

Fibres and cables, optical, aircraft use — Test methods —

Part 513: Crush resistance

The European Standard EN 3745-513:2005 has the status of a
British Standard

ICS 49.060

National foreword

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The UK participation in its preparation was entrusted by Technical Committee ACE/6, Aerospace avionic electrical and fibre optic technology, to Subcommittee ACE/6/-/10, Aerospace — Fibre optic systems and equipment, which has the responsibility to:

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Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 6, an inside back cover and a back cover.

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Management Centre: rue de Stassart, 36 B-1050 Brussels

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Foreword

This European Standard (EN 3745-513:2005) has been prepared by the European Association of Aerospace Manufacturers - Standardization (AECMA-STAN).

After enquiries and votes carried out in accordance with the rules of this Association, this Standard has received the approval of the National Associations and the Official Services of the member countries of AECMA, prior to its presentation to CEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2006, and conflicting national standards shall be withdrawn at the latest by May 2006.

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1 Scope

This standard specifies a method to determine the ability of an optical fibre cable to withstand crushing under specified environmental conditions.

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.

EN 2591-100, *Aerospace series — Elements of electrical and optical connection — Test methods — Part 100: General*

EN 3745-100, *Aerospace series — Fibres and cables, optical, aircraft use — Test methods — Part 100: General*¹⁾

EN 3745-201, *Aerospace series — Fibres and cables, optical, aircraft use — Test methods — Part 201: Visual examination*

EN 3745-301, *Aerospace series — Fibres and cables, optical, aircraft use — Test methods — Part 301: Attenuation*

3 Preparation of specimens

3.1 If not at standard test conditions, the specimens shall be subjected to standard test conditions and stabilized at these conditions for 24 h as defined in EN 3745-100.

3.2 The following details shall be specified if not already included in the product standard:

- temperatures at which test is to be carried out;
- humidity at which test is to be carried out;
- number and length of specimens;
- the compressive force to be applied;
- diameter of mandrel if used;
- maximum permissible variation in attenuation during and after test;
- duration of application of the load.

4 Apparatus

The apparatus shall allow a sample to be crushed between a flat steel base plate and a movable steel plate which applies the crushing force uniformly over a 100 mm length of the sample. The plates shall be suitably radiused to prevent sharp edges digging into the specimen. A mandrel can be used instead of the steel plate if

1) In preparation at the date of publication of this standard.

required. Suitable apparatus is shown in Figure 1. The Light Launch System (LLS) and the Light Detector System (LDS) are defined in EN 2591-100. A suitable oven capable of temperature control $\pm 2\text{ }^{\circ}\text{C}$, and if necessary, capable of controlling the relative humidity during the test.

Dimensions in millimetres

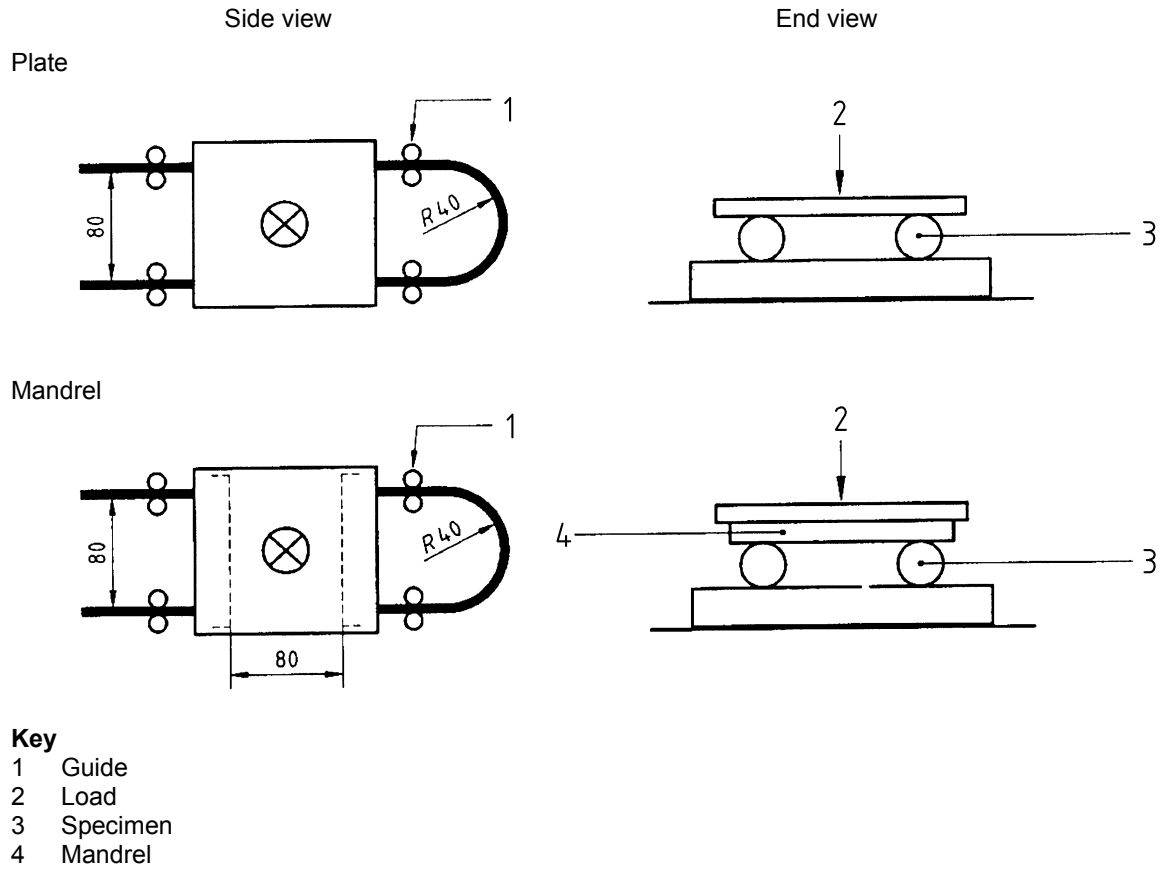


Figure 1 — Test methods

5 Method

5.1 Procedure

The variation of attenuation (EN 3745-301, method C) shall be monitored continuously throughout the test.

Connect the specimen to the LLS and the LDS.

Place the specimen in the test fixture.

With no load applied, obtain a reference power measurement on the LDS.

The load shall then be applied gradually avoiding shock to the specimen.

Maintain the load for the specified time.

Take a power measurement on the LDS.

Remove the load.

When the load has been fully removed allow the specimen to recover for 15 min.

Measure the final attenuation in accordance with EN 3745-301, method C.

5.2 Final measurements and requirements

After removal of the load the following tests should be carried out:

- EN 3745-201: Visual examination;
- EN 3745-301: Attenuation, method C, maximum change in attenuation shall be within that specified.

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