

AS 3547.2:2023



STANDARDS
Australia



Breath alcohol electronic testing devices for personal use



AS 3547.2:2023

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- Association of Accredited Certification Bodies
- Australian Chamber of Commerce and Industry
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- Civil Aviation Safety Authority
- Consumers Federation of Australia
- National Association of Testing Authorities Australia
- National Measurement Institute
- NSW Police Force
- Royal College of Pathologists of Australasia
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- Workplace Drug Testing Association

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Breath alcohol electronic testing devices for personal use

Originated as part of AS 3547—1997.
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Preface

This Standard was prepared by Standards Australia Committee CS-077, to supersede in part AS 3547—1997, *Breath alcohol testing devices for personal use*.

The objective of this document is to specify requirements for the performance, testing and marking of breath alcohol testing devices for personal use devices.

The AS 3547 series of standards defines the minimum technical requirements, and test methods to establish compliance, for breath alcohol testing devices.

The series covers a number of different device types that may be used across a number of different applications. The standards that currently make up AS 3547 are as follows, along with the basic scope of each document:

(a) AS 3547.1, *Electronic breath alcohol testing devices for professional use*

This standard specifies requirements for the performance, testing and marking of breath alcohol testing devices for uses such as, but not limited to, personal, workplace and medical screening purposes.

It covers electronic portable devices for professional use, fixed installations, and units with basic interlock functions. This relates to type 2, 3 and 4 devices from AS 3547:1997.

The basic functions of an alcohol interlock are covered, with possibility of vehicle interlocks to be specifically covered under a future AS 3547.4. Other non-Australian standards currently exist in this field.

NOTE NMIR126 applies for evidential breath analysers, used specifically for legal evidential purposes.

(b) AS 3547.2, *Electronic breath alcohol testing devices for personal use* (this document)

This standard specifies requirements for the performance, testing and marking of breath alcohol testing devices intended for personal use.

It covers electronic portable devices for personal use. This also relates to a type 2 device from AS 3547:1997.

(c) AS 3547.3, *Single-use breath alcohol testing devices*

This standard specifies requirements for the performance, testing and marking of single-use, disposable breath alcohol testing devices.

Single-use disposable breathalysers are defined as qualitative devices as they are not capable of delivering and recording a quantitative or finite test result. They are personal screening devices which provide guidance to the breath alcohol concentration of a single breath sample against a pre-set indicative measure of BrAC. While adequate accuracy and reliability is ensured through AS 3547.3, they are appropriate for use in circumstances and environments covered by legislation where important personal decisions may be made by the user following assessment of a test result. Such circumstances may include, but are not limited to, road safety and workplace applications.

Table A.1 of AS 3547:1997 was based on a blood to breath ratio of 2300:1. However, to be compliant with Australian legal units of measurement defined in the National Measurement Regulations, measurement units of grams of alcohol in 210 l of breath (g/210 L) have been used in these standards. The term “informative” is used in Standards to define the application of the appendices to which it applies. An “informative” appendix is only for information and guidance.

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Introduction

The capabilities of electronic breath testing devices have advanced since the AS 3547:1997 document and consumers should be afforded the increased accuracy and reliability that modern devices can now provide. The devices should be able to perform in a manner that allows the user to make informed decisions. Therefore, this standard contains current performance and testing requirements of devices intended for personal use.

The committee was aware that recalibration of electronic breath testing devices at regular intervals is vital if accurate results are to be obtained. Provision of recalibration facilities to the general public at a reasonable price, should, in the opinion of the committee, be a prerequisite for the sale of electronic breath alcohol devices. Such a requirement could not be included in an Australian Standard product specification, and it is therefore only included as a recommendation for consideration by the consumer and by the suppliers of these devices. Informative sections on the periodic verification and calibration methods have been included as guidance.

The requirements for a passive testing device are not covered by this document, as there are large variants on what may be considered the measured sample and its relation to the subject's breath alcohol concentration. Devices which conform to this standard may also possess the function for passive testing; however the accuracy of this function is not assessed as part of this standard's testing.

NOTES

Australian Standard®

Breath alcohol electronic testing devices for personal use

Section 1 Scope and general

1.1 Scope

This Standard specifies requirements for the performance, testing and marking of breath alcohol testing devices intended for personal use.

It is applicable where electronic devices are intended primarily for personal use, where they will give a good indication to the user around intended actions. They offer the same reliability and accuracy as in AS 3547.1 but may not necessarily have a measurement range beyond 0.100 g/210 L, and may not have a separate changeable mouthpiece. They have not been tested for interfering substances which may potentially elevate the reading. These devices will require ongoing calibration.

Devices that meet AS 3547.1 would meet the requirements of this standard.

NOTE 1 [Section 4](#) and [Appendix A](#) and [Appendix B](#) cover recommended methods of calibration for these devices.

1.2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document.

NOTE Documents for informative purposes are listed in the Bibliography.

AS 60068.2.1, *Environmental testing, Part 2.1: Tests — Tests A: Cold*

AS 60068.2.2, *Environmental testing, Part 2.2: Tests — Tests B: Dry heat*

AS 60068.2.6, *Environmental testing, Part 2.6: Tests — Test Fc: Vibration (sinusoidal)*

AS 60068.2.32, *Environmental testing, Part 2.32: Tests — Test Ed: Free fall*

AS/NZS IEC 61000-4.2, *Electromagnetic compatibility (EMC), Part 4.2: Testing and measurement techniques — Electrostatic discharge immunity test*

AS/NZS IEC 61000-4.3, *Electromagnetic compatibility (EMC), Part 4.3: Testing and measurement techniques — Radiated, radio-frequency, electromagnetic field immunity test*

AS ISO 17034, *General requirements for the competence of reference material producers*

AS ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories*

1.3 Terms and definitions

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

1.3.1

adjustment of a measuring system

set of operations carried out on a measuring system so that it provides prescribed indications corresponding to given values of a quantity to be measured

Note 1 to entry: Types of adjustment of a measuring system include zero adjustment of a measuring system, offset adjustment, and span adjustment (also referred to as gain adjustment).

Note 2 to entry: Adjustment of a measuring system should not be confused with calibration, which is a prerequisite for adjustment.

Note 3 to entry: After an adjustment of a measuring system, the measuring system usually needs to be recalibrated.

[SOURCE: ISO/IEC Guide 99: 2007]

1.3.2 alcohol

unmodified term “alcohol” refers specifically to the chemical substance ethanol which, in the context of this document, may occur in either a liquid or gaseous form

Note 1 to entry: Ethanol is also referred to as ethyl alcohol.

1.3.3 breath alcohol testing device

device which measures the mass concentration of alcohol in an appropriate sample of expired air

1.3.4 calibration

operation that, under specified conditions, in a first step, establishes a relation between the quantity values with measurement uncertainties provided by measurement standards and corresponding indications with associated measurement uncertainties and, in a second step, uses this information to establish a relation for obtaining a measurement result from an indication

Note 1 to entry: Calibration should not be confused with adjustment of a measuring system, often mistakenly called “self-calibration”, nor with verification of calibration.

[SOURCE: ISO/IEC Guide 99: 2007]

1.3.5 corridor air

expired air from the upper part of the respiratory tract, as opposed to deep lung air

1.3.6 deep lung air

expired air from the lower part of the respiratory tract, including a proportion of alveolar air

1.3.7 masking capabilities

result is displayed as 0.000 or .000 below a nominated value

Note 1 to entry: This nominated value may be defined by the manufacturer or specified in agreement between the user and manufacturer.

1.3.8 may

indicates the existence of an option

1.3.9 measurement standard

realization of the definition of a given quantity, with stated quantity value and associated measurement uncertainty, used as a reference

[SOURCE: ISO/IEC Guide 99: 2007]

Note 1 to entry: For example, certified reference material providing quantity value with measurement uncertainty for the mass concentration of alcohol in water.

1.3.10**metrological traceability**

property of a measurement result whereby the result can be related to a reference through a documented unbroken chain of calibrations, each contributing to the measurement uncertainty

[SOURCE: ISO/IEC Guide 99: 2007]

1.3.11**recovery time**

time taken for a breath alcohol testing device to be ready to receive another sample of expired air after a result from one sample of expired air has been obtained

1.3.12**shall**

indicates that a statement is mandatory

1.3.13**should**

indicates a recommendation