BRITISH STANDARD

BS EN ISO
3822-2:1996

Acoustics — Laboratory tests on noise emission from appliances and equipment used in water supply installations —

Part 2: Mounting and operating conditions for draw-off taps and mixing valves

The European Standard EN 3822-2:1995 has the status of a British Standard

ICS 17.140.20

Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee EH/1, Acoustics, upon which the following bodies were represented:

Association of Consulting Engineers
British Broadcasting Corporation
British Occupational Hygiene Society
British Telecommunications plc
Department of the Environment (Building Research Establishment)
Department of Health
Department of Trade and Industry (National Physical Laboratory)
Health and Safety Executive
Institute of Acoustics
Institute of Occupational Hygienists
Institute of Sound and Vibration Research
Institution of Electrical Engineers
Royal Institute of British Architects
Society of Environmental Engineers

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

Access Flooring Association
Aggregate Concrete Block Association
Association of Building Component Manufacturers
Association of Building Engineers
Association of Manufacturers of Domestic Unvented Supply Systems Equipment
Autoclaved Aerated Concrete Products Association
Brick Development Association
British Bathroom Council
British Ceramic Research Ltd.
British Precast Concrete Federation Ltd.
Calcium Silicate Brick Association Ltd.
Concrete Block Association
Concrete Society
Gypsum Products Development Association
Heriot-Watt University
Hevac Association
Institute of Physics
Sound and Communications Industries' Federation
Suspended Ceilings Association

This British Standard, having been prepared under the direction of the Health and Environment Sector Board, was published under the authority of the Standards Board and comes into effect on 15 June 1996

The following BSI references relate to the work on this standard:
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Contents

National foreword

This British Standard has been prepared by Technical Committee EH/1 and is the English language version of EN ISO 3822-2:1995 *Acoustics — Laboratory tests on noise emission from appliances and equipment used in water supply installations — Part 2: Mounting and operating conditions for draw-off taps and mixing valves* published by the European Committee for Standardization (CEN). It supersedes BS 6864-2:1987, which is withdrawn. It is technically equivalent to ISO 3822-2:1995 *Acoustics — Laboratory tests on noise emission from appliances and equipment used in water supply installations — Part 2: Mounting and operating conditions for draw-off taps and mixing valves* published by the International Organization for Standardization (ISO), which supersedes the standard ISO 3822-2:1984.

Cross-references

Publication referred to	Corresponding British Standard
ISO 7-1:1994	BS 21:1985 *Specification for pipe threads for tubes and fittings where pressure-tight joints are made on the threads (metric dimensions)*
ISO 3822-1:1983	BS 6864 *Laboratory tests on noise emission from appliances and equipment intended for use in water supply installations* Part 1:1987 (1993) *Method for measurement*

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN ISO title page, pages 2 to 6, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 3822-2

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Descriptors: Acoustics, water supply, draw-off taps, tests, acoustic tests, determination, noise (sound)

English version

Acoustics — Laboratory tests on noise emission from appliances and equipment used in water supply installations — Part 2: Mounting and operating conditions for draw-off taps and mixing valves

(ISO 3822-2:1995)

Acoustique — Mesurage en laboratoire du bruit émis par les robinetterie et les équipements hydrauliques utilisés dans les installations de distribution d'eau —
Partie 2: Conditions de montage et de fonctionnement des robinets de puisage et des robinetteries
(ISO 3822-2:1995)

Prüfung des Geräuschverhaltens von Armaturen und Geräten der Wasserinstallation im Laboratorium —
Teil 2: Anschluß und Betriebsbedingungen für Auslaufarmaturen und für Mischbatterien
(ISO 3822-2:1995)

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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 CEN member.

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CEN

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

Central Secretariat: rue de Stassart 36, B-1050 Brussels

Foreword

The text of the International Standard ISO 3822-2:1995 has been prepared by Technical Committee CEN/TC 126, Acoustic properties of building components and of buildings, in collaboration with ISO/TC 43, Acoustics. It has been approved by CEN on 1994-11-28 as a European Standard.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by September 1995, and conflicting national standards shall be withdrawn at the latest by September 1995.

According to the CEN/CENELEC Internal Regulations, the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom.

0 Introduction

The method of measurement for laboratory tests on noise emission from appliances and equipment used in water supply installations is specified in EN ISO 3822-1.

This part of EN ISO 3822 gives detailed descriptions for mounting and operating draw-off taps and mixing valves in such laboratory tests. These taps and mixing valves are for use with cold and/or hot water in buildings (for sinks, wash-basins, baths, etc.) or next to buildings (for example for garden use). Draw-off taps and mixing valves are the most common kind of appliance used in water supply installations.

1 Scope

This part of EN ISO 3822 specifies the mounting and operating conditions to be used for draw-off taps and mixing valves when measuring noise emission resulting from water flow.

The procedures described are for general use for all types of draw-off taps and mixing valves of conventional design, with a recommended flow pressure range of 0,1 MPa to 0,5 MPa[1)].

The mounting and operating conditions apply to draw-off tap and mixing valve assemblies including any inlet or outlet mounting or installation unions, elbows, adaptors, etc., but excluding interchangeable outlet accessories such as aerators, shower hoses, shower heads, flow straighteners, etc. These outlet accessories are replaced by standardized low-noise flow resistances.

When the outlet accessories mentioned above are neither interchangeable nor removable, then the tests are carried out with them in place. Interchangeable outlet accessories are tested separately according to procedures specified in other parts of EN ISO 3822.

Thermostatic mixing valves, intended for use with more than one independent draw-off tap, and bidet valves with a direct outlet into an interior part of the body of the bidet are not regarded as conventional draw-off taps or mixing valves and are not covered by this part of EN ISO 3822. Similarly, electrically operated valves are regarded as combined devices (solenoid valve and outlet) and are not covered by this part of EN ISO 3822.

The test procedures cover a range of flow pressures between 0,1 MPa and 0,5 MPa.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

ISO 7-1, *Pipe threads where pressure-tight joints are made on the threads — Part 1: Designation, dimensions and tolerances.*

ISO 49, *Malleable cast iron fittings threaded to ISO 7-1.*

EN ISO 3822-1, *Acoustics — Laboratory tests on noise emission from appliances and equipment used in water supply installations — Part 1: Method of measurement.*

EN ISO 3822-4, *Acoustics — Laboratory tests on noise emission from appliances and equipment used in water supply installations — Part 4: Mounting and operating conditions for special appliances.*

3 Mounting

3.1 General

Draw-off taps and mixing valves shall be connected to the test pipe and positioned according to the normal position of the tap or mixing valve in use.

3.2 Fitting to the test pipe

The test pipe shall have an external thread R1 in accordance with ISO 7-1, and shall end with a galvanized union, taper seat 1, U11, in accordance with ISO 49.

3.3 Mounting of draw-off taps and mixing valves with screwed connections

Depending on whether the position of the connection is horizontal or vertical, draw-off taps and mixing valves with screwed connections shall be connected to the test pipe by means of a galvanized long sweep bend 1, G1 or G4, and/or a galvanized bushing N4, pattern I or II, in accordance with ISO 49. A galvanized socket, reducing M2, in accordance with ISO 49, may be connected to the union or to the bend.

[1)] 1 MPa = 10 bar

3.4 Mounting of draw-off taps and mixing valves fitted with pipe connections

Draw-off taps and mixing valves without screwed connections shall be mounted with couplings chosen such that rigid and watertight connections are assured. These couplings may be made either by soldering a nipple onto the pipe and using a cap nut or by means of a compression fitting. The coupling shall be made so that no air is trapped therein.

3.5 Mounting of mixing valves with two inlets

Mixing valves with two inlets shall be connected to the test pipe by means of a twin outlet (see EN ISO 3822-1), as specified in **3.3** and **3.4**.

4 Test procedure

4.1 General test conditions

4.1.1 *General*

Draw-off taps and mixing valves shall be tested by the method specified in EN ISO 3822-1.

4.1.2 *Water temperature*

Appliances, such as mixing valves, which are normally operated with both hot and cold water shall be tested with water at a temperature not exceeding 25 °C at both inlets.

4.1.3 *Outlets*

Appliances with more than one outlet (e.g. bath and shower appliances) shall be tested separately for each outlet. Appliances with provision for connecting interchangeable outlet accessories, such as aerators, shower hoses, shower heads, flow straighteners, etc., shall be tested with a low-noise flow resistance fitted in place of the accessory. This low-noise flow resistance shall comply with Annex A of EN ISO 3822-4:1985 and shall be connected by means of an adaptor, if necessary. This adaptor shall comply with Annex B of EN ISO 3822-4:1985.

4.1.4 *Discharge*

The water discharged from the appliance shall be disposed of quietly (see EN ISO 3822-1). The arrangement for disposing of the discharged water shall in no way influence the flow through the appliance.

4.1.5 *Flow adjusters*

NOTE In some types of draw-off taps and mixing valves, especially mixing taps with sequential control, devices known as flow adjusters may be incorporated in the appliance. These devices serve to adjust the pressure loss in the tap to adapt the appliance to its proper use.

When a flow adjuster is incorporated in an appliance to be tested, the manufacturer of the appliance shall provide information on the settings of the flow adjuster for operation at flow pressures of 0,3 MPa and 0,5 MPa.

At the setting advised for 0,3 MPa, the procedures specified in **4.2**, **4.3** or **4.4** shall be carried out at flow pressures of 0,3 MPa and 0,5 MPa. At the setting advised for 0,5 MPa, the same procedures shall be carried out at flow pressures of 0,1 MPa, 0,2 MPa, 0,3 MPa, 0,4 MPa and 0,5 MPa.

4.1.6 *Test pressures*

Except where flow adjusters are incorporated in the appliance as mentioned in **4.1.5**, the procedures specified in **4.2**, **4.3** or **4.4** shall be carried out at flow pressures of 0,3 MPa and 0,5 MPa.

4.2 Procedure for conventional draw-off taps with one inlet

4.2.1 Open the appliance fully. Adjust the water flow pressure to the selected value and keep it constant throughout the following steps.

4.2.2 Measure the water flow rate.

4.2.3 Determine the sound pressure level in the test room.

4.2.4 Slowly close the appliance to the fully closed position. Determine the maximum sound pressure level in the test room during this closing action and measure the water flow rate at which this maximum occurs.

4.3 Procedure for mixing valves with two inlets

4.3.1 *Procedure for mixing valves with similar independent controls for hot and cold water*

4.3.1.1 Carry out the procedure specified in **4.2** for each control separately.

4.3.1.2 Open both controls fully and then slowly close the hot control to locate a maximum sound pressure level. At this point, slowly close the cold control and locate a possible further maximum sound pressure level. Determine the greater of the two maximum sound pressure levels and measure the water flow rate at which this maximum occurs. Repeat the procedure, slowly closing the cold control first.

4.3.2 *Procedure for mixing valves with a dual-function control for flow and temperature, including thermostatic types*

NOTE These mixing valves have control functions for the flow rate and for the temperature (ratio of hot and cold water), but both functions are combined in a single control device such as a lever.

4.3.2.1 With the temperature setting in the extreme cold position, carry out the procedure specified in **4.2**.

4.3.2.2 With the temperature setting in the extreme hot position, carry out the procedure specified in **4.2**.

4.3.2.3 Vary the temperature control over its full range with the flow setting at maximum. Determine the maximum sound pressure level and measure the water flow rate at which this maximum occurs.

4.3.2.4 If the maximum sound pressure level is higher than those measured in **4.3.2.1** or **4.3.2.2**, proceed as specified in **4.2.4** at the intermediate temperature setting at which the maximum sound pressure level occurs.

4.3.3 *Procedure for mixing valves with independent controls for flow and temperature, including thermostatic types*

Mixing valves with independent controls for flow and temperature shall be tested as for valves with a dual function control (see **4.3.2**).

4.3.4 *Procedure for mixing valves with a single sequential control, including thermostatic types*

NOTE Mixing valves with a single sequential control are mixing valves in which a single control first opens the valve and then provides a progressively warmer flow. In some cases, the flow rate depends on the temperature setting.

4.3.4.1 Keeping the flow pressure constant, operate the control of the valve over the whole range from the extreme hot position to closed.

4.3.4.2 Determine the maximum sound pressure level and measure the water flow rate when this maximum occurs.

4.4 Procedure for special draw-off taps and mixing valves operated by remote or indirect controls

4.4.1 *Operating conditions*

Valves with automatic or indirect controls (e.g. those actuated by push button, proximity switch, etc.) shall be operated in accordance with the manufacturer's instructions.

4.4.2 *Procedure*

Operate the valve and measure the sound pressure level and the steady water flow rate. Ensure that the flow pressure stays constant and determine the maximum sound pressure level during closure. Valves having two inlets shall be tested using each inlet both separately and together.

5 Test report

The test report shall include the following information:

a) the information required by EN ISO 3822-1;

b) the mounting of the appliance tested;

c) the flow pressure and flow rates used, the outlet used and the sound pressure levels obtained;

d) a description of the tap or mixing valve tested, including the type, nominal size, manufacturer and manufacturer's number;

e) the number of the clauses of this part of EN ISO 3822 relevant to the appliance, in accordance with which the tests were carried out, together with descriptions of any peculiarities observed.

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List of references

See national foreword.

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