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Methods for

Crack opening displacement (COD) testing

Méthodes de mesure de l'écartement critique de fissuration (COD)

Prüfverfahren für die Rissöffnungsverschiebung (COD)

British Standards Institution

Gr6

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Foreword

This British Standard, published under the direction of the Iron and Steel and the Non-Ferrous Standards Committees, has been prepared to take account of the experiences derived from the procedures contained in DD 19 : 1972 for carrying out crack opening displacement (COD) testing on metallic materials. Such procedures are used in the United Kingdom particularly for obtaining data to support design criteria for pressure vessels and similar equipment.

This standard replaces DD 19 but since the test method is similar to that for K_{Ic} testing, it is based as far as possible on BS 5447 : 1977 which describes the method of plane strain fracture toughness testing. The crack opening displacement test is used normally in conditions of greater ductility where linear elastic fracture mechanics becomes invalid.

Compatibility between K_{Ic} and COD test methods is achieved by using clip gauge instrumentation. The necessity of using a sharp crack in the test piece precludes direct measurement of the crack opening displacement. Crack opening displacement values are inferred from clip gauge measurement.

Attention is drawn to the fact that the units used for stress and linear dimensions are N/mm^2 and mm in this standard (and in the standard for K_{Ic} testing, BS 5447). This will give numerically different K_f and K values to those obtained with the units used in DD19 (and DD 3).

Users should check existing data.

NOTE 1. 1 N $mm^{-3/2}$ = 0.0316 MN $m^{-3/2}$.

NOTE 2. In this British Standard, the term COD refers to 'crack tip opening displacement'. This displacement is alternatively referred to in other organizations by the term CTOD in order to avoid confusion with other displacements within a crack.