BS EN 13707:2013

BSI Standards Publication

Flexible sheets for waterproofing — Reinforced bitumen sheets for roof waterproofing — Definitions and characteristics

bsi.

...making excellence a habit.™

National foreword

This British Standard is the UK implementation of EN 13707:2013. It supersedes BS EN 13707:2004+A2:2009 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee B/546, Flexible sheets for waterproofing and water vapour control.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

ISBN 978 0 580 77792 9

ICS 01.040.91; 91.100.50

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 October 2013.

Amendments issued since publication

Date	Text affected

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 13707

October 2013

ICS 91.100.50; 01.040.91

Supersedes EN 13707:2004+A2:2009

English Version

Flexible sheets for waterproofing - Reinforced bitumen sheets for roof waterproofing - Definitions and characteristics

Feuilles souples d'étanchéité - Feuilles bitumineuses armées pour l'étanchéité de toiture - Définitions et caractéristiques

Abdichtungsbahnen - Bitumenbahnen mit Trägereinlage für Dachabdichtungen - Definitionen und Eigenschaften

This European Standard was approved by CEN on 12 November 2012.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Ref. No. EN 13707:2013: E

Contents

Page

Foreword

This document (EN 13707:2013) has been prepared by Technical Committee CEN/TC 254 “Flexible sheets for waterproofing”, the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2014, and conflicting national standards shall be withdrawn at the latest by April 2014.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 13707:2004+A2:2009.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

According to the CEN/CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard specifies definitions and characteristics for flexible reinforced bitumen sheets for which the intended use is roofing. This covers sheets used as top layers, intermediate layers and underlayers. It does not cover reinforced bitumen sheets for waterproofing used as underlays for discontinuous roofing.

This European Standard does not cover waterproofing sheets which are intended to be used fully bonded under bituminous products (e.g. asphalt) directly applied at high temperature, specified by EN 14695.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1107-1, *Flexible sheets for waterproofing — Part 1: Bitumen sheets for roof waterproofing — Determination of dimensional stability*

EN 1108, *Flexible sheets for waterproofing — Bitumen sheets for roof waterproofing — Determination of form stability under cyclical temperature changes*

EN 1109, *Flexible sheets for waterproofing — Bitumen sheets for roof waterproofing — Determination of flexibility at low temperature*

EN 1110, *Flexible sheets for waterproofing — Bitumen sheets for roof waterproofing — Determination of flow resistance at elevated temperature*

EN 1296, *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roofing — Method of artificial ageing by long term exposure to elevated temperature*

EN 1297, *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Method of artificial ageing by long term exposure to the combination of UV radiation, elevated temperature and water*

EN 1848-1, *Flexible sheets for waterproofing — Determination of length, width and straightness — Part 1: Bitumen sheets for roof waterproofing*

EN 1849-1, *Flexible sheets for waterproofing — Determination of thickness and mass per unit area — Part 1: Bitumen sheets for roof waterproofing*

EN 1850-1, *Flexible sheets for waterproofing — Determination of visible defects — Part 1: Bitumen sheets for roof waterproofing*

EN 1928:2000, *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of watertightness*

EN 12039, *Flexible sheets for waterproofing — Bitumen sheets for roof waterproofing — Determination of adhesion of granules*

EN 12310-1, *Flexible sheets for waterproofing — Part 1: Bitumen sheets for waterproofing — Determination of resistance to tearing (nail shank)*

EN 12311-1, *Flexible sheets for waterproofing — Part 1: Bitumen sheets for roof waterproofing — Determination of tensile properties*

EN 12316-1, *Flexible sheets for waterproofing — Part 1: Bitumen sheets for roof waterproofing — Determination of peel resistance of joints*

EN 12317-1, *Flexible sheets for waterproofing — Part 1: Bitumen sheets for roof waterproofing — Determination of shear resistance of joints*

EN 12691:2006, *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of resistance to impact*

EN 12730:2001, *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of resistance to static loading*

EN 13416:2001, *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Rules for sampling*

EN 13501-1:2007+A1:2009, *Fire classification of construction products and building elements — Part 1: Classification using test data from reaction to fire tests*

EN 13501-5, *Fire classification of construction products and building elements — Part 5: Classification using data from external fire exposure to roofs tests*

EN 13897, *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of watertightness after stretching at low temperature*

EN 13948, *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of resistance to root penetration*

EN ISO 11925-2, *Reaction to fire tests — Ignitability of products subjected to direct impingement of flame — Part 2: Single-flame source test (ISO 11925-2)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 13416:2001 and the following apply.

3.1
waterproofing
action to prevent the passage of water from one plane to another

3.2
waterproofing system
assembly of one or more layers of roofing sheet in its applied and jointed form, which has certain performance characteristics, to be assessed as a whole

Note 1 to entry: Where only one layer is used this is usually referred to as a single layer system.

Note 2 to entry: A bituminous roofing system is formed on site by connecting and sealing one or more superimposed layers of bitumen sheets to form a single composite waterproof layer for use over flat, pitched or vertical surfaces according to building application requirements.

3.3
roofing
waterproofing used in the roof of a building including roofs used for parking of vehicles and for roof gardens

Note 1 to entry: Waterproofing sheets which are intended to be fully bonded and bituminous products directly applied at high temperature are specified by the European Standard on flexible reinforced bitumen sheets for concrete bridge decks and other concrete surfaces trafficable by vehicles (see EN 14695 [8]).

3.4
roofing sheet
factory made flexible sheet including any carriers, facings, surface texture and/or backing

3.5
carrier
material incorporated into or onto the factory-made roofing sheet to ensure its stability and/or mechanical resistance

3.6
backing
material incorporated onto the factory-made roofing sheet without a permanent mechanical function

3.7
surfacing
material applied on one or both sides of roofing sheets, either as a permanent light surface protection against weathering on the upper surface or as an anti-sticking substance of the roofing sheets

3.8
batch
amount of product manufactured to the same specification within a maximum period of 24 h

3.9
manufacturer's limiting value
MLV
value which is stated by the manufacturer to be met during testing and which can be a minimum or a maximum value according to statements made under product characteristics of this document

3.10
manufacturer's declared value
MDV
value declared by the manufacturer accompanied by a declared tolerance

3.11
reinforced bitumen sheet
factory made flexible layer of bitumen with internal or external incorporation of one or more carriers, supplied in roll form ready for use

3.12
oxidised bitumen
straight run petroleum bitumen or a fluxed bitumen which has been hardened and rendered less temperature susceptible by blowing with air at high temperature with or without the use of a catalyst

3.13
elastomeric bitumen
petroleum bitumen and/or oxidised bitumen modified by the addition of thermo-plastic rubbers

3.14
plastomeric bitumen
petroleum bitumen and/or oxidised bitumen modified by the addition of polyolefin or polyolefin copolymer compound

3.15
sampling
procedure used to select or constitute a sample

3.16
sample
sheet from which a test piece is taken

3.17
test piece
part of the sample from which test specimens are taken

3.18
test specimen
piece of precise dimensions taken from the test piece

4 System-related characteristics

System-related characteristics with respect to multilayer systems, sheets for single layer application, mechanically fastened systems (see Annex E) and roof gardens or under heavy protection are given in Annex A.

5 Product characteristics

5.1 General

5.1.1 Where a tolerance is limited by this standard, it does not have to be declared by the manufacturer.

5.1.2 When tested for purposes other than initial type testing or factory production control, the tests to determine product characteristics indicated in this standard shall be started within one month of delivery from the manufacturer.

5.2 Characteristics

5.2.1 Visible defects

The product shall be free of visible defects, as determined in accordance with EN 1850-1.

5.2.2 Dimensions, tolerances and mass per unit area

The length, width and straightness of the sheet shall be determined in accordance with EN 1848-1. The length and width shall not be shorter than the manufacturer's limiting value. The maximum deviation from straightness shall not exceed 20 mm per 10 m length or in proportion for other lengths (e.g. 10 mm per 5 m length).

Where a product is specified by mass per unit area, it shall be measured in accordance with EN 1849-1, except that the sample shall be 100 mm $\times$ 100 mm, and the results shall lie within the declared tolerance of the manufacturer's declared value.

Where a product is specified by thickness, it shall be measured in accordance with EN 1849-1 and the results shall lie within the declared tolerance of the manufacturer's declared value.

Where sheets with incorporated mineral protection are specified by thickness, the measurement of thickness may be carried out on the granule-free selvedge. This shall be declared in the report.

5.2.3 Watertightness

The watertightness shall be determined in accordance with EN 1928:2000 using method A or B at an applied water pressure of 10 kPa (0,1 bar) and shall give a pass result.

5.2.4 Effects of water

Not specified.

NOTE Experience has shown that water has little or no effect upon the in-service performance of reinforced bitumen sheets. See also Annex C.

5.2.5 Fire performance

5.2.5.1 External fire performance

The classification of the product in accordance with EN 13501-5 is limited to class F_{ROOF}, (t1, t2, t3, t4).

NOTE The external fire performance of a roof is dominated by the built up system.

5.2.5.2 Reaction to fire

Where required, the product shall be tested and classified in accordance with EN 13501-1:2007+A1:2009, Table 1. When tested according to EN ISO 11925-2, the products shall be tested under conditions of surface flame attack.

NOTE It is currently considered that the Euroclasses Classification system at Classes D and above requires investigation to determine its appropriateness to the products covered by this document (the SBI test may be inappropriate for products covered by the standard). Pending results of such an investigation and discussions in the Fire Regulators Group, products covered by this document are tested to EN ISO 11925-2. If and when a new fire test scenario and test method are developed for the products, this document will be amended to refer to them.

Reaction to fire is by definition a product test, as distinct from Resistance to fire, which is a system test. Therefore, it is considered important to provide guidance in order to reduce the number of tests required.

According to EN ISO 11925-2, the test is required to be undertaken on the exposed surface without any substrate, in one direction only, and the reinforcement has to be stated by the manufacturer as “organic” or “inorganic”.

a) Test results from EN ISO 11925-2 for a product with a given reinforcement and a bituminous compound having a certain percentage of organic content shall apply to the same product having a lower organic content.

b) Test results from EN ISO 11925-2 for a product with a given organic reinforcement and a bituminous compound shall apply to a product having the same bituminous compound and an inorganic reinforcement.

c) Test results from EN ISO 11925-2 for a product with a given reinforcement and bituminous compound, with a thickness of above 2 mm or a mass per unit area of above 2 kg/m², shall apply to any product with the same type of reinforcement and the same type of bituminous compound but lower thickness or mass per unit area, down to a limit of 2 mm or 2 kg/m² respectively.

d) Test results from EN ISO 11925-2 for a product with a given reinforcement and bituminous compound with a thickness or mass per unit area below 2 mm or 2kg/m², shall apply to any product with the same type of reinforcement and the same type of bituminous compound but with higher thickness or mass per unit area, up to a limit of 2 mm or 2 kg/m² respectively.

5.2.6 Resistance to hail

Not specified.

NOTE Experience has shown that hail has little or no effect upon the in-service performance of reinforced bitumen sheets.

5.2.7 Watertightness after stretching at low temperature

Where required, the watertightness after stretching at low temperature shall only be determined for mechanically fastened single layer applications in accordance with EN 13897 and the results shall be greater than or equal to the manufacturer's limiting value.

5.2.8 Joint strength

5.2.8.1 The peel resistance of joints shall only be determined for mechanically fastened single layer applications in accordance with EN 12316-1 and the results shall lie within the declared tolerance of the manufacturer's declared value.

5.2.8.2 The shear resistance of joints shall be determined for all single layer applications in accordance with EN 12317-1 and the results shall lie within the declared tolerance of the manufacturer's declared value.

5.2.9 Water vapour properties

If necessary, the moisture resistance factor μ of reinforced bitumen sheets may be determined in accordance with EN 1931. If the factor μ is not determined, a value of 20 000 may be used for calculation purposes.

5.2.10 Tensile properties

The tensile properties shall be determined in accordance with EN 12311-1 and the results (for the longitudinal and transverse directions) shall lie within the declared tolerance of the manufacturer's declared value.

5.2.11 Resistance to impact

Where required, the resistance to impact shall be determined in accordance with EN 12691 and shall be expressed as the maximum drop height of the puncturing tool in millimetres, which has not caused leakage of the flexible sheet, which shall be greater than or equal to the manufacturer's limiting value.

Products shall be tested in accordance with EN 12691:2006, method A.

Where subject to regulatory requirements or where the manufacturer wishes to make such a declaration, products shall also be tested in accordance with EN 12691:2006, method B.

The method(s) used shall be stated in the product data sheet.

5.2.12 Resistance to static loading

The resistance to static loading shall be determined in accordance with EN 12730:2001, method A and shall be greater than or equal to the manufacturer's limiting value.

5.2.13 Resistance to tearing (nail shank)

The resistance to tearing (nail shank) shall be determined in accordance with EN 12310-1 and the results shall lie within the declared tolerance of the manufacturer's declared value.

5.2.14 Resistance to root penetration

The resistance to root penetration shall be determined only for products used as root barriers in roof gardens in accordance with EN 13948 and shall give a pass result.

5.2.15 Dimensional stability

The dimensional stability shall be determined in accordance with EN 1107-1 and shall be less than or equal to the manufacturer's limiting value. This test shall only be carried out on sheets containing organic fibres or synthetic fibres (e.g. jute, hessian, polyester, polyolefines).

5.2.16 Form stability under cyclic temperature change

The form stability under cyclic temperature change shall be determined only for sheets with metal foil surfacing in accordance with EN 1108 and shall be less than or equal to the manufacturer's limiting value.

5.2.17 Flexibility at low temperature (pliability)

The flexibility at low temperature shall be determined in accordance with EN 1109 and shall be less than or equal to the manufacturer's limiting value.

This test does not give results directly corresponding to the application conditions in practice. Results should only be used to compare products of similar thickness and construction.

In the case of sheets with the same bituminous compound on both sides and where the reinforcement is placed in the cross section visually closer to the upper surface, the test shall be performed on the bottom face only.

If the upper surface is covered with a non-woven (e.g. tissue, fleece, etc.) or metal facing, the test shall be performed on the bottom side only.

If the sheet on the upper surface is covered with permanent light surface protection and where the reinforcement is placed in the cross section visually closer to the upper surface, the test shall be performed on the bottom side only.

5.2.18 Flow resistance at elevated temperature

The flow resistance at elevated temperature shall be determined in accordance with EN 1110 and shall be greater than or equal to the manufacturer's limiting value.

5.2.19 Artificial ageing behaviour

5.2.19.1 Top layers and single layers with permanent light surface protection

In order to verify the artificial ageing behaviour of the product, characteristics shall be determined before and after exposure in accordance with EN 1296 for a period of 12 weeks. The relevant characteristics are the flexibility at low temperature or the flow resistance at elevated temperature. The flexibility at low temperature shall be determined in accordance with EN 1109 (see 5.2.17) and the results shall lie within the declared tolerance of the manufacturer’s declared value. The flow resistance at elevated temperature shall be determined in accordance with EN 1110 (see 5.2.18) and the results shall lie within the declared tolerance of the manufacturer’s declared value.

The purpose of testing in accordance with EN 1296 is to characterise the long-term thermal stability of elastomeric or plastomeric bitumen. The test does not give results corresponding to the service conditions in practice. Results should only be used to compare products of similar thickness, construction and composition, and they cannot be used for general durability classification. The chosen exposure duration for artificial ageing in accordance to EN 1296 has no relevance to a real product lifetime.

NOTE When reinforced oxidised bitumen roofing sheets are tested as described in this sub-clause, they become brittle and have poor low temperature flexibility. However, experience shows that when they are reinforced and protected properly, they perform satisfactorily in the long term.

5.2.19.2 Top layers and single layers without surface protection

Materials used as top layers without permanent surface protection (e.g. mineral granules, metal foil, gravel or any additional protection) shall be tested in addition with EN 1296 according to 5.2.19.1 by the method for artificial ageing by long-term exposure to the combination of UV radiation, elevated temperature and water in accordance with EN 1297 for a period of 1 000 h UV exposure and evaluated for visual defects in accordance with EN 1850-1.

5.2.19.3 Top layers with permanent heavy surface protection, underlayers and intermediate layers

Top layers with permanent heavy surface protection (e.g. with loose-fill gravel), underlayers and intermediate layers are not subject to testing of artificial ageing behaviour.

5.2.20 Adhesion of granules

Where the top surface of the sheet is protected with incorporated mineral granules, the granule adhesion shall be determined in accordance with EN 12039 and the results shall lie within the declared tolerance of the manufacturer's declared value and shall not exceed 30 % by mass of granules.

5.3 Dangerous substances

For products placed on the market within the European Economic Area, see ZA.1. Outside the EEA, products shall conform to any applicable provisions related to dangerous substances valid in the place of use.

Bitumen sheets covered by this standard shall not contain asbestos or coal tar constituents. The manufacturer shall disclose on the product wrapper and in the health and safety data sheets the use of any additive or constituent considered hazardous.

NOTE See also [3] and [4].

6 Evaluation of conformity

6.1 General

The compliance of reinforced bitumen sheets for roof waterproofing with the requirements of this standard and with the declared values (including classes) shall be demonstrated by:

— Initial Type Testing;

— Factory Production Control by the manufacturer, including product assessment.

The manufacturer shall always retain the overall control and shall have the necessary means to take responsibility for the product.

NOTE The assignment of tasks to the notified bodies and the manufacturer is shown in Annex ZA, Table ZA.3.

6.2 Initial Type Testing – Type Testing

6.2.1 General

Initial Type Testing and Type Testing shall be performed to demonstrate compliance with this European Standard.

All essential characteristics for which the manufacturer declares performances, are subject to Initial Type Testing. In addition, the need to perform Type Tests applies to all other characteristics included in a standard when the manufacturer claims compliance, unless the standard gives provisions (e.g. use of previously existing data, CWFT and conventionally accepted performance) for declaring performances without performing tests.

Tests previously performed in accordance with the provisions of this standard may be taken into account provided that they were made to the same or a more rigorous test method, under the same system of attestation of conformity on the same product or products of similar design, construction and functionality, such that the results are applicable to the product in question.

Same system of attestation of conformity means testing by an independent third party for products covered by attestation of conformity systems 1 or 3.

For the purposes of testing, the manufacturer's products may be grouped into families, where it is considered that the results for one or more characteristics from any one product within the family are representative for

that same characteristic(s) for all products within that same family (a product may be in different families for different characteristics).

Reference to the test method standards should be made to allow the selection of a suitable representative sample.

In addition, Type Tests or Initial Type Testing shall be performed for all characteristics included in the standard for which the manufacturer declares performances:

— at the beginning of the production of new or modified reinforced bitumen sheets for roof waterproofing (unless a member of the same family), or

— at the beginning of a new or modified method of production (where this may affect the stated properties); or

— they shall be repeated for the appropriate characteristic(s), whenever a change occurs in the reinforced bitumen sheets for roof waterproofing design, in the raw material or in the supplier of the components, or in the production process (subject to the definition of a family), which would affect significantly one or more of the characteristics.

Where components are used whose characteristics have already been determined by the component manufacturer on the basis of compliance with other product standards, these characteristics need not be re-assessed. The specifications of these components shall be documented, and shall be included in the inspection scheme for ensuring their compliance.

Products marked in accordance with appropriate harmonised European Standards may be presumed to have the performances stated with the marking. However, this does not replace the responsibility of the designer of the reinforced bitumen sheets for roof waterproofing to ensure that the reinforced bitumen sheets for roof waterproofing as a whole are correctly designed and their component products have the necessary performance values to meet the design.

6.2.2 Test reports

All Type Tests, and/or Initial Type Tests and their results shall be documented in test reports. All test reports shall be retained by the manufacturer for at least ten years after the last date of production of the reinforced bitumen sheets for roof waterproofing to which they relate.

6.3 Factory production control (FPC)

6.3.1 General

The manufacturer shall establish, document and maintain an FPC system to ensure that the products placed on the market comply with the declared performance of the characteristics.

The FPC system shall consist of procedures, regular inspections and tests and/or assessments and the use of the results to control raw and other incoming materials or components, equipment, the production process and the product. 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 documentation shall ensure a common understanding of conformity evaluation and enable the achievement of the required product characteristics and the effective operation of the production control system to be checked. Factory production control therefore brings together operational techniques and all measures allowing maintenance and control of the compliance of the product with this European Standard.

6.3.2 Requirements

6.3.2.1 General

The manufacturer is responsible for organising the effective implementation of the FPC system. Tasks and responsibilities in the production control organisation shall be documented and this documentation shall be kept up-to-date.

The responsibility, authority and the relationship between personnel who manage, perform or verify work affecting product conformity, shall be defined. This applies in particular to personnel who need to initiate actions to prevent product non-conformities from occurring, actions in case of non-conformities and to identify and register product conformity problems. Personnel performing work affecting product conformity shall be competent on the basis of appropriate education, training, skills and experience for which records shall be maintained.

In each factory, the manufacturer may delegate the action to a person having the necessary authority to:

— identify procedures to demonstrate conformity of the product at appropriate stages;

— identify and record any instance of non-conformity;

— identify procedures to correct instances of non-conformity.

The manufacturer shall draw up and keep up-to-date documents defining the factory production control. The manufacturer's documentation and procedures should be appropriate to the product and manufacturing process. The FPC system should achieve an appropriate level of confidence in the conformity of the product. This involves:

a) the preparation of documented procedures and instructions relating to factory production control operations, in accordance with the requirements of the technical specification to which reference is made;

b) the effective implementation of these procedures and instructions;

c) the recording of these operations and their results;

d) the use of these results to correct any deviations, repair the effects of such deviations, treat any resulting instances of non-conformity and, if necessary, revise the FPC to rectify the cause of non-conformity.

Where subcontracting takes place, the manufacturer shall retain the overall control of the product and ensure that he receives all the information that is necessary to fulfil his responsibilities according to this European Standard.

If the manufacturer has part of the product designed, manufactured, assembled, packed, processed and/or labelled by subcontracting, the FPC of the subcontractor may be taken into account, where appropriate for the product in question.

The manufacturer who subcontracts all of his activities may in no circumstances pass these responsibilities on to a subcontractor.

NOTE Manufacturers that have an FPC system which complies with EN ISO 9001 and which addresses the requirements of this European Standard are recognised as satisfying the FPC requirements of Council Directive 89/106/EEC.

6.3.2.2 Equipment

6.3.2.2.1 Testing

All weighing, measuring and testing equipment shall be calibrated and regularly inspected according to documented procedures, frequencies and criteria.

6.3.2.2.2 Manufacturing

All equipment used in the manufacturing process shall be regularly inspected and maintained to ensure use, wear or failure does not cause inconsistency in the manufacturing process. Inspections and maintenance shall be carried out and recorded in accordance with the manufacturer's written procedures and the records retained for the period defined in the manufacturer's FPC procedures.

6.3.2.3 Raw materials and components

The specifications of all incoming raw materials and components shall be documented, as shall the inspection scheme for ensuring their compliance. In case supplied kit components are used, the attestation of conformity level of the component shall be that given in the appropriate harmonised technical specification for that component.

6.3.2.4 Design process

The factory production control system shall document the various stages in the design of products, identify the checking procedure and those individuals responsible for all stages of design. During the design process itself, a record shall be kept of all checks, their results, and any corrective actions taken.

This record shall be sufficiently detailed and accurate to demonstrate that all stages of the design phase, and all checks, have been carried out satisfactorily.

6.3.2.5 Controls during manufacturing process

The manufacturer shall plan and carry out production under controlled conditions.

6.3.2.6 Product testing and evaluation

The manufacturer shall establish procedures to ensure that the stated values of the characteristics he declares are maintained. The characteristics and the means of control are given in Table B.1.

6.3.2.7 Non-complying products

The manufacturer shall have written procedures which specify how non-complying products shall be dealt with. Any such events shall be recorded as they occur and these records shall be kept for the period defined in the manufacturer's written procedures.

6.3.2.8 Corrective action

The manufacturer shall have documented procedures that instigate action to eliminate the cause of non-conformities in order to prevent recurrence.

6.3.2.9 Handling, storage and packaging

The manufacturer shall have procedures providing methods of product handling and shall provide suitable storage areas preventing damage or deterioration.

6.3.3 Product specific requirements

The FPC system shall:

— address this European Standard

and

— ensure that the products placed on the market comply with the declared performance characteristics.

The FPC system shall include a product specific FPC, which identifies procedures to demonstrate compliance of the product at appropriate stages, i.e:

a) the controls and tests to be carried out prior to and/or during manufacture according to a frequency laid down in the FPC test plan,

and/or

b) the verifications and tests to be carried out on finished products according to a frequency laid down in the FPC test plan.

If the manufacturer uses only finished products, the operations under b) shall lead to an equivalent level of compliance of the product as if FPC had been carried out during the production.

If the manufacturer carries out parts of the production himself, the operations under b) may be reduced and partly replaced by operations under a). Generally, the more parts of the production that are carried out by the manufacturer, the more operations under b) may be replaced by operations under a).

In any case the operation shall lead to an equivalent level of compliance of the product as if FPC had been carried out during the production.

Depending on the specific case, it may be necessary to carry out the operations referred to under a) and b), only the operations under a) or only those under b).

The operations under a) refer to the intermediate states of the product as on manufacturing machines and their adjustment, and measuring equipment, etc. These controls and tests and their frequency shall be chosen based on product type and composition, the manufacturing process and its complexity, the sensitivity of product features to variations in manufacturing parameters, etc.

The manufacturer shall establish and maintain records that provide evidence that the production has been sampled and tested. These records shall show clearly whether the production has satisfied the defined acceptance criteria and shall be available for at least three years.

These records shall be available for inspection.

Where the product fails to satisfy the acceptance measures, the provisions for non-complying products shall apply, the necessary corrective action shall immediately be taken and the products or batches not complying shall be isolated and properly identified.

Once the fault has been corrected, the test or verification in question shall be repeated.

The results of controls and tests shall be properly recorded. The product description, date of manufacture, test method adopted, test results and acceptance criteria shall be entered in the records under the signature of the person responsible for the control/test.

With regard to any control result not meeting the requirements of this European Standard, the corrective measures taken to rectify the situation (e.g. a further test carried out, modification of manufacturing process, throwing away or putting right of product) shall be indicated in the records.

Individual products or batches of products and the related manufacturing documentation shall be completely identifiable and retraceable.

6.3.4 Initial inspection of factory and of FPC

Initial inspection of FPC shall be carried out when the production process has been finalised and in operation. The factory and FPC documentation shall be assessed to verify that the requirements of 6.3.2 and 6.3.3 are fulfilled.

During the inspection it shall be verified:

a) that all resources necessary for the achievement of the product characteristics required by this European Standard are in place and correctly implemented, and

b) that the FPC-procedures in accordance with the FPC documentation are followed in practice, and,

c) that the product complies with the Initial Type Testing/Type Testing samples, for which compliance with this European standard has been verified.

All locations where final assembly or at least final testing of the relevant product is performed shall be assessed to verify that the above conditions a) to c) are in place and implemented. If the FPC system covers more than one product, production line or production process, and it is verified that the general requirements are fulfilled when assessing one product, production line or production process, then the assessment of the general requirements does not need to be repeated when assessing the FPC for another product, production line or production process.

All assessments and their results shall be documented in the initial inspection report.

6.3.5 Continuous surveillance of FPC

Surveillance of the FPC shall be undertaken once per year. The surveillance of the FPC shall include a review of the FPC test plan(s) and production processes(s) for each product to determine if any changes have been made since the last assessment or surveillance. The significance of any changes shall be assessed.

Checks shall be made to ensure that the test plans are still correctly implemented and that the production equipment is still correctly maintained and calibrated.

The records of tests and measurements made during the production process and to finished products shall be reviewed to ensure that the values obtained still correspond with those values for the samples submitted to Initial Type Testing/Type Testing and that the correct actions have been taken for non-compliant devices.

6.3.6 Procedure for modifications

If modifications are made to the product, production process or FPC system that could affect any of the product characteristics required by this standard, then all the characteristics for which the manufacturer declares performance, which may be affected by the modification, shall be subject to Initial Type Testing/Type Testing, except as described in 6.2.1. Where relevant, a re-assessment of the factory and of the FPC system shall be performed for those aspects, which may be affected by the modification.

All assessments and their results shall be documented in a report.

7 Product data sheet

The characteristics of the product, determined in accordance with the test methods specified in this document, shall be listed in a technical data sheet. The technical data sheet shall also give the following information:

a) product trade name and manufacturer's name;

b) origin/source of manufacture or traceable code;

c) method of application;

d) results of tests (see also Table A.1) according to intended end use system where relevant;

e) certification mark, if any;

f) consumer information, e.g. restrictions concerning use and storage and safety precautions during installation and disposal;

g) description of the product (e.g. type and number of carriers, type of coating, mass or thickness, type of surfacing).

An example of a product data sheet is shown in Annex D.

8 Marking, labelling and packaging

The following information shall be indicated on each roll and/or in the accompanying technical or commercial documentation:

a) production date or identification number;

b) product trade name;

c) length and width;

d) thickness or mass;

e) labelling according to national regulations related to dangerous substances and/or health and safety.

NOTE Where ZA.3 covers the same information as required by this clause, the requirements of this clause are met.

Annex A
(normative)

Applicability of characteristics

Table A.1 gives the characteristics to be tested depending on the roofing system.

Table A.1 — Roofing system-related characteristics

Sub-clause in this document	Testing for		Multilayer system without permanent heavy surface protection (e.g. ballast)…		Sheets for single layer applications	Sheets for roof gardens or sheets under permanent heavy surface protection (e.g. ballast)…
			Underlay and intermediate layer	Top layer		
5.2.1	Visible defects		+	+	+	+
5.2.2	Dimensions		+	+	+	+
5.2.3	Watertightness		+	+	+	+
5.2.5.1	External fire performance		+ a	+ a	+ a	–
5.2.5.2	Reaction to fire		+	+	+	+
5.2.7	Watertightness after stretching		–	–	+ b	–
5.2.8.1	Peel resistance		–	–	+ b	–
5.2.8.2	Shear resistance		–	–	+	+
5.2.9	Water vapour properties		– g	– g	– g	– g
5.2.10	Tensile properties		+	+	+	+
5.2.11	Resistance to impact		–	–	+	+
5.2.12	Resistance to static loading		–	–	+	+
5.2.13	Resistance to tearing (nail shank)		+ f	+ f	+ f	–
5.2.14	Resistance to root penetration		–	–	–	+ d
5.2.15	Dimensional stability		–	+	+	+
5.2.16	Form stability under cyclic temperature change		–	+ c	+ c	–
5.2.17	Flexibility at low temperature		+	+	+	+
5.2.18	Flow resistance at elevated temperature		+	+	+	+
5.2.19	Artificial ageing behaviour	EN 1296	–	+	+	–
		EN 1297	–	+ e	+ e	–
5.2.20	Adhesion of granules		–	+	+	–

a System testing, to be performed where required by regulations.
b Mechanically fastened system.
c Only for metal surfaced sheets.
d Only for root barriers in roof gardens.
e Without surface protection.
f Mechanically fastened layer.
g Determination according to EN 1931 or value of 20 000 may be used, see details in 5.2.9.
\+ necessary
– not necessary

Annex B
(normative)

Frequencies of testing for factory production control

The minimum frequencies of testing for factory production control are given in Table B.1.

Table B.1 — Frequencies of testing for factory production control

Product characteristic	Clause	Minimum frequencies of testing per			
		batch	week	month	year
Visible defects	5.2.1	1			
Length and width	5.2.2	1			
Straightness	5.2.2		1		
Mass per unit area or thickness	5.2.2	1			
Watertightness	5.2.3	$_0$[a, k]			
External fire performance	5.2.5.1	$_0$[a, b, k]			
Reaction to fire	5.2.5.2	$_0$[a, k]			
Watertightness after stretching at low temperature	5.2.7				$_1$[h]
Joint strength (peel resistance)	5.2.8.1	$_0$[a, h, k]			
Joint strength (shear resistance)	5.2.8.2	$_0$[a, d, k]			
Water vapour properties	5.2.9	$_0$[a,k]			
Tensile properties	5.2.10			$_1$[c]	
Resistance to impact	5.2.11	$_0$[a, k]			
Resistance to static loading	5.2.12	$_0$[a, k]			
Resistance to tearing (nail shank)	5.2.13				$_1$[c, e]
Resistance to root penetration	5.2.14	$_0$[a, b, k]			
Dimensional stability	5.2.15				$_2$[c]
Form stability under cyclic temperature change	5.2.16				$_1$[i]
Flexibility at low temperature (pliability)	5.2.17		$_1$[f, k]		
Flow resistance at elevated temperature	5.2.18		$_1$[f, k]		
Artificial ageing behaviour	5.2.19	$_0$[a, k]			
Adhesion of granules	5.2.20			$_1$[g]	

a Initial Type Testing/Type Testing.

b System test.

c In the case where a manufacturer is continuously producing numerous different sheets which contain the same carrier (type and mass) and the same type of coating, the frequency of these tests, which relate essentially to the carrier, may be considered on the total number of these different sheets.

d Initial type testing only for single layer application.

e Only for applications with mechanical fastening.

f In the case where a manufacturer is continuously producing numerous differently reinforced sheets, and/or sheets which differ only by the presence of incorporated protection, whilst using the same type of coating and having a similar thickness, the frequency for these tests, which relate essentially to the type of coating, may be considered on the total number of these different sheets.

g In the case where a manufacturer is continuously producing numerous differently reinforced sheets with incorporated mineral protection or surfacing, whilst using the same type of coating, the frequency for this test may be considered on the total number of these different sheets.

h Only for single layer applications with mechanical fastening.

i Only for sheets with metal foil.

k Control of the product is required, either by direct testing or by indirect control.
If a manufacturer uses for FPC indirect control the correlation to the direct test should have been established.

Annex C
(informative)

Information about chemical resistance

Table C.1 describes the chemical resistance in contact with common substances.

Table C.1 — Chemical resistance of bitumen

Substance	Concentration %	Temperature ≤ 30 °C	Temperature ≤ 65 °C
Inorganic acids			
Sulphuric acid	< 25	+	+
	≥ 25 and ≤ 95	+	o
	> 95	–	–
Oleum		–	–
Nitric acid	< 10	+	o
	≥ 10 and ≤ 65	o	o
	> 65	–	–
Hydrochloric acid	< 25	+	+
	≥ 25 and ≤ 36	+	o
	> 36	o	–
Organic acids			
Formic acid	40	+	o
Benzoic acid		+	
Butyric acid		–	–
Acetic acid	25	+	+
Oleic acid		–	–
Oxalic acid		+	+
Phenols		–	–
Phthalic acid		+	
Tartric acid	< 25	+	+
	≥ 25	+	
Citric acid		+	+
Inorganic bases			
Ammonium hydroxide		+	+
Potassium hydroxide		+	o
Sodium hydroxide		+	o
Organic bases			
Pyridine and derivatives		–	–
Triethanolamin		+	

Table C.1 (*concluded*)

Substance	Concentration %	Temperature ≤ 30 °C	Temperature ≤ 65 °C
Salt solutions			
Chlorides		+	+
Nitrates		+	+
Sulphates		+	+
Different substances			
Drinking water		+	+
Beer		+	
Glycol		+	+
Molasses		+	+
Sugar		+	+
Soap solution		+	+
Liquid manure		+	
Sewage		o	o

Reaction period 30 days;

Key

+ stable

o not stable in all cases – to be checked

– unstable

Table C.2 — Chemical resistance of bitumen depending on concentration and reaction period at room temperature

Substance	Concentration %	Solid bitumen for traffic area building				Oxidised bitumen
		Types 20/30 and 35/50				
		6 months	1 year	1,5 years	2 years	5 years
Inorganic acids						
Hydrochloric acid	up to 10	+	o		–	+
	10 to 30	o	o		–	+
Sulphuric acid	up to 10	+		o	–	+
	10 to 50	o	–			+
Nitric acid	10 to 25	–	–			o
	25 to 50	–	–			–
Organic acids						
Lactic acid		–				+
Butyric acid		–				+

Key

+ no attack;

0 low attack;

- strong attack.

Annex D
(informative)

Example of a product data sheet — General information

— Date and reference of this technical data sheet,

— Product trade name,

— Manufacturer/supplier,

— Origin/source of manufacturing,

— Type of application,

— Method of application,

— Product performance[1)] (see Table D.1),

— Certification mark, where relevant,

— Consumer information[2)],

— Description of the product (e.g. type and number of carriers, type of coating, mass or thickness, type of surfacing).

Table D.1 — Information from testing

Characteristic	Test method/classification	Units	Expression of result[a]	Value or statement[b]
Visible defects	EN 1850-1	–	Visible defects	
Length	EN 1848-1	m	MLV	
Width	EN 1848-1	m	MLV	
Straightness	EN 1848-1	–	Pass	–
Mass per unit area	EN 1849-1	kg/m²	MDV	
Thickness	EN 1849-1	mm	MDV	
Watertightness	EN 1928:2000, Method A or B	–	Pass	–
Watertightness after stretching at low temperature	EN 13897	%	MLV	

1) See ZA.3, which limits the information to be given in association with CE marking.

2) For example, restrictions concerning use and storage and safety precaution during installation and disposal.

Table D.1 (*concluded*)

Characteristic	Test method/ Classification	Units	Expression of result[a]	Value or statement[b]
External fire performance	ENV 1187	–	In accordance with EN 13501-5	The details of the system(s) which were tested, of which the roofing sheet is a part, shall be given.
Reaction to fire	EN 13501-1	–	EN 13501-1 (see NOTE in 5.2.5.2)	
Peel resistance of joint	EN 12316-1	N/50 mm	MDV	
Shear resistance of joint	EN 12317-1	N/50 mm	MDV	
Tensile properties: maximum tensile force	EN 12311-1	N/50 mm	MDV	
Tensile properties: elongation	EN 12311-1	%	MDV	
Resistance to impact	EN 12691	mm	MLV	
Resistance to static loading	EN 12730	Kg	MLV	
Resistance to tearing (nail shank)	EN 12310-1	N	MDV	
Resistance to root penetration	EN 13948	–	Pass	–
Dimensional stability	EN 1107-1	%	MLV	
Form stability under cyclic temperature change	EN 1108	mm	MLV	
Flexibility at low temperature	EN 1109	°C	MLV	
Flow resistance at elevated temperature	EN 1110	°C	MLV	
Artificial ageing by long term exposure to elevated temperature	EN 1296	See EN 1109 or EN 1110	MDV	
Artificial ageing by long term exposure to the combination of UV radiation, elevated temperature and water	EN 1297	See EN 1850-1	Pass	–
Adhesion of granules	EN 12039	%	MDV	
Water vapour transmission properties	EN 1931	–	μ = MDV or 20 000	

a MLV: manufacturer's limiting value according to 3.9; MDV: manufacturer's declared value according to 3.10.

b To be completed by the manufacturer.

– Not relevant.

Annex E
(informative)

Wind-uplift properties of mechanically fixed bituminous membranes — General information

If the wind-uplift performance has to be determined it shall be measured as the interaction between a specific fastener and a specific membrane in accordance with EN 16002.

EN 16002 gives the result as:

$$\Delta W_{char} = 0{,}001 \times P_{test} \times A_i \times C_a \times C_d$$

where

A_i is the area of influence of the fastener, in mm^2;

C_a is a geometric correction factor according to 10.2;

C_d is a statistical correction factor according to 10.3;

P_{test} is the peak pressure of the cycle preceding the cycle of failure, in KPa;

ΔW_{char} is the characteristic load for the resistance to wind uplift per mechanical fastener, in N.

Annex ZA
(informative)

Clauses of this European Standard addressing essential requirements or other provisions of EU Directives

ZA.1 Scope and relevant characteristics

This European Standard has been prepared under mandate M/102 Flexible sheets for waterproofing as amended by M/126, M/130 and M/137 given to CEN by the European Commission and the European Free Trade Association.

The clauses of this European Standard shown in this annex meet the requirements of the mandate given under the EU Construction Products Directive (89/106/EEC).

Compliance with these clauses confers a presumption of fitness of bitumen sheets covered by this annex for the intended uses indicated herein; reference shall be made to the information accompanying the CE marking.

WARNING — Other requirements and other EU Directives, not affecting the fitness for intended uses, can be applicable to the bitumen sheets falling within the scope of this European Standard.

NOTE 1 In addition to any specific clauses relating to dangerous substances contained in this standard, 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.

NOTE 2 An informative database of European and national provisions on dangerous substances is available at the Construction web site on EUROPA (accessed through http://europa.eu.int/comm/enterprise/construction/cpd-ds).

This annex establishes the conditions for the CE marking of the bitumen sheets intended for the uses indicated in Table ZA.1 and shows the relevant clauses applicable.

This annex has the same scope as the relevant part in Clause 1 of this standard related to the aspect covered by the mandate and is defined by Table ZA.1.

Table ZA.1 — Relevant clauses for the product and the intended use

Product: Bitumen sheets **Intended use:** Roof sheets in buildings			
Essential Characteristics (EC)	**Requirement clauses in this European Standard**	**Levels and/or classes**	**Notes**
External fire performance	5.2.5.1	Classes in accordance with EN 13501-5	Declared class
Reaction to fire	5.2.5.2	Classes in accordance with EN 13501-1	Declared class
Watertightness	5.2.3	–	Threshold value
Tensile properties	5.2.10	–	MDV
Root resistance	5.2.14	–	Threshold value Only for products used as root barriers in roof gardens
Resistance to static loading	5.2.12	–	MLV only for single layer application or covered application
Resistance to impact	5.2.11	–	MLV only for single layer application or covered application
Tear resistance	5.2.13	–	MDV only for mechanical fixing
Joint strength	5.2.8.1	–	MDV only for mechanically fastened single layer applications
	5.2.8.2	–	MDV only for single layer application or roof gardens
Durability	5.2.19.1	–	MDV only for top layers and single layers with permanent light surface protection
	5.2.19.2	–	pass only for top layers and single layers without surface protection
Pliability	5.2.17	–	MLV
Dangerous substances	5.3	–	See relevant note in ZA.1
"-" shown in the column "levels and/or classes" means that no classes or levels according to Articles 3.2 and 20.2 of the CPD are specified by the mandate.			

The requirement on a certain characteristic is not applicable in those Member States (MSs) where there are no regulatory requirements on that characteristic for the intended use of the product. In this case, manufacturers placing their products on the market of these MSs are not obliged to determine nor declare the performance of their products with regard to this characteristic and the option “No performance determined” (NPD) in the information accompanying the CE marking (see ZA.3) may be used. The NPD option may not be used, however, for durability (if this essential characteristic is declared in case of a specific use in the roofing system) and where the characteristic is subject to a threshold value.

ZA.2 Procedure for attestation of conformity of the bitumen sheets

ZA.2.1 Systems of attestation of conformity

The systems of attestation of conformity of the bitumen sheets indicated in Table ZA.1, as given in Annex III of the mandate M/102 for Floor beds (including suspended ground floors), roads and other trafficked areas amended by M/126, M/130 and M/137 and established by EC Decision 95/204/EC of 14/06/1995, 99/90/EC of 3/02/1999 and 2001/596/EC of 8/01/2001 is shown in Table ZA.2 for the indicated intended uses and relevant levels or classes.

Table ZA.2 — Systems of attestation of conformity

Product	Intended uses	Levels or classes	Attestation of conformity systems
Bitumen sheets	for uses subject to reaction to fire regulations	A1([1]), A2([1]), B([1]), C([1])	1
		A1([2]), A2([2]), B([2]),C([2]), D and E	3
		(A1 to E) ([3]) and F	4
	for uses subject to external fire performance regulations	All classes according to EN 13501-5 for products requiring testing	3
		Products deemed to satisfy without testing([4]) or Class F_{ROOF} products	4
	Roof sheets in buildings [a)]	–	2+

([1]) 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).

([2]) Products/materials not covered by footnote (1).

([3]) Products/materials that do not require to be tested for reaction to fire (e.g. products/materials of Class A1 according to Commission Decision 96/603/EC, as amended).

([4]) Products/materials that do not require to be tested for external fire (e.g. Commission Decision 2000/553/EC, as amended).

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

System 2+: See Directive 89/106/EEC (CPD) Annex III.2.(ii), First possibility, including certification of the factory production control by an approved body on the basis of initial inspection of factory and of factory production control as well as of continuous surveillance, assessment and approval of factory production control.

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

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

[a)] Because all bitumen sheets have requirements for roof sheets in buildings, all products covered by this standard come under attestation of conformity system 2+. In case of additional requirements on reaction to fire and/or external fire performance for these characteristics and the related parameters, depending on the classes attestation of conformity systems 1, 3 or 4 shall additional applied.

The attestation of conformity of the bitumen sheets in Table ZA.1 shall be according to the evaluation of conformity procedures indicated in Tables ZA.3.1 to ZA.3.6 resulting from application of the clauses of this or other European Standards indicated therein.

Table ZA.3.1 — Assignment of evaluation of conformity tasks for bitumen sheets under system 2+ for roof sheets in buildings, system 1 for reaction to fire classes A1([1]), A2([1]), B([1]), C([1]) and system 3 for external fire performance (*)

Tasks		Content of the task	Evaluation of conformity clauses to apply
Tasks under the responsibility of the manufacturer	Factory production control (FPC)	Parameters related to Essential Characteristics of Table ZA.1 relevant for the intended use, which are declared	6.3
	Further testing of samples taken at factory according to the prescribed test plan	Essential Characteristics of Table ZA.1 relevant for the intended use, which are declared, except external fire performance	
	Initial type testing	Essential Characteristics of Table ZA.1 relevant for the intended use, which are declared, except reaction to fire and external fire performance	6.2
Tasks under responsibility of a notified laboratory	Initial type testing	External fire performance of Table ZA.1	6.2
Tasks under the responsibility of the product certification body	Initial type testing	Reaction to fire classes A1 ([1]), A2([1]), B([1]), or C([1]) of Table ZA.1	6.2
	Initial inspection of factory and of FPC	Parameters related to reaction to fire and watertightness of Table ZA.1 Documentation of the FPC	6.3
	Continuous surveillance, assessment and approval of FPC	Parameters related to reaction to fire and watertightness of Table ZA.1 Documentation of the FPC	

(*) All classes with exception of class F_{ROOF}.

Table ZA.3.2 — Assignment of evaluation of conformity tasks for bitumen sheets under system 2+ for roof sheets in buildings, system 1 for reaction to fire classes A1 ([1]), A2([1]), B([1]), C([1]) and system 4 for external fire performance class F_{ROOF}

Tasks		Content of the task	Evaluation of conformity clauses to apply
Tasks under the responsibility of the manufacturer	Factory production control (FPC)	Parameters related to Essential Characteristics of Table ZA.1 relevant for the intended use, which are declared	6.3
	Further testing of samples taken at factory according to the prescribed test plan	Essential Characteristics of Table ZA.1 relevant for the intended use, which are declared, except external fire performance	
	Initial type testing	Essential Characteristics of Table ZA.1 relevant for the intended use, which are declared, except reaction to fire	6.2
Tasks under the responsibility of the product certification body	Initial type testing	Reaction to fire classes A1 ([1]), A2([1]), B([1]) or C([1]) of Table ZA.1	6.2
	Initial inspection of factory and of FPC	Parameters related to reaction to fire and watertightness of Table ZA.1 Documentation of the FPC	6.3
	Continuous surveillance, assessment and approval of FPC	Parameters related to reaction to fire and watertightness of Table ZA.1 Documentation of the FPC	

Table ZA.3.3 — Assignment of evaluation of conformity tasks for bitumen sheets under system 2+ for roof sheets in buildings, system 3 for reaction to fire classes A1([2]), A2([2]), B([2]), C([2]), D and E and system 3 for external fire performance (*)

Tasks		Content of the task	Evaluation of conformity clauses to apply
Tasks under the responsibility of the manufacturer	Factory production control (FPC)	Parameters related to Essential Characteristics of Table ZA.1 relevant for the intended use, which are declared	6.3
	Further testing of samples taken at factory according to the prescribed test plan	Essential Characteristics of Table ZA.1 relevant for the intended use, which are declared, except reaction to fire and external fire performance	
	Initial type testing	Essential characteristics of Table ZA.1 relevant for the intended use, which are declared, except reaction to fire and external fire performance	6.2
Tasks under the responsibility of a notified laboratory	Initial type testing	Reaction to fire classes A1(2), A2([2]), B([2]),C([2]), D or E and external fire performance of Table ZA.1	6.2
Tasks under the responsibility of the FPC certification body	Initial inspection of factory and of FPC	Parameters related to watertightness of Table ZA.1 Documentation of the FPC	6.3
	Continuous surveillance, assessment and approval of FPC	Parameters related to watertightness of Table ZA.1 Documentation of the FPC	

(*) All classes with exception of class F_{ROOF}.

Table ZA.3.4 — Assignment of evaluation of conformity tasks for bitumen sheets under system 2+ for roof sheets in buildings, system 3 for reaction to fire classes A1 ([2]), A2([2]), B([2]), C([2]), D and E and system 4 for external fire performance class F_{ROOF} or deemed to satisfy

Tasks		Content of the task	Evaluation of conformity clauses to apply
Tasks under the responsibility of the manufacturer	Factory production control (FPC)	Parameters related to Essential Characteristics of Table ZA.1 relevant for the intended use, which are declared	6.3
	Further testing of samples taken at factory according to the prescribed test plan	Essential characteristics of Table ZA.1 relevant for the intended use, which are declared, except reaction to fire and external fire performance	
	Initial type testing	Essential characteristics of Table ZA.1 relevant for the intended use, which are declared, except reaction to fire and external fire performance	6.2
Tasks under the responsibility of a notified laboratory	Initial type testing	Reaction to fire classes A1(2), A2([2]), B([2]),C([2]), D or E of Table ZA.1	6.2
Tasks under the responsibility of the FPC certification body	Initial inspection of factory and of FPC	Parameters related to watertightness of Table ZA.1 Documentation of the FPC	6.3
	Continuous surveillance, assessment and approval of FPC	Parameters related to watertightness of Table ZA.1 Documentation of the FPC	6.3

Table ZA.3.5 — Assignment of evaluation of conformity tasks for bitumen sheets under system 2+ for roof sheets in buildings, system 4 for reaction to fire classes (A1 to E) ([3]) and F and system 3 for external fire performance (*)

Tasks		Content of the task	Evaluation of conformity clauses to apply
Tasks under the responsibility of the manufacturer	Factory production control (FPC)	Parameters related to Essential Characteristics of Table ZA.1 relevant for the intended use, which are declared	6.3
	Further testing of samples taken at factory according to the prescribed test plan	Essential characteristics of Table ZA.1 relevant for the intended use, which are declared, except reaction to fire and external fire performance	
	Initial type testing	Essential characteristics of Table ZA.1 relevant for the intended use, which are declared, except external fire performance	6.2
Tasks under the responsibility of a notified laboratory	Initial type testing	External fire performance of Table ZA.1	6.2
Tasks under the responsibility of the FPC certification body	Initial inspection of factory and of FPC	Parameters related to watertightness of Table ZA.1 Documentation of the FPC	6.3
	Continuous surveillance, assessment and approval of FPC	Parameters related to watertightness of Table ZA.1 Documentation of the FPC	

(*) All classes with exception of class F_{ROOF}.

Table ZA.3.6 — Assignment of evaluation of conformity tasks for bitumen sheets under system 2+ for roof sheets in buildings, system 4 for reaction to fire classes (A1 to E) ([3]) and F and system 4 for external fire performance class F_{ROOF} or deemed to satisfy

Tasks		Content of the task	Evaluation of conformity clauses to apply
Tasks under the responsibility of the manufacturer	Factory production control (FPC)	Parameters related to Essential Characteristics of Table ZA.1 relevant for the intended use, which are declared	6.3
	Further testing of samples taken at factory according to the prescribed test plan	Essential Characteristics of Table ZA.1 relevant for the intended use, which are declared, except reaction to fire and external fire performance	
	Initial type testing	Essential Characteristics of Table ZA.1 relevant for the intended use which are declared, except external fire performance and reaction to fire	6.2
Tasks under the responsibility of the FPC certification body	Initial inspection of factory and of FPC	Parameters related to watertightness of Table ZA.1 Documentation of the FPC	6.3
	Continuous surveillance, assessment and approval of FPC	Parameters related to watertightness of Table ZA.1 Documentation of the FPC	

ZA.2.2 EC Certificate and Declaration of conformity

ZA.2.2.1 In case of products following Table ZA.3.1 or ZA.3.2

When compliance with the conditions of this annex is achieved, the certification body shall draw up the EC Certificate of conformity, which is related only to the reaction to fire characteristic. It shall include the FPC Certificate concerning parameters related to watertightness. The EC Certificate of conformity shall include:

— name, address and identification number of the certification body,

— name and address of the manufacturer, or his authorised representative established in the EEA, and place of production,

NOTE 1 The manufacturer may also be the person responsible for placing the product onto the EEA market if he takes responsibility for CE marking.

— description of the product (type, identification, use...),

— provisions to which the product conforms (i.e. Annex ZA of this European Standard),

— particular conditions applicable to the use of the product (e.g. provisions for use under certain conditions),

— the number of the Certificate,

— conditions of validity of the Certificate, where applicable,

— name of, and position held by, the person empowered to sign the Certificate.

In addition, the manufacturer or his agent established in the EEA shall draw up and retain the EC-Declaration of conformity which entitles the manufacturer to affix the CE marking. This declaration shall include:

— name and address of the manufacturer, or his authorised representative established in the EEA, and the place of production,

NOTE 2 The manufacturer may also be the person responsible for placing the product onto the EEA market if he takes responsibility for CE marking.

— name and address of the certification body,

— number of the accompanying EC Certificate of conformity,

— name and address of the notified laboratory in case of Table ZA.3.1,

— description of the product (type, identification, use...), and a copy of the information accompanying the CE marking,

NOTE 3 Where some of the information required for the Declaration is already given in the CE marking information, it does not need to be repeated.

— provisions to which the product conforms (i.e. Annex ZA of this European Standard), and a reference to the ITT report(s) and factory production control records (if appropriate),

— particular conditions applicable to the use of the product (e.g. provisions for use under certain conditions),

— name of, and position held by, the person empowered to sign the declaration on behalf of the manufacturer or of his authorised representative.

The above mentioned Certificate and the declaration shall be presented in the language or languages accepted in the Member State in which the product is to be used.

ZA.2.2.2 In case of products following Tables ZA.3.3 to ZA.3.6

When compliance with the conditions of this annex is achieved, and once the notified body has drawn up the FPC Certificate mentioned below, the manufacturer or his agent established in the EEA shall draw up and retain the EC declaration of conformity, which entitles the manufacturer to affix the CE marking. This declaration shall include:

— name and address of the manufacturer, or his authorised representative established in the EEA, and the place of production,

NOTE 1 The manufacturer may also be the person responsible for placing the product onto the EEA market if he takes responsibility for CE marking.

— description of the product (type, identification, use...), and a copy of the information accompanying the CE marking,

NOTE 2 Where some of the information required for the Declaration is already given in the CE marking information, it does not need to be repeated.

— provisions to which the product conforms (i.e. Annex ZA of this European Standard), and a reference to the ITT report(s) and factory production control records (if appropriate),

— particular conditions applicable to the use of the product (e.g. provisions for use under certain conditions),

— the number of the accompanying factory production control Certificate, and FPC records, where applicable,

— name and address of the notified laboratory(ies) if characteristics are tested by such a laboratory,

— name of, and position held by, the person empowered to sign the declaration on behalf of the manufacturer or his authorised representative.

The EC declaration of conformity shall be accompanied by the FPC Certificate, drawn up by the notified body, concerning parameters related to watertightness. The Certificate shall contain, in addition to the information above, the following:

— name and address of the notified body,

— the number of the factory production control Certificate,

— conditions of validity of the Certificate, where applicable,

— name of, and position held by, the person empowered to sign the Certificate.

The EC declaration of conformity and the FPC Certificate shall be presented in the language or languages accepted in the Member State in which the product is to be used.

ZA.3 CE marking and labelling

The manufacturer or his authorised representative established within the EEA is responsible for the affixing of the CE marking. The CE marking symbol to affix shall be in accordance with Directive 93/68/EEC and shall be shown on a label attached to the bitumen sheets together with the following minimum information:

— reference to this European Standard (EN 13707) with the date of version,

— name or identifying mark and registered address of the manufacturer,

— the last two digits of the year in which the marking is affixed,

— number of the EC product Certificate or Certificate of Factory Production Control,

— information required by Clause 8 (except 8 a)).

The CE marking symbol shall also be shown on the accompanying commercial (technical) documentation.

The following complete information shall accompany the CE marking symbol:

a) identification number of the certification body,

b) name or identifying mark and registered address of the manufacturer (see Note 1 in ZA.2.2),

c) the last two digits of the year in which the marking is affixed,

d) number of the EC product Certificate or Certificate of factory production control ,

e) reference to this European Standard (EN 13707) with the date of version,

f) description and intended use of the product,

g) information on those relevant Essential Characteristics listed in Table ZA.1.

The “No performance determined” (NPD) option may not be used for durability (depending on the provided use in the roofing system) and where the characteristic is subject to a threshold value. Otherwise, the NPD option may be used when and where the characteristic, for a given intended use, is not subject to regulatory requirements in the Member State of destination.

Figure ZA.1 gives an example of the information related to products subject to attestation of conformity systems according to Table ZA.3.1, to be given on the accompanying commercial (technical) documentation.

CE	*CE marking, consisting of the “CE”-symbol given in Directive 93/68/EEC.*
01234	*Identification number of the certification body*
AnyCo Ltd, PO Box 21, B-1050	*Name or identifying mark and registered address of the producer*
13	*Last two digits of the year in which the marking was affixed*
01234-CPD-00234	*EC Certificate number*
EN 13707:2013	*No. of European Standard with the date of version*
1 m × 5 m × 4 mm, polyester non-woven, elastomeric modified bitumen, fine mineral and polymeric sheeting, torchable only. Top layer, not for single layer application, not for roof gardens.	*Description of the product*
External fire performance: Class F_{ROOF} (t2) Reaction to fire: Class E Tensile strength in longitudinal direction: 700 N/50 mm ± 50 N/50 mm Tensile strength in transverse direction: 500 N/50 mm ± 50 N/50 mm Elongation: 30 % ± 3 % Resistance to static loading: 20 kg Resistance to impact: NPD Tear resistance: NPD Flexibility at low temperature (pliability): –20 °C Durability: –10 °C ± 5 °C Watertightness: pass Root resistance: NPD	*Information on Essential Characteristics*

Figure ZA.1 — Example CE marking information to be given on the accompanying commercial (technical) documents

In addition to any specific information relating to dangerous substances shown above, the product should also be accompanied, when and where required and in the appropriate form, by documentation listing any other legislation on dangerous substances for which compliance is claimed, together with any information required by that legislation.

NOTE 1 European legislation without national derogations need not be mentioned.

NOTE 2 Affixing the CE marking symbol means, if a product is subject to more than one directive, that it complies with all applicable directives.

Bibliography

[1] Guidance paper F, "Durability and the Construction Products Directive"

[2] Guidance paper D, "CE marking under the Construction Products Directive"

[3] Guidance paper H, "A harmonized approach relating to dangerous substances under the Construction Products Directive"

[4] Essential Requirements (ER) n° 3 "Hygiene, health and environmental protection" of the Council Directive of 21 December 1988 on the approximation of laws, regulations and administrative provisions of the Member States relating to constructions products (89/106/EEC)

[5] Commission Decision 2000/553/EC of 6 September 2000 implementing Council Directive 89/106/EEC as regards the external fire performance of roof coverings (notified under document number C(2000) 2266) (Text with EEA relevance) Official Journal L 235, 19/09/2000 p. 0019–0022

[6] ENV 1187, *Test methods for external fire exposure to roofs*

[7] EN 1931, *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of water vapour transmission properties*

[8] EN 14695, *Flexible sheets for waterproofing — Reinforced bitumen sheets for waterproofing of concrete bridge decks and other trafficked areas of concrete — Definitions and characteristics*

[9] EN 16002, *Flexible sheets for waterproofing — Determination of the resistance to wind load of mechanically fastened flexible sheets for roof waterproofing*

[10] EN ISO 9001, *Quality management systems — Requirements (ISO 9001)*

This page deliberately left blank

This page deliberately left blank

British Standards Institution (BSI)

BSI is the national body responsible for preparing British Standards and other standards-related publications, information and services.

BSI is incorporated by Royal Charter. British Standards and other standardization products are published by BSI Standards Limited.

About us

We bring together business, industry, government, consumers, innovators and others to shape their combined experience and expertise into standards -based solutions.

The knowledge embodied in our standards has been carefully assembled in a dependable format and refined through our open consultation process. Organizations of all sizes and across all sectors choose standards to help them achieve their goals.

Information on standards

We can provide you with the knowledge that your organization needs to succeed. Find out more about British Standards by visiting our website at bsigroup.com/standards or contacting our Customer Services team or Knowledge Centre.

Buying standards

You can buy and download PDF versions of BSI publications, including British and adopted European and international standards, through our website at bsigroup.com/shop, where hard copies can also be purchased.

If you need international and foreign standards from other Standards Development Organizations, hard copies can be ordered from our Customer Services team.

Subscriptions

Our range of subscription services are designed to make using standards easier for you. For further information on our subscription products go to bsigroup.com/subscriptions.

With **British Standards Online (BSOL)** you'll have instant access to over 55,000 British and adopted European and international standards from your desktop. It's available 24/7 and is refreshed daily so you'll always be up to date.

You can keep in touch with standards developments and receive substantial discounts on the purchase price of standards, both in single copy and subscription format, by becoming a **BSI Subscribing Member**.

PLUS is an updating service exclusive to BSI Subscribing Members. You will automatically receive the latest hard copy of your standards when they're revised or replaced.

To find out more about becoming a BSI Subscribing Member and the benefits of membership, please visit bsigroup.com/shop.

With a **Multi-User Network Licence (MUNL)** you are able to host standards publications on your intranet. Licences can cover as few or as many users as you wish. With updates supplied as soon as they're available, you can be sure your documentation is current. For further information, email bsmusales@bsigroup.com.

BSI Group Headquarters

389 Chiswick High Road London W4 4AL UK

Revisions

Our British Standards and other publications are updated by amendment or revision.

We continually improve the quality of our products and services to benefit your business. If you find an inaccuracy or ambiguity within a British Standard or other BSI publication please inform the Knowledge Centre.

Copyright

Useful Contacts:

Customer Services
Tel: +44 845 086 9001
Email (orders): orders@bsigroup.com
Email (enquiries): cservices@bsigroup.com

Subscriptions
Tel: +44 845 086 9001
Email: subscriptions@bsigroup.com

Knowledge Centre
Tel: +44 20 8996 7004
Email: knowledgecentre@bsigroup.com

Copyright & Licensing
Tel: +44 20 8996 7070
Email: copyright@bsigroup.com

bsi.

...making excellence a habit.™