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

GB/T 15972.33-2024

Replacing GB/T 15972.33-2008

**Specifications for optical fibre test methods - Part 33:
Measurement methods and test procedures for mechanical
characteristics - Stress corrosion susceptibility
(English Translation)**

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Table of Contents

Preface
Introduction
1 Scope
2 Normative references
3 Terms and Definitions
4 Symbols
5 Method Overview
6 Test Environment
7 Specimens and samples
8 Test Procedure
9 Calculation
10 Results
Appendix A (normative) Dynamic n value (nd) measured by axial tension method
Appendix B (Normative) Two-point bending method for measuring dynamic n value (nd)
Appendix C (normative) Static n value (ns) measured by axial tension method
Appendix D (Normative) Static n value (ns) measured by two-point bending method
Appendix E (Normative) Static n value (ns) measured by uniform bending method
Appendix F (Informative) Considerations for Calculation of Dynamic Stress Corrosion Sensitivity Parameters
Appendix G (Informative) Considerations for Calculation of Static Stress Corrosion Sensitivity Parameters
Appendix H (Informative) Considerations on the test method for stress corrosion sensitivity parameters
Reference

Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document is part 33 of GB/T 15972 "Specification for optical fiber test methods". GB/T 15972 has been published in the following 25 parts.

--- Part 10: General principles for measurement methods and test procedures;

- Part 20: Measurement methods and test procedures for dimensional parameters Optical fiber geometric parameters;
- Part 21: Measurement methods and test procedures for dimensional parameters --- Coating geometric parameters;
- Part 22: Measurement methods and test procedures for dimensional parameters --- Length;
- Part 30: Measurement methods and test procedures for mechanical properties. Optical fiber screening tests;
- Part 31: Measurement methods and test procedures for mechanical properties Tensile strength;
- Part 32: Measurement methods and test procedures for mechanical properties. Strippability of coatings;
- Part 33: Measurement methods and test procedures for mechanical properties Stress corrosion sensitivity parameters;
- Part 34: Measurement methods and test procedures for mechanical properties of optical fiber warping;
- Part 40: Measurement methods and test procedures for transmission characteristics attenuation;
- Part 41: Measurement methods and test procedures for transmission characteristics bandwidth;
- Part 42: Measurement methods and test procedures for transmission characteristics Wavelength dispersion;
- Part 43: Measurement methods and test procedures for transmission characteristics Numerical aperture;
- Part 44: Measurement methods and test procedures for transmission characteristics and optical properties Cut-off wavelength;
- Part 45: Measurement methods and test procedures for transmission characteristics Mode field diameter;
- Part 46: Measurement methods and test procedures for transmission and optical properties --- Changes in transmittance;
- Part 47: Measurement methods and test procedures for transmission characteristics Macrobending losses;
- Part 48: Measurement methods and test procedures for transmission characteristics and optical properties Polarization mode dispersion;

--- Part 49: Measurement methods and test procedures for transmission characteristics
Differential mode delay;

--- Part 50: Measurement methods and test procedures for environmental performance ---
Steady state damp heat;

--- Part 51: Measurement methods and test procedures for environmental performance ---
Dry heat;

--- Part 52: Measurement methods and test procedures for environmental performance ---
Temperature cycling;

--- Part 53: Measurement methods and test procedures for environmental performance ---
Immersion in water;

--- Part 54: Measurement methods and test procedures for environmental performance
Gamma irradiation;

--- Part 55: Measurement methods and test procedures for environmental properties.
Hydrogen aging this document replaces GB/T 15972.33-2008 "Optical Fiber Test Methods
Specification Part 33: Measurement Methods and Tests for Mechanical Properties"
Compared with GB/T 15972.33-2008, in addition to structural adjustments and editorial
changes, the main technical the technical changes are as follows.

a) Changed the applicable fiber types in the "scope" to include A3 multimode fiber and C
single-mode fiber (see Chapter 1, 2008 edition).

Chapter 1 of);

b) The provisions of the benchmark test method have been changed, and the provision of
the axial tension method as the benchmark test method has been cancelled.

To be studied (see Chapter 5, Chapter 3 of the 2008 edition);

c) The value of the gauge length in the schematic diagram of the tensile test device has
been changed (see Figure A.1, Figure A.1 of the 2008 edition);

d) Changed the formula for fracture stress, the formula for median fracture stress with
constant stress rate, the intercept formula and the fracture stress dependence Dynamic
fatigue curve of stress rate [see formula (A.2), formula (A.7), formula (A.8), Figure A.4,
2008 version of formula (A.2), formula (A.7), formula (A.8), Figure A.4];

e) Added the typical value of Young's modulus of quartz glass (see B.5.1);

f) The formula for the variation of median fracture stress with constant platen speed,
intercept formula and dynamic fatigue data graph have been modified [see formula (B.5),
formula (B.6), Figure B.3, 2008 edition of formula (B.5), formula (B.6), Figure B.3];

g) The requirement that the results should include "fitting parameters md, median fracture

stress and σ_0 has been deleted (see B.6 of the 2008 edition);

h) Added detailed requirements for optical fiber diameter (see B.6);

i) The linear regression formula and intercept formula have been changed [see formula (C.1), formula (C.2), formula (C.1), formula (C.2) of the 2008 edition];

j) The schematic diagram of the two-point bending static fatigue device has been changed (see Figure D.1, Figure D.1 of the 2008 edition);

k) The formula for the numerical algorithm of the dynamic stress corrosion sensitivity parameter n_d has been changed (see F.2, F.2 of the 2008 edition);

l) The method for calculating the fracture stress has been changed (see F.3, F.3 of the 2008 edition);

m) The variance and covariance formulas of the homology method have been changed (see G.1, G.1 of the 2008 edition);

n) Modified the series test results graph of breaking strength versus "effective" breaking time and added the explanation of the graph (see Appendix H, 2008 Appendix H of this edition).

This document is modified to adopt IEC 60793-1-33:2017 "Optical Fibers Part 1-33.Measurement Methods and Test Procedures Stress Corrosion Susceptibility".

This document has made the following structural adjustments compared to IEC 60793-1-33:2017.

---Added Chapter 4 symbols;

--- Chapter 5 corresponds to Chapter 1, Chapter 4, Chapter 5, Chapter 6 and part of 7.3 of IEC 60793-1-33:2017;

--- Chapter 6 corresponds to part of 7.3 of IEC 60793-1-33:2017;

--- Chapter 7 corresponds to parts of 7.1, 7.2 and 7.3 in IEC 60793-1-33:2017;

--- Chapter 10 corresponds to Chapter 10 and Chapter 11 of IEC 60793-1-33:2017.

The technical differences between this document and IEC 60793-1-33:2017 and their reasons are as follows.

a) Symbols are added (see Chapter 4) for ease of use;

b) The requirements for the actual test length of the two-point bending test (see 7.2) have been changed to make it applicable to the domestic understanding of the actual test length;

c) The value of the gauge length in Figure A.1 has been changed (see Figure A.1) and the error in the IEC document has been corrected;