Afera 4015 (EN 1945) Test Method

Quick Stick

1. Scope

The test method is designed to measure the ability of adhesive tapes to adhere to a surface, with the application of a very light pressure.

2. Terms and Definitions

2.1 Quick Stick: The ability of a tape to adhere to a surface with measurable separation force upon the application of a very light pressure.

3. Summary of Test Method

A length of tape is applied to a standard metal plate under standard conditions. The force required to peel the tape continuously from the plate at an approximate angle of 90° is measured.

4. Apparatus

4.1 Tensile testing machine: This shall be a pendulum type tester or electronic tensile testing machine placed in the standard atmosphere with the following characteristics:

4.1.1 The force shall be indicated with a maximum error of 2 %.

4.1.2 The speed of the moveable clamp shall be (5 ± 0.5) mm/s.

4.1.3 The scale shall be such that the readings obtained are between 15 and 85 % of the complete scale.

4.1.4 The clamps shall be serrated to prevent slipping or tearing of the tape.

4.1.5 If a pendulum type tester is used, the pawls shall be disengaged.

4.2 Stainless steel plates: These shall be perfectly flat, about 1.1 mm thick and 200 mm long x 50 mm wide. They shall conform in their composition and surface preparation to the plates specified for the Afera Test Method 5001.

4.3 Horizontal traverse device: A simple mechanical device that will ensure that the plate moves horizontally at the rate of traverse of the tensile testing machine throughout the period of peeling the tape at an angle of approximately 90°.

This device may consist of a metal section containing two grooves in which the plate can move freely in a horizontal plane. This section shall be fixed rigidly to the moveable clamp, the plate being positioned horizontally and its longitudinal axis aligned with the vertical passing through the two clamps.

A convenient way to make the plate move horizontally at the same speed as the moveable clamp is to connect it to a fixture by means of an inextensible wire passing round a pulley attached to the device. The device is designed to produce a theoretical peel angle of 90°. In practice, the angle of peel varies slightly around this figure due to irregularities in the structure of the adhesive. The extent of the variation will also depend on the degree of damping of the tensile testing machine.

4.4 Roller for the application of light pressure: This roller will be about 32 mm in diameter and 75 mm long, with a total mass of (25 ± 0.5) g.

4.5 Standard test conditions: (23 ± 1) °C and (50 ± 5) % relative humidity

5. Test Specimen

5.1 Use rolls of tape at least 25 mm wide and discard the three outer turns before taking specimens. Perform the test on 5 specimens from each roll. Each specimen shall be 300 to 375 mm long. For widths greater than 25 mm, a specimen 25 mm wide shall be cut longitudinally from the tape. The cutting must be carried out by means of a punch razor-blade or any other suitable instrument. It must always be ensured that the adhesive surface never contacts other surfaces before application to the test plate. Cutting must never be carried out with the tape already applied to the test plate, to avoid marking of the plate.

6. Procedure

6.1 Conditioning of rolls before test: Condition the sample roll for 24 hours in the standard test conditions (4.5) prior to testing.

6.2 Preparation of plates: Before each test, clean the testing surface of the stainless steel plates as per Afera test method 5001. After cleaning and cooling, examine each plate to ensure that it is perfectly clean, then apply the tape immediately as follows.

6.3 Application of the tape to the plate: Place the plate on an inclined plane having a slope of 1/5 (making an angle of 11° 19' with the horizontal). Remove the specimen radially from the roll at an approximate speed of 300 mm/s, then apply it immediately to the plate in its sloping position. Adhere the end of the test specimen to the middle of the upper edge of the stainless steel plate. Then place the roller on the back of the tape and hold the other end of the tape in a vertical position so that the roller rests in the loop so formed.

Allow the roller to travel down the sloping plane, thus applying the tape to the plate, at an approximate speed of 25 mm/s. Take care to ensure that the edges of the tape are parallel to those of the plate.

6.4 Peeling of the tape: Place the plate immediately in its horizontal support, which shall have been previously fixed in the moveable clamp of the tensile testing machine in the standard test conditions (4.5). Fold back about 25 mm, of free end of tape, adhesive to adhesive, and place it in the other clamp of the tensile testing machine. Attach the plate to the fixture with the connecting wire. Set the speed at (5 ± 0.5) mm/s, and start the tensile testing machine. The measurement shall be made within one minute after application of the tape to the plate.

As the device has been constructed so that the plate moves at the same speed as the clamp. If assembled correctly, an angle of peel of about 90° will be maintained throughout the entire test, subject to the comments made in subclause 4.3. Take readings when the line of separation of tape and plate passes each reference mark on the plate.

7. Expression of Results

7.1 For each test specimen, arrange the 5 readings in ascending order and take the central value (median). Similarly, arrange these 5 central values in ascending order and take their central value (median). Express the results in Newtons per centimetre (N/cm) width of tape.

Since the measurements made using different types of tensile testing machines (for example, electronic or pendulum) are not directly comparable, the type of tensile testing machine used will be indicated in the report.

8 Report

The test report shall comprise the following:

- Reference to this Afera TM

- Full designation of the test sample material

- Date of testing

- Results

- Any deviation from the procedure described in this method that may influence the results.

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