भारतीय मानक IS/IEC 60667-3-1 : 2020

Indian Standard

विद्युत प्रयोजनों के लिए वल्कनीकृत फाइबर

भाग 3 व्यक्तिगत सामग्रियाँ — विशिष्टि

अनुभाग 1 चपटी चादरें

Vulcanized Fiber for Electrical Purposes

Part 3 Individual Materials — Specification

Section 1 Flat Sheets

ICS 29.035.10

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July 2024 **Price Group 4**

Solid Electrical Insulating Material and Insulating System Sectional Committee, ETD 02

NATIONAL FOREWORD

This Indian Standard (Part 3) which is identical to IEC 60667-3-1: 2020 ‘Vulcanized fiber for electrical purposes — Part 3: Specifications for individual materials — Sheet 1: Flat sheets’ issued by the International Electrotechnical Commission (IEC) was adopted by the Bureau of Indian Standards on the recommendation of the Solid Electrical Insulating Materials and Insulation Systems Sectional Committee and approval of the Electrotechnical Division Council.

This Standard (Part 3/Sec 1) gives requirements for vulcanized fibre flat sheets for electrical purposes.

The text of the IEC Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

a) Wherever the words ‘International Standard’ appears referring to this standard, they should be read as ‘Indian Standard’; and

b) Comma (,) has been used as a decimal marker, while in Indian Standards the current practice is to use a point (.) as the decimal marker.

The Committee has reviewed the provision of the following International Standard referred in this adopted standard and has decided that it is acceptable for use in conjunction with this standard:

International Standard	*Title*
IEC 60667-1	Vulcanized fibre for electrical purposes — Part 1: Definitions and general requirements
IEC 60667-2	Vulcanized fibre for electrical purposes — Part 2: Methods of test

Only English language text has been retained while adopting it in this Indian Standard, and as such the page numbers given here are not the same as in the International Standard.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test, shall be rounded off in accordance with IS 2 : 2022 ‘Rules for rounding off numerical values (*second revision*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

CONTENTS

INTRODUCTION

This International Standard is one of a series which deals with vulcanized fibre sheets for electrical purposes.

The series consists of three parts:

Part 1: Definitions and general requirements (IEC 60667-1)

Part 2: Methods of test (IEC 60667-2)

Part 3: Specifications for individual materials (IEC 60667-3)

Indian Standard

VULCANIZED FIBER FOR ELECTRICAL PURPOSES

PART 3 INDIVIDUAL MATERIALS — SPECIFICATION

SECTION 1 FLAT SHEETS

1 Scope

This part of IEC 60667 gives requirements for vulcanized fibre sheets for electrical purposes. Materials made by combining with an adhesive several thicknesses of vulcanized fibre are not covered by this document.

Materials that conform to this specification meet established levels of performance. However, the selection of a material by a user for a specific application is based on the actual requirements necessary for adequate performance in that application and not based on this specification alone.

Safety warning: it is the responsibility of the user of the methods contained or referred to in this document to ensure that they are used in a safe manner.

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.

IEC 60667-1, *Vulcanized fibre for electrical purposes – Part 1: Definitions and general requirements*

IEC 60667-2:—[1], *Specification for vulcanized fibre for electrical purposes – Part 2: Methods of Test*

3 Terms and definitions

No terms and definitions are listed in this document.

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

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

4 Classification

The material shall be classified as general type or fishpaper type, as indicated in IEC 60667-1.

[1] Under preparation. Stage at the time of publication: IEC FDIS 60667-2:2019.

5 Requirements

The sheets shall comply with the general requirements for quality, finish, etc., given in IEC 60667-1.

When tested following the stipulated methods given in IEC 60667-2, the sheets shall comply with the requirements given in Table 1.

Table 1 – Requirements

Property	IEC 60667-2:— Clause or Subclause	Unit	Min. / Max. or range	General type	Fishbone type
Thickness	5	mm	Range		
Deviation from nominal					
≤ 0,5				±0,05	±0,05
> 0,5 to 1,0				±0,10	±0,10
> 1,0 to 1,2				±0,12	
> 1,2 to 1,6				±0,16	
> 1,6 to 2,0				±0,20	
> 2,0 to 2,4				±0,24	
> 2,4 to 3,2				±0,25	
> 3,2 to 6,0				±0,30	
> 6,0 to 12				±0,40	
> 12				±0,60	
Apparent density	6.1	g/cm^3	Min.		
≤ 0,25				0,90	0,85
> 0,25 to 0,8				1,05	1,00
> 0,8 to 2,5				1,10	1,10
> 2,5				1,15	-
Specific gravity	6.2	g/cm^3	Min.		
≤ 0,8				1,15	1,10
> 0,8				1,15	1,15
Tensile strength	7	MPa	Min.		
Machine direction					
≤ 0,25				70	70
> 0,25 to 0,8				80	80
> 0,8 to 1,6				90	90
> 1,6 to 2,5				80	-
> 2,5				65	-
Cross machine direction ≤ 0,25				35	35
> 0,25 to 0,8				40	40
> 0,8 to 1,6				45	45
> 1,6 to 2,5				45	-
> 2,5				35	-
Flexural strength	8	MPa	Min.		
Machine direction				85	-
Cross machine direction				75	-
Electric strength	10	kV/mm	Min.		
≤ 0,25				8,0	9,0
> 0,25 to 3,0				9,0	9,0
Arc resistance	11	s	Min.	70	
Chloride content	12	mg/kg	Max.	500	
Ash content	13	%	Max.	5	
Flexibility	14	MPa	Max.		
≤ 0,5				5	4
> 0,5 to 1,0				10	8
> 1,0 to 1,5				16	-
> 1,5 to 2,0				25	-
Moisture content	15	%	Max.	10	
Internal ply adhesion	16	N/m	Min.		
0,4				330	350
> 0,4 to 0,8				400	420
> 0,8				480	500
Shrinkage	17	%	Max.		
Machine direction				2,0	
Cross machine direction				3,0	
Thickness				6,0	

Bureau of Indian Standards

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Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the website-www.bis.gov.in or www.standardsbis.in.

This Indian Standard has been developed from Doc No.: ETD 02 (20765).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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