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GUIDELINE FOR EUROPEAN TECHNICAL APPROVAL
OF

LIQUID APPLIED ROOF WATERPROOFING KITS

Revision of March 2004

**Part 7: SPECIFIC STIPULATIONS
FOR KITS BASED ON BITUMEN EMULSIONS
AND SOLUTIONS**

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TABLE OF CONTENTS

	page
FOREWORD	4
General	4
Normative references	4
SECTION ONE: INTRODUCTION	
1. PRELIMINARIES	6
1.1 Legal basis	6
1.2 Status of ETAGs	6
2. SCOPE	6
3. TERMINOLOGY	6
3.1 Definitions and abbreviations	6
3.2 Particular definitions	7
3.3 Particular abbreviations	7
SECTION TWO: GUIDANCE FOR THE ASSESSMENT OF THE FITNESS FOR USE	
4. REQUIREMENTS	8
4.0 General	8
4.1 ER1: Mechanical resistance and stability	8
4.2 ER2: Safety in case of fire	8
4.3 ER3: Hygiene, health and the environment	8
4.4 ER4: Safety in use	8
4.5 ER5: Protection against noise	8
4.6 ER6: Energy economy and heat retention	8
4.7 Related aspects of serviceability	8
5. SPECIFIC METHODS OF VERIFICATION	9
5.0 General	9
5.1 ER1: Mechanical resistance and stability	9
5.2 ER2: Safety in case of fire	9
5.3 ER3: Hygiene, health and the environment	9
5.4 ER4: Safety in use	9
5.5 ER5: Protection against noise	9
5.6 ER6: Energy economy and heat retention	9
5.7 Related aspects of serviceability	9
5.8 Identification of components	10

6.	ASSESSING AND JUDGING THE FITNESS OF PRODUCTS FOR INTENDED USE	12
6.0	General	12
6.1	ER1: Mechanical resistance and stability	12
6.2	ER2: Safety in case of fire	12
6.3	ER3: Hygiene, health and the environment	12
6.4	ER4: Safety in use	12
6.5	ER5: Protection against noise	12
6.6	ER6: Energy economy and heat retention	12
6.7	Related aspects of serviceability	12
6.8	Identification of components	12
7.	PRECONDITIONS CONCERNING INCORPORATION OF PRODUCTS IN THE WORKS	13
7.1	Application methods and design rules	13
7.2	Maintenance and repair	13
SECTION THREE:	ATTESTATION OF CONFORMITY	
8.	ATTESTATION AND EVALUATION OF CONFORMITY	14
8.1	EC-decisions	14
8.2	AC-procedures	14
8.3	CE-marking and information	14
SECTION FOUR:	THE ETA CONTENT	
9.	THE ETA CONTENT	14
9.1	Exceptions	14

FOREWORD

General

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

This ETAG 005 – Part 7 "Specific stipulations for kits based on bitumen emulsions and solutions" shall be used in conjunction with ETAG 005 – Part 1 - "General".

This Complementary Part expands and/or modifies the requirements given in ETAG 005 – Part 1 – "General" taking into account the specific family of products referred to.

Normative references

This ETAG 005 – Part 7 incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. 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 dated revision of the publication referred to, applies.

EN 933-1	Tests for geometrical properties of aggregates – Part 1:Determination of particle size distribution – Sieving method.
EN 1107-1	Flexible sheets for waterproofing – Determination of dimensional stability – Part 1:Bitumen sheets for roof waterproofing.
EN 1107-2	Flexible sheets for waterproofing – Determination of dimensional stability – Part 2:Plastic and rubber sheets for roof waterproofing.
EN 1426	Bitumen and bituminous binders – Determination of needle penetration.
EN 1427	Bitumen and bituminous binders – Determination of softening temperature – Ring and ball method.
EN ISO 2431 (+ C1 and 2)	Paints and varnishes – Determination of flow time by use of flow cups.
EN ISO 2555	Plastics – resins in the liquid state or as emulsions or dispersions – Determination of apparent viscosity by the Brookfield Test method.
EN ISO 2592	Determination of flash and fire points – Cleveland open cup method.
EN ISO 2719	Determination of flash points – Pensky-Martens closed cup method.

EN ISO 3251	Paints, varnishes and plastics – Determination of non-volatile matter content.
ISO 976	Rubber and plastics – Polymer dispersions and rubber lattices – Determination of pH.
ISO 3342	Textile glass – Mats – Determination of tensile breaking force.
ISO 3374	Reinforcement products – Mats and Fabrics – Determination of mass per unit area.
ISO 9073-1	Textiles – Test methods for nonwovens – Part 1: Determination of mass per unit area.
ISO 9073-3	Textiles – Test methods for nonwovens – Part 3: Determination of tensile strength and elongation.
BS 2000-223	Methods of test for petroleum and its products – Determination of ash of petroleum products containing mineral matter.
ETAG 005 Part 1	Liquid applied water proofing kits : Part 1 – General.

SECTION ONE

INTRODUCTION

1. PRELIMINARIES

1.1 Legal basis

The legal basis of the ETA-Guidelines is given in clause 1.1 of ETAG 005 – Part 1.

No existing ETA-Guideline is superseded

1.2 Status of ETA-Guidelines

The Status of the ETA-Guidelines is given in clause 1.2 of ETAG 005 - Part 1.

2. SCOPE

This Part 7 shall be used in conjunction with ETAG 005 – Part 1.

This Complementary Part (ETAG 005 – Part 7) - "Specific stipulations for kits based on bitumen emulsions and solutions" specifies terminology and definitions, the specific methods of verification for the construction products and for the identification of its component characteristics.

It also gives guidance for the assessment of the specific installation instructions and for the Attestation of Conformity for such kits for use in roof waterproofing.

It is applicable to roof waterproofing kits based on bitumen emulsions and solutions, in-situ applied by brushing, spraying or spreading, with or without a supporting layer, an internal layer and/or a protective finish of mineral granules, chips or solar reflective coating.

This ETAG 005 – Part 7 is applicable only to those kits used for repair, renovation or maintenance, or solely for use in construction works, which have a limited intended working life of five years.

3. TERMINOLOGY

3.1 Definitions and abbreviations

For the purpose of this Complementary Part of the ETA-Guideline the particular definitions and abbreviations as stated in clause 3 of ETAG 005 – Part 1 and the Common Terminology adopted by the Technical Board (see Annex II of ETAG 005 – Part 1) applies.

3.2 **Particular definitions**

For the purpose of this ETAG 005 – Part 7 the following definitions apply:

- 3.2.1 **bitumen:** A viscous semi-solid or solid, consisting essentially of a complex mixture of hydrocarbons and their derivatives, soluble in carbon disulphide; it is substantially non-volatile and softens gradually when heated. It is black in colour and possesses waterproofing and adhesive properties. It is obtained by refinery processes from petroleum and is also found as a natural deposit or as a component of naturally occurring asphalt where it is associated with mineral matter.
- 3.2.2 **bitumen adhesive (cold):** A high viscosity homogeneous blend of bitumen or polymer modified bitumen and volatile organic solvent(s) which may incorporate fillers and/or fibres. Can be used as a cold applied adhesive for bonding bituminous roofing sheets used as a supporting layer.
- 3.2.3 **bitumen adhesive (hot):** A solid bitumen softening gradually when heated. Can be used as a hot applied adhesive for bonding bituminous roofing sheets used as a supporting layer. The bitumen can be either oxidised or polymer modified.
- 3.2.4 **bitumen emulsion:** A substantial amount of bitumen, finely dispersed in an aqueous medium by one or more suitable emulsifying agents. The emulsion may also incorporate inert fillers and/or fibres.
A liquid or paste of brushing, spraying or spreading consistency that, when dried, provides a film that forms part of the assembled system of the LARWK.
- 3.2.5 **bitumen primer:** A low viscosity bitumen emulsion or solution for the purpose of improving adhesion, sealing and preparing surfaces prior to the application of the LARWK.
- 3.2.6 **bitumen solution:** A blend of bitumen dissolved in volatile organic solvent(s) which may contain inert fillers and/or fibres. A viscous liquid or paste of brushing, spraying or spreading consistency that, when dried, provides a film that forms part of the assembled system of the LARWK.
- 3.2.7 **catalyst:** A destabilising salt solution, added to certain bitumen emulsion systems in order to break or destabilise the emulsion and initiate the curing process.
- 3.2.8 **solar reflective coating:** A liquid coating, sufficiently light in colour, used for the purpose of protection against solar degradation, in particular reducing heat gain of the roof surface and associated thermal movement. The coating can be of bitumen base containing metal flake or of polymer base containing pigments and inert fillers and/or fibres. The coating can be in an aqueous or volatile organic solvent(s) medium and is applied as a finish layer to the assembled system.

3.3 **Particular abbreviations**

For the purpose of this ETA-Guideline - Part 7 no particular abbreviations apply.

SECTION TWO

GUIDANCE FOR THE ASSESSMENT OF THE FITNESS FOR USE

4. REQUIREMENTS

4.0 General

The performance requirements, establishing the fitness for use of LARWK(s) based on **bitumen emulsions and solutions**, shall be in accordance with chapter 4 of ETAG 005 – Part 1, and with the following specific stipulations for this family of products.

4.1 **ER 1: Mechanical resistance and stability** No requirements

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

4.2.1 **External fire performance** Specific requirements in 6.2.1

4.2.2 **Reaction to fire** Specific requirements in 6.2.2

4.3 **ER 3: Hygiene, health and the environment**

(working life and durability aspects) No additional requirements

4.4 **ER 4: Safety in use** No additional requirements

4.5 **ER 5: Protection against noise** No requirements

4.6 **ER 6: Energy economy and heat retention** No requirements

4.7 **Related aspects of serviceability**

The following specific requirements

To fall within the scope of this Complementary Part the final product shall meet the additional requirements related to the following aspects.

4.7.1 **Effect of weather conditions** Specific requirements in 5.7.1

4.7.1.1 Resistance to dynamic indentation

4.7.1.2 Resistance to static indentation

4.7.1.3 Resistance to dynamic indentation at low surface temperature

5. SPECIFIC METHODS OF VERIFICATION

5.0 General

The methods of verification given in chapter 5 of ETAG 005 –Part 1 shall be applied, except where identified below.

- 5.1 **ER 1: Mechanical resistance and stability** Not applicable.
- 5.2 **ER2: Safety in case of fire**
- 5.2.1 **External fire performance** Method of verification according to clause 5.2.1 of ETAG 005 – Part1.
- 5.2.2 **Reaction to fire** Method of verification according to clause 5.2.2 of ETAG 005 – Part1.
- 5.3 **ER 3: Hygiene, health and the environment** No specific methods of verification.
- 5.4 **ER4: Safety in use** No specific methods of verification.
- 5.5 **ER 5: Protection against noise** Not applicable.
- 5.6 **ER 6: Energy economy and heat retention** Not applicable.
- 5.7 **Related aspects of serviceability** Additional methods of verification
- 5.7.1 **Effects of variations in kit components and site practices**
To check that a satisfactory system can be achieved over the whole range of permitted weather conditions quoted by the Applicant, the following tests shall be performed comparatively on free films prepared under the defined conditions:
- 5.7.1.1 Resistance to dynamic indentation Reference clause 5.3.3.2.1 ETAG 005 - Part 1.
- 5.7.1.2 Resistance to static indentation Reference clause 5.3.3.2.2 ETAG 005 – Part 1.
- 5.7.1.3 Resistance to dynamic indentation at at low surface temperature Reference clause 5.3.3.4.1(i) ETAG 005- Part 1

5.8 **Identification of components**

5.8.0 **General**

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.

5.8.1 **Bitumen primer**

- 5.8.1.1 - nature by declaration
- 5.8.1.2 - flash point method: EN ISO 2592 or EN ISO 2719
- 5.8.1.3 - viscosity method: EN ISO 2431
- 5.8.1.4 - % non-volatiles method: EN ISO 3251

5.8.2 **Bitumen solution**

- 5.8.2.1 - type of bitumen by declaration
- 5.8.2.2 - viscosity method: EN ISO 2431
- 5.8.2.3 - % non-volatiles method: EN ISO 3251

5.8.3 **Bitumen emulsion**

- 5.8.3.1 - nature by declaration
- 5.8.3.2 - viscosity method: EN ISO 2431
- 5.8.3.3 - % non-volatiles method: EN ISO 3251
- 5.8.3.4 - pH value method: ISO 976

5.8.4 **Internal layer**

- 5.8.4.1 - nature by declaration
- 5.8.4.2 - mass per unit area method: ISO 3374 or ISO 9073-1
- 5.8.4.3 - tensile strength method: ISO 3342 or ISO 9073-3
- 5.8.4.4 - tensile elongation method: ISO 3342 or ISO 9073-3

5.8.5 **Supporting layer**

- 5.8.5.1 - nature by declaration
- 5.8.5.2 - type specification by declaration
- 5.8.5.3 - dimensional stability method: EN 1107-1 - bituminous roofing sheets
EN 1107-2 - plastic roofing sheets

5.8.6 **Mineral finish**

- 5.8.6.1 - nature by declaration
- 5.8.6.2 - particle size method: EN 933-1

5.8.7 **Solar reflective coating (liquid)**

- 5.8.7.1 - nature by declaration
- 5.8.7.2 - % non-volatiles method: EN ISO 3251
- 5.8.7.3 - % ash content method: BS 2000 – 223

5.8.8 **Catalyst (emulsions only)**

- 5.8.8.1 - nature by declaration

5.8.9. Bitumen adhesive (cold)

- 5.8.9.1 - nature by declaration
- 5.8.9.2 - flash point method: EN ISO 2592 or EN ISO 2719
- 5.8.9.3 - viscosity method: EN ISO 2555 (Brookfield)
- 5.8.9.4 - % non-volatiles method: EN ISO 3251

5.8.10 Bitumen adhesive (hot)

- 5.8.10.1 - nature by declaration
- 5.8.10.2 - softening point (R&B) method: EN 1427
- 5.8.10.3 - penetration method: EN 1426

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

6.0 General

The requirements given in chapter 6 of ETAG 005 – Part 1 shall be applied, except where identified below, or where the test has been identified as being not required in chapter 5 of this Complementary Part (ETAG 005 – Part 7).

- 6.1 **ER 1: Mechanical resistance and stability** Not applicable
- 6.2 **ER2: Safety in case of fire**
- 6.2.1 **External fire performance** Classification in accordance with the provisions given in clause 6.2.1 of ETAG 005 – Part 1.
- 6.2.2 **Reaction to fire** Classification in accordance with the provisions given in clause 6.2.2 of ETAG 005 – Part 1.
- 6.3 **ER3: Hygiene, health and the environment** No additional assessment.
(working life and durability aspects)
- 6.4 **ER 4: Safety in use** No specific assessment.
- 6.5 **ER 5: Protection against noise** Not applicable.
- 6.6 **ER 6: Energy economy and heat retention** Not applicable.
- 6.7 **Related aspects of serviceability**
- 6.7.1 Variations in kit components and in site practices (see chapter 7 of ETAG 005 – Part 1), tested in accordance with clause 5.7.1 of this document (ETAG 005 – Part 7), shall be within the limits quoted by the Applicant and the effects on characteristics, determined by comparative testing, shall not affect the kits fitness for the intended use.
- 6.8 **Identification of components**
When verified in accordance with clause 5.8 of this document (ETAG 005 – Part 7), the characteristics of the component shall fall within the limits declared by the Applicant
- The Approval Body shall assess the possible effects on the performances of the assembled system due to the declared tolerances.

6.8.1 **Supporting layer**

6.8.1.1 Dimensional stability

- the free shrinkage of sheet material used as a supporting layer shall be less than 0,7 %

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

7.1 **Application methods and design rules** (installation instructions)

All the information required as indicated in clause 7 of ETAG 005 – Part 1 shall be elaborated in the Manufacturer's Technical Dossier (MTD) taking into account the following particular points:

7.1.1 **Transport and storage**

There are no specific requirements.

7.1.2 **Influence of weather conditions**

There are no specific requirements.

7.1.3 **Application of components**

There are no specific requirements.

7.1.4 **Details**

There are no specific requirements.

7.1.5 **Auxiliaries**

There are no specific requirements.

7.1.6 **Product waste**

There are no specific requirements.

7.1.7 **Special measures**

There are no specific requirements.

7.1.8 **Safety measures**

There are no specific requirements.

7.2 **Maintenance and repair**

There are no specific requirements.

SECTION THREE

ATTESTATION OF CONFORMITY

8. ATTESTATION AND EVALUATION OF CONFORMITY

8.1 EC-decision

The decision as given in clause 8.1 of ETAG 005 – Part 1.

8.2 AC-procedures

This Complementary Part of the ETA-Guideline has no procedures contrary to those stated in clauses 8.1 and 8.2 of ETAG 005 – Part 1.

Because incorporation in the works implies the manufacturing of the final product, the installation instructions should also contain one or more practical parameters to verify some aspects which are indicative for **the designed quality of that final product**.

As consequence the installation instructions should not only give guidance on the on-site process control as indicated in clause 7.1.3 ("application of components") of ETAG 005 – Part 1, but should also contain instructions on the following, which are to be considered as on-site **quality** control:

- verification of thickness of the applied film and corrective measures, if necessary;
- verification of on breaking time for emulsions and corrective measures, if necessary;
- verification of adhesion to the substrate;
- recommendations for the preparation of free film site samples to enable this on-site verification;
- directions for the registration of results of this on-site verification in a completion report.

8.3 CE-marking and information

This Complementary Part of the ETA-Guideline gives no additional or different information and/or requirements for CE-marking as detailed in clause 8.4 of ETAG 005 – Part 1.

SECTION FOUR

THE ETA CONTENT

9. THE ETA CONTENT

9.1 Exceptions

There are no exceptions to the conditions mentioned in clause 9 of ETAG 005 – Part 1.