INTERNATIONAL STANDARD

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Road vehicles — Collection of accident data for evaluation of occupant restraint performance

Véhicules routiers — Recueil de données des accidents pour évaluer les performances de retenue des occupants

Reference number
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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.

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 6546 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 12, *Passive safety crash protection systems*.

This first edition cancels and replaces the Technical Report ISO/TR 6546:1979, which has been technically revised.

Introduction

This International Standard was originally published as an ISO Technical Report in 1979 and specified information for the study of vehicle occupants wearing seat belts and included information on vehicle identification, pre-crash situation, vehicle damage, and accident reconstruction data (e.g. EES, Δv). Since then there has been a rapid development of more advanced occupant restraint features such as multi-stage airbags. Therefore, an update of ISO/TR 6546 was necessary to cover these restraint system features.

This revision includes:

— seat belt data elements from ISO/TR 6546:1979;

— data elements extracted from current and prior U.S Department of Transportation (DOT), National Highway Traffic Safety Administration (NHTSA) field accident data forms;

— data from the EU sponsored project STAIRS Version 8.1; and

— data elements from ISO 13218.

Data elements in this revision are grouped according to the Standardization of Accident and Injury Registration Systems (STAIRS) categorization scheme.

The data elements are not listed in priority order.

Road vehicles — Collection of accident data for evaluation of occupant restraint performance

1 Scope

This International Standard specifies information for the field collection of traffic accident data that is necessary or may assist in the evaluation of occupant restraint systems in passenger cars and trucks. The specific occupant restraints covered are seat belts, head restraints, knee protection, airbag systems and child restraint systems.

This International Standard does not cover an assessment of the structural performance of the vehicle for which items such as crush, intrusion, and structural architecture may be necessary.

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 6813, *Road vehicles — Collision classification — Terminology*

ISO 12353-1, *Road vehicles — Traffic accident analysis — Part 1: Vocabulary*

ISO 13216-1, *Road vehicles — Anchorages in vehicles and attachments to anchorages for child restraint systems — Part 1: Seat bight anchorages and attachments*

ISO 13218, *Road vehicles — Child restraint systems — Report form for accidents involving child passengers*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 6813, ISO 12353-1, ISO 13216-1, and ISO 13218 apply.

4 Vehicle data

Vehicle data shall be obtained for each case vehicle.

Beyond vehicle identification, pre-crash situation, crash configuration, vehicle damage/intrusion, collision partner, and impact severity data (e.g. EES, Δv), the following occupant restraint related data elements should be recorded:

a) total number of deployed airbags;

b) for each impact where an airbag deploys:

- crash event sequence number,
- CDC,
- longitudinal component of Δv,
- lateral component of Δv;

c) setting of manual airbag deactivation switch (if applicable);

d) type of automatic deactivation (if applicable):

- occupant detection system,
- child seat detection system,
- other _____;

e) airbag diagnostic or warning lights/messages (post-crash);

f) modifications or service performed on the airbag system or parts of the vehicle relevant to the operation of the airbag in this crash;

g) whether the vehicle has been involved in previous traffic crashes;

h) retrievable accident data (if available):

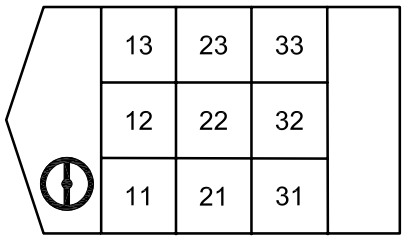
- acceleration pulse (total, X, Y and Z directions as available),
- change of velocity (total, X, Y and Z directions as available),
- belt buckle latch engagement,
- vehicle speed,
- pre-impact braking,
- pre-impact yawing and skidding,
- deployments in prior accidents,
- multiple event data,
- rollover event data,
- restraint deployment timing,
- restraint deployment level (one-stage, two-stage, etc., other),
- deactivation or suppression of deployable restraint(s),
- driver seat in forward track position status,
- occupant detection status,
- child seat detection/recognition status,
- other (as applicable) _____.

5 Restraint data by seating position

5.1 General

Beyond recording seat description (such as type, fabric), record the seat and restraint data elements in 5.2 to 5.8. Data is to be obtained for each seating position in vehicle.

For each set of seat and restraint data, also record the corresponding seating position code (according to Figure 1).



NOTE 1 Mirror image for right-hand drive.

NOTE 2 Seating matrix can be further expanded, if needed.

Figure 1 — Seating position codes

5.2 Seating

Factors to take into account for seating include the following:

a) determine whether or not the seat was occupied;

b) determine seat track adjusted position prior to impact (front, middle, back, exact);

c) if seat is a multi-way powered seat, describe position in each axis of movement.

5.3 Head restraint and seat evaluation

Factors to take into account for head restraint and seat evaluation include the following:

a) head restraint type (bolster, ladder, integral);

b) active head restraint equipped (activated);

c) other neck injury protection systems (activated);

d) head restraint vertical adjustment at impact (up, mid, down, or exact position);

e) distance from seat bight (lower front edge of the seat back) to top of head restraint;

f) head restraint horizontal adjustment at impact;

g) head restraint damage by occupant, other occupant, intrusion, interior loose item(s);

h) seat cushion angle relative to horizontal;

i) seat back angle relative to vertical (pre-impact and post-impact).