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**Electrically propelled mopeds and  
motorcycles — Safety requirements  
for conductive connection to an  
external electric power supply**

*Cyclomoteurs et motocycles à propulsion électrique — Exigences  
de sécurité relatives au couplage conductif à une station extérieure  
d'alimentation d'énergie*



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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.

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](http://www.iso.org/directives)).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

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

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 22, *Road vehicles*, Subcommittee SC 38, *Motorcycles and mopeds*.

If there is any lack of requirements especially for safety issues in this International Standard, the requirement in other relevant standards, such as ISO 17409, is adopted.

## Introduction

This International Standard prescribes basic safety requirements for electrically propelled mopeds and motorcycles, which are called electric vehicles, for simplicity, in this International Standard, while connected to an external electric power supply. The safety requirements for off-board chargers are described in IEC 60335-2-29 and will be described in the IEC 61851-3 series (under consideration).

This International Standard does not consider discharging from vehicle to grid.

This International standard does not standardize specific charging method.

Moped and motorcycle are defined in ISO 3833:1977, 3.4 and 3.5.

# Electrically propelled mopeds and motorcycles — Safety requirements for conductive connection to an external electric power supply

## 1 Scope

This International Standard specifies safety requirements for conductive connection to an external electric power supply of electrically propelled mopeds and motorcycles.

It is not applicable to vehicles not in normal conditions, such as damaged vehicles and vehicles which have mechanical and/or electrical failure.

It applies only to on-board charging systems between the plug or vehicle couplers and RESS circuits.

The safety requirements for vehicles not connected to external power supply are specified in ISO 13063.

NOTE This International Standard does not contain requirements for bidirectional power flow.

It does not provide comprehensive safety information for manufacturing, maintenance and repair personnel.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3864-1, *Graphical symbols — Safety colours and safety signs — Part 1: Design principles for safety signs and safety markings*

ISO 20653, *Road vehicles — Degrees of protection (IP code) — Protection of electrical equipment against foreign objects, water and access*

IEC 60664-1 Ed. 2.0:2007, *Insulation coordination for equipment within low-voltage systems — Part 1: Principles, requirements and tests*

IEC 60950-1 Ed. 2.0:2005, *Information technology equipment — Safety — Part 1: General requirements*

## 3 Terms and definitions

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

### 3.1

#### **basic insulation**

insulation of hazardous-live-parts which provides basic protection

Note 1 to entry: This concept does not apply to insulation used exclusively for functional purposes.

[SOURCE: IEC 195-06-06]