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Road vehicles — Injury risk curves for the THOR dummy

Véhicules routiers — Courbe de risques de blessures pour mannequin THOR

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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

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Foreword

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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).

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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 22, *Road vehicles*, Subcommittee SC 36, *Safety aspects and impact testing*.

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.

Introduction

The THOR-M 50 dummy is in its final development phase and can be used to evaluate the occupant protection in frontal impact. US-NCAP and Euro-NCAP are currently developing test procedures using this dummy to evaluate car performances. However, injury risk curves (IRCs) are proposed by these organizations without a large consensus. Rules were established to develop IRCs (ISO/TS 18506). These rules were applied to the available data to evaluate IRCs for THOR-M 50. In addition to the quality evaluation as recommended in ISO/TS 18506, considerations on the repeatability and reproducibility of the criteria, as well as their performance with regard to field investigations will be proposed.

Road vehicles — Injury risk curves for the THOR dummy

1 Scope

This document provides injury risk curves to assess occupant protection in frontal impact using the 50th percentile THOR metric dummy (THOR-M 50).

Injury risk curves developed specifically for the THOR dummy are chosen preferably, however, when not available, the applicability of the PMHS injury risk curve is evaluated with regard to the dummy biofidelity.

Finally, when possible, a field evaluation is provided.

2 Normative references

There are no normative references in this document.

3 Terms and definitions and abbreviated terms

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1 Terms and definitions

3.1.1
THOR-M 50
50th percentile metric dummy as defined in Reference [61]

3.1.2
injury criterion
physical parameter which correlates well with the severity of a specific injury or injuries of a body region under consideration

3.1.3
injury risk curve
IRC
curve giving the probability, for a defined population and for a given input, to sustain a specified severity of injury

3.1.4
injury risk function
IRF
mathematical function that relates a value of an *injury criterion* (3.1.2) and possible additional factors (variables) to a risk of sustaining an injury of a certain level

3.2 Abbreviated terms

AIS abbreviate injury score