Lap Shear Strength Test According to ISO 21809-3

Description

L.1 Lap shear strength of tape coatings
L.1.1 General
The test consists of measuring the lap shear strength (maximum force per unit area) obtained in shearing a single overlap joint between a plate with metallic surface or plant coating and the FJC by applying a tensile force that is parallel to the bond area and to the major axis of the sample.
L.1.2 Equipment
L.1.2.1 Tensile testing machine, in accordance with ISO 5893, allowing the shear force to be recorded and capable of operating at a constant rate of separation of 10 mm/min.
L.1.2.2 Temperature-maintenance equipment, capable of maintaining the sample in the tensile testing machine at the test temperature.
L.1.2.3 Steel plates, 100 mm long and 50 mm wide, or of tape width in the case of narrower tapes.

L.1.3 Preparation of the test samples
The metal surface of the steel plate shall be blast cleaned in accordance with ISO 8501-1:2007, grade Sa 2 Â½, to give a medium profile in accordance with ISO 8503-2. The steel plates shall be kept clean and dry. Primer and/or coating shall be applied within 8 h.
The plant coating shall be cleaned in accordance with the tape manufacturerâ€™s instructions. The cleaning
procedure shall be agreed upon with the manufacturer of the plant coating.
Apply the coating systems (all layers) to one side of the plates in accordance with the manufacturerâ€™s
instructions, such that the coating overhangs one end by 30 mm to 40 mm, to allow clamping in the testing machine. Store the test samples for a minimum of seven days at 23 Â°C Â± 2 Â°C under a load of 0,01 N/mm2.
Before testing, cut the coating transversely so that the effective shear length is 20 mm.

L.1.4 Procedure
The lap shear strength test shall be carried out on
âŽ¯ five test samples at 23 Â°C Â± 2 Â°C; or
âŽ¯ five test samples at the maximum design temperature, Tmax, Â± 2 Â°C if this is higher than 30 Â°C.
Clamp the test sample into the tensile testing machine, ensuring that the plate (metal surface) and the coating system are in the same plane.
For the test at a temperature of 50 Â°C, precondition the test sample at the specified test temperature for at least 0,5 .

Maintain the test sample at the specified test temperature throughout the test.
Set the tensile testing machine to a constant rate of separation of 10 mm/min. Record the maximum force.

If the tape breaks instead of shearing, prepare new test samples so that the effective shear length is 10 mm. Repeat for five test samples.

L.1.5 Results

Calculate the arithmetic mean of the five results of the lap shear strength, expressed in newtons per square millimetre.

If the tape breaks, express the lap shear strength as greater than the breaking force, expressed in newtons

per square millimetre of bonded area.

L.2 Lap shear strength of shrinkable material coatings

L.2.1 General

The test consists of measuring the maximum stress obtained in shearing a single overlap joint between two plates with a metallic surface or a plant coating bonded with the adhesive of the shrinkable material by applying a tensile force that is parallel to the bond area and to the major axis of the test sample.

L.2.2 Apparatus

See L.1.2.

L.2.3 Preparation of the test samples

The metal surface of the steel plate shall be blast cleaned in accordance with ISO 8501-1:2007, grade Sa 2 Â½, to give a medium profile in accordance with ISO 8503-2. The steel plates shall be kept clean and dry and primer and/or adhesive shall be applied within 8 h.

The plant coating shall be cleaned in accordance with the instructions of the shrinkable-material manufacturer.

The cleaning procedure shall be agreed upon with the manufacturer of the plant coating.

Coat one side of the plates with the adhesive of the shrinkable material to a thickness of 1 mm.

Position a second plate in such a way that the overlap of the two plates is 20 mm. Treat the test samples in accordance with the manufacturerâ€™s instructions (pressure, temperature and time).

Store the test samples for at least 24 h at 23 Â°C Â± 2 Â°C.

Remove any adhesive that has exuded at the sides during preparation.

L.2.4 Procedure

See L.1.4.

L.2.5 Results

See L.1.5.

Lap Shear Tester According to ISO 21809-3

- Servo controlled
- **Fixture for lap shear testing (weight grips-or-screw type grips)**
- Ball screw
- Double column
- USB port for computer connection
- Windows based software is included
- Computer will be quoted separately as per customer request
- Load resolution 1/10000
- Speed as per customer request
- Grips as per customer request for different products
- Easy operation and clear visualization (test curves, calculations)
- Easy to change the grips via male-female connection
- Accuracy Â±0.5% of full scale
- Precise self-cleaning ball-screw
- Brush-less servo motor quarantine maintenance-free operation
- Easy calibration of load-cell
- Training video

Category

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