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Road vehicles — Traffic accident analysis —

Part 1:
Vocabulary

Véhicules routiers — Analyse des accidents de la circulation —

Partie 1:
Vocabulaire

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Contents

Page

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).

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).

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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 and impact testing*.

This second edition cancels and replaces the first edition (ISO 12353-1:2002), which has been technically revised.

The main changes compared to the previous edition are as follows:

— Revision of the following terms and/or definitions: 3.8, 3.13, 3.14, 4.1, 4.2.5, 4.2.20, 4.2.21, 4.2.21.1, 4.2.21.3, 4.2.21.3.1, 4.3.1, 4.3.7, 4.3.14.5, 4.3.16, 4.3.18, 4.3.22 (old deleted), 4.3.23, 5.1, 5.2, 5.5, 5.16, 5.18, 5.22.2, 5.26, 5.27, 5.28, 5.31, 5.34, and 5.40.1;

— Table A.1;

— Removal of A.3;

— Redrawn figures, and;

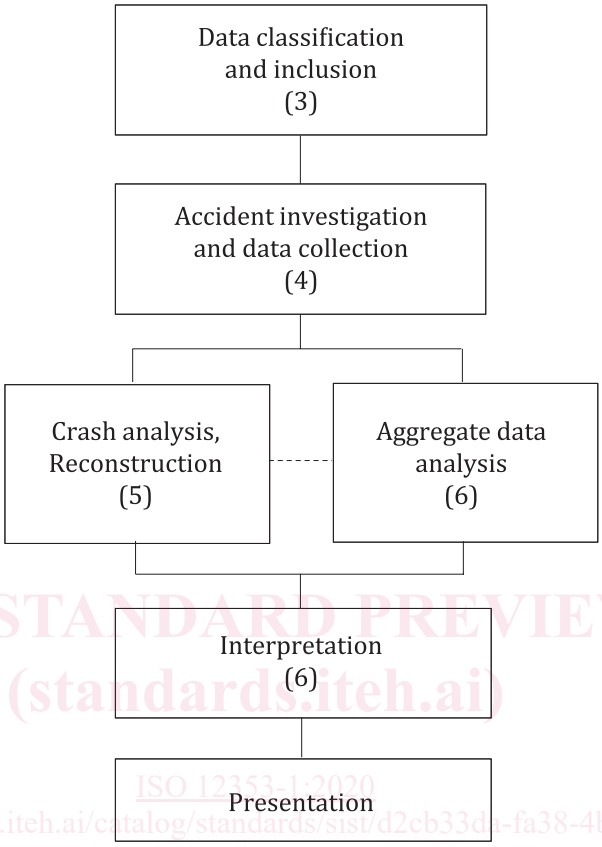
— Added references in Bibliography.

A list of all parts in the ISO 12353 series can be found on the ISO website.

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 various clauses of this document are based on a model of the accident analysis process as outlined in Figure 1.



NOTE The numbers in parentheses correspond to clauses in this document.

Figure 1 — Road traffic accident analysis

Road vehicles — Traffic accident analysis —

Part 1: Vocabulary

1 Scope

This document establishes a vocabulary relating to the investigation and analysis of road traffic accidents and to the application of accident data.

It also lists other, commonly used terms in the domain.

NOTE Additional terms and definitions, related to configuration aspects of road vehicle collisions, can be found in ISO 6813.

2 Normative references

There are no normative references in this document.

3 Terms related to classification and inclusion

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

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

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

3.1
road vehicle accident
unintended event that involves at least one *road vehicle* (4.3) in motion and leads to personal *injury* (4.4.6) or property damage, or both

3.2
accident classification
classification of *road vehicle accidents* (3.1) according to a predetermined classification system

Note 1 to entry: There is no common and universally useful classification of accident types. Several systems have proven useful in accident research and analysis, for example:

— accident classification by vehicle type,

— accident classification by injury *severity* (4.4.6.2),

— accident classification by damage severity,

— accident classification by number of vehicles,

— accident classification by *first harmful event* (5.26), and

— accident classification by location.

Attention is here drawn to some common terms used for accident classification.

Note 2 to entry: See 5.26 for definition of first harmful event.

3.3
injury accident
road vehicle accident (3.1) in which at least one *road user* (4.4) sustains an *injury* (4.4.6)

3.3.1
fatal accident
injury accident (3.3) in which at least one *road user* (4.4) sustains a fatal *injury* (4.4.6)

3.4
damage-only accident
property damage accident
road vehicle accident (3.1) in which the only outcome is damage to vehicles, or other property, with no *injury* (4.4.6)

3.5
on-road accident
road vehicle accident (3.1) in which the *first harmful event* (5.26) occurs on the road

3.6
off-road accident
road vehicle accident (3.1) in which the *first harmful event* (5.26) occurs off the road

3.7
towaway accident
road vehicle accident (3.1) in which at least one vehicle is removed from the scene for reasons of vehicle damage

3.8
single-vehicle accident
road vehicle accident (3.1) in which only one vehicle is involved

3.9
multi-vehicle accident
road vehicle accident (3.1) in which more than one vehicle is involved

3.10
accident-involved vehicle
vehicle involved in a *road vehicle accident* (3.1)

3.11
injury vehicle
accident-involved vehicle (3.10) in (or on) which at least one vehicle occupant sustains an *injury* (4.4.6)

3.11.1
fatal vehicle
injury vehicle (3.11) in (or on) which at least one vehicle occupant sustains a fatal *injury* (4.4.6)

3.12
non-injury vehicle
accident-involved vehicle (3.10) in (or on) which no vehicle occupant sustains an *injury* (4.4.6)

3.12.1
non-fatal vehicle
accident-involved vehicle (3.10) in (or on) which no vehicle occupant sustains a fatal *injury* (4.4.6)

3.13
damaged vehicle
vehicle involved sustaining damage

3.14
undamaged vehicle
vehicle involved not sustaining damage

3.1.15
towaway vehicle
vehicle involved in a *towaway accident* (3.7) and removed from the scene for reasons of vehicle damage

3.16
non-towaway vehicle
vehicle involved in a *towaway accident* (3.7) and not removed from the scene for reasons of vehicle damage

3.17
inclusion criteria
sampling criteria
principle of evaluation of scope and coverage of an *accident investigation* (4.1) referring to different aspects

Note 1 to entry: An aspect of an accident investigation could be a *road user* (4.4), vehicle, *injury* (4.4.6) or *fatality* (4.4.10.1), traffic environment or property damage.

3.18
sampling unit
combination of *inclusion criteria* (3.17) used for selection of data

EXAMPLE Injured passenger car *drivers* (4.4.1.2).

3.19
data source
origin of data in terms of time and type of investigation, type of institution or organization, and type of record

4 Terms related to accident-descriptive elements and data collection

4.1
accident investigation
acquisition and documentation of factual information regarding an accident

Note 1 to entry: An accident investigation can include on-scene elements, elements collected retrospectively, or both these.

4.1.1
first-level investigation
accident investigation (4.1) conducted by an investigator without specialized knowledge

4.1.2
in-depth investigation
accident investigation (4.1) conducted by an investigator with specialized knowledge

Note 1 to entry: An in-depth investigation covers one or more aspects of an accident in more detail than a first level investigation.

4.1.3
multidisciplinary investigation
accident investigation (4.1) conducted by a team of investigators with specialized knowledge encompassing several professional disciplines

4.1.4
self-reported investigation
accident investigation (4.1) based on data submitted by a person involved in an accident

4.1.5
on-scene investigation
accident investigation (4.1) conducted at the *accident scene* (4.2) with the purpose of collecting on-scene information before physical evidence (e.g. the vehicles involved) has been removed

4.2
accident scene
area of a traffic accident before the vehicles and people involved have left

4.2.1
accident site
geographic location of the *accident scene* (4.2)

Note 1 to entry: The accident site may be given as exact coordinates [see *point of impact* (5.23)] or in a less detailed way.

4.2.2
road category
trafficway category
subdivision of road, with respect to a predetermined set of parameters

Note 1 to entry: A road may be categorized by a description of the following parameters:

— main function (long distance, local, parking lot, etc.);

— size (width, number of lanes, etc.);

— separation level (vertical or horizontal);

— access restrictions (from adjacent areas);

— type of surface;

— design standard;

— *road user* (4.4) preferences or restrictions (allowed or prohibited traffic).

If this method is not applicable, a definition according to other relevant standards could be accepted, provided that the reference source is given. For more details, see Annex A.

4.2.3
roadside
area adjoining the outer edge of the road

Note 1 to entry: See Figure A.1.

4.2.4
median strip, US
central reservation, GB
median
dividing strip
area separating two roadways

Note 1 to entry: See Figure A.1.

4.2.5
traffic island
facility in an intersection, gore (see Table A.2), etc., designed to secure a safe and smooth passing of vehicles or to ensure the safe crossing of *pedestrians* (4.4.2)

4.2.6
bicycle way, GB
bikeway, US
part of a trafficway specifically designated as being open for pedal cycle travel

4.2.7
footpath, GB
pavement, GB
sidewalk, US
paved strip adjacent to the roadway intended for *pedestrian* (4.4.2) use

4.2.8
kerb, GB
curb, US
stone or concrete edging separating a road from a *pavement* (4.2.7) or a path

4.2.9
pedestrian crossing, GB
crosswalk, US
part of a road indicated for pedestrian crossing

4.2.10
road alignment
top view (plan view) of road geometry

4.2.11
road profile
longitudinal side view of road geometry

4.2.12
road cross-section
transverse view of road geometry

4.2.13
horizontal curve
curve in the horizontal plane

4.2.14
vertical curve
curve in the vertical plane

Note 1 to entry: A vertical curve can be either a hill or a valley.

4.2.15
road condition
status of maintenance and condition of a road surface

EXAMPLE Descriptions of maintenance: smooth, pitted, rough; descriptions of road surface: dry, wet, snowy, icy.

4.2.16
visibility conditions
conditions that may possibly affect visibility for the *driver* (4.4.1.2)

EXAMPLE Conditions that affect visibility are weather and light conditions, dirt on the windscreen, objects blocking the view, etc.

4.2.17
traffic control
systematic or concentrative control of the traffic flow

Note 1 to entry: The traffic control can be composed of traffic signals, traffic-control signs (including markings on the road), other traffic-control facilities (traffic-information warning device), median barriers, etc.

4.2.18
speed limit
maximum speed allowed on a road

4.2.19
roadside object
roadside furniture
roadside appurtenance
natural or manufactured object at the *roadside* (4.2.3)

EXAMPLE Crushable lattice light column (fixed, deformable roadside object); rigid pole with a break-away pole footing (non-fixed, non-deformable roadside object).

Note 1 to entry: A roadside object can be fixed, non-fixed, deformable or non-deformable.

4.2.20
rest position
position where a vehicle or a *road user* (4.4) comes to a final stop after a *road vehicle accident* (3.1)

4.2.21
trace mark
mark left at the *accident scene* (4.2) showing relative contact during the *road vehicle accident* (3.1)

Note 1 to entry: The term "imprint" is sometimes used as a synonym to "trace mark".

EXAMPLE Scrape mark, scratch mark, gouge mark.

4.2.21.1
transfer mark
trace mark (4.2.21) caused by parts by transferring material from a vehicle onto another surface

4.2.21.2
critical speed mark
trace mark (4.2.21) caused by a tire when the tire does not track parallel to the leading front tire in a turning manœuvre

Note 1 to entry: In a normal turn, the rear tire tracks inside and parallel to the leading front tire.

4.2.21.3
tire mark
tire friction mark
trace mark (4.2.21) caused by tire

EXAMPLE Scuffs, *skids* (5.34).

4.2.21.3.1
skid mark
tire mark (4.2.21.3) made by a wheel that is sliding without rotation

4.2.21.3.1.1
skip-skid mark
periodic non-continuous *skid mark* (4.2.21.3.1)

4.2.21.3.2
acceleration mark
tire mark (4.2.21.3) caused by an accelerating vehicle

4.2.21.3.3
yaw mark
tire mark (4.2.21.3) caused by a sideways slip while the vehicle undergoes a *yaw* (5.38)

4.2.21.3.4
scuff mark
tire mark (4.2.21.3) made by a tire that is both rotating and slipping on a road or other surface

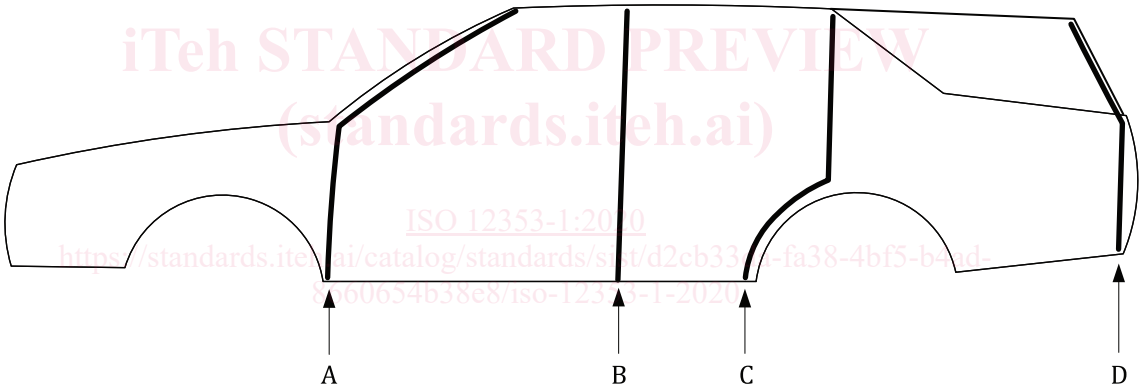
EXAMPLE Acceleration scuff, impact scuff, flat tire marks.

4.3
road vehicle
vehicle designed to operate on a road

4.3.1
pillar
reinforced vertical structure along the side of a passenger car designed to strengthen the occupant compartment

Note 1 to entry: The pillars are named A-pillar, B-pillar, C-pillar, etc. from the windscreen and backwards. See Figure 2.

Note 2 to entry: The term "post" is sometimes used instead of "pillar". SAE R-397 uses "post" for the lower part, below window height.



Letters refer to names of pillars, A–D.

Figure 2 — Designation of pillars

4.3.2
rocker panel
sill
reinforced structure that passes below the doors and *pillars* (4.3.1) along the length of the occupant compartment of a passenger car

4.3.3
roof side rail
reinforced structure along the top of the *pillars* (4.3.1) on the sides of a passenger car

4.3.4
upper beam, GB
header, US
reinforced structure above the windscreen (windshield) or the rear window of a passenger car

4.3.5
original equipment
equipment provided by the vehicle manufacturer

4.3.6
post-mounted equipment
equipment installed on a vehicle after production

4.3.6.1
aftermarket equipment
post-mounted equipment (4.3.6) unspecified by the manufacturer

4.3.7
primary vehicle safety
active safety
crash avoidance
vehicle system and features designated to avoid and reduce the occurrence of *road vehicle accidents* (3.1)

EXAMPLE Electronic stability control, autonomous emergency braking.

4.3.8
secondary vehicle safety
passive safety
crash protection
vehicle system and features designed to reduce the *injury* (4.4.6) consequences of a *road vehicle accident* (3.1)

EXAMPLE *Restraint systems* (4.3.9), high penetration-resistant windshields.

4.3.9
restraint system
system designed to protect a vehicle occupant in the event of a collision

4.3.9.1
active restraint
manual restraint
restraint system (4.3.9) that relies on the action of its user

4.3.9.2
passive restraint
automatic restraint
restraint system (4.3.9) that does not rely on the action of its user

EXAMPLE Airbag.

4.3.9.3
supplementary restraint
restraint intended for use in combination with another *restraint system* (4.3.9)

EXAMPLE An airbag in combination with a three-point belt.

4.3.10
exterior damage description
description of exterior damage according to agreed rules

Note 1 to entry: Generally, SAE J224 (CDC) or J1301 (TDC) should be used.

4.3.11
collision deformation classification
CDC
classification of the extent of a car or light truck contact deformation caused by a *road vehicle accident* (3.1)

Note 1 to entry: The collision deformation classification is presented as a structured combination of seven alphanumeric characters (see SAE J224).

4.3.12
truck deformation classification
TDC
classification of the extent of a heavy vehicle contact deformation caused by a *road vehicle accident* (3.1)

Note 1 to entry: The truck deformation classification is presented as a structured combination of seven alphanumeric characters (see SAE J1301).

4.3.13
wrap around distance
WAD
in a vehicle-pedestrian impact, shortest contour distance from the ground to the head impact against the vehicle, measured on the vehicle front structure

4.3.14
crush
deformation
distortion of a vehicle from its original dimensions

4.3.14.1
dynamic crush
maximum deformation during the *impact phase* (5.8), total of restitutional and *residual crush* (4.3.14.3)

4.3.14.2
maximum crush
greatest amount of (dynamic or residual) crush to which a vehicle is subjected, measured either at right angles to the vehicle surface or, sometimes, along the line of the principal direction of force

4.3.14.3
residual crush
crush (4.3.14) remaining when all parts of a vehicle have ceased moving, and after any restitution, following impact

4.3.14.4
elastic crush
restitutional crush
portion of *dynamic crush* (4.3.14.1) recovered after the collision force is removed

Note 1 to entry: This is equal to the *maximum crush* (4.3.14.2) less the *residual crush* (4.3.14.3).

4.3.14.5
bowing
bananaing
bending of a vehicle along a principal axis caused by a side impact

4.3.15
crush profile
series of measurements across the damaged area that describe the damage pattern

4.3.16
end shifting
amount of lateral movement of the front or rear end of a passenger car following an oblique impact or side impact

4.3.17
area of direct crush
area of direct impact
damaged area of a vehicle that has come into contact with the object that struck the vehicle

4.3.18
area of indirect crush
area of induced crush
damaged area which has not come into contact with the object that struck the vehicle

4.3.19
post-crash damage
all damage that occurred to a vehicle after it came to rest after an accident, as a result of human intervention

Note 1 to entry: This includes damage resulting from rescue, towing, and salvage operations.

4.3.20
mass at impact
total mass of a vehicle, including occupants and luggage, at the time of impact

4.3.20.1
effective mass at impact
mass at impact (4.3.20) minus that portion of the mass of unrestrained vehicle occupants and luggage not contributing to the *residual crush* (4.3.14.3)

4.3.21
interior damage description
description, preferably in words, of a vehicle interior *crush* (4.3.14)

EXAMPLE Deformation, displacement, separation, intrusion, penetration.

4.3.22
occupant compartment intrusion
reduction of space (dynamic or residual) of the occupant compartment caused by external influences

4.3.23
interior component displacement
relative change of *position* (4.4.5.1) of an interior component due to a *road vehicle accident* (3.1)

4.4
road user
person on the road

4.4.1
vehicle occupant
road user (4.4) in or on a vehicle

Note 1 to entry: *Vehicle rider* (4.4.1.1) is included in the concept of vehicle occupant.

4.4.1.1
vehicle rider
vehicle occupant riding on a vehicle

EXAMPLE Motorcyclist, moped rider, bicyclist.

4.4.1.2
driver
vehicle occupant in actual physical control of a vehicle, or who was in physical control before that control was lost

