



DPC: 24/30483356 DC

BSI Group Headquarters

389 Chiswick High Road London W4 4AL

Tel: +44 (0)20 8996 9000

Fax: +44 (0)20 8996 7400

www.bsigroup.com

Date: 26 July 2024

Origin: European

Latest date for receipt of comments: 17 September 2024

Project No. 2023/02805

Responsible committee: ACE/6 Aerospace avionic electrical and fibre optic technology

Interested committees:

Title: BS EN 6059-502 Aerospace series - Electrical cables, installation Protection sleeves - Test methods

Part 502: Resistance to electrical arcs

Please notify the secretary if you are aware of any keywords that might assist in classifying or identifying the standard or if the content of this standard

- i) has any issues related to 3rd party IPR, patent or copyright
- ii) affects other national standard(s)
- iii) requires additional national guidance or information

**WARNING: THIS IS A DRAFT AND MUST NOT BE REGARDED OR USED AS A BRITISH STANDARD.
THIS DRAFT IS NOT CURRENT BEYOND 17 September 2024**

This draft is issued to allow comments from interested parties; all comments will be given consideration prior to publication. No acknowledgement will normally be sent. **See overleaf for information on the submission of comments.**

No copying is allowed, in any form, without prior written permission from BSI except as permitted under the Copyright, Designs and Patent Act 1988 or for circulation within a nominating organization for briefing purposes. Electronic circulation is limited to dissemination by e-mail within such an organization by committee members.

Further copies of this draft may be purchased from BSI Shop <http://shop.bsigroup.com> or from BSI Customer Services, Tel: +44(0) 20 8996 9001 or email cservices@bsigroup.com. British, International and foreign standards are also available from BSI Customer Services.

Information on the co-operating organizations represented on the committees referenced above may be obtained from <http://standardsdevelopment.bsigroup.com>

Responsible Committee Secretary: **Committee Service Centre (BSI)**
Direct tel: **020 8996 7009**
E-mail: csc@bsigroup.com

AVA Documents
Document Sharing Hub

Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

For national standards, comments will be reviewed by the relevant UK national committee and the resulting standards published as a British Standard.

UK Vote

Please indicate whether you consider the UK should submit a negative (with supporting technical reasons) or positive vote on this draft. Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

Submission of Comments

- **Annotated drafts are not acceptable and will be rejected.**
- All comments should be submitted online at <https://standardsdevelopment.bsigroup.com/>. You will need to register in order to comment.

Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
------------------	------------------------

1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/Figure/ Table/Note	Type of comment	Commend (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	

English Version

Aerospace series - Electrical cables, installation -
Protection sleeves - Test methods - Part 502: Resistance to
electrical arcs

Série aérospatiale - Câbles électriques, installation -
Gaines de protection - Méthodes d'essais - Partie 502 :
Résistance aux arcs électriques

Luft- und Raumfahrt - Elektrische Leitungen,
Installation - Schutzschläuche - Prüfverfahren - Teil
502: Lichtbogenfestigkeit

This draft European Standard is submitted to CEN members for second enquiry. It has been drawn up by the Technical Committee ASD-STAN.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

This draft European Standard was established by CEN in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and United Kingdom.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents	Page
European foreword	3
1 Scope.....	4
2 Normative references.....	4
3 Terms and definitions	4
4 Specimen requirements	4
5 Definition and preparation of specimen	5
5.1 Test configuration	5
Figure 1 — Test configuration.....	5
5.2 Protected victim bundle	5
Figure 2 — Protected cable bundle configuration with overlap sleeve	6
Figure 3 — Cable Specimen configuration	7
5.3 Aggressive bundle (bundle un-protected).....	7
Figure 4 — Aggressive cable bundle configuration	8
6 Apparatus	8
6.1 Electrical equipment.....	8
6.2 Test configurations (case of a three-phase 115V _{AC} network)	8
Table 1 — Prospective fault currents	9
Figure 5 — Test schematic circuit.....	10
6.3 Test equipment.....	10
6.4 Test protocol.....	10
6.5 Test rig set-up	11
6.6 Description of the Expected Measurements.....	11
7 Method	11
7.1 Test procedure.....	11
7.2 Short circuit pass/fail criteria.....	12
7.3 Examination	13
7.4 Test report.....	13
8 Requirements.....	14
Bibliography	15

European foreword

This document (prEN 6059-502:2024) has been prepared by the Aerospace and Defence Industries Association of Europe — Standardization (ASD-STAN).

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 6059-502:2014.

The main changes compared to the previous edition are as follows:

- update of test method to eliminate the 230 VAC electrical arc, retain only the 115 VAC element and to ensure integrity of adjacent target harness cable after short circuit test;
- update of Clause 2 “Normative references”;
- addition of Clause 3 “Terms and definitions”.

1 Scope

This document specifies a method of assessing the behaviour of protection sleeves or conduits subject to an external electric arc at 115 Vac, 400 Hz.

This document is used in conjunction with EN 6059-100.

The primary aim of this test is to produce, in a controlled fashion, electric arcs at the immediate vicinity of a protection sleeve or conduit and to examine possible consequences on the surrounding external cables bundle which are adjacent from this protection, and are supposed to be maintained in a safe condition. These electric arcs are representative of those, which may occur in service when a typical cable bundle is severely damaged.

In order to optimize thickness and mass of such protection, it is necessary to associate a nominal current limit I_n to each sleeves or conduits construction.

Two levels of prospective fault current are specified for all protection sizes.

2 Normative references

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

EN 2350, *Aerospace series - Circuit breakers - Technical specification*¹

EN 3475-302, *Aerospace series - Cable, electrical, aircraft use - Test methods - Part 302: Voltage proof test*

EN 6059-501, *Aerospace series - Electrical cables, installation - Protection sleeves - Test methods - Part 501: Voltage proof test*

A-A-52083,¹ *Specification for tape lacing and tying*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp/>
- IEC Electropedia: available at <https://www.electropedia.org/>

4 Specimen requirements

Protection sleeves or conduits to be tested shall be of traceable origin and, unless otherwise specified, shall have passed the voltage proof test (EN 6059-501) as defined in the concerned product standard.

Unless otherwise specified in the concerned technical product standard, at least one size of protection sleeve per sleeve thickness or construction type (if different from one size to another) shall be assessed.

If possible for each thickness or construction type, the test shall be performed on a sample having the minimum authorized thickness or minimum authorized mass.

¹ Published by Customer Service, Defense Printing Service Detachment Office, 700 Robbins Ave, Building 4D, Philadelphia PA 19111-5094 USA.