

STN	Plasty Metódy vystavovania slnečnému žiareniu Časť 1: Všeobecný návod (ISO 877-1: 2025, opravená verzia 2026-02)	STN EN ISO 877-1 64 0771
------------	---	--

Plastics - Methods of exposure to solar radiation - Part 1: General guidance (ISO 877-1:2025, Corrected version 2026-02)

Táto norma obsahuje anglickú verziu európskej normy.

This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 07/26

Obsahuje: EN ISO 877-1:2025, ISO 877-1 Corrected version 2026-02:2025

Oznámením tejto normy sa ruší

STN EN ISO 877-1 (64 0771) z decembra 2025

142804

Úrad pre normalizáciu, metrológiu a skúšobníctvo Slovenskej republiky, 2026

Slovenská technická norma a technická normalizačná informácia je chránená zákonom č. 60/2018 Z. z. o technickej normalizácii v znení neskorších predpisov.

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 877-1

August 2025

ICS 83.080.01

Supersedes EN ISO 877-1:2010

English Version

**Plastics - Methods of exposure to solar radiation - Part 1:
General guidance (ISO 877-1:2025, Corrected version
2026-02)**

Plastiques - Méthodes d'exposition au rayonnement
solaire - Partie 1: Lignes directrices générales (ISO
877-1:2025, Version corrigée 2026-02)

Kunststoffe - Freibewitterung - Teil 1: Allgemeine
Anleitung (ISO 877-1:2025, korrigierte Fassung 2026-
02)

This European Standard was approved by CEN on 18 August 2025.

This European Standard was corrected and reissued by the CEN-CENELEC Management Centre on 25 February 2026.

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

EN ISO 877-1:2025 (E)

Contents	Page
European foreword.....	3

European foreword

This document (EN ISO 877-1:2025) has been prepared by Technical Committee ISO/TC 61 "Plastics" in collaboration with Technical Committee CEN/TC 249 "Plastics" the secretariat of which is held by SIS.

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 February 2026, and conflicting national standards shall be withdrawn at the latest by February 2026.

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 ISO 877-1:2010.

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

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, 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.

Endorsement notice

The text of ISO 877-1:2025, Corrected version 2026-02 has been approved by CEN as EN ISO 877-1:2025 without any modification.



International Standard

ISO 877-1

Plastics — Methods of exposure to solar radiation —

Part 1: General guidance

*Plastiques — Méthodes d'exposition au rayonnement solaire —
Partie 1: Lignes directrices générales*

**Second edition
2025-08**

**Corrected version
2026-02**

ISO 877-1:2025(en)



COPYRIGHT PROTECTED DOCUMENT

© ISO 2025

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

ISO 877-1:2025(en)**Contents**

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Principle	2
5 Apparatus	3
5.1 General requirements	3
5.2 Apparatus for measurement of climatic factors	3
5.2.1 Apparatus for measurement of radiant exposure	3
5.2.2 Other climate-measuring instruments	4
6 Test specimens	5
6.1 Form, shape and preparation	5
6.2 Number of test specimens	5
6.3 Conditioning and storage	6
7 Conditions of exposure of the test specimens	6
7.1 Classes of climate	6
7.2 Types of exposure used for specimens	6
8 Exposure stages	7
8.1 General considerations	7
8.2 Duration of exposure	7
8.3 Solar radiant exposure	7
8.3.1 Importance	7
8.3.2 Instrumental measurement of solar radiant exposure	7
9 Procedure	8
9.1 Mounting of test specimens	8
9.2 Mounting of reference materials	8
9.3 Climatic observations	9
9.4 Exposure of test specimens	9
9.5 Determination of changes in properties, if required	9
10 Expression of results	9
10.1 Determination of changes in properties	9
10.2 Levels (values) of exposure stages	9
10.3 Climatic conditions	9
11 Test report	10
Annex A (informative) Classification of climates	12
Bibliography	14

ISO 877-1:2025(en)**Foreword**

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 6, *Ageing, chemical and environmental resistance* in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 249, *Plastics*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 877-1:2009), which has been technically revised.

The main changes are as follows:

- addition of new term and definition (3.1) "natural weathering";
- addition of a requirement for the area beneath and in the vicinity of racks in 5.1;
- addition of new NOTE 2 in 9.2 referring to ISO/TR 19032;
- addition of information to be included in the test report (Clause 11).

A list of all parts in the ISO 877 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

This corrected version of ISO 877-1:2025 incorporates the following corrections:

- in 6.1, information on test specimens have been corrected.

ISO 877-1:2025(en)**Introduction**

Outdoor-exposure tests of the type specified in the ISO 877 series are needed to evaluate the performance of plastics when exposed to solar radiation. The results of such tests should be regarded only as an indication of the effect of exposure to direct weathering (ISO 877-2:2025, method A) or to indirect weathering using glass-filtered solar radiation (ISO 877-2:2025, method B) or to intensified solar radiation (ISO 877-3) by the methods described. Results from tests conducted in accordance with any of the parts of the ISO 877 series will show some variability when comparing results from repeat exposures conducted at the same location at a different time. This is much more important for materials that show significant change after a year or less of exposure. In general, results from repeat exposures at the same location are necessary to determine the range of performance of a material subjected to exposure to solar radiation as specified in the ISO 877 series. Since the type of climate can have a significant effect on the rate and type of degradation, results from exposures conducted in different types of climate are necessary to fully characterize the outdoor durability of a material. For solar-concentrating exposures conducted in accordance with ISO 877-3, exposure duration is defined in terms of the total solar UV radiant exposure. This reduces the effect of annual and seasonal variations in solar ultraviolet radiation.

Fresnel-reflecting concentrators of the type described in ISO 877-3, are utilized to intensify natural solar radiation, in an attempt to accelerate outdoor-exposure testing of plastics materials.

A system of classifying and characterizing climates in different parts of the world is given in [Annex A](#).

The test method chosen is usually that designed to expose the material to the most severe conditions associated with any particular climate. It should, therefore, be borne in mind that the severity of exposure in actual use is, in most cases, likely to be less than that specified in this document, and allowance should be made accordingly when interpreting the results. For example, vertical exposure at 90° from the horizontal is considerably less severe in its effects on plastics than near-horizontal exposure, particularly in tropical regions, where the sun is most powerful at high zenith angles.

Polar-facing surfaces are much less likely to be degraded than equator-facing surfaces because they are less exposed to solar radiation. However, the fact that they can remain wet for longer periods can be of significance for materials affected by moisture or for materials that are susceptible to microbial growth.

Plastics — Methods of exposure to solar radiation —

Part 1: General guidance

1 Scope

This document provides information and general guidance on the selection and use of the methods of exposure to solar radiation described in detail in subsequent parts of the ISO 877 series. These methods of exposure to solar radiation are applicable to plastics materials of all kinds as well as to products and portions of products.

It also specifies methods for determining radiant exposure.

It does not include direct weathering using black-box test fixtures, which simulate higher end-use temperatures in some applications.

NOTE ASTM G7^[1] and ASTM D4141^[2] describe black-box exposure tests.

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.

ISO 291, *Plastics — Standard atmospheres for conditioning and testing*

ISO 472, *Plastics — Vocabulary*

ISO 877-2:2025, *Plastics — Methods of exposure to solar radiation — Part 2: Direct weathering and exposure behind window glass*

ISO 877-3, *Plastics — Methods of exposure to solar radiation — Part 3: Intensified weathering using concentrated solar radiation*

ISO 2818, *Plastics — Preparation of test specimens by machining*

ISO 4582, *Plastics — Determination of changes in colour and variations in properties after exposure to glass-filtered solar radiation, natural weathering or laboratory radiation sources*

ISO 4892-1, *Plastics — Methods of exposure to laboratory light sources — Part 1: General guidance and requirements*

ISO 9370, *Plastics — Instrumental determination of radiant exposure in weathering tests — General guidance and basic test method*

ISO 10640, *Plastics — Methodology for assessing polymer photoageing by FTIR and UV/visible spectroscopy*

ASTM G179, *Standard Specification for Metal Black Panel and White Panel Temperature Devices for Natural Weathering Tests*

ASTM G183, *Standard Practice for Field Use of Pyranometers, Pyrhemometers and UV Radiometers*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN