

BS 669-1:2022



BSI Standards Publication

## **Flexible hoses, end fittings and sockets for gas burning appliances**

Part 1: Strip-wound metallic flexible hoses, covers, end fittings and sockets for domestic appliances burning 1st, 2nd and 3rd family gases — Specification

**Publishing and copyright information**

The BSI copyright notice displayed in this document indicates when the document was last issued.

© The British Standards Institution 2022

Published by BSI Standards Limited 2022

ISBN 978 0 539 14319 5

ICS 71.100.20

The following BSI references relate to the work on this document:

Committee reference GSE/42

Draft for comment 21/30422609 DC

**Amendments/corrigenda issued since publication**

Date

Text affected

---

# Contents

	Page
<b>Foreword</b>	<b>iii</b>
<b>Section 1: General</b>	<b>1</b>
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
<b>Section 2: Strip-wound flexible connections</b>	<b>4</b>
4 General	4
4.1 Size	4
4.2 Length	4
4.3 Flow rate test	4
<i>Table 1 — Flow rate through flexible connection assemblies</i>	4
4.4 Classification	4
5 Design and dimensions	4
5.1 Strip-wound flexible hose	4
<i>Table 2 — Dimensions of flexible hoses</i>	5
<i>Figure 1 — General view and section of a strip-wound flexible hose</i>	5
5.2 Cover performance	5
5.3 Soundness	6
5.4 Assembly markings	6
<i>Figure 2 — Acid test equipment</i>	7
6 Materials for strip-wound flexible hose	7
6.1 Steel strip	7
6.2 Sealing thread/rubber packing	7
6.3 Sealant	8
6.4 Cover materials	8
<i>Table 3 — Properties and methods of test for synthetic rubber covers</i>	8
7 Performance	9
7.1 Strength and heat resistance	9
<i>Table 4 — Test sequence schedule</i>	10
<i>Figure 3 — Flexibility test apparatus</i>	11
<i>Table 5 — Minimum performance test values</i>	12
<i>Figure 4 — Flexing test</i>	14
7.2 Reaction to fire	15
<i>Figure 5 — Testing rig for single burning item test</i>	15
<i>Figure 6 — Testing rig for test of direct impingement of flame</i>	16
<b>Section 3: Additional requirements for end fittings and sockets</b>	<b>17</b>
8 Design, construction and materials	17
8.1 Basic designs and dimensions	17
8.2 Construction	17
8.3 Materials	18
9 Selection of end fittings	18
10 Performance of end fitting assemblies	18
10.1 Soundness	18
10.2 Pull test	19
<i>Table 6 — Force and impact energy for pull test and impact test of end fitting assemblies</i>	19
<i>Figure 7 — Pull test</i>	20
10.3 Impact test	20
<i>Figure 8 — Impact test apparatus</i>	21

	<i>Figure 9 — Impact test on a typical end fitting</i>	22
10.4	Drop test	22
	<i>Figure 10 — Drop test</i>	23
10.5	Durability	23
	<b>Section 4: Marking</b>	<b>24</b>
11	Information to be marked on flexible connection assembly	24
12	Packaging	24
	<hr/> <b>Bibliography</b>	<hr/> <b>25</b>

### Summary of pages

This document comprises a front cover, an inside front cover, pages I to IV, pages 1 to 25, an inside back cover and a back cover.

---

# Foreword

## Publishing information

This part of BS 669 is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 31 January 2022. It was prepared by Technical Committee GSE/42, *Gas fittings and connections*. A list of organizations represented on this committee can be obtained on request to the committee manager.

## Supersession

This part of BS 669 supersedes [BS 669-1:1989](#), which is withdrawn.

## Relationship with other publications

BS 669 is published in the following parts:

- Part 1: *Strip-wound metallic flexible hoses, covers, end fittings and sockets for domestic appliances burning 1st, 2nd and 3rd family gases – Specification*; and
- Part 2: *Specification for corrugated metallic flexible hoses, covers, end fittings and sockets for catering appliances burning 1st, 2nd and 3rd family gases*.

## Information about this document

This is a full revision of the standard, and introduces the following principal changes:

- technical content revised and standards updated to current editions;
- classification of products based on reaction to fire added; and
- addition of 3rd family gases.

This publication can be withdrawn, revised, partially superseded or superseded. Information regarding the status of this publication can be found in the Standards Catalogue on the BSI website at [bsigroup.com/standards](https://bsigroup.com/standards), or by contacting the Customer Services team.

Where websites and webpages have been cited, they are provided for ease of reference and are correct at the time of publication. The location of a webpage or website, or its contents, cannot be guaranteed.

## Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is “shall”.

*Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.*

Where words have alternative spellings, the preferred spelling of the Shorter Oxford English Dictionary is used (e.g. “organization” rather than “organisation”).

## Contractual and legal considerations

This publication has been prepared in good faith, however no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by BSI in relation to the adequacy, accuracy, completeness or reasonableness of this publication. All and any such responsibility and liability is expressly disclaimed to the full extent permitted by the law.

This publication is provided as is, and is to be used at the recipient’s own risk.

The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

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

---

# Section 1: General

---

## 1 Scope

This part of BS 669 specifies requirements for strip-wound flexible hoses, and end fittings and sockets for use with domestic appliances (including cookers). It applies to hoses designed for use with 1st and 2nd family gases at a nominal inlet pressure not exceeding 20 mbar<sup>1)</sup> or for 1st, 2nd and 3rd family gases at a nominal inlet pressure not exceeding 50 mbar.

The requirements for strip-wound flexible hoses with end fittings attached are specified in [Section 2](#). [Section 3](#) specifies additional requirements for the end fittings and sockets.

*NOTE* Strip-wound flexible connection assemblies in accordance with this specification are not suitable for installations where the ambient air temperature exceeds 70 °C, nor where there is the possibility of contact with hot surfaces exceeding 95 °C.

---

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes provisions of this document<sup>2)</sup>. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

[BS 1179-6:1980](#), *Glossary of terms used in the gas industry – Part 6: Combustion and utilization including installation at consumers' premises*

[BS 1449-1.14:1991](#), *Steel plate, sheet and strip – Part 1: Carbon and carbon-manganese plate, sheet and strip – Section 1.14: Specification for hot rolled narrow strip supplied in a range of conditions for heat treatment and general engineering purposes*

[BS 2751](#), *General purpose acrylonitrile-butadiene rubber compounds – Specification*

[BS 4518](#), *Specification for metric dimensions of toroidal sealing rings ('O'-rings) and their housings*

BS EN 549, *Rubber materials for seals and diaphragms for gas appliances and gas equipment*

BS EN 751-2, *Sealing materials for metallic threaded joints in contact with 1st, 2nd and 3rd family gases and hot water – Part 2: Non-hardening jointing compounds*

BS EN 1775:2007, *Gas supply – Gas pipework for buildings – Maximum operating pressure less than or equal to 5 bar – Functional recommendations*

BS EN 10226 (all parts), *Pipe threads where pressure tight joints are made on the threads*

BS EN 10346, *Continuously hot-dip coated steel flat products for cold forming – Technical delivery conditions*

[BS EN 12164:2016](#), *Copper and copper alloys – Rod for free machining purposes*

[BS EN 12165:2016](#), *Copper and copper alloys – Wrought and unwrought forging stock*

[BS EN 13501-1:2018](#), *Fire classification of construction products and building elements – Part 1: Classification using data from reaction to fire tests*

BS EN 13823, *Reaction to fire tests for building products – Building products excluding floorings exposed to the thermal attack by a single burning item*

---

<sup>1)</sup> 1 mbar = 100 N/m<sup>2</sup> = 100 Pa.

<sup>2)</sup> Documents that are referred to solely in an informative manner are listed in the Bibliography.