



BSI Standards Publication

<http://www.china-gauges.com/>

**Flexible sheets for waterproofing —  
Bitumen, plastic and rubber sheets for roof  
waterproofing — Rules for sampling**

---

## National foreword

This British Standard is the UK implementation of EN 13416:2023. It supersedes BS EN 13416:2001, which is withdrawn.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 committee manager.

### Contractual and legal considerations

This publication has been prepared in good faith, however no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by BSI in relation to the adequacy, accuracy, completeness or reasonableness of this publication. All and any such responsibility and liability is expressly disclaimed to the full extent permitted by the law.

This publication is provided as is, and is to be used at the recipient's own risk.

The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

© The British Standards Institution 2023  
Published by BSI Standards Limited 2023

ISBN 978 0 539 21840 4

ICS 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 30 November 2023.

### Amendments/corrigenda issued since publication

Date	Text affected
------	---------------

---

EUROPEAN STANDARD

**EN 13416**

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2023

ICS 91.100.50

Supersedes EN 13416:2001

English Version

## Flexible sheets for waterproofing - Bitumen, plastic and rubber sheets for roof waterproofing - Rules for sampling

Feuilles souples d'étanchéité - Feuilles d'étanchéité de  
toiture bitumineuses, plastiques et élastomères -  
Règles d'échantillonnage

Abdichtungsbahnen - Bitumen-, Kunststoff- und  
Elastomerbahnen für Dachabdichtungen - Regeln für  
die Probenentnahme

This European Standard was approved by CEN on 7 August 2023.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and United Kingdom.



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

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

## Contents

Page

Contents .....	2
European foreword.....	3
Introduction .....	4
1 Scope .....	5
2 Normative references .....	5
3 Terms and definitions .....	5
4 Principle .....	7
5 Sampling.....	7
5.1 General.....	7
5.2 FPC and ITT .....	7
5.3 Consignment .....	7
6 Test pieces and test specimens .....	7
6.1 Temperature conditioning .....	7
6.2 Test pieces .....	7
6.3 Test specimens.....	8
7 Sampling report.....	8
Bibliography.....	9

<http://www.china-gauges.com/>

## European foreword

This document (EN 13416:2023) 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 2024, and conflicting national standards shall be withdrawn at the latest by April 2024.

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

This document supersedes EN 13416:2004.

The main changes compared to the previous edition are listed below:

- Content has been extended to market surveillance and other purpose of testing and sampling for factory production control (FPC) and initial type testing (ITT); and
- Description of the sampling condition of sheets before use are improved.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

## Introduction

This document is intended for sampling and test sample preparation of flexible sheets for waterproofing as manufactured or supplied before use. This document relates exclusively to products, or to their components where appropriate, and not to waterproofing membrane systems composed of such products and installed in the works.

<http://www.china-gauges.com/>

## 1 Scope

This document specifies the general rules how to select the samples of correctly stored and handled samples of uninstalled bitumen, plastic or rubber sheets for waterproofing. It also specifies the procedures to be followed before the test piece is cut from the sample.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

EN 1850-2, *Flexible sheets for waterproofing - Determination of visible defects - Part 2: Plastic and rubber sheets for roof waterproofing*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

### 3.1

#### **consignment**

delivery of waterproofing sheets

### 3.2

#### **sample**

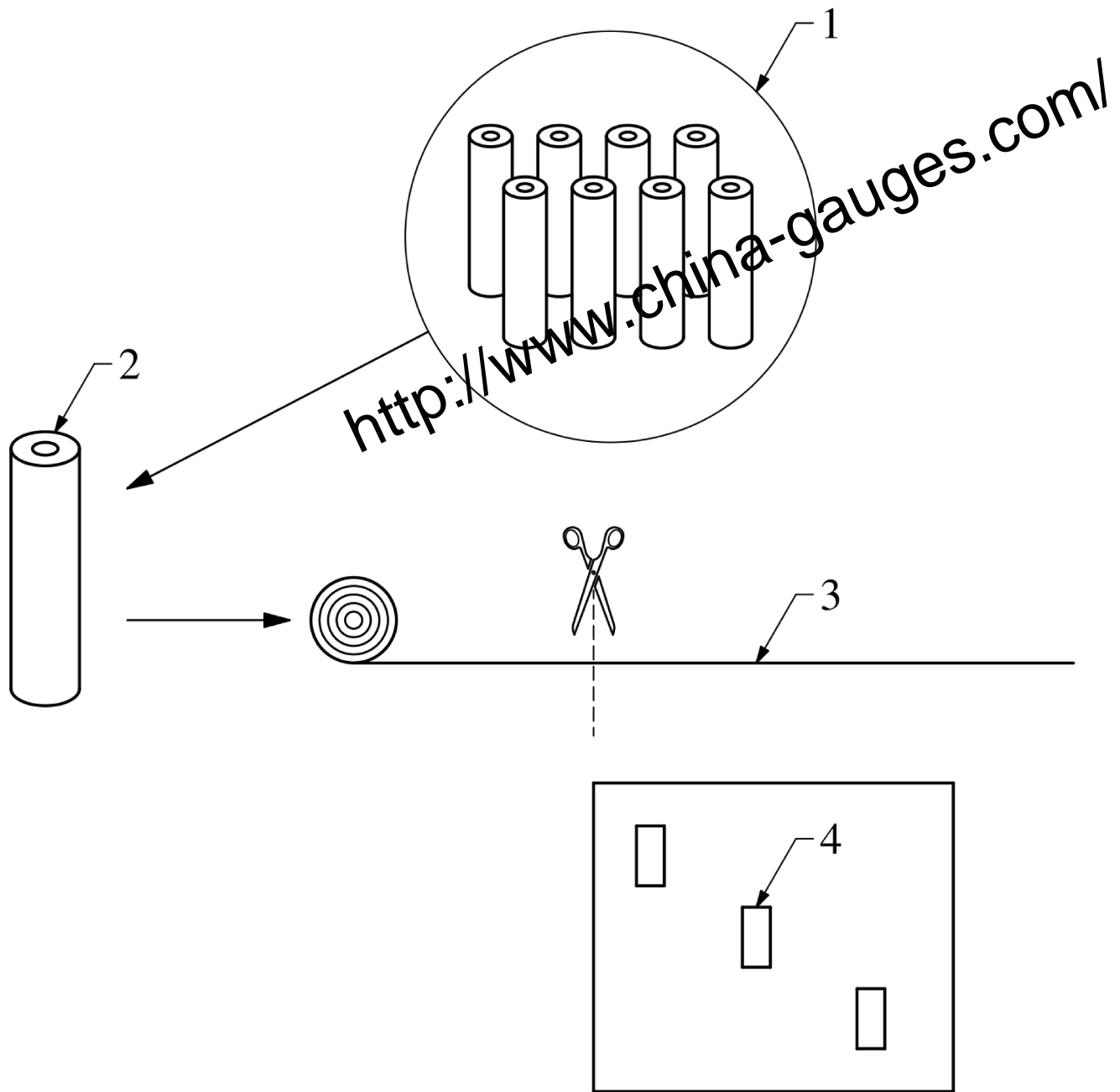
sheet with manufacture original packaging and labelling from which a test piece is taken

### 3.3

#### **sampling**

procedure used to select or to constitute a sample from a consignment in accordance with Figure 1 (e.g. third party control)

Note 1 to entry: Sampling for FPC and ITT is described in 5.3.



- Key**
- 1 consignment
  - 2 sample
  - 3 test piece
  - 4 test specimen

**Figure 1 — Sampling**

**3.4 test piece**  
part of the sample from which test specimens are taken



### 3.5

#### **test specimen**

piece of accurate dimensions taken from test piece

## 4 Principle

The method describes the sequence of actions which to be followed to produce test pieces and test specimens. Inappropriate handling and/or storage of the product after delivery by the manufacturer can cause divergent results to the declared value. This does not include requirements as fire properties and environmental aspects.

The sampling from an installed membrane is not within the scope of this document. The measured value of the test specimens (e.g. other purpose than E-Marking) tested from an installed membrane may give divergent results compared to the declaration of performance (DOP).

## 5 Sampling

### 5.1 General

Samples and test pieces that are damaged shall not be selected for sampling.

### 5.2 FPC and ITT

Sampling and conditioning of the test pieces for internal testing like FPC and ITT is done in accordance to the manufacture procedure.

### 5.3 Consignment

The numbers of samples should be agreed by the involved parties. Typical frequency of consignment will be 1 sample per batch. If not possible or in absence of such an agreement it can be carried out as proposed in Table 1.

**Table 1 — Sampling**

<b>Consignment m<sup>2</sup></b>	<b>Number of samples</b>
< 10 000	1
10 000 to 50 000	2
> 50 000	3

## 6 Test pieces and test specimens

### 6.1 Temperature conditioning

The sample(s) shall be stored for at least 24 h at (20 ± 10) °C before the test pieces are cut.

### 6.2 Test pieces

Unroll the selected sample(s) on a flat surface and cut off a test piece over the full width and of a suitable length to allow the required test specimens to be cut. The outer turn of the roll shall be rejected unless protected by suitable wrapping.

The test piece shall be marked to identify the material, the top surface of the sheet and the direction of manufacture. The test piece shall be stored for at least 20 h at  $(23 \pm 2)$  °C before the test specimens are cut, unless otherwise specified in relevant European Standards for flexible sheets for waterproofing.

### 6.3 Test specimens

Before cutting the test specimens the test piece shall be inspected; the test piece shall show no signs of creasing as a consequence of the sampling procedure or transportation, and it shall be ensured that the test piece is free of any visible defects in accordance with EN 1850-1 or EN 1850-2, respectively.

Cut test specimens in accordance to the procedure, specified in the relevant European Standards for flexible sheets for waterproofing depending on the properties to be determined and the required number of test specimens.

The test specimens shall be marked to identify the material, the top surface of the sheet and the direction of manufacture.

## 7 Sampling report

The sampling report shall contain at least the following information:

- all details necessary to identify the product tested in accordance with the European Standard on flexible sheets for waterproofing;
- reference to this document (EN 13416) and any deviation from it;
- any signs of creasing or any defects, which are a consequence of the production or conditioning process;
- date and place of sampling.

## Bibliography

- [1] ISO 3534-1, *Statistics — Vocabulary and symbols — Part 1: General statistical terms and terms used in probability*
- [2] ISO 3534-2, *Statistics — Vocabulary and symbols — Part 2: Applied statistics*
- [3] ISO 3534-3, *Statistics — Vocabulary and symbols — Part 3: Design of experiments*

<http://www.china-gauges.com/>

# 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](http://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](http://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.

## Copyright in BSI publications

All the content in BSI publications, including British Standards, is the property of and copyrighted by BSI or some person or entity that owns copyright in the information used (such as the international standardization bodies) and has formally licensed such information to BSI for commercial publication and use.

Save for the provisions below, you may not transfer, share or disseminate any portion of the standard to any other person. You may not adapt, distribute, commercially exploit or publicly display the standard or any portion thereof in any manner whatsoever without BSI's prior written consent.

## Storing and using standards

Standards purchased in soft copy format:

- A British Standard purchased in soft copy format is licensed to a sole named user for personal or internal company use only.
- The standard may be stored on more than one device provided that it is accessible by the sole named user only and that only one copy is accessed at any one time.
- A single paper copy may be printed for personal or internal company use only.

Standards purchased in hard copy format:

- A British Standard purchased in hard copy format is for personal or internal company use only.
- It may not be further reproduced – in any format – to create an additional copy. This includes scanning of the document.

If you need more than one copy of the document, or if you wish to share the document on an internal network, you can save money by choosing a subscription product (see 'Subscriptions').

## Reproducing extracts

For permission to reproduce content from BSI publications contact the BSI Copyright and Licensing 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](http://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](http://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 [cservices@bsigroup.com](mailto:cservices@bsigroup.com).

## 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.

## Useful Contacts

### Customer Services

**Tel:** +44 345 086 9001

**Email:** [cservices@bsigroup.com](mailto:cservices@bsigroup.com)

### Subscriptions

**Tel:** +44 345 086 9001

**Email:** [subscriptions@bsigroup.com](mailto:subscriptions@bsigroup.com)

### Knowledge Centre

**Tel:** +44 20 8996 7004

**Email:** [knowledgecentre@bsigroup.com](mailto:knowledgecentre@bsigroup.com)

### Copyright & Licensing

**Tel:** +44 20 8996 7070

**Email:** [copyright@bsigroup.com](mailto:copyright@bsigroup.com)

## BSI Group Headquarters

389 Chiswick High Road London W4 4AL UK