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EAST AFRICAN STANDARD

Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water — Part 3: High temperature tests

EAST AFRICAN COMMUNITY

First Edition 2010

Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in East Africa. It is envisaged that through harmonized standardization, trade barriers which are encountered when goods and services are exchanged within the Community will be removed.

In order to meet the above objectives, the EAC Partner States have enacted an East African Standardization, Quality Assurance, Metrology and Test Act, 2006 (EAC SQMT Act, 2006) to make provisions for ensuring standardization, quality assurance, metrology and testing of products produced or originating in a third country and traded in the Community in order to facilitate industrial development and trade as well as helping to protect the health and safety of society and the environment in the Community.

East African Standards are formulated in accordance with the procedures established by the East African Standards Committee. The East African Standards Committee is established under the provisions of Article 4 of the EAC SQMT Act, 2006. The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the private sectors and consumer organizations. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the procedures of the Community.

Article 15(1) of the EAC SQMT Act, 2006 provides that "Within six months of the declaration of an East African Standard, the Partner States shall adopt, without deviation from the approved text of the standard, the East African Standard as a national standard and withdraw any existing national standard with similar scope and purpose".

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

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Introduction

In the preparation of this East African Standard, the following source was consulted extensively:

BS 6920-3:2000, *Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water — Part 3: High temperature tests*

Assistance derived from this source and others inadvertently not mentioned is hereby acknowledged.

Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water —

Part 3: High temperature tests

ICS 13.060.20

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by Technical Committee EH/3, Water quality, to Subcommittee EH/3/7, Effects of materials on water quality, upon which the following bodies were represented:

Association of Manufacturers of Domestic Electrical Appliances
Automatic Vending Association of Britain
British Bathroom Council
British Cement Association
British Coatings Federation Ltd.
British Malleable Tube Fittings Association
British Non-Ferrous Metals Federation
British Plastics Federation
British Plumbing Fittings Manufacturers' Association
British Precast Concrete Federation Ltd.
British Rubber Manufacturers' Association
British Valve and Actuator Manufacturers' Association
British Water
Department of the Environment for Northern Ireland
The Drinking Water Inspectorate
Galvanizers Association
Laboratory of the Government Chemist
Lead Development Association
Pipeline Industries Guild
UK Steel Association
UK Water Byelaws Scheme
Water Research Centre
Water UK
Zinc Development Association

This British Standard, having been prepared under the direction of the Health and Environment Sector Committee, was published under the authority of the Standards Committee and comes into effect on 15 May 2000

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

Foreword

This part of BS 6920 has been prepared by Subcommittee EH/3/7 under the direction of the Health and Environment Sector Committee. This part of BS 6920 supersedes BS 6920-3:1990, which is withdrawn.

This edition introduces technical changes but it does not reflect a full review or revision of the standard.

BS 6920 is published in several parts, namely *Part 1: Specification*, *Part 2: Methods of test*, *Part 3: High temperature tests* and *Part 4: The GCMS identification of water leachable organic substances*. Part 2 is further subdivided into a number of sections and subsections as follows.

Section 2.1: Samples for testing;

Section 2.2: Odour and flavour of water;

Subsection 2.2.1: General method of test;

Subsection 2.2.2: Method of testing odours and flavours imparted to water by hoses and composite pipes and tubes;

Subsection 2.2.3: Method of testing odours and flavours imparted to water by hoses for conveying water for food and drink preparation;

Section 2.3: Appearance of water;

Section 2.4: Growth of aquatic microorganisms;

Section 2.5: The extraction of substances that may be of concern to public health;

Section 2.6: The extraction of metals.

Annex A is informative.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 and 2, an inside back cover and a back cover.

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Introduction

Non-metallic products used in contact with hot and boiling water can leach water soluble compounds not detectable in significant quantities when tested under the conditions of test described in BS 6920-2. Such products, if satisfactory in the tests described in part 2, can be tested by the methods described in this part of BS 6920 if they are intended for use in hot domestic water installations where the water in contact with the product will pass to a draw-off point and hence could be used for drinking or culinary purposes. Materials use in plastics kettles can also be assessed for suitability for drinking purposes using these tests.

NOTE It is recommended that no boiling water tests are undertaken on non-metallic products until these products have been shown to comply with the complete requirements of BS 6920, including an Odour and Flavour assessment undertaken at 85 °C.

1 Scope

This part of BS 6920 describes methods designed to assess the ability of a non-metallic product to affect hot and boiling water intended for human consumption by imparting a discernible odour or flavour, or any noticeable colour or turbidity. It is also applicable in assessing the leachability in hot or boiling water of metals from non-metallic products and the extraction from such products of substances that may be of concern to public health. It is not applicable to the test for growth of aquatic microorganisms (see BS 692-2.4). Products used exclusively in industrial or steam services are excluded.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of BS 6920. For dated references, subsequent amendments to or revisions of any of these publications do not apply. For undated references, the latest edition of the publication referred to applies.

BS 6920-1:2000, *Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water — Part 1: Specification.*

BS 6920-2.2.1, *Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water — Part 2: Methods of test — Section 2.2: Odour and flavour of water — Subsection 2.2.1: General method of test.*

BS 6920-2.2.2, *Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water — Part 2: Methods of test — Section 2.2: Odour and flavour of water — Subsection 2.2.2: Method of testing tastes imparted to water by hoses.*

BS 6920-2.2.3, *Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water — Part 2: Methods of test — Section 2.2: Odour and flavour of water — Subsection 2.2.3: Method of testing tastes imparted to water by hoses for conveying water for food and drink preparation.*

BS 6920-2.3, *Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water — Part 2: Methods of test — Section 2.3: Appearance of water.*

BS 6920-2.4, *Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water — Part 2: Methods of test — Section 2.4: Growth of aquatic microorganisms.*

BS 6920-2.5, *Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water — Par' 2: Methods of test — Section 2.5: The extraction of substances that may be of concern to public health.*

BS 6920-2.6, *Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water — Part 2: Methods of test — Section 2.6: The extraction of metals.*

3 Terms and definitions

For the purposes of this part of BS 6920, the definitions given in BS 6920-2.1 apply.

4 Principle

The product is immersed in test water at a temperature of between 30 °C and 85 °C in the manner set out in sections 2.2, 2.3, 2.5 and 2.6 of BS 6920. Additional testing in boiling water is carried out in a similar manner.

5 Apparatus

5.1 *Water bath or incubator,* capable of maintaining a test container at the extraction temperature ±2 °C (see **7.1**).

6 Samples

Samples shall comply with all the requirements of BS 6920-2.1:2000, **4.1**, and any of those that apply to the sample in BS 6920 Section 2.1:2000, **4.2**.

7 Test procedure

7.1 Hot water testing

7.2 Extraction temperature

Store the sample in the test water during the extraction procedures (see **7.2**) at the maximum water temperature for which the product is intended to be used (not lower than 30 °C) or 85 °C, whichever is the lower.

7.2.1 *Extraction procedure*

Undertake each extraction procedure in accordance with that given in sections 2.2, 2.3, 2.5 and 2.6 of BS 6920 in a water bath or incubator (**5.1**) maintained at the required temperature (see **7.1.1**).

7.2.2 *Testing*

Before undertaking the measurements given in sections 2.2, 2.3, 2.5 and 2.6 of BS 6920 as appropriate, allow each container plus test water and sample or reference container to cool to (25 ± 2) °C. Then carry out the tests on the extracts from each sample as given in those sections.

7.3 Boiling water testing

7.3.1 *Extraction procedure*

Place a sample with a total surface area of 15 000 mm^2 into a 1.5 l clean borosilicate beaker. Add test water to give a total volume of 1 l, place a borosilicate glass watch-glass over the top of the beaker and then heat the water and sample to boiling point. Boil the water for (5 ± 1) minutes.

Cool the sample and water to (25 ± 2) °C, add sufficient test water to bring the total volume of water plus sample back to 1 l and collect the extract for the appropriate assessment(s).

Into a second beaker place 1 l of test water and boil the water for (5 ± 1) minutes. Cool the water to (25 ± 2) °C and add sufficient test water to bring the total volume back to 1 l.

7.3.2 *Testing*

Carry out the tests on the extracts from each sample in accordance with BS 6920-2. Apply the appropriate criteria in accordance with BS 6920-1 to assess the results obtained.

NOTE Normally testing is limited to the "Odour and Flavour of Water Test", BS 6920-2.2.1.

If appropriate, on the basis of the result(s) on the first leachate, repeat the boiling periods, using the same test sample(s) and with fresh water on each occasion, for a maximum of seven 5 minute periods.

8 Expression of results

Express the results for each test on a sample in accordance with the appropriate section of BS 6920-2.

9 Test report

In addition to the requirements for the test report given in the appropriate section of BS 6920-2, include the temperature at which the test container plus sample and test water were maintained throughout the extraction period(s).

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