

SINGAPORE 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 2:2:1: Methods of test – Odour and flavour of
water – General method of test

Published by

Enterprise
Singapore

SS 375 : Part 2:2:1 : 2015
(ICS 13.060.20)

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ISBN 978-981-4557-87-0

This Singapore Standard was approved by the Chemical Standards Committee on behalf of the Singapore Standards Council on 11 June 2015.

First endorsement, 1994

First published, 2002

First revision, 2015

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Longus Consulting

PUB, the National Water Agency

Setsco Services Pte Ltd

Singapore Sanitary Ware Importer and Exporter Association

Singapore Water Association

Standard Chemical Corporation Pte Ltd

TUV SUD PSB Pte Ltd

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National Foreword

This Singapore Standard was prepared by the Working Group on Drinking Water appointed by the Technical Committee on Water under the direction of the Chemical Standards Committee.

This is a revision of SS 375 : Part 2:2:1 : 2001. It is an identical adoption of BS 6920-2.2.1: 2000 + A3: 2014 '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 flavor of water – Subsection 2.2.1: General method of test', and is implemented with the permission of BSI Standards Limited.

The following editorial changes were made:

<u>Clauses/Subclauses</u>	<u>Modification</u>
Clause 1 – NOTE 2; Bibliography – Other documents	<i>Deleted the reference to UK regulations</i> <i>Explanation: These regulations are not applicable to Singapore.</i>

Wherever appropriate, the words 'British Standard' have been replaced by 'Singapore Standard'. The references to BS 6920 series have been replaced by the following Singapore Standards:

BS 6920 Series	Corresponding Singapore Standard
BS 6920	SS 375
BS 6920-1: 2014	SS 375 : Part 1: 2015
BS 6920-2	SS 375 : Part 2
BS 6920-2.1: 2014	SS 375 : Part 2:1: 2015
BS 6920-2.2.1	SS 375 : Part 2:2:1
BS 6920-2.2.2	SS 375 : Part 2:2:2
BS 6920-2.2.3	SS 375 : Part 2:2:3
BS 6920-3	SS 375 : Part 3

Attention is drawn to the possibility that some of the elements of this Singapore Standard may be the subject of patent rights. Enterprise Singapore shall not be held responsible for identifying any or all of such patent rights.

NOTE

1. Singapore Standards (SSs) and Technical References (TRs) are reviewed periodically to keep abreast of technical changes, technological developments and industry practices. The changes are documented through the issue of either amendments or revisions.
2. An SS or TR is voluntary in nature except when it is made mandatory by a regulatory authority. It can also be cited in contracts making its application a business necessity. Users are advised to assess and determine whether the SS or TR is suitable for their intended use or purpose. If required, they should refer to the relevant professionals or experts for advice on the use of the document. Enterprise Singapore shall not be liable for any damages whether directly or indirectly suffered by anyone or any organisation as a result of the use of any SS or TR.
3. Compliance with a SS or TR does not exempt users from any legal obligations.

Foreword

Publishing information

This subsection of BS 6920 is published by BSI Standards Limited, under license from The British Standards Institution and came into effect on 15 May 2000. It was prepared by Technical Committee EH/6, *Effects of materials on water quality*.

Supersession

BS 6920-2.2.1:2000 + A3:2014 supersedes BS 6920-2.2.1:2000 + A2: 2008, which is withdrawn.

Relationship with other publications

BS 6920 is published in several parts, namely *Part 1: Specification*, *Part 2: Methods of test*, *Part 3: High temperature tests* and *Part 4: Method for 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 flavor of water;

Subsection 2.2.1: General method of test;

Subsection 2.2.2: Method of testing odours and flavours imparted to water by multi-layered hoses and pipes;

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 test;

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

Section 2.6: The extraction of metals.

Information about this document

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

Major changes have been introduced to improve the overall accuracy of the method (all testing undertaken by three test panelists), and clarification of the experimental details for undertaking hot water tests using chlorinated water. Reporting requirements have been refined (on the basis of experience) and a slight modification was made to the order of the extraction temperature and sequence to assist laboratories undertaking this test.

Hazard warnings

WARNING. This British Standard calls for the testing of extracts that might contain substances that could be injurious to the health of test panelists if adequate precautions are not taken. It is important that the guidance given in 10.1 is followed. This British Standard refers only to technical suitability and does not absolve the user from legal obligations relating to health and safety at any stage.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

Introduction

WARNING

Conduct this test with due regard to the possible presence of substances in the extracts that may be hazardous to the health of the test panellists. Only products deemed suitable for contact with water intended for human consumption in accordance with SS 375 : Part 1 : 2015, Clause 7 (toxicological test) may be assessed in this test, unless details of the chemical composition and process of manufacture of the sample(s) are known, and any possible hazard can be assessed.

Instruct the test panellists not to swallow any test extract under any circumstances.

Some materials are capable of leaching into water compounds which give rise to unacceptable odours and flavours at very low concentrations.

All odour and flavour assessment procedures are subjective and fall into two basic types as follows:

- a) those which involve the assessment of a water sample and the qualitative classification on the basis of the intensity and nature of any odour or flavour;
- b) those in which a semi-quantitative determination of odour and flavour intensity is made by a group of people who assess a series of dilutions of the sample.

The method described in this subsection of SS 375 involves a combination of both these procedures.

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 2:2:1: Methods of test – Odour and flavour of water – General method of test

1 Scope

This subsection of SS 375 describes a method designed to assess the ability of a product to impart a discernible odour and/or flavour to water intended for human consumption. The method is applicable for most types of non-metallic products used in contact with drinking water.

It is not applicable for testing the following product types:

- a) multilayered pipes and hoses in which the outer material differs from the inner (water contact) material, together with barrier pipes and reinforced flexible hoses (see SS 375 : Part 2:2:2);
- b) hoses (with or without reinforcement) for use in equipment used for food and drink (see SS 375 : Part 2:2:3).

NOTE 1 - Procedures for testing odours and flavours imparted to water by flexible hoses (with or without reinforcement) in their final form (i.e. before assembly) and flexible hoses (with or without reinforcement) intended for use in equipment used for food and drink preparation are given in SS 375 : Part 2:2:2 and SS 375 : Part 2:2:3 respectively.

NOTE 2 - The National Regulator may specify additional provisions in some cases and will assess the significance of the results obtained.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this section of SS 375. 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 5586-1: 1978, *Sensory analysis apparatus – Part 1: Specification for wine-tasting glass*.

SS 375 : Part 1 : 2015, *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*.

SS 375 : Part 2:1 : 2015, *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 2.1: Methods of test – Samples for testing*.

SS 375 : Part 3 : 2001 (2015), *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*.

BS EN ISO 3696: 1995, *Water for analytical laboratory use - Specification and test methods*.

BS EN ISO 7393: 2000 (BS 6068-2.26), *Water quality – Part 2: Physical, chemical and biochemical methods – Section 2.26, Method for determination of free chlorine and total chlorine: colorimetric method using N,N-diethyl-1,4 phenylenediamine, for routine control purposes*.