

Testing coated fabrics

Part 21. Method 24. Method for determination of elongation and tension set

IMPORTANT NOTE. It is recommended that this Part be read in conjunction with the information in Part 0 'Foreword and general introduction'.

Foreword

This revision has been prepared under the direction of the Plastics and Rubber Standards Policy Committee.

The response of many textiles, including coated fabrics, to stresses in the bias direction is particularly important, and this is especially so when one considers that the integrity of a structure depends upon its weakest link. When the tensile properties of textile materials are examined or specified with a particular end-use in mind, their bias direction performance is quite often overlooked.

Tension set, sometimes referred to as permanent set, is defined in various ways depending upon the discipline concerned. The general descriptions of tension set or permanent set, however, invariably agree; it is only the means by which it is derived that differs. In order to avoid any misunderstanding, therefore, a definition of tension set as applied to coated fabrics has been prepared.

The factors affecting the determination of tension set are:

- a) the rate at which the specimen is extended;
- b) the temperature and relative humidity prior to and during testing;
- c) the period or elapse of time between the extension of the specimen and the release of the load or strain;
- d) the period allowed for recovery;
- e) the previous mechanical history of the specimen.

This last factor can be of particular importance, as specimens can be mechanically conditioned by repeated loadings followed by periods of relative recovery in which some strain is maintained or periods of recovery in which the specimen is under zero strain.

Generally, however, the point of interest in conducting the test is to discover the extent to which the coated fabric will suffer permanent deformation after it has been strained beyond a given point. The extent of the permanent deformation is the value referred to as tension or permanent set.

Because of all these variables and as the designers of coated fabrics for airships, sails and inflated structures will have different interests than designers of coated fabrics for upholstery and clothing applications for example, a method of test has been developed which caters for all these interests and at the same time permits direct comparisons to be made between materials of different types.

For methods related to creep and creep recovery, reference should be made to BS 3424 : Part 0 : 1982.

This edition supersedes BS 3424 : Part 21 : 1987 which is withdrawn.

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