



BS 18:1987

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British Standard Method for **Tensile testing of metals** (including aerospace materials)

Méthode d'essai en traction des métaux (y compris les matériaux pour l'aérospatiale)

Zugprüfung an Metallen (einschließlich solcher für die Luft- und Raumfahrt)

British Standards Institution

Foreword

This British Standard, which has been prepared under the direction of the Iron and Steel and the Non-ferrous Metals Standards Committee, is a revision of BS 18 : Part 1 : 1970 and Parts 2 to 4 : 1971, which are withdrawn. It also incorporates requirements for tensile tests previously given in Section one of Part 1 of British Standard 4A4 : 1966 which is being deleted by amendment.

No new major concepts have been introduced. The appropriate tensile properties have been referred to throughout as strengths rather than stresses. Implicit in these strength definitions is the knowledge that multiaxial loading and/or the presence of notches can change the values of the applied stress at which yield and rupture may occur in a particular material. However, consideration of established and accepted testing practices now in common use, as well as the outcome of the recent work of the International Organization for Standardization (ISO), indicated a sufficient degree of commonality in application to different product forms to allow the standard to revert to one Part. This change has been facilitated by the elimination of the need to determine the *K*-value (apparent elastic compliance) of the tensile testing system. This has followed a corresponding action in international standards. Attention is drawn to the fact that in ISO 6892 there is no definition of extension and that the definition given for elongation differs from that in BS 18.

Procedures relating to tensile testing of metals at room temperature are described. Testing at elevated temperatures is described in BS 3688 and British Standard 4A4 : Part 1 : Section two : 1967.

Details of procedures that may be specifically applicable to particular metals and alloys are not described.

Provision is not made for testing some forms of product such as very thin foil or products of asymmetrical shape for which demands for accurate measurement of strength are often very limited. Although the procedures described in this standard might be applied to such products, the values obtained would not necessarily be recommended or chosen for use as a basis for acceptance test purposes.

The opportunity has been taken to clarify the significance of some features from earlier Parts of BS 18. Also the greater importance of using unmachined test pieces including those 'as cast' in view of economic considerations has been recognized by the committee. Requirements for tolerances upon measurement of cross-sectional area have been introduced to eliminate any uncertainty regarding the validity of tests carried out on such specimens.

Features that require a decision based fundamentally upon metallurgical considerations, e.g. the position in a product from which a test piece is selected, have been eliminated from this edition.

Testing of metals and alloys complying with the aerospace series of British Standards calls for a small number of special requirements; these requirements have been incorporated into this revision of BS 18 and are referred to in relevant clauses as category 2 requirements.

Compliance with a British Standard does not of itself confer immunity from legal obligations.