



BSI Standards Publication

Plastics - Poly(vinyl chloride) (PVC) based profiles - Determination of the resistance to impact of profiles by falling mass

National foreword

This British Standard is the UK implementation of EN 477:2018. It supersedes BS EN 477:1999, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PRI/21, Testing of plastics.

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.

© The British Standards Institution 2018
Published by BSI Standards Limited 2018

ISBN 978 0 580 94816 9

ICS 83.140.99; 91.060.50

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 28 February 2018.

Amendments/corrigenda issued since publication

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

EUROPEAN STANDARD

EN 477

NORME EUROPÉENNE

EUROPÄISCHE NORM

January 2018

ICS 83.080.20; 83.140.99

Supersedes EN 477:1995

English Version

Plastics - Poly(vinyl chloride) (PVC) based profiles - Determination of the resistance to impact of profiles by falling mass

Plastiques - Profilés à base de poly(chlorure de
vinyle) (PVC) - Détermination de la résistance
aux chocs par masse tombante des profilés

Kunststoffe - Profile auf Basis von Polyvinylchlorid
(PVC) - Bestimmung der Stoßfestigkeit
von Profilen mittels Fallbolzens

This European Standard was approved by CEN on 6 December 2017.

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, Serbia, 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

Contents

Page

European foreword	3
1 Scope	4
2 Normative references	4
3 Terms and definitions	4
4 Principle	4
5 Apparatus	4
6 Test specimens	4
7 Conditioning	6
8 Procedure	6
9 Expression of results	6
10 Test report	6

European foreword

This document (EN 477:2018) has been prepared by Technical Committee CEN/TC 249 “Plastics”, the secretariat of which is held by NBN.

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 July 2018, and conflicting national standards shall be withdrawn at the latest by July 2018.

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

This document supersedes EN 477:1995.

According to the CEN/CENELEC Internal Regulations, the national standards organizations 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, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard specifies a method for determining the resistance to impact by a falling mass at -10 °C of unplasticized poly(vinyl chloride) (PVC-U) profiles.

It is also applicable to PVC-based profiles at specified temperatures/test conditions.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

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

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

3.1

inner web

partition wall connecting two walls of a profile

4 Principle

Test specimens cut from lengths of profiles are subjected to a blow from a mass falling from a known height on the surface at a point mid-way between two inner webs at a fixed temperature.

After testing the profiles are examined visually for failures in the surface tested.

5 Apparatus

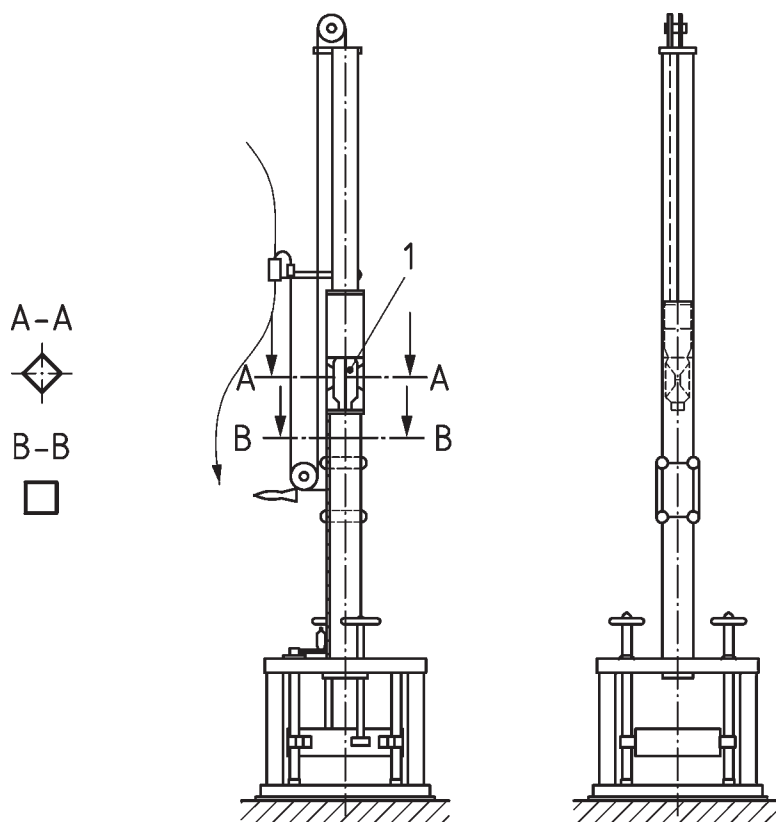
An impact testing machine incorporating the following basic components (see [Figure 1](#)) shall be used:

- a) **main frame**, rigidly fixed in the vertical position;
- b) **guide rails**, fixed to the main frame to accommodate the falling mass and allowing it to fall freely in the vertical plane;
- c) **test specimen support**, consisting of two rounded off supports (see [Figure 2](#)) (200 ± 1) mm apart. The support shall be made from steel and rigidly fixed in a solid foundation or on a table with a mass of more than 50 kg;
- d) **release mechanism**, such that the falling height of the mass, measured from the top surface of the test specimen to be tested, can be adjusted up to the falling height defined in the referred product standard with a tolerance of $(\quad)^{+10}$ mm (e.g. 1 000 mm, 1 500 mm);
- e) **falling mass**, of $(1\ 000 \pm 5)$ g, which has a hemispherical striking surface of $(25 \pm 0,5)$ mm radius.

The striking surface shall be free from all imperfections.

6 Test specimens

Ten test specimens, each of length of 300 mm shall be taken from a profile.



Key

1 falling mass

Figure 1 — Example of impact resistance testing apparatus

Dimensions in millimetres

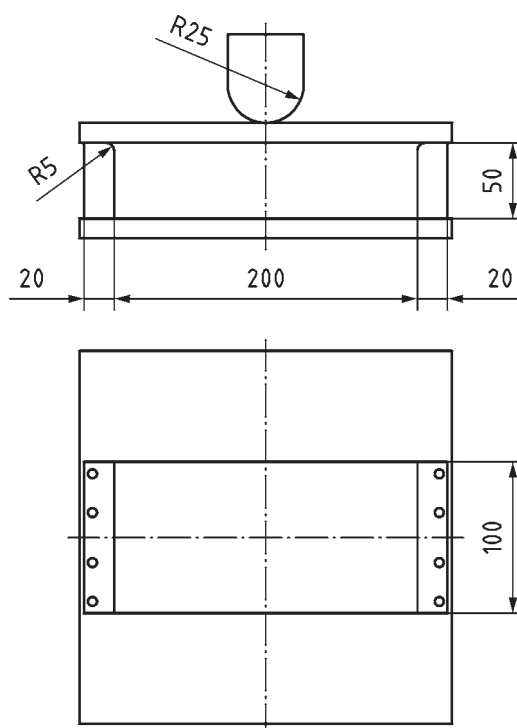


Figure 2 — Example of a supporting device

7 Conditioning

The test specimens shall be conditioned at a temperature of (-10_{-3}^0) °C for at least 1 h before testing.

Each test specimen shall be tested within 10 s of removal from the conditioning chamber.

8 Procedure

8.1 The test shall be performed on the surface of the profile, as defined by the referred standard.

8.2 Drop the falling mass from the given height as required in the product standard at a point mid-way between two inner webs.

Where it is impracticable for the mass to hit the profile in accordance to the above due to its geometry other impact positions for the falling mass should be agreed upon between the profile manufacturer and the testing laboratory.

When due to its geometry, the profile tend to tilt sideways at the impact of the falling mass, any tilting should be prevented, by attaching additional stays to the two supports.

During the test care should be taken to prevent multiple impacts of the falling mass on the test specimen.

9 Expression of results

The number of test specimens tested and the number of test specimens broken shall be reported for each type of profile.

10 Test report

The test report shall include the following information:

- a) reference to this document (i.e. EN 477);
- b) the testing laboratory;
- c) full identification of the profile;
- d) date of testing;
- e) the height of the falling mass;
- f) the number of test specimens tested;
- g) the number of test specimens broken;
- h) all operating details not specified in this document, as well as incidents likely to have influenced the results.

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.

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 1 device provided that it is accessible by the sole named user only and that only 1 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 1 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 & 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.

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 subscriptions@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 (orders): orders@bsigroup.com

Email (enquiries): cservices@bsigroup.com

Subscriptions

Tel: +44 345 086 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 Group Headquarters

389 Chiswick High Road London W4 4AL UK