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**Alkoholne zapore - Preskusne metode in zahtevane lastnosti - 2. del: Instrumenti z ustnikom, ki merijo alkohol v sapi, za splošno preventivno uporabo**

Alcohol interlocks - Test methods and performance requirements -- Part 2: Instruments having a mouthpiece and measuring breath alcohol for general preventive use

Alkohol-Interlocks - Prüfverfahren und Anforderungen an das Betriebsverhalten -- Teil 2: Geräte mit Mundstück zur Messung des Atemalkohols für den allgemein-präventiven Einsatz

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Alcootests électroniques anti-démarrage - Méthodes d'essai et exigences de performance -- Partie 2: Instruments munis d'une embouchure et effectuant la mesure du taux d'alcoolémie de l'air expiré, à usage préventif général

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EUROPEAN STANDARD

**EN 50436-2**

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**Alcohol interlocks -  
Test methods and performance requirements -  
Part 2: Instruments having a mouthpiece and measuring breath alcohol  
for general preventive use**

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Teil 2: Geräte mit Mundstück  
zur Messung des Atemalkohols  
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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

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# CENELEC

European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

**Central Secretariat: rue de Stassart 35, B - 1050 Brussels**

## Foreword

This European Standard was prepared by the CENELEC BTTF 116-2, Alcohol interlocks.

The text of the draft was submitted to the formal vote and was approved by CENELEC as EN 50436-2 on 2007-12-01.

The following dates were fixed:

- latest date by which the EN has to be implemented  
at national level by publication of an identical  
national standard or by endorsement (dop) 2008-12-01
- latest date by which the national standards conflicting  
with the EN have to be withdrawn (dow) 2010-12-01

The purpose of this European Standard is to specify essential performance requirements and to provide the respective test methods for presently available technologies. The technology of alcohol interlocks is rapidly evolving, and further innovations can be expected. These could be considered in future amendments or new parts of this European Standard.

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## Introduction

The main purpose of alcohol interlocks is to prevent persons with blood alcohol concentrations exceeding a set limit value from driving a vehicle. The general preventive use, being the object of this standard, is complementary to the use according to the standard EN 50436-1 directed towards programs for drink-driving offenders to enhance traffic safety. The general preventive use concerns a much larger number of drivers and vehicles. The primary target is to hinder a casually intoxicated person with temporarily impaired judgement from driving a vehicle. It applies both to professional and private drivers, and it applies to all vehicles in which careless driving could be hazardous.

Alcohol interlocks should not represent a significant impediment to the normal use of a vehicle.

The purpose of this European Standard is to specify essential performance requirements and to provide the respective test methods for presently available technologies. The technology of alcohol interlocks is rapidly evolving, and further innovations can be expected. These could be considered in future amendments or new parts of this European Standard.

Furthermore, it should be recognised that the purpose of alcohol interlocks may to some degree violate the privacy. There is thus good reason to apply a principle of caution when defining requirements and test methods for alcohol interlocks.

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## 1 Scope

This European Standard specifies test methods and performance requirements for breath alcohol controlled alcohol interlocks having a mouthpiece. It covers alcohol interlocks intended for general preventive use.

This European Standard is mainly directed to test laboratories and manufacturers for alcohol interlocks. It defines requirements and test procedures for type approval.

Several parameters (as for example alcohol concentration or breath volume) are specified in this European Standard for the purpose of type testing according to this standard only. However, it may be necessary according to national regulations or depending on user requests to set the values of the prescribed parameters differently for use of the alcohol interlocks.

This European Standard also applies to alcohol interlocks integrated into other systems of the vehicle.

This European Standard does not apply to

- alcohol interlocks intended to be used mainly in traffic safety programs for drink driving offenders (see EN 50436-1),
- instruments measuring the alcohol concentration in the ambient air in the vehicle,
- alcohol interlocks not having a mouthpiece.

## 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.

EN 60068-2-78:2001, *Environmental testing – Part 2-78: Tests – Test Cab: Damp heat, steady state (IEC 60068-2-78:2001)*

EN 60529:1991 + A1:2000, *Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989 + A1:1999)*

ISO 7637-2:2004, *Road vehicles – Electrical disturbances from conduction and coupling – Part 2: Electrical transient conduction along supply lines only*

ISO 7637-3:1995, *Road vehicles – Electrical disturbances by conduction and coupling – Part 3: Vehicles with nominal 12 V or 24 V supply voltage - Electrical transient transmission by capacitive and inductive coupling via lines other than supply lines*

ISO 16750-2:2006, *Road vehicles – Environmental conditions and testing for electrical and electronic equipment – Part 2: Electrical loads*

ISO 16750-3:2006, *Road vehicles – Environmental conditions and testing for electrical and electronic equipment – Part 3: Mechanical loads*

ISO 16750-4:2006, *Road vehicles – Environmental conditions and testing for electrical and electronic equipment – Part 4: Climatic loads*

Commission Directive 2004/104/EC of 14 October 2004 adapting to technical progress Council Directive 72/245/EEC relating to the radio interference (electromagnetic compatibility) of vehicles and amending Directive 70/156/EEC on the approximation of the laws of the Member States relating to the type-approval of motor vehicles and their trailers, Official Journal of the European Communities No. L 337 of 13.11.2004, p.13

International Recommendation OIML R 126:1998, *Evidential breath analyzers*. International Bureau of Legal Metrology, 11, rue Turgot – 75 009 Paris – France

### 3 Definitions

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

#### 3.1

##### **alcohol interlock**

device which provides in the blocking state an output signal which is intended for example to prevent the starting of a vehicle motor, and which can be brought into the unblocking state only after presenting and analysing a breath sample with an alcohol concentration below a limit value

NOTE 1 It normally consists of a handset and a control unit electrically connected to the vehicle.

NOTE 2 In this European Standard the expression “starting of the vehicle motor” includes alternatively the provision of an respective output signal.

[EN 50436-1, 3.1, modified]

#### 3.2

##### **breath alcohol concentration**

mass concentration of ethanol, given in mg/l (milligram ethanol per litre breath air), in a breath sample delivered into an alcohol interlock

[EN 50436-1, 3.2, modified]

#### 3.3

##### **breath sample**

breath air sample taken under forced expiration through the mouth

[EN 50436-1, 3.3, modified]

#### 3.4

##### **accepted breath sample**

breath sample fulfilling set requirements for volume, flow and exhalation time

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#### 3.5

##### **mouthpiece**

part connecting the mouth of the tested person and the alcohol interlock to assure hygienic conditions and to avoid that the breath sample is mixed with ambient air

#### 3.6

##### **blocking state**

state in which the alcohol interlock is inhibiting the start of the vehicle motor

[EN 50436-1, 3.4, modified]

#### 3.7

##### **unblocking state**

state in which the vehicle motor can be started

[EN 50436-1, 3.5, modified]

#### 3.8

##### **breath alcohol concentration limit**

predefined value of the breath alcohol concentration below which the vehicle motor may be started. A breath test result equal to or above this limit value will prevent the vehicle motor from being started

[EN 50436-1, 3.6, modified]

#### 3.9

##### **retest**

breath test after the vehicle motor has been started

[EN 50436-1, 3.7]



**3.10****start period**

time interval after an accepted breath sample has been delivered during which the vehicle motor may be started

[EN 50436-1, 3.8, modified]

**3.11****restart period**

time interval after the ignition is switched off during which the vehicle motor may be started again without the presentation of another breath sample

NOTE This restart period is intended to ensure the driver's ability to restart the vehicle motor after a stall situation.

[EN 50436-1, 3.9, modified]

**3.12****bypass**

starting the vehicle motor without providing a breath sample with an accepted breath test result below the concentration limit or without engaging the override function

[EN 50436-1, 3.10, modified]

**3.13****override**

method of unblocking the start of the vehicle motor without providing a breath sample with an accepted breath test result below the concentration limit

[EN 50436-1, 3.11, modified]

**3.14****tampering**

unauthorised change to or interference with the alcohol interlock or its installation in the vehicle or its functioning

[EN 50436-1, 3.12]

**3.15****data memory**

record of breath test results and other events with date and time stored in the internal memory of the alcohol interlock

**3.16****manufacturer**

person or organisation responsible for the design, construction and/or production of the alcohol interlock

**3.17****aftermarket installation**

any installation of an alcohol interlock in a vehicle after the original retail sale of a vehicle

**3.18****OEM aftermarket installation**

aftermarket installation of an alcohol interlock which is placed onto the market under the name of the vehicle manufacturer (OEM: original equipment manufacturer)

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## 4 General requirements

### 4.1 Blocking and unblocking

Unblocking shall be achieved after delivery of an accepted breath sample and its analysis with a breath alcohol concentration below a limit value.

The alcohol interlock shall be blocking without supplementary action from the driver after switching off the ignition of the vehicle motor and the following expiration of a restart period.

The restart period has to be at least 1 min.

### 4.2 Override function

An override function is permissible.

It shall be possible to enable or to disable the override function.

In case the alcohol interlock has an override function, the override function shall be activated. The use of the override function by the user shall be indicated.

### 4.3 Influence on the vehicle motor

The alcohol interlock shall not influence a running vehicle motor, even in the case of a missed or a failed retest.

### 4.4 Vehicle circuitry (applicable to alcohol interlocks for aftermarket installation only)

The electrical properties of the on-board circuitry of the vehicle (lead cross-sections, contact safety, etc.) shall not be adversely affected by the alcohol interlock installed according to the manufacturer's instructions.

### 4.5 Concentration limit

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The nominal breath-alcohol-concentration limit of the alcohol interlock shall be at least 0,09 mg/l.

### 4.6 Mouthpiece

The alcohol interlock shall have an exchangeable mouthpiece.

### 4.7 Data memory

A data memory in the alcohol interlock is optional.

Examples for events to be recorded are

- test results with a concentration value above the limit value,
- missing delivery of a breath sample during a retest,
- manipulation or circumvention attempts,
- overriding and bypassing,
- detachment and reattachment of handset,
- connections and disconnections of supply voltage.

If the alcohol interlock records one or several of these events, the correct recording with date and time shall be tested.

Data shall be stored in such a way, that it will not be lost due to unintended data corruption or low vehicle battery voltage.

NOTE There may be national regulations on data storage and evaluation.

#### 4.8 Readiness

The alcohol interlock shall provide a visual and/or audible indication when it is ready for a breath test. A breath test shall only be accepted after a ready indication.

#### 4.9 Tampering

The alcohol interlock shall be designed and built such that, when installed aftermarket in a vehicle, according to the manufacturer's instructions, it cannot be put out of service or be rendered ineffective or destroyed, without visible changes to the connection or the part of the alcohol interlock electrically connected to the vehicle or its installation.

The access to the data memory, to means for setting parameters and to adjustment possibilities shall be designed so as to deter unauthorised or inadvertent interference.

#### 4.10 Electromagnetic compatibility

The alcohol interlock shall fulfil the relevant legal technical requirements with regard to electromagnetic compatibility (EMC).

NOTE For the European Union the legal requirements are given in the European Directive 2004/104/EC.

#### 4.11 Electrical disturbances (not applicable to parts of the alcohol interlock integrated into other vehicle systems)

##### 4.11.1 Supply lines

The alcohol interlock shall be tested for the influence of electrical disturbances according to ISO 7637-2 with the following test conditions:

- test pulses 2a, 2b, 3a, 3b (functional status: class A) and test pulse 4 (functional status: class C),

- test level: IV. <https://standards.iteh.ai/catalog/standards/sist/6a0266c5-cfac-4b30-9bee-6eac37dccc5/sist-en-50436-2-2008>

##### 4.11.2 Lines other than supply lines

The alcohol interlock shall be tested for the influence of electrical disturbances according to ISO 7637-3 with the following test conditions:

- functional status: class A;
- test pulses: a, b;
- test level: IV.

#### 4.12 Type of protection

The following types of protection in accordance with EN 60529 shall be provided (see 8.3.5):

- IP40 for parts to be fitted in the passenger compartment, in the luggage compartment or in a compartment with a type of protection as stated below;
- IP42 for parts to be fitted in the passenger compartment of roadsters/convertibles and cars with moveable roof-panels if the installation location requires a higher degree of protection than IP40;
- IP54 for all other parts.

#### 4.13 Combination with other systems

The alcohol interlock may be a stand-alone instrument, may be combined with other vehicle systems or may be integrated into them (e.g. engine management or alarm systems).