, 16 & 17.

Table 15 System of attestation of conformity of uses for all roof waterproofing according to Commission Decision 98/599/EC of 12 October 1998.

Product(s)	Intended use(s)	Level(s) or class(es)	Attestation of conformity system(s)
Liquid applied roof waterproofing kits	For all roof waterproofing uses	-	3

System 3: See CPD Annex III(2)(ii), second possibility

Table 16 System of attestation of conformity of uses subject to external fire performance regulations according to Commission Decision 98/599/EC of 12 October 1998

Product(s)	Intended use(s)	Level(s) or class(es)	Attestation of conformity system(s)
Liquid applied roof waterproofing kits	For uses subject to external fire performance regulations	Products requiring testing	3
		Products 'deemed to satisfy' without testing (*)	4

System 3: See CPD Annex III(2)(ii), second possibility

System 4: See CPD Annex III(2)(ii), third possibility

(*) to be confirmed in discussion with the Fire Regulators Group

Table 17 System of attestation of conformity of uses subject to reaction to fire regulations according to Commission Decision 2001/596/EC of 8 January 2001.

Product(s)	Intended use(s)	Level(s) or class(es)	Attestation of conformity system(s)
the liquid applied roof waterproof kit as an assembled system	for uses subject to regulations on reaction to fire	A1*, A2*, B*, C*	1
		----- A1**, A2**, B**, C**, D, E	3
		----- (A1 to E)***, F	4

System 1: See Directive 89/106/EEC Annex III.2.(i), without audit-testing of samples

System 3: See Directive 89/106/EEC Annex III.2.(ii), Second possibility

System 4: See Directive 89/106/EEC Annex III.2.(ii), Third possibility

* Products/ materials for which a clearly identifiable stage in the production process results in an improvement of the reaction to fire classification (e.g. an addition of fire retardants or a limiting of organic material)

** Products/ materials not covered by footnote (*).

*** Products/ materials that do not require to be tested for reaction to fire (eg. Products/materials of classes A1 according to Commission Decision 96/603/EC, as amended

Concerning table 17, footnotes * and ** applies as follows.:

When a product is classified as A1, A2, B or C, due to the nature of the product, a fire retardant has been added, footnote ** is not applicable. The level of Attestation of Conformity then shall be 1.

Concerning table 17 footnote *** this is not applicable for the liquid applied roof waterproofing kits because all the products are based on organic material and therefore not covered by the Commission Decision 96/603/EC and its amendment.

Due to their properties with regard to the uses subject to regulations on roof waterproofing use, external fire performance and reaction to fire, uses different AoC systems as stated before shall be applied to the products.

That means for the performance of AoC for the product that only the product properties related to these uses shall be evaluated according to the relevant AoC system.

The tasks for the manufacturer and the approved body resulting on the combination of different AoC systems shall be laid down by reference to a deposited "control plan" which is part of the ETA and has to be applied for attestation of conformity and the CE marking on the basis of the ETA.

A/C System 1:

Certification of the conformity of the product by an Approved Certification Body, without audit-testing of samples, on the basis of {see CPD - Annex III.2.(i)}:

(a) tasks for the manufacturer

- Factory Production Control (see 8.2.1.1. and 8.3.4)
- further testing of samples taken at the factory by the manufacturer in accordance with a prescribed test plan (see 8.3.6)

(b) tasks for the Approved Body

- initial type-testing of the product
- initial inspection of the factory and of Factory Production Control
- continuous surveillance, assessment and approval of Factory Production Control

A/C System 3:

Declaration of conformity of the product by the manufacturer on the basis of {see CPD – Annex III.2.(ii), Second possibility}:

(a) tasks for the manufacturer

- factory production control

(b) tasks for the Approved Body

- initial type-testing of the product (see 8.2.2.1)

A/C System 4:

Declaration of conformity of the product by the manufacturer on the basis of {see CPD – Annex III,2.(ii), Third possibility}:

(a) tasks for the manufacturer

- initial type-testing of the product
- factory production control

(b) task for the Approved Body

- none

8.2 **Responsibilities**

8.2.1 **Tasks for the manufacturer**

8.2.1.1 Factory Production Control (FPC)

The manufacturer shall exercise permanent internal control of production and shall ensure that the results meet the set quality level.

***Note:** For the products dealt with in this ETA-Guideline a quality level of 5% is suitable. In this respect guidance can be obtained from “Guidance Paper B” – document CONSTRUCT 95/135, Rev. 1)*

All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures. This production control system shall ensure that the product is in conformity with the European Technical Approval (ETA).

***Note:** Manufacturers having an FPC system complying with EN ISO 9001/9002 and addressing the requirements of an ETA are recognized as satisfying the FPC requirements of the Directive
(see Guidance Paper “B” – document CONSTRUCT 95/135 Rev. 1).*

8.2.1.2 Testing of samples taken at the factory (A/C-system 1)

Both large and small companies produce these products and there is a wide variation in the materials used. Therefore a precise test plan can only be set up on a case-by-case basis.

In general it is not necessary to conduct tests on complete kits. Indirect methods will normally be sufficient, eg control of raw materials, manufacturing processes and properties of components.

8.2.1.3 Declaration of Conformity (A/C-systems 3 and 4)

When all the criteria of the Conformity Attestation are satisfied the manufacturer shall make a Declaration of Conformity.

8.2.2 **Tasks for the manufacturer or the Approved Body**

8.2.2.1 Initial type testing

Approval tests will have been conducted by the Approval Body or under its responsibility (which may include a proportion conducted by an indicated laboratory or by the manufacturer, witnessed by the Approval Body) in accordance with chapter 5 of this ETA-Guideline.

The Approval Body will have assessed the results of these tests in accordance with chapter 6 of this ETA-Guideline, as part of the ETA issuing procedure.

These tests shall be used for the purposes of Initial Type Testing. In this respect Approval Bodies shall be able to have open arrangements with relevant approved bodies to avoid duplication, respecting each other's responsibilities.

A/C-system 1: this work shall be validated by the Approved Body for Certification of Conformity purposes.

A/C-system 3: this work shall be validated **by an Approved Laboratory** for Declaration of Conformity purposes by the manufacturer.

A/C-system 4: this work should be taken over **by the manufacturer** for Declaration of Conformity purposes.

8.2.3 **Tasks for the Approved Body (A/C-system 1)**

8.2.3.1 Assessment of the Factory Production Control (FPC) system – initial inspection and continuous surveillance.

- Assessment of the Factory Production Control system is the responsibility of the Approved Body.

All assessments must be carried out on each production unit to demonstrate that the factory production control is in conformity with the ETA and any subsidiary information. This assessment shall be based on an initial inspection of the factory.

Subsequent continuous surveillance of the factory production is necessary to ensure continuing conformity with the ETA.

It is recommended that surveillance inspections be conducted at least twice per year.

8.2.3.2 Certification of conformity

The Approved Body shall issue Certification of Conformity of the product.

8.3. **Documentation (all A/C-systems)**

In order to help the Approved Body make an evaluation of the conformity, the Approval Body, issuing the ETA, shall supply the information detailed below.

This information together with the requirements given in the EC Guidance Paper "B" will:

A/C-system 1: generally form the basis on which the Factory Production Control (FPC) is assessed by the Approved Body.

A/C-systems 3 and 4: generally form the basis of FPC.

This information shall initially be prepared or collected by the Approval Body and shall be agreed with the manufacturer. Guidance on the type of information required is given below:

8.3.1 The ETA (see Section four, chapter 9 of this Guideline).

The nature of any additional (confidential) information shall be declared in the ETA.

8.3.2 Basic manufacturing process

The basic manufacturing process shall be described in sufficient detail to support the proposed FPC methods.

Components for kits are normally manufactured using conventional techniques. Any critical process or treatment of the components affecting performance shall be highlighted.

8.3.3 Product and material specifications

These may include:

- incoming (raw) materials specifications and declarations (including tolerances).
- references to European and/or international standards or appropriate specifications
- manufacturer's data sheets (including tolerances).
- principle detail drawings
- installation procedures

8.3.4 Manufacturer's Technical Dossier (MTD)

The provisions of the FPC system and installation procedures, documented as the Manufacturer's Technical Dossier (MTD), shall be assessed, accepted and registered by the Approval Body.

The Factory Production Control system, as a minimum, shall address the following:

- | | |
|--|---|
| A. Organisation and responsibilities | This includes the organisation chart of the technical part of the company |
| B. Quality plan | |
| i) Control of incoming materials ("raw materials" and/or components) | This control is for materials received, to be directly used as components or for the manufacturing of components. |
| ii) Control of the production process | This is only applicable to those processes, where components are manufactured. |
| iii) Control of test equipment | This includes calibration charts, etc. |
| iiii) Control of finished products | This is only applicable to the components manufactured in the plant. |
| C. Inspection and testing | |
| i) General | Requirements for facilities, equipment and personnel in the manufacturing plant. |
| ii) Inspections and test status | Procedures for inspection and acceptance criteria for materials (raw materials and/or components) by setting a quality level. |
| iii) Testing | If indirect testing is used, this needs to be addressed. |
| iiii) Records | Procedures for the registration of quality control data |
| D. Control of non-conforming products | Procedures for dealing with non-conforming products |
| E. Complaints | |

i)	Registration	Procedures for dealing with complaints and a complaint registration chart.
ii)	Traceability	A linked system of complaints registration and records regarding quality control data, non-conforming products, transport, etc.
F. Handling, storage, packaging and delivery of the product		Procedures.
G. Training of personnel		Procedures.

Since 'liquid applied roof waterproofing' is made on site from components of a kit, the manufacturer's installation procedures shall include quality requirements and conditions for proper installation, such as:

H. Application methods and design rules	Procedures according clause 7.1, and if applicable the specific procedure according to the relevant clause in the Complementary Part.
J. Testing of final product on site	Recommended procedures (e.g. completion report).
K. Maintenance and repair	Recommended procedures, frequencies, means and specific maintenance of surface protective finish layers, if any.

8.3.5 Test plan

The manufacturer and the Approval Body issuing the ETA shall agree an FPC test plan.

An agreed FPC test plan is necessary, as current standards relating to quality management systems (Guidance Paper "B", EN ISO 9001 / 9002, etc) do not ensure that the product specification remains unchanged and they cannot address the technical validity of the type or frequency of checks / tests.

The validity of the type and the frequency of checks / tests, conducted during production of the components (kit) and, if applicable, on its "assembled system", shall be considered.

This will include the checks conducted during manufacture on properties that cannot be inspected at a later stage.

These will normally comprise:

- material properties
- compatibility of components

Where materials / components are not manufactured and tested by the supplier in accordance with agreed methods, then, where appropriate, they must be subject to suitable checks / tests by the manufacturer before acceptance.

Details of the test plan shall be included in the Manufacturer's Technical Dossier.

8.3.6 Prescribed test plan (**only A/C-System 1**)

The manufacturer and the Approval Body, issuing the ETA, shall agree a prescribed test plan.

The characteristic to be addressed as described in the mandate is the **Reaction to fire**. This will be controlled at least twice per year by analysis / measurement of the relevant characteristics for the "assembled system" of the kit.

8.3.7 Modification of the MTD

If, subsequent to the issue of an ETA, the manufacturer wishes to modify the contents of the MTD the proposed changes shall be submitted to the Approval Body (A/C-systems 3 and 4), or to the Approved Body (A/C-system 1) who shall consult with the Approval Body, if necessary, before implementation.

The proposed changes and their effects on the contents of the ETA shall be assessed by the Approval Body. Additional tests or justifications may be required before approval is granted. Significant changes may lead to the need to amend and re-issue the ETA.

Acceptable changes shall be recorded and registered by the Approval Body in an amended MTD.

8.4 **CE - marking and information**

The ETA shall indicate the information to accompany the CE-marking, the placement of CE-marking and the accompanying information (eg on the kit and/or components, an attached label, the packaging or on the accompanying commercial documents).

According to the CE Guidance Paper "D" on CE-marking, the required information to accompany the symbol "CE" is:

- identification number of the notified body (**A/C-System 1**)
- name / address or identifying mark of the manufacturer of the kit (LARWK)
- "class / type" indication as to clarify the intended use(s)
- last two digits of the year in which the marking was affixed
- number of the EC Certificate of Conformity (**A/C-System 1**)
- number of the ETA
- dangerous substances (see clause 5.3.2 of this ETAG)
- class of external fire performance
- class of reaction to fire

The CE marking should be accompanied by the information as given in the ETAG-format document, taking into account that:

- If the ETA provides all the information regarding the performance characteristics and the appropriate conditions for their achievement (e.g. details of the relevant end use applications covered by the mounting and fixing arrangements provided for the purpose of test), then reference to the ETA is sufficient.
- If the ETA covers more than one type of product, and the type designation provides all the information regarding the performance characteristics and the appropriate conditions for

their achievement (e.g. details of the relevant end use applications covered by the mounting and fixing arrangements provided for the purpose of test), then reference to the ETA and the relevant type is sufficient.

- Only when the above two options do not provide all the necessary information regarding the mandated performance characteristics (table 4.1), then additional information regarding the performance characteristics and the appropriate conditions for their achievement (e.g. details of the relevant end use applications covered by the mounting and fixing arrangements provided for the purpose of test), needs to accompany the CE Marking. Reference to accompanying information should be given in the ETA.

SECTION FOUR

THE ETA CONTENT

9. THE ETA CONTENT

- 9.1 The ETA content shall be in accordance with the Commission Decision 97/571/EC, dated 22 July 1997.

In section II.2 "characteristics of products and methods of verification" the ETA shall include the following note::

In addition to the specific clauses relating to dangerous substances contained in this European Technical Approval, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the EU Construction Products Directive, these requirements need also to be complied with, when and where they apply.

The ETA is issued for the product/kit on the basis of agreed data/information, deposited with {the Approval Body name}, which identifies the product/kit that has been assessed and judged. Changes to the product/production process/kit, which could result in this deposited data/information being incorrect, should be notified to the {the Approval Body name} before the changes are introduced. The {Approval body name} 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 so whether further assessment/alterations to the ETA, shall be necessary.

- 9.2 The ETA shall contain information and/or references allowing for, where there is a need eg. attestation of Conformity [see Chapter 8 clause 8.2.3.3 certification, evaluation of conformity Systems 1 & 2], market surveillance, complaints or accidents [all Systems of A/C]), to determine that the products on the market, or intended to be put on the market are in compliance with the approved product as described in the ETA.

When such information/references are of a confidential nature it/they shall exist on the ETA file managed by the Approval body and as necessary on the relevant file of any notified body involved.

This information/references shall also be of assistance in any renewal of the ETA.

The type, scale, range of information will be based on the identification clauses in Chapter 5 of the ETAG.

Annex I

I LIST OF COMPLEMENTARY PARTS "SPECIFIC STIPULATIONS" FOR PARTICULAR FAMILY OF PRODUCTS (Issue No 1 – February 2000)

I.1 SCOPE

This Annex gives a list of Complementary Parts for the particular family of products.

I.2 LIST OF COMPLEMENTARY PARTS

The following Complementary Parts are published:

- Part 2 - Specific stipulations for liquid applied roof waterproofing kits based on polymer modified bitumen emulsions and solutions.
- Part 3 - Specific stipulations for liquid applied roof waterproofing kits based on glass reinforced resilient unsaturated polyester resins.
- Part 4 - Specific stipulations for liquid applied roof waterproofing kits based on flexible unsaturated polyester.
- Part 5 - Specific stipulations for liquid applied roof waterproofing kits based on hot applied polymer modified bitumen.
- Part 6 - Specific stipulations for liquid applied roof waterproofing kits based on polyurethane.
- Part 7 - Specific stipulations for liquid applied roof waterproofing kits based on bitumen emulsions and solutions.
- Part 8 - Specific stipulations for liquid applied roof waterproofing kits based on water dispersable polymers

Note: This list of Complementary Parts will be revised on the occasion of release of such parts for different families of products or in case of updating or withdrawal of existing parts.

Annex II

II COMMON DEFINITIONS (and clarifications) AND COMMON ABBREVIATIONS

1. WORKS AND PRODUCTS

1.1 Construction works (and parts of works) (often simply referred to as "works") (ID 1.3.1)

Everything that is constructed or results from construction operations and is fixed to the ground.
(This covers both building and civil engineering works, and both structural and non structural elements).

1.2. Construction products (often simply referred to as "products") (ID 1.3.2)

Products which are produced for incorporation in a permanent manner in the works and placed as such on the market.

(The term includes materials, elements, components and prefabricated systems or installations)

1.3. Incorporation (of products in works) (ID 1.3.2)

Incorporation of a product in a permanent manner in the works means that:

- its removal reduces the performance capabilities of the works, and
- that the dismantling or the replacement of the product are operations which involve construction activities.

1.4. Intended use (ID 1.3.4)

Role(s) that the product is intended to play in the fulfilment of the essential requirements.

(N.B. This definition covers only the intended use as far as relevant for the CPD)

1.5. Execution (ETAG-format)

Used in this document to cover all types of incorporation techniques such as installation, assembling, incorporation, etc.

1.6. System (EOTA/TB guidance)

Part of the works realised by

- particular combination of a set of defined products, and
- particular design methods for the system, and/or
- particular execution procedures.

2. PERFORMANCES

2.1. Fitness for intended use (of products) (CPD 2.1)

Means that the products have such characteristics that the works in which they are intended to be incorporated, assembled, applied or installed, can, if properly designed and built, satisfy the essential requirements.

(N.B. This definition covers only the intended fitness for intended use as far as relevant for the CPD)

2.2. Serviceability (of works)

Ability of the works to fulfill their intended use and in particular the essential requirements relevant for this use.

The products must be suitable for construction works which (as a whole and in their separate parts) are fit for their intended use, subject to normal maintenance, be satisfied for an economically reasonable working life. The requirements generally concern actions which are foreseeable (CPD Annex I, Preamble).

2.3. Essential requirements (for works): requirements applicable to works, which may influence the technical characteristics of a product, and are set out in objectives in the CPD, Annex I (CPD, art. 3.1).

2.4. Performance (of works, parts of works or products) (ID 1.3.7)

The quantitative expression (value, grade, class or level) of the behaviour of the works, parts of works or of the products, for an action to which it is subject or which it generates under the intended service conditions (works or parts of works) or intended use conditions (products).

As far as practicable the characteristics of products, or groups of products, should be described in measurable performance terms in the technical specifications and guidelines for ETA. Methods of calculation, measurement, testing (where possible), evaluation of site experience and verification, together with compliance criteria shall be given either in the relevant technical specifications or in references called up in such specifications.

2.5. Actions (on works or parts of the works) (ID 1.3.6)

Service conditions of the works which may affect the compliance of the works with the essential requirements of the Directive and which are brought about by agents (mechanical, chemical, biological, thermal or electro-mechanical) acting on the works or parts of the works.

Interactions between various products within a work are considered as "actions".

2.6. Classes or levels (for essential requirements and for related product performances) (ID 1.2.1)

A classification of product performance(s) expressed as a range of requirement levels of the works, determined in the ID's or according to the procedure provided for in art. 20.2a of the CPD.

3. ETAG - FORMAT

3.1. Requirements (for works) (ETAG-format 4.)

Expression and application, in more detail and in terms applicable to the scope of the guideline, of the relevant requirements of the CPD (given concrete form in the ID's and further specified in the mandate, for works or parts of the works, taking into account the durability and serviceability of the works.

3.2. Methods of verification (for products) (ETAG-format 5.)

Verification methods used to determine the performance of the products in relation to the requirements for the works (calculations, tests, engineering knowledge, evaluation of site experience, etc.).

This verification methods are related only to the assessment of, and for judging the fitness for use. Verification methods for particular designs of works are called here "project testing", for identification of products are called "identification testing", for surveillance of execution or executed works are called "surveillance testing", and for attestation of conformity are called "AC-testing".

3.3. Specifications (for products) (ETAG-format 6.)

Transposition of the requirements into precise and measurable (as far as possible and proportional to the importance of the risk) or qualitative terms, related to the products and their intended use. *The satisfaction of the specifications is deemed to satisfy the fitness for use of the products concerned.*

Specifications may also be formulated with regard to the verification of particular designs, for identification of products, for surveillance of execution or executed works and for attestation of conformity, when relevant.

4. WORKING LIFE

4.1. Working life (of works or parts of the works) (ID 1.3.5(1))

The period of time during which the performance will be maintained at a level compatible with the fulfilment of the essential requirements.

4.2. Working life (of products)

Period of time during which the performances of the product are maintained - under the corresponding service conditions - at a level compatible with the intended use conditions.

4.3. Economically reasonable working life: (ID 1.3.5(2))

Working life which takes into account all relevant aspects, such as costs of design, construction and use, costs arising from hindrance of use, risks and consequences of failure of the works during its working life and cost of insurance covering these risks, planned partial renewal, costs of inspections, maintenance, care and repair, costs of operation and administration, of disposal and environmental aspects.

4.4. Maintenance (of works) (ID 1.3.3(1))

A set of preventive and other measures which are applied to the works in order to enable the works to fulfil all its functions during its working life. These measures include cleaning, servicing, repainting, repairing, replacing parts of the works where needed, etc.

4.5. Normal maintenance (of works) (ID 1.3.3(2))

Maintenance, normally including inspections, which occurs at a time when the cost of the intervention which has to be made is not disproportionate to the value of the part of the work concerned, consequential costs (e.g. exploitation) being taken into account.

4.6. Durability (of products)

Ability of the product to contribute to the working life of the work by maintaining its performances, under the corresponding service conditions, at a level compatible with the fulfilment of the essential requirements by the works.

5. CONFORMITY

5.1. Attestation of conformity (of products)

Provisions and procedures as laid down in the CPD and fixed according to the directive, aiming to ensure that, with acceptable probability, the specified performance of the product is achieved by the ongoing production.

5.2. Identification (of a product)

Product characteristics and methods for their verification, allowing to compare a given product with the one that is described in the technical specification.

6. APPROVAL AND APPROVED BODIES

6.1. Approval Body

Body notified in accordance with Article 10 of the CPD, by an EU Member State or by an EFTA State (contracting party to the EEA Agreement), to issue European Technical Approvals in (a) specific construction product area(s). All such bodies are required to be members of the European Organisation for Technical Approvals (EOTA), set up in accordance with Annex II.2 of the CPD.

6.2. Approved Body(*)

Body nominated in accordance with Article 18 of the CPD, by an EU Member State or by an EFTA State (contracting party to the EEA Agreement), to perform specific tasks in the framework of the Attestation of Conformity decision for specific construction products (certification, inspection or testing). All such bodies are automatically members of the Group of Notified Bodies.

(*) also known as Notified Body

ABBREVIATIONS

Concerning the Construction products directive:

AC: Attestation of conformity
CEC: Commission of the European Communities
CEN: Comité européen de normalisation / European Committee for Standardization
CPD: Construction products directive
EC: European communities
EFTA: European free trade association
EN: European standard
FPC: Factory production control
ID: Interpretative documents of the CPD
ISO: International standardisation organisation
SCC: Standing committee for construction of the EC

Concerning approval:

EOTA: European organisation for technical approvals
ETA: European Technical Approval
ETAG: European technical approval guideline
TB: EOTA-Technical Board
UEAtc: Union européenne pour l'agrément technique / European union of agrément

General:

TC: Technical committee
WG: Working group

Annex III

III PREPARATION OF FREE SAMPLES

III.1 SCOPE

This Annex gives guidance on the procedure for the preparation of free samples of (an) assembled system(s) of roof waterproofing kits (LARWKS).

III.2 INTRODUCTION

To perform specific tests and/or verifications (eg. the effects of ageing media on different characteristics of liquid applied waterproofing membranes) it is necessary to prepare free film samples of systems.

The method of free film sample preparation may differ with the system under examination and the advice of the manufacturer should be sought on the most appropriate method to be used with the materials.

III.3 APPARATUS

III.3.1 **Base:** a rigid support (eg of plywood, glass, plastic coated chipboard or MDF etc.) of sufficient size to provide an even and stable substrate on which to prepare the sample(s)

III.3.2 **Release agent:** to avoid adhesion to the base and to allow subsequent removal of the sample. Examples of release agents known to work are siliconised paper, spray furniture polish, spray silicone release agent, micro-crystalline parafin wax, etc.

III.3.3 **Thickness control:** a means of ensuring a constant and controllable thickness of the free film. Examples: wet film gauges, film spreaders, film casters, bar coaters, steel frames, etc.

III.3.4 **Spirit level:** to allow the base plate to be adjusted to a horizontal position.

III.4 FREE SAMPLE

III.4.1 Composition

The free sample is the roof waterproofing kit (LARWK), applied in accordance with the manufacturer's instructions to the appropriate ratio of constituent parts, or to the specified composition by the Approval Body.

III.4.2 Number and size of free samples

The number and size of free samples will be declared by the Approval Body, dependent on the relevant method of verification.

Annex III

III.5 PROCEDURE

The base shall be placed on a firm support ensuring that it is horizontal.

The release agent shall be applied and, where necessary, allowed to dry. Where sheet release agents are used, these shall be firmly fixed to the base without creases or wrinkles.

Apply the roof waterproofing kit (LARWK) in the appropriate number of coats, including reinforcement, where appropriate, in accordance with the manufacturer's instructions (by spraying, spreading or brushing) to the prepared base. For two-coat brush-applied roof waterproofing kits the manufacturer's instructions for the direction of brushing shall be followed. The mean thickness of the applied membrane shall be controlled in the appropriate manner.

The sample shall be allowed to fully cure before removal, without straining, from the base. Any area of free film falling outside the manufacturer's thickness specification shall be rejected.

Annex IV

Reaction to fire – test procedures

The test methods depend on the classification which the product shall meet.

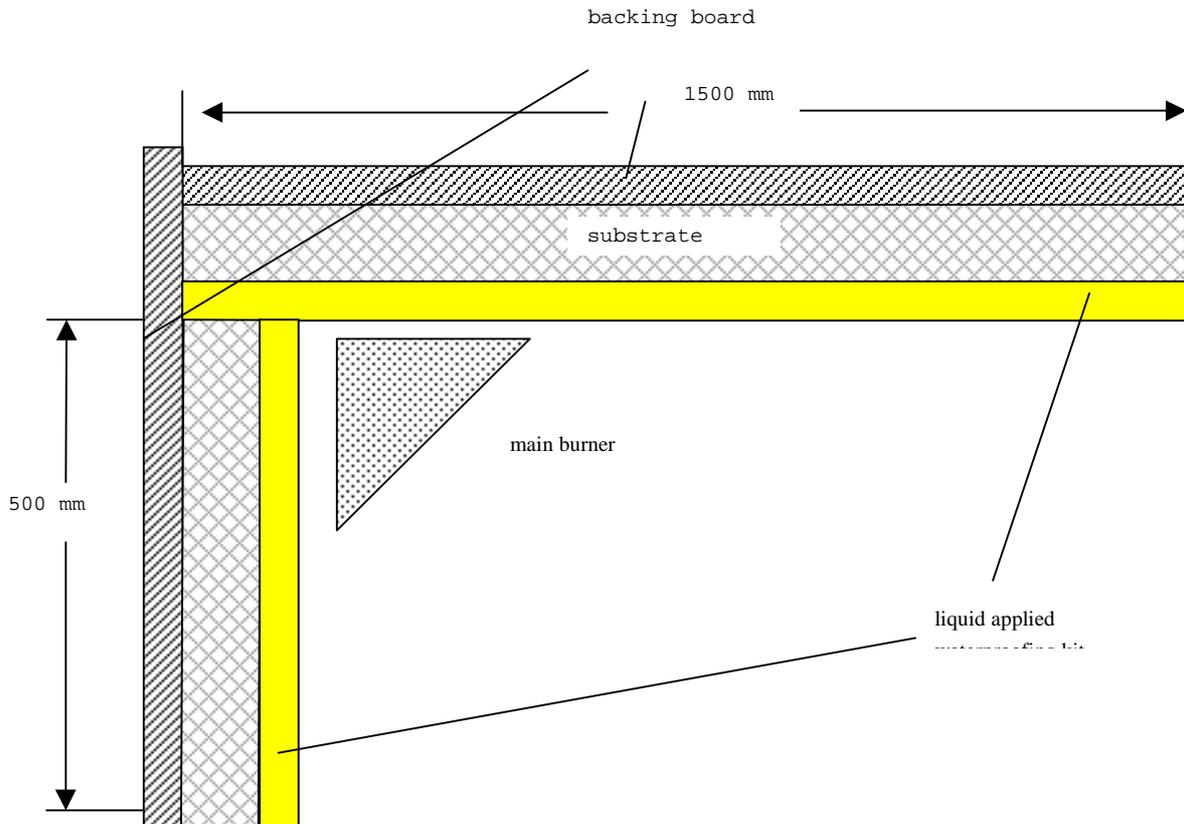
Tests according to EN ISO 11925-2 shall be carried out on substrates according to EN 13238.

When the liquid applied roof waterproofing kit is intended to be used in combination with other substrates, it shall be tested in end-use practice. Liquid applied waterproofing kit shall be tested in its highest intended thickness. The result is valid for lower thickness.

Tests according EN 13823 shall be carried out on substrates according to EN 13238. If the liquid applied waterproofing kit is intended to be used in combination with other substrates it shall be tested as in end-use practice. The liquid applied roof water proofing kit shall be tested in its highest and lowest thickness intended to be used. The test specimen shall be installed on the sample carrier according to figure 1.

As a result the tests for the classification to Euroclasses B, C, D and E according to EN 13501-1 refer to the specified substrates and their characteristics. This may cause different Euroclasses for the liquid applied roof waterproofing as an assembled system for different substrates.

Figure 1
Example for SBI – test



Annex V (informative)

V. BIBLIOGRAPHY

The following documents have served as reference (in the preparation) of this Guideline.

- Directives Générales UEAtc pour l'Agrément des Revêtements d'Étanchéité des Toitures / General Directive for the Assessment for Roof Waterproofing Systems: July 1982.
- Guide Technique UEAtc pour l'Agrément des Systèmes isolant supports d'étanchéité des toitures planes et inclinées / Technical Guide for the Assessment of Thermal Insulating Systems intended for Supporting Waterproofing Coverings on Flat and Sloping Roofs : 1993.
- EN-ISO 9001: 1994 Quality systems: Model for the quality assurance in design, development, production, installation and servicing.
- EN-ISO 9002: 1994 Quality systems: Model for quality assurance in production, installation and servicing.