Indian Standard

OPTICAL FIBRES

PART 1 MEASUREMENT METHODS AND TEST PROCEDURES

Section 33 Stress Corrosion Susceptibility

1 Scope and object

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

The object of this standard is to establish uniform requirements for the mechanical characteristic stress corrosion susceptibility. Dynamic fatigue and static fatigue tests are used in practice to determine stress corrosion susceptibility parameters, dynamic *n*-value and static *n*-value.

Any fibre mechanical test should determine fracture stress and fatigue properties under conditions that model the practical application as close as possible. Some appropriate test methods are available:

–A: Dynamic *n* value by axial tension (see annex A);

–B: Dynamic *n* value by two-point bending (see annex B);

–C: Static *n* value by axial tension (see annex C);

–D: Static *n* value by two-point bending (see annex D);

–E: Static *n* value by uniform bending (see annex E).

These methods are appropriate for types A1, A2 and A3 multimode and type B1 single-mode fibres.

Static and dynamic fatigue test methods show comparable results if both tests are performed in the same effective measuring time. For dynamic fatigue tests this means a measuring time which is (*n* + 1) times larger than the measuring time of static fatigue tests.

When using static fatigue test methods, it has been observed that for longer measuring times and consequently lower applied stress levels, the *n*-value increases. The range of measuring times of the static fatigue tests, given in this standard, approaches the practical situation better than that of the dynamic fatigue tests, which in general are performed in relatively short time-frames.

These tests provide values of the stress corrosion parameter, *n*, that can be used for reliability calculations according to IEC 62048.

2 Normative references

The following referenced documents are indispensable for the application 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 62048, *The law theory of optical fibre reliability*