
**Road vehicles — Degrees of protection
(IP code) — Protection of electrical
equipment against foreign objects,
water and access**

*Véhicules routiers — Degrés de protection (codes IP) — Protection des
équipements électriques contre les corps étrangers, l'eau et les contacts*



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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.

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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 20653 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 3, *Electrical and electronic equipment*.

This second edition cancels and replaces the first edition (ISO 20653:2006), which has been technically revised.

Introduction

The IP codes used in this International Standard are in accordance with IEC 60529, except in the case of codes “K”, which describe special requirements for road vehicles that are not covered by IEC 60529.

Road vehicles — Degrees of protection (IP code) — Protection of electrical equipment against foreign objects, water and access

1 Scope

This International Standard applies to degrees of protection (IP code) provided by enclosures of the electrical equipment of road vehicles. It specifies the following:

- a) Designations and definitions of types and degrees of protection provided by enclosures of electrical equipment (IP codes) for the:
 - protection of electrical equipment within the enclosure against ingress of foreign objects, including dust (protection against foreign objects);
 - protection of persons against access to hazardous parts inside the enclosure (protection against access);
 - protection of electrical equipment inside the enclosure against effects due to ingress of water (protection against water).
- b) Requirements for each degree of protection.
- c) Tests to be carried out in order to confirm that the enclosure complies with requirements of the relevant degree of protection.

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 12103-1, *Road vehicles — Test dust for filter evaluation — Part 1: Arizona test dust*

IEC 60068-2-68, *Environmental testing — Part 2: Tests — Test L: Dust and sand*

3 Terms and definitions

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

3.1

enclosure

part providing protection of equipment against certain external influences and in any direction against access

3.2

degree of protection

protection provided by an enclosure against access, foreign objects and/or water and verified by standardized test methods