

भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS

DRAFT FOR COMMENTS ONLY

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भारतीय मानक मसौदा

कार्बन रेशे – घनत्व का निर्धारण

(आई एस 17306 का पहला पुनरीक्षण)

Draft Indian Standard

CARBON FIBRE — DETERMINATION OF DENSITY

(First Revision of IS 17306)

ICS 59.100.20

High Performance Fibres, Fibrous Structure and
Textile Components of composites Sectional
Committee, TXD 40

Last date for receipt of comment is
12 May 2024

FOREWORD

(Formal clauses will be added later)

This Indian Standard intended to be adopted is identical with ISO 10119 : 2020 ‘Carbon Fibre — Determination of Density’ issued by the International Organization for Standardization (ISO).

This standard was originally published in 2019. The first revision of this standard has been undertaken to harmonize it with the latest version of ISO 10119 : 2020 ‘Carbon Fibre — Determination of Density’.

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’ appear referring to this standard, they should be read as ‘Indian Standard’.
- 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.

In this standard intended to be adopted, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards, which are to be substituted in their respective places, are listed below along with their degree of equivalence for the editions indicated:

<i>International Standard</i>	<i>Corresponding Indian Standard</i>	<i>Degree of Equivalence</i>
ISO 291, Plastics — Standard atmospheres for conditioning and testing	IS 13360 (Part 1) : 1992 Plastics — Methods of testing Part 1 Introduction	Technically Equivalent
ISO 1675, Plastics — Liquid resins — Determination of density by the pycnometer method	IS 13360 (Part 3/Sec 7) : 1999 Plastics - Methods of testing: Part 3 physical and dimensional properties section 7 liquid resins - Determination of density by the pycnometer method	Technically Equivalent
ISO 10548, Carbon fibre — Determination of size content	IS 17605 : 2021/ ISO 10548 : 2002 Carbon fibre — Determination of size content	Identical

In reporting the result of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS 2 : 2022 ‘Rules for rounding off numerical values (*second revision*)’.

INTRODUCTION

Density is a parameter that characterizes the basic physical properties of carbon fibre, and is also an important parameter for calculating the tensile strength and tensile modulus of carbon fibre.

ISO 10119 : 2002 describes three methods (A, B and C) of using liquid to determine the density of carbon fibre. In this edition, the gas pycnometer method is added as method D.

Gas pycnometer method uses inert gas instead of liquids to measure the volume of fibres, powders and cellular materials so as to obtain the density. The method give a much higher resolution (i.e. a factor of 100 times better).

With the development of electronic technology, fully automatic instruments are commercially available, which allow faster throughput testing which are suitable for large scale testing. In addition, there is no environmental pollution because no organic solvent is used.

SCOPE

This document specifies four methods for the determination of the density of carbon fibre tested as a yarn:

- method A: liquid-displacement method;
- method B: sink/float method;
- method C: density-gradient column method;
- method D: gas pycnometer method.

Method C is the reference method in cases of dispute, etc.

FORMAT FOR SENDING COMMENTS ON BIS DOCUMENTS

(Please use A4 size sheet of paper only and type within fields indicated. Comments on each clause/sub clause/table/fig etc. be started on a fresh box. Information in column 3 should include reasons for the comments and suggestions for modified working of the clauses when the existing text is found not acceptable. Adherence to this format facilitates Secretariat's work)

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Item, Clause Sub-Clause No. Commented Upon (Use Separate Box a fresh)	Comments	Specific Proposal (Draft) Clause to be add/ amended	Remarks	Technical References and Justification on Which (2), (3), (4) are based
(1)	(2)	(3)	(4)	(5)

