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**Fibre reinforced composites - Determination of mixed mode  
I-mode II interlaminar fracture toughness of unidirectional  
reinforced materials**

纤维增强复合材料 单向增强材料I型-II型混合层间断裂韧性的测定

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## Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents.

This document is proposed by China Building Materials Federation.

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## 1 Scope

This document describes the use of the mixed mode bending (MMB) test to determine the properties of type I-type II hybrid layers of unidirectional fiber reinforced resin matrix composites.

Interstitial fracture toughness method.

This document is applicable to the determination of mixed mode I-II interlaminar fracture toughness of unidirectional fiber reinforced resin matrix composite laminates.

## 2 Normative references

GB/T 1446

GB/T 3961

## 3 Terms and Definitions

The terms and definitions defined in GB/T 3961 and the following apply to this document.

### 3.1 Mode I crack opening mode mode I crack opening mode

A fracture mode in which a crack is initiated by a load applied perpendicular to the specimen surface and the specimen surface does not slide relative to each other.

Note. Abbreviated as "Type I model".

### 3.2 Mode II crack sliding mode mode II crack sliding mode

A fracture mode in which relative slip is caused by a load applied parallel to the surface of

the specimen and in which cracking in the Type I mode (3.1) does not occur.

Note. Abbreviated as "Type II model".

### **3.3 model-model mixedmode**

A fracture mode characterized by crack initiation and relative slip caused by loads applied simultaneously perpendicular and parallel to the specimen's surface layers.

Note. Abbreviated as "mixed mode".

### **3.4 GI**

In the mixed mode of type I and type II (3.3), during the constant displacement crack growth process caused by the load, the unit crack of the specimen caused by the type I mode is The rate of change of strain energy of width with crack growth.