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**Adhesives — Determination of peel resistance  
of high-strength adhesive bonds — Floating  
roller method**

*Adhésifs — Détermination de la résistance au pelage des assemblages à forte  
cohésion — Méthode des galets mobiles*



Reference number  
ISO 4578 : 1990 (E)

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 4578 was prepared by Technical Committee ISO/TC 61, *Plastics*.

This second edition cancels and replaces the first edition (ISO 4578 : 1979), of which it constitutes a minor revision.

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International Organization for Standardization

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# Adhesives — Determination of peel resistance of high-strength adhesive bonds — Floating roller method

## 1 Scope

This International Standard specifies a floating roller method for the determination of the peel resistance of high-strength adhesive bonds between one rigid metallic adherend and one flexible metallic adherend when tested under specified conditions of preparation and testing.

NOTE — The use of the floating roller produces more constant numerical data than other peel methods, but it should not be expected that the flexible metallic adherend will conform to the surface of the roller.

## 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 291 : 1977, *Plastics — Standard atmospheres for conditioning and testing*.

ISO 4588 : 1989, *Adhesives — Preparation of metal surfaces for adhesive bonding*.

## 3 Definition

For the purposes of this International Standard, the following definition applies.

**peel resistance:** The average force per unit test specimen width, measured along the bond line, required to separate progressively the two metallic members of a bonded test specimen under specified conditions of test. It is expressed in kilonewtons per metre of width.

## 4 Apparatus

**4.1 Tensile testing machine,**<sup>1)</sup> capable of maintaining a pre-determined constant crosshead rate to be reported in the

test report (preferred rate 100 mm/min). It shall be provided with a suitable self-aligning grip to hold the test specimen. The jaws of this grip shall firmly engage the outer 25 mm of the end of the flexible adherend. The grip and attachments shall be so constructed that they will move into alignment with the test specimen as soon as the force is applied, so that the flexible member of the test specimen will coincide with the direction of the applied pull through the centre line of the grip assembly. The machine shall be autographic, giving a chart that can be read in terms of millimetres of crosshead movement as one co-ordinate and applied force as the other co-ordinate. All equipment shall be calibrated regularly. It is recommended that inertialess equipment be used for this test.

The machine shall permit the measurement and recording of the applied force with an accuracy of  $\pm 2\%$ .

**4.2 Peel test fixture,** for supporting the test specimen (see figure 1). The fixture shall be attached to one of the cross-arms of the testing machine (4.1). The 25 mm diameter rollers on the test fixture shall roll freely. The angle determined by the rollers and the use of dual roller bearings are critical and the rollers shall therefore be carefully maintained.

## 5 Test specimens

**5.1** Test specimens of the dimensions shown in figure 2 may be prepared individually or cut from bonded panels. Laminated test panels, or individual test specimens, shall consist of two adherends properly prepared and bonded together.

**5.2** Surface treatment shall be such as to obtain optimum strength in the bonded assembly. The preparation of the surface shall be in accordance with either the adhesive manufacturer's instructions or ISO 4588 and shall be stated in the test report.

The adhesive shall be applied in accordance with the manufacturer's recommendations to obtain an optimum bond with a minimum of variations.

NOTE — Direct comparison of different adhesives can be made only when test specimen construction, adherend materials and dimensions, and test conditions are identical.

1) See for instance ISO 5893 : 1985, *Rubber and plastics test equipment — Tensile, flexural and compression types — Description*.