

Optical fibres - Part 1-33: Measurement methods and
test procedures - Stress corrosion susceptibility

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English Version

**Optical fibres - Part 1-33: Measurement methods and test
procedures - Stress corrosion susceptibility
(IEC 60793-1-33:2017)**

Fibres optiques - Partie 1-33: Méthodes de mesure et
procédures d'essai - Résistance à la corrosion sous
contrainte
(IEC 60793-1-33:2017)

Lichtwellenleiter - Teil 1-33: Messmethoden und
Prüfverfahren - Spannungskorrosionsempfindlichkeit
(IEC 60793-1-33:2017)

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European foreword

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INTRODUCTION

Annexes A, B, C, D, and E form an integral part of this document.

Annexes F, G, and H are for information only.

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OPTICAL FIBRES –

Part 1-33: Measurement methods and test procedures – Stress corrosion susceptibility

1 Scope

This part of IEC 60793 contains descriptions of the five main test methods for the determination of stress corrosion susceptibility parameters.

The object of this document is to establish uniform requirements for the mechanical characteristic of stress corrosion susceptibility for silica-based fibres. Dynamic fatigue and static fatigue tests are used to determine the (dynamic) n_d value and (static) n_s value of stress corrosion susceptibility parameters. Currently, only the n_d -value is assessed against specification. Measured values greater than 18 per this procedure reflect the n_d -value of silica, which is approximately 20. Higher values will not translate to demonstrable enhanced fatigue resistance.

Silica fibre mechanical tests determine the fracture stress and fatigue properties under conditions that model the practical applications as closely as possible. The following test methods are used for determining stress corrosion susceptibility:

- A: Dynamic n_d value by axial tension;
- B: Dynamic n_d value by two-point bending;
- C: Static n_s value by axial tension;
- D: Static n_s value by two-point bending;
- E: Static n_s value by uniform bending.

These methods are appropriate for category A1, A2 and A3 multimode, class B single-mode fibres and class C intraconnecting single-mode fibres.

These tests provide values of the stress corrosion parameter, n , that can be used for reliability calculations according to IEC TR 62048 [18]¹.

Information common to all methods is contained in Clauses 1 to 10, and information pertaining to each individual test method appears in Annexes A, B, C, D, and E.

Annexes F and G offer considerations for dynamic and static stress corrosion susceptibility parameter calculations, respectively; Annex H offers considerations on the different stress corrosion susceptibility parameter test methods.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

¹ Numbers in square brackets refer to the Bibliography.