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| STN | **Pasívna bezpečnosť nosných konštrukcií vybavenia pozemných komunikácií Požiadavky a skúšobné metódy** | **STN EN 12767+A1**<br><br>73 6052 |
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Passive safety of support structures for road equipment - Requirements and test methods

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. 03/25

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Oznámením tejto normy sa ruší
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# EUROPEAN STANDARD
# NORME EUROPÉENNE
# EUROPÄISCHE NORM

**EN 12767:2019+A1**

December 2024

ICS 93.080.30 Supersedes EN 12767:2019

English Version

# Passive safety of support structures for road equipment - Requirements and test methods

Sécurité passive des structures supports d'équipements de la route - Prescriptions et méthodes d'essai

Passive Sicherheit von Tragkonstruktionen für die Straßenausstattung - Anforderungen und Prüfverfahren

This European Standard was approved by CEN on 24 June 2019 and includes Amendment 1 approved by CEN on 24 August 2024.

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.

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

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



Ref. No. EN 12767:2019+A1:2024 E

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# European foreword

This document (EN 12767:2019+A1:2024) has been prepared by Technical Committee CEN/TC 226 “Road Equipment”, the secretariat of which is held by AFNOR.

This document shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2025, and conflicting national standards shall be withdrawn at the latest by June 2025.

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 includes Amendment 1 approved by CEN on 24 August 2024.

This document supersedes [A1] EN 12767:2019 [/A1].

The start and finish of text introduced or altered by amendment is indicated in the text by tags [A1] [/A1].

[A1] The significant technical changes incorporated in this revision are:

— incorporation of the Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonized conditions for the marketing of construction products and repealing Council Directive 89/106/EEC terminology;

— introduction of a push-pull test to enable a comparison to be made between the backfills used in the test and those on-site;

— harmonization of the boundary values for occupant safety (ASI and THIV) independent of the energy absorption category;

— replacement of the occupant safety level by an alphanumeric character instead of a number to make a clear distinction with the old (EN 12767:2007) approach. Now, NE-C, LE-C and HE-C have the same occupant safety. The best occupant safety is achieved for A;

— introduction of collapse modes to classify if test items become detached or do not become detached;

— introduction of direction sensitivities to take into account any sensitiveness to impact angle;

— improved test description, include installation manual and translation of roof deformation into a measurable value, to reduce the influence of the vehicle structure on the test results;

— introduction of an extra test at 50 km/h for cases where the test-item is not activated at low speed. An explanation of the definition of “activated” is also given;

— better rules for the determination of product ranges (former product families) based on the tested limit(s);

— introduction of a risk assessment approach, in line with the EN 1317-1:2010, for assessing changes of a version, and the use of (for example) virtual testing in this;

— possibility to declare, under certain conditions, intermediate speed levels. [/A1]

Most of the comments collected from all CEN members to the previous version of this norm are implemented or solved. The definition and use of newer technologies has to be developed before introduction into the standard.

〈A1〉 Some added changes mentioned above are expressed in a new performance classification for the product. This results in a longer description of the overall passive safety performance, but at the end, it gives a clearer indication of product performance. For example, an old performance classification like "100, HE, 3" could be translated to "100-HE-C-S-SE-MD-1". In this example, the last 4 sub-indications stands for backfill type (S), collapse mode (SE), direction sensitivity (MD) and risk of roof indentation (1). 〈A1〉

Translation of older tests to this new standard is possible when sufficient information is available in the reports, photographs and videos of the tests.

The previous version of EN 12767 included test acceptance criteria – this is now, for convenience, repeated in Annex A.

When this standard is used as a supporting standard for a product standard under CPR (e.g. sign supports) relevant clauses of Annexes A, G and H are supposed to be copied inside the product standard, and the product standard refers to the rest of this standard.

When this standard is used for testing constructions with no product standard the specifying authority is supposed to refer to whole EN 12767, including Annexes A, G and H.

Annexes A, B, D, E, G, H, I, K, L, M of this document are normative, Annexes C, F, J are informative.

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 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.

# Introduction

The severity of accidents for the occupant(s) of a vehicle is affected (in part) by the performance of the support structures for items of road equipment under impact. Based on safety considerations, support structures can be designed to behave in controlled ways to reduce the overall risk.

[A1] Passive safety is intended to reduce the severity of injury to vehicle occupants of a car in an impact with support structures of road equipment. Passive safety for vulnerable road users, e.g. motorcyclists, is not covered by this document. [A1]

This document has been developed in order to provide:

— test methods for determining impact safety performance; and

— methods to handle the data resulting from the impact tests;

— technical background about passive safety that can be used in the product standard.

[A1] The test procedure includes guidelines:

— for test item selection, test parameters, detailed test methods with different test conditions, the data to record, and requirements for reporting;

— to assess the performance within product ranges and for modified products (called “changed versions”). [A1]

[A1] This document considers:

— two kinds of test inputs:

  — three speed levels (50, 70 and 100);

  — three Backfill types (standard aggregates (S), special (X) and Rigid (R)).

— five kinds of test outcomes:

  — three energy absorption categories: high energy absorbing (HE), low energy absorbing (LE) and non-energy absorbing (NE);

  — five occupant safety levels (from A to E);

  — two modes of collapse for support structures (Separation mode (SE) and No separation collapse mode (NS));

  — three direction sensitivities (single-directional (SD), bi-directional (BD) and multi-directional (MD));

  — two performance variables of risk of roof indentation (0 or 1). [A1]

In order to help to evaluate the risk in case of a product modification, this document introduces Virtual Testing through the definition of procedures for verification, validation, and development of numerical models.

Based on the evaluation of the performance of each tested support structure, National and Local road authorities will be able to specify the performance class of an item of road equipment support structure in terms of the likely effect on the occupants of a vehicle in impact with the structure.

# 1 Scope

This document specifies performance test procedures to determine the passive safety properties of support structures such as lighting columns, sign posts, signal supports, structural elements, foundations, detachable products and any other components used to support a particular item of equipment on the roadside.

This document provides a common basis for the vehicle impact testing of items of road equipment support structures.

This document does not apply to road restraint systems.

# 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 1317-1:2010, *Road restraint systems — Part 1: Terminology and general criteria for test methods*

EN 13285, *Unbound mixtures — Specifications*

ISO 6487, *Road vehicles — Measurement techniques in impact tests — Instrumentation*

ISO 10392, *Road vehicles — Determination of centre of gravity*