

Specification for

# Copper-tin-phosphorous alloy rods and sections

# Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Aerospace Standards Policy Committee (ACE/-) to Technical Committee ACE/16, upon which the following bodies were represented:

British Non-ferrous Metals Federation  
Copper Development Association  
Ministry of Defence  
Society of British Aerospace Companies Ltd.

This British Standard, having been prepared under the direction of the Aerospace Standards Policy Committee, was published under the authority of the Standards Board and comes into effect on 31 October 1991

© BSI 01-2000

The following BSI references relate to the work on this standard:  
Committee reference ACE/16  
Draft for comment 90/73965 DC

ISBN 0 580 19994 0

## Amendments issued since publication

Amd. No.	Date	Comments

---

# Contents

	Page
Committees responsible	Inside front cover
Foreword	ii
<hr/>	
1 Scope	1
2 References	1
3 Technical requirements	1
<hr/>	
Table 1 — Technical requirements for phosphor bronze rods and sections	2
<hr/>	

## Foreword

This British Standard has been prepared under the direction of the Aerospace Standards Policy Committee and is a conversion and revision of MoD (PE) Specification DTD 265A, which it supersedes.

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.

**Compliance with a British Standard does not of itself confer immunity from legal obligations.**

### Summary of pages

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

## 1 Scope

This British Standard specifies the inspection and testing procedure, chemical composition, heat treatment and mechanical properties for a copper-tin-phosphorous alloy supplied in the form of rods (including hollow rods) and sections.

## 2 References

This standard makes reference to the following standards publications:

BS B 100, *Procedure for inspection, testing and acceptance of wrought copper alloys*<sup>1)</sup>.

BS 2874, *Specification for copper and copper alloy rods and sections (other than forging stock)*.

BS 5555, *Specification for SI units and recommendations for the use of their multiples and of certain other units*.

BS 5775, *Specification for quantities, units and symbols — Part 0 General principles*.

BS EN 2500, *Instructions for the drafting and use of metallic material standards — Part 1 General requirements*<sup>1)</sup>.

## 3 Technical requirements

**3.1** Material to this standard shall comply with the technical requirements specified in Table 1. All material supplied shall comply with the requirements appropriate to its dimensions and condition as specified in the standards given in line 5 of Table 1.

**3.2** Symbols and units in Table 1 shall be interpreted in accordance with BS 5555, BS 5775-0 or BS EN 2500-1.

---

<sup>1)</sup> In preparation.

Table 1 — Technical requirements for phosphor bronze rods and sections

1	Material designation		CuSn8							
2	Chemical composition %	Element	Sn	P	Pb	Fe	Ni	Zn	Total impurities	Cu
		min.	7.5	0.1	—	—	—	—	—	Base
		max.	9.0	0.4	0.05	0.1	0.3	0.30	0.3(1)	
3	Method of melting		—							
4	Form Method of production Limit dimensions (mm)		Rods, and sections Rolled, extruded or drawn $6 \leq (a \text{ or } D) \leq 80$							
5	5.1 Technical specification		Sections 1 and 2 of BS B 100							
	5.2 Dimensional standard		BS 2874(2)							
6	6.1 Delivery condition and heat treatment		As manufactured —							
	6.2 Delivery condition code		—							
7	Use condition and heat treatment		Delivery condition —							
Characteristics										
8	Sampling Test piece Heat treatment		Delivery condition							
9	Dimensions concerned		mm	$6 \leq (a \text{ or } D) \leq 18$			$18 < (a \text{ or } D) \leq 40$		$40 < (a \text{ or } D) \leq 80$	
10	Thickness of cladding on each face		%	—						
11	Direction of sample		L			L		L		
12	Tensile	Temperature	$\theta$	°C	Ambient temperature					
13		Proof stress	$R_{p0.2}$	MPa	$\geq 400$			$\geq 360$		$\geq 300$
14		Strength	$R_m$	MPa	$\geq 550$			$\geq 500$		$\geq 450$
15		Elongation	$A$	%	$\geq 15$			$\geq 18$		$\geq 20$
16		Reduction of area	$Z$	%	—					
17	Hardness		HV $\geq 127$ (HB $\geq 120$ )							
18	Shear strength		$R_C$	MPa	—					
19	Bending		$k$		—					
20	Impact strength		—							
21	Creep	Temperature	$\theta$	°C	—					
22		Time		h	—					
23		Stress	$\sigma_a$	MPa	—					
24		Elongation	$a$	%	—					
25		Rupture stress	$\sigma_R$	MPa	—					
26		Elongation at rupture	$A$	%	—					
98	Notes		(1) Total impurities include Pb, Fe, Ni and Sn. (2) Material group III tolerances shall apply. For round rod, normal tolerances shall apply unless close tolerances are specified on the order. NOTE The dimensional tolerances for rods larger than the size ranges given in BS 2874 should be agreed between the supplier and the purchaser.							



---

---

# BSI — British Standards Institution

BSI is the independent national body responsible for preparing British Standards. It presents the UK view on standards in Europe and at the international level. It is incorporated by Royal Charter.

## Revisions

British Standards are updated by amendment or revision. Users of British Standards should make sure that they possess the latest amendments or editions.

It is the constant aim of BSI to improve the quality of our products and services. We would be grateful if anyone finding an inaccuracy or ambiguity while using this British Standard would inform the Secretary of the technical committee responsible, the identity of which can be found on the inside front cover.  
Tel: 020 8996 9000. Fax: 020 8996 7400.

BSI offers members an individual updating service called PLUS which ensures that subscribers automatically receive the latest editions of standards.

## Buying standards

Orders for all BSI, international and foreign standards publications should be addressed to Customer Services. Tel: 020 8996 9001. Fax: 020 8996 7001.

In response to orders for international standards, it is BSI policy to supply the BSI implementation of those that have been published as British Standards, unless otherwise requested.

## Information on standards

BSI provides a wide range of information on national, European and international standards through its Library and its Technical Help to Exporters Service. Various BSI electronic information services are also available which give details on all its products and services. Contact the Information Centre.  
Tel: 020 8996 7111. Fax: 020 8996 7048.

Subscribing members of BSI are kept up to date with standards developments and receive substantial discounts on the purchase price of standards. For details of these and other benefits contact Membership Administration.  
Tel: 020 8996 7002. Fax: 020 8996 7001.

## Copyright

Copyright subsists in all BSI publications. BSI also holds the copyright, in the UK, of the publications of the international standardization bodies. Except as permitted under the Copyright, Designs and Patents Act 1988 no extract may be reproduced, stored in a retrieval system or transmitted in any form or by any means – electronic, photocopying, recording or otherwise – without prior written permission from BSI.

This does not preclude the free use, in the course of implementing the standard, of necessary details such as symbols, and size, type or grade designations. If these details are to be used for any other purpose than implementation then the prior written permission of BSI must be obtained.

If permission is granted, the terms may include royalty payments or a licensing agreement. Details and advice can be obtained from the Copyright Manager.  
Tel: 020 8996 7070.