

SS 375:Part 2:2:2:2015(2024)+A1:2024
BS 6920-2.2.2:2000+A1:2014, IDT
(ICS 13.060.20)

SINGAPORE STANDARD

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

- Part 2:2:2: Methods of test – Odour and flavour of water
- Method of testing odours and flavours imparted to water by multi-layered hoses and pipes

Incorporating Amendment No. 1

Confirmed 2024

SS 375:Part 2:2:2:2015(2024)+A1:2024

BS 6920-2.2.2:2000+A1:2014, IDT

(ICS 13.060.20)

SINGAPORE STANDARD

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

– Part 2:2:2: Methods of test – Odour and flavour of water – Method of testing
odours and flavours imparted to water by multi-layered hoses and pipes

Published by Enterprise Singapore

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilised in any form or by any means, electronic or mechanical, including photocopying and microfilming, without permission in writing from Enterprise Singapore. Request for permission can be sent to: standards@enterprisesg.gov.sg.

© BSI 2014

© Enterprise Singapore 2024

ISBN 978-981-5237-07-8

Contents

	Page
National Foreword _____	3
Foreword _____	5
1 Scope _____	7
2 Normative references _____	7
3 Terms and definitions _____	7
4 Principle _____	8
5 Reagents _____	8
6 Apparatus _____	8
7 Samples _____	8
8 Test procedure _____	8
9 Expression of results _____	11
10 Test report _____	11
 Annex	
A Test sequence (informative) _____	12
 Figure	
A.1 Test sequence _____	12

National Foreword

This Singapore Standard was prepared by the Working Group on Water Quality set up by the Technical Committee on Water under the purview of the Environment and Resources Standards Committee.

This standard is a confirmation of SS 375: Part 2:2:2: 2015. It is an identical adoption of BS 6920-2.2.2:2000 + A1: 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 2.2.2: Method of testing odours and flavours imparted to water by multi-layered hoses and pipes”, published by the British Standards Institution. It incorporates Amendment No.1, denoted by A1 and A1.

The following editorial changes were made:

<u>Clauses/Subclauses</u>	<u>Modification</u>
Clause 1 – NOTE 2;	<i>Deleted the reference to UK regulations</i>
Bibliography	<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 6920-2.1: 2014	SS 375 : Part 2:1: 2015
BS 6920-2.2.1	SS 375 : Part 2:2:1
BS 6920-2.2.1: 2000 + A3: 2014	SS 375 : Part 2:2:1: 2015
BS 6920-2.2.2	SS 375 : Part 2:2:2
BS 6920-2.2.3	SS 375 : Part 2:2:3
BS 6920-2.3	SS 375 : Part 2:3
BS 6920-2.5	SS 375 : Part 2:5
BS 6920-2.6	SS 375 : Part 2:6
BS 6920-3	SS 375 : Part 3

A1 Replaced the following normative reference wherever it appears in the standard:

Normative reference	Replaced by
BS EN ISO 4788, Laboratory glassware – Graduated measuring cylinders	ISO 4788, Laboratory glassware – Graduated measuring cylinders

A1

NOTE 1 – Where appropriate, the words “British Standard” are read as “Singapore Standard”.

NOTE 2 – Reference to International/Overseas Standards are replaced by applicable Singapore Standards or Technical References.

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. Where SSs are deemed to be stable, i.e. no foreseeable changes in them, they will be classified as “mature standards”. Mature standards will not be subject to further review, unless there are requests to review such standards.*
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 and the Singapore Standards Council 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. Although care has been taken to draft this standard, users are also advised to ensure that they apply the information after due diligence.*
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 Subcommittee EH/3/7, *Effects of materials on water quality*. Amendment No. 1 was prepared by Technical Committee EH/6, *Effects of materials on water quality*.

Supersession

BS 6920-2.2.2:2000 + A1:2014 supersedes BS 6920-2.2.2:2000 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.

Annex A is informative.

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 8.1 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

Hoses and pipes are usually manufactured by extrusion and therefore are subject to different processing conditions from moulded products. It is especially important therefore that these products are tested in their final form.

Many of these products are designed for use at mains pressure; hoses are typically fabricated from the water-contact material, some form of reinforcement, e.g. polyamide or steel, and an outer covering which may be made of different material from the water-contact surface. In a similar way many pipes and tubes are composed of several layers; often the water-contact surface will differ from that used for the outside of the pipe.

In these products, the outer materials are not necessarily designed for use in contact with water intended for human consumption, and are not subject to the tests described in SS 375. Experience has shown, however, that odour and flavour-imparting substances can diffuse from these outer non-water contact materials of the product through the water-contact material and thus affect the odour and flavour of the water. Thus samples of these products have to be tested for their effect on the odour and flavour of water as complete hoses. The method described in SS 375 : Part 2:2:1 is not suitable for such products.

Hoses constructed from one material only (with or without any reinforcements) can be assessed for their ability to affect the odour and flavour of water using the method set out in in SS 375 : Part 2:2:1. A modified test procedure is given in SS 375 : Part 2:2:3 for use with hoses intended for conveying water for food and drink preparation purposes.

NOTE The method described in Clause 8 can also be used to prepare leachates from multi-layered hoses and pipes (including in-situ relined pipes) for the "Appearance of Water" test given in SS 375 : Part 2:3, the "Extraction of substances that may be of concern to public health" given in SS 375 : Part 2:5 and the "Extraction of Metals test" given in SS 375 : Part 2:6.

Suitability of non-metallic ^{A1} materials ^{A1} and products for use in contact with water intended for human consumption with regard to their effect on the quality of the water – Part 2:2:2: Methods of test – Odour and flavour of water – Method of testing odours and flavours imparted to water by multi-layered hoses and pipes

1 Scope

This subsection of SS 375 describes a method designed to assess the ability of multi-layered hoses (including reinforcements) and pipes to impart a discernible odour or flavour to water intended for human consumption.

NOTE 1 - A modified test for use with hoses intended for use in conveying water for food and drink preparation is described in SS 375 : Part 2:2:3.

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.

SS 375 : Part 1 : 2015, *Suitability of non-metallic ^{A1} materials ^{A1} and 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 ^{A1} materials ^{A1} and 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 2:2:1 : 2015, *Suitability of non-metallic ^{A1} materials ^{A1} and 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.*

SS 375 : Part 2:2:3 : 2015, *Suitability of non-metallic ^{A1} materials ^{A1} and products for use in contact with water intended for human consumption with regard to their effect on the quality of the water - Part 2:2:3: Methods of test - Odour and flavour of water – Method of testing odours and flavours imparted to water by hoses for conveying water for food and drink preparation*

^{A1} ISO 4788, *Laboratory glassware – Graduated measuring cylinders.* ^{A1}