
**Fibre-reinforced plastic composites —
Determination of mode I interlaminar
fracture toughness, G_{IC} , for unidirectionally
reinforced materials**

*Composites plastiques renforcés de fibres — Détermination de la ténacité
à la rupture interlaminaire en mode I, G_{IC} , de matériaux composites à
matrice polymère renforcés de fibres unidirectionnelles*



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Printed in Switzerland

Contents

Page

Foreword.....	iv
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Principle.....	2
5 Apparatus	5
6 Test specimens	7
7 Number of specimens	8
8 Conditioning.....	8
9 Test procedure	9
10 Calculation of G_{IC}	10
11 Precision.....	15
12 Test report	15
Annex A (normative) Preparation and bonding of the load blocks or piano hinges	17
Annex B (informative) Recommendations for testing.....	18
Annex C (informative) Recommended test result sheet	21
Bibliography	24

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 15024 was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 13, *Composites and reinforcement fibres*.

Annex A forms a normative part of this International Standard. Annexes B and C are for information only.

Fibre-reinforced plastic composites — Determination of mode I interlaminar fracture toughness, G_{IC} , for unidirectionally reinforced materials

1 Scope

1.1 This International Standard specifies a method for the determination of mode I interlaminar fracture toughness (critical energy release rate), G_{IC} , of unidirectional fibre-reinforced plastic composites using a double cantilever beam (DCB) specimen.

1.2 It is applicable to carbon-fibre-reinforced and glass-fibre-reinforced thermosets and thermoplastics.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 291:1997, *Plastics — Standard atmospheres for conditioning and testing*

ISO 1268 (all parts), *Fibre-reinforced plastics — Methods of producing test plates*

ISO 4588:1995, *Adhesives — Guidelines for the surface preparation of metals*

ISO 5893:—¹⁾, *Rubber and plastics test equipment — Tensile, flexural and compression types (constant rate of traverse) — Description*

3 Terms and definitions

For the purposes of this International Standard, the following terms and definitions apply.

3.1

mode I interlaminar fracture toughness
critical energy release rate

G_{IC}

the resistance to the initiation and propagation of a delamination crack in unidirectional fibre-reinforced polymer matrix composite laminates under mode I opening load

NOTE It is measured in joules per square metre.

1) To be published. (Revision of ISO 5893:1993)