

ICS 33.180.10
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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 12357.4-2026

Replacing GB/T 12357.4-2016

**Multimode optical fibres for telecommunication - Part 4:
Sectional specification for category A4 multimode fibres**

通信用多模光纤 第4部分：A4类多模光纤特性

(English Translation)

Issued on: March 31, 2026

Implemented on: October 1, 2026

Issued by: State Administration for Market Regulation

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document is Part 4 of GB/T 12357 "Multimode optical fiber for communication". GB/T 12357 has already published the following parts.

---Part 1: Characteristics of Category A1 Multimode Fiber;

---Part 2: Characteristics of Category A2 Multimode Fiber;

---Part 3: Characteristics of Category A3 Multimode Fiber;

---Part 4: Characteristics of Category A4 Multimode Fiber this document replaces GB/T 12357.4-2016 "Multimode optical fiber for communication - Part 4: Characteristics of Category A4 multimode optical fiber", and is consistent with...

Compared with GB/T 12357.4-2016, apart from structural adjustments and editorial changes, the main technical changes are as follows.

a) Added terms and definitions (see Chapter 3);

b) The product classification has been changed, expanding the categories from A4a~A4h to A4a~A4i subcategories of multimode fiber, while removing the A4f subcategory.

Quasi-multimode fiber (see Chapter 4, Chapter 4 of the 2016 edition);

c) The theoretical numerical aperture and effective numerical aperture are uniformly changed to the numerical aperture measured by the far-field scanning method (see Chapters 4 and 5).

(Chapter 4, 5.4 of the 2016 edition)

d) The numerical aperture requirements for A4a.2 have been changed (see Table 5, Table 5 in the 2016 edition);

e) The requirement for the diameter of the tight-buffered fiber in the geometric dimensions of A4a~A4d subclasses of multimode fiber has been removed (see Table 2 in the 2016 edition);

f) The performance requirements for Category A4f multimode fiber have been removed (see Chapter 5 and Appendix A, A.1 of the 2016 edition);

g) Increased performance requirements for A4i subtype multimode fiber (see Chapter 5);

h) Modified the macrobending loss condition for A4g~A4h subclass multimode fibers and increased the test bandwidth for A4g~A4h subclass multimode fibers.

The length requirement has been revised, and the footnote regarding the light source wavelength requirement for the test bandwidth of A4g~A4h subclass multimode optical fibers has been removed (see Table 7).

Table 7 (2016 edition)

i) The content of the original Appendix A is adjusted to 5.2, and the section on mechanical property test methods applicable to the tight-fitting layer in the original Appendix A is deleted.

Technical details regarding test methods for quasi-multimode optical fibers (see section 5.2, A.2 of the 2016 edition);

j) Change Appendix B from normative to informative (see Appendix B, Appendix B of the 2016 edition).

This document is modified to adopt IEC 60793-2-40:2021 "Fiber Optics - Part 2-40.Product Specifications - Characteristics of Category A4 Multimode Fibers".

Compared with IEC 60793-2-40:2021, this document has undergone many structural adjustments. A comparison of the structural numbering changes between the two documents is provided below.

See Appendix A for the table of contents.

The technical differences between this document and IEC 60793-2-40:2021, and the reasons therefor, are as follows.

a) IEC 60793-1-22 (see Table 4) has been replaced with the normatively referenced GB/T 15972.22 to adapt to my country's technical conditions and improve...

High operability;

b) IEC 60793-1-41 (see Chapter 3, 5.3) has been replaced with the normatively referenced GB/T 15972.41 to adapt to my country's technical requirements.

Conditions to improve operability;

c) IEC 60793-1-42 (see 5.3) has been replaced with the normatively referenced GB/T 15972.42 to adapt to my country's technical conditions.

High operability;

d) IEC 60793-1-47 (see 5.3) has been replaced with the normatively referenced GB/T 15972.47 to adapt to my country's technical conditions and improve [the following].

High operability;

e) IEC 60793-1-50 has been replaced with the normatively referenced GB/T 15972.50 (see Table 11) to adapt to my country's technical requirements.

Improve operability;

f) IEC 60793-1-51 has been replaced with the normatively referenced GB/T 15972.51 (see Table 11) to adapt to my country's technical requirements.

Improve operability;

g) IEC 60793-1-52 has been replaced with the normatively referenced GB/T 15972.52 (see Table 11) to adapt to my country's technical requirements.

This improves operability.

h) IEC 60068-1 (see 5.2.2.4) has been replaced with the normatively referenced GB/T 15972.10 to conform to the actual test environment in my country.

Environmental technical requirements;

i) The nominal core diameter, nominal cladding diameter, and operating wavelength requirements for optical fiber in section A4a.2 of Table 1 have been added (see Table 1).

The corresponding section of Table 1 in IEC 60793-2-40:2021 is missing, which is clearly inconsistent with the content of Appendix A. To maintain overall consistency...

The requirement is that this category must be consistent with the A1a subcategory multimode fiber; therefore, this content should be added.

j) The test conditions for the A4e subclass multimode fiber at 650nm wavelength mode bandwidth in Table 6 have been added, and the requirements for mode-limited injection have been added.

Please find (see Table 6);

k) The minimum mode bandwidth requirement for A4g sub-category multimode fiber at 650nm has been changed in Table 7, correcting an error in the IEC document (see [link]).

Table 7).

The following editorial changes have been made to this document.

---To maintain consistency with the existing GB/T 12357 standard name, the standard name has been changed to "Multimode optical fiber for communication - Part 4.

Characteristics of Category A4 multimode fiber.

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed and is under the jurisdiction of the Ministry of Industry and Information Technology of the People's Republic of China.

Introduction

Multimode fibers exhibit varying geometric characteristics, transmission characteristics, and mechanical properties due to differences in the shape of their refractive index profile and cladding/core materials.

Due to differences in environmental performance, multimode fibers are classified into A1, A2, A3, and A4 based on their refractive index profile shape and core/cladding materials.

Four categories.

GB/T 12357 "Multimode Optical Fiber for Communication" is proposed to consist of four parts.

---Part 1: Characteristics of Category A1 Multimode Fiber. The purpose is to specify the technical and testing requirements for Category A1 multimode fiber.