# INTERNATIONAL STANDARD



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# 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,  $G_{\rm IC}$ , de matériaux composites à matrice polymère renforcés de fibres unidirectionnelles



Reference number ISO 15024:2001(E)

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### Foreword

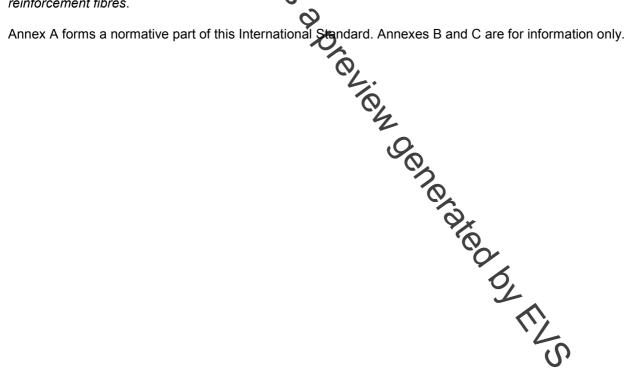
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ISO 15024 was prepared by Technical Committee ISO/TC 61, Plastics, Subcommittee SC 13, Composites and reinforcement fibres.



# 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) speciment

**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:—<sup>1)</sup>, Rubber and plastics test equipment — Tensile, flexuration d 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

 $G_{\mathsf{IC}}$ 

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.

<sup>1)</sup> To be published. (Revision of ISO 5893:1993)