

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

Part 404: Thermal shock

The European Standard EN 3745-404:2005 has the status of a British Standard

ICS 49.060

National foreword

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English Version

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thermique

Luft- und Raumfahrt - Faseroptische Leitungen für
Luftfahrzeuge - Prüfverfahren - Teil 404: Thermische
Schocks

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Foreword

This European Standard (EN 3745-404:2005) 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.

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1 Scope

This standard specifies a method to determine the effects of thermal shock on an optical fibre or cable.

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 inspection*

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 stabilised 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:

- the number of specimens;
- the number of temperature cycles, if not four cycles;
- maximum permissible variation in attenuation;
- the upper and lower temperatures at which test is carried out;
- relative humidity during the test;
- diameter of the coil.

4 Apparatus

The test requires a suitable oven, a cold chamber capable of temperature control of ± 2 °C, a Light Launch System (LLS) and Light Detector System (LDS) as defined in EN 2591-100. A device to control the relative humidity during the test may also be required.

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

5 Method

5.1 Procedure

The specimen shall be coiled at all times and shall be arranged to be easily moved between the two temperature chambers. Once the sample is prepared, the attenuation reference measurement shall be taken in accordance with EN 3745-301 method C.

The specimen shall then be subjected to the required higher temperature for a period of 30 min.

The specimen shall be removed from the oven and, within 2 min, placed in the cold chamber at lower temperature for 30 min. After the final chamber, bring the specimen back to the standard test conditions. The duration shall be sufficient to allow the specimen to reach standard conditions.

Attenuation shall be measured immediately after this cycle, test in accordance with EN 3745-301, method C.

The cycle shall be carried out four times or the number of times specified in the product standard, on the same sample.

5.2 Final measurements and requirements

The following shall be carried out after the test:

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

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