
**Road vehicles — Offset frontal impact
test procedure**

Véhicules routiers — Mode opératoire d'essai de choc frontal décalé

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[ISO 15828:2004](https://standards.iteh.ai/catalog/standards/sist/4c931113-0dde-44c4-ae19-05ea2ab421e5/iso-15828-2004)

<https://standards.iteh.ai/catalog/standards/sist/4c931113-0dde-44c4-ae19-05ea2ab421e5/iso-15828-2004>



PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO 15828:2004

<https://standards.iteh.ai/catalog/standards/sist/4c931113-0dde-44c4-ae19-05ea2ab421e5/iso-15828-2004>

© ISO 2004

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword	iv
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Test facility and equipment	3
5 Preparation of test vehicle	6
6 Description of test dummy	8
7 Installation of test dummy	9
8 Impact response measurements	9
Bibliography	11

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[ISO 15828:2004](#)

<https://standards.iteh.ai/catalog/standards/sist/4c931113-0dde-44c4-ae19-05ea2ab421e5/iso-15828-2004>

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

ISO 15828 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 10, *Impact test procedures*.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[ISO 15828:2004](https://standards.iteh.ai/catalog/standards/sist/4c931113-0dde-44c4-ae19-05ea2ab421e5/iso-15828-2004)

<https://standards.iteh.ai/catalog/standards/sist/4c931113-0dde-44c4-ae19-05ea2ab421e5/iso-15828-2004>

Road vehicles — Offset frontal impact test procedure

1 Scope

This International Standard specifies a full scale test procedure for frontal offset deformable barrier impacts, that will ensure such tests are conducted under the same conditions. It is applicable to passenger cars and light trucks as defined in ISO 3833 with dummies in front seat positions.

2 Normative references

The following referenced documents are indispensable for the application 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 209-1, *Wrought aluminium and aluminium alloys — Chemical composition and forms of products — Part 1: Chemical composition*

ISO 1176:1990, *Road vehicles — Masses — Vocabulary and codes*

ISO 3833, *Road vehicles — Types — Terms and definitions*

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

ISO 8721, *Road vehicles — Measurement techniques in impact tests — Optical instrumentation*

ISO/TR 12349-1, *Road vehicles — Dummies for restraint system testing — Part 1: Adult dummies*

FMVSS 208, *Occupant crash protection* ¹⁾

NHTSA TP-214D, *Dynamic side impact protection* ²⁾

SAE J211-1, *Instrumentation for Impact Test — Part 1: Electronic Instrumentation* ³⁾

SAE J211-2, *Instrumentation for Impact Test — Part 2: Photographic Instrumentation*

3 Terms and definitions

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

3.1

deformable barrier face

energy-absorbing barrier face mounted on the front of a rigid block

1) FMVSS, Federal Motor Vehicle Safety Standards and Regulations.

2) NHTSA, National Highway Traffic Safety Administration, US Department of Transportation.

3) SAE, Society of Automotive Engineers.

3.2
test vehicle width

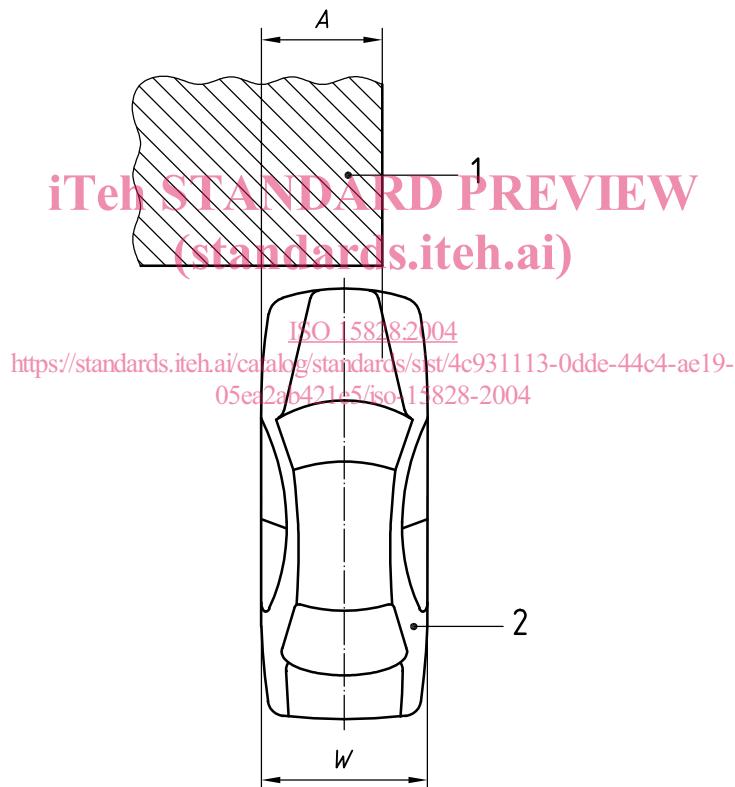
W
distance between two planes parallel to the longitudinal median plane (of the test vehicle) and touching the test vehicle on either side of the longitudinal median plane

NOTE All parts of the test vehicle, including any lateral projections of fixed parts (wheels, hubs, door-handles, bumpers, etc.) are contained between these two planes, except the rear-view mirrors, side marker lamps, tyre pressure indicators, direction indicator lamps, position lights, customs seals, flexible mud-guards, door-edge guards, hinged side windows in the open position, fuel filler flaps in the open position, retractable steps, snow chains and the deflected part of the tyre walls immediately above the point of contact with the ground.

3.3
overlap
percentage of the test vehicle width covered by the barrier face

EXAMPLE Overlap = 75 %.

NOTE The overlap may be left or right. Figure 1 shows a left side overlap.



Key

- 1 barrier
- 2 test vehicle

$$\text{Overlap} = \frac{A}{W} \times 100$$

where

- A* is the test vehicle width covered by the barrier face
- W* is the test vehicle width

Figure 1 — Example of a left side overlap

3.4**passenger compartment**

space for occupant accommodation, bounded by the roof, floor, side walls, doors, outside glazing, bulkhead, and plane of the rear compartment bulkhead or plane of the rear-seat back support

4 Test facility and equipment**4.1 Impact test site**

The impact test site shall be a horizontal, smooth and hard surface which is of sufficient area for the test vehicle to reach the specified speed prior to impact and to come to rest after impact.

4.2 Barrier

The front face of the barrier consists of a deformable structure. The front face of the deformable structure is vertical $\pm 1^\circ$ and perpendicular to the line of travel $\pm 1^\circ$ when installed. The barrier face is secured to a mass of not less than (7×10^4) kg. This mass is anchored in the ground or placed on the ground with, if necessary, additional arresting devices to restrict its movement at impact to ± 2 mm.

4.3 Deformable barrier face characteristics**4.3.1 General**

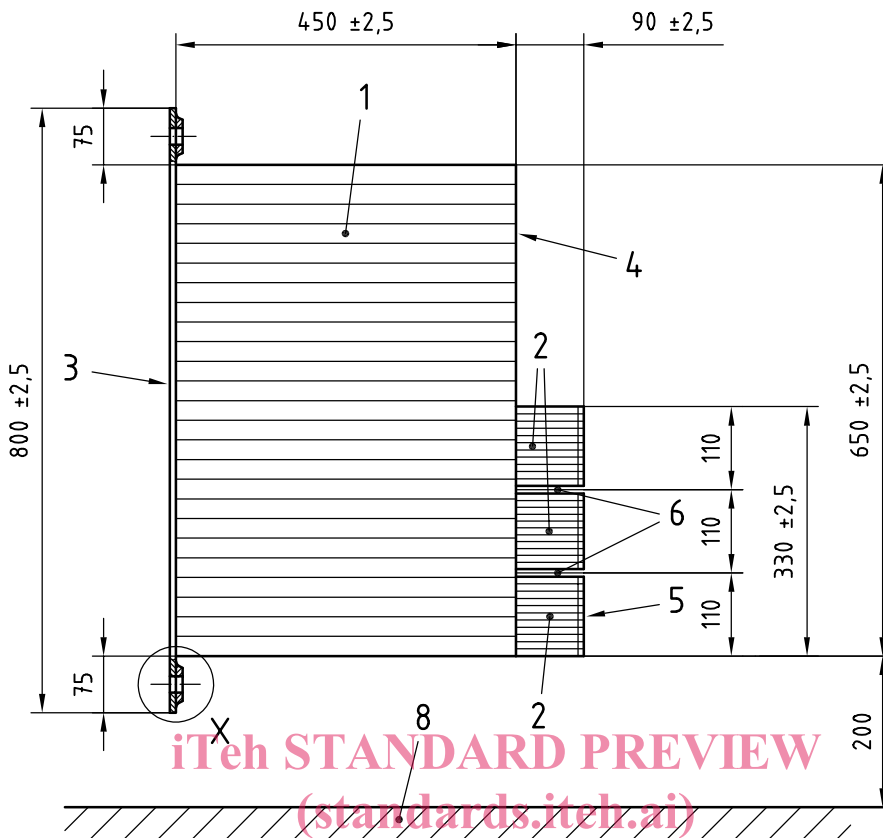
The dimensions and constituent materials of the deformable barrier face shall be in accordance with 4.3.2 to 4.3.6. See Figure 2.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

4.3.2 Main deformable block

	https://standards.iteh.ai/catalog/standards/sist/4c931113-0dde-44c4-ae19-05ca2ab421e5/iso-15828-2004
— Width	1 000 mm \pm 2,5 mm
— Height	650 mm \pm 2,5 mm
— Depth	450 mm \pm 2,5 mm
— Material	Aluminium 3003 ⁴⁾
1) Foil thickness	0,076 mm
2) Cell size	19,14 mm
3) Density	28,6 kg/m ³
— Crush strength	0,342 MPa $\begin{matrix} 0 \\ -10 \end{matrix}$ %

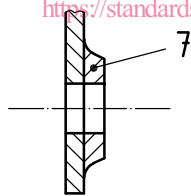
4) See ISO 209-1.



iTeh STANDARD PREVIEW
(standards.itech.ai)

ISO 15828:2004

<https://standards.itech.ai/catalog/standards/sist/4c931113-0dde-44c4-ae19-05ea2ab421e5/iso-15828-2004>



X (3:1)

Key

- 1 main deformable block ^a
- 2 bumper element ^b
- 3 backing sheet
- 4 cladding sheet
- 5 bumper facing sheet
- 6 slots in bumper
- 7 mounting flange
- 8 ground

^a Crush strength = 0,342 MPa ₋₁₀⁰ %

^b Crush strength = 1,711 MPa ₋₁₀⁰ %

Figure 2 — Deformable barrier for offset frontal impact testing

4.3.3 Bumper element

— Width	1 000 mm ± 2,5 mm
— Height	330 mm ± 2,5 mm
— Depth	90 mm ± 2,5 mm
— Material	Aluminium 3003 ⁵⁾
1) Foil thickness	0,076 mm
2) Cell size	6,4 mm
3) Density	82,6 kg/m ³
— Crush strength	1,711 MPa $\begin{matrix} 0 \\ -10 \end{matrix}$ %

4.3.4 Backing sheet

— Width	1 000 mm ± 2,5 mm
— Height	800 mm ± 2,5 mm
— Thickness	2,0 mm ± 0,1 mm
— Material	Aluminium 5251/5052 ⁵⁾

4.3.5 Cladding sheet

— Width	1 000 mm ± 2,5 mm
— Height	650 mm ± 2,5 mm
— Thickness	0,81 mm ± 0,07 mm
— Material	Aluminium 5251/5052 ⁵⁾

4.3.6 Bumper facing sheet

— Width	1 000 mm ± 2,5 mm
— Height	330 mm ± 2,5 mm
— Thickness	0,81 mm ± 0,07 mm
— Material	Aluminium 5251/5052 ⁵⁾

5) See ISO 209-1.