



RVT / Elastomer Adhesion Test for T- Joints

Application

This method is used to determine the RVT/elastomer adhesion strength in T-joint applications cured under ambient conditions.

Equipment

Lab Spatula
Caulk Gun
Scissors
Marking Utensil (Sharpie marker)
Masking Tape
Ruler
Scalpel
Stamp Die block (2.5 cm x 15 cm)
Steel Plaques (14 cm x 9 cm x 0.5 cm)
Aluminum lab cups

Supplies

Deionized Water
Solvent: 50/50 Isopropanol and H₂O
RTV – to be tested
Clean/Lint Free rags
Cotton tipped applicators (Swabs)
Elastomer slabs (15 cm x 15 cm)

Apparatus Required

Mechanical Convection Oven - Capable of maintaining a temperature up to 250 +/- 2 °C.
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Controlled Environmental Chamber - Capable of maintaining temperatures between - 40 to 150 +/- 2 °C.
Compression Press
Tensile Machine - Capable of a constant rate of jaw separation of 25 mm/minute and with a recording device relating crosshead separation and load.

Preparation of Test Assemblies

- I. The elastomer to be tested should be supplied in slabs 15 cm x 15 cm x 0.25 cm
- II. Using the compression press, die cut four rectangular strips from slabs measuring 2.5 cm x 15 cm
- III. Bond test strips
 - Clean the surface of the strips to be bonded. Do this by rinsing the test surface of the specimen with solvent and wipe with clean lint free cloth
 - Measure 10 cm on each strip from one end and mark with utensil
 - Starting at the mark, mask the remaining 5 cm with standard masking tape
 - Expel fresh RVT into an aluminum lab cup
 - Using a lab spatula spread a thin even layer ($\approx$ 0.5 mm thick) of the RVT over the entire exposed clean surface of the test strip.

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- Place the exposed clean surface of a second test strip on the RVT of the first strip, making sure the two are oriented in the same direction.
- Align the test strips and place on a steel plaque.
- Place no more than three specimens per plaque and cover with second plaque. Space samples on the plaque so the force is evenly distributed. Do not clamp plates together. The only force acting on the adhered samples should be that of the second plate.
- Repeat steps above for all specimens to be tested (specimens size to be determined on statistical significance, minimum 9 samples per material type)
- Label the assembled specimens sequentially in the masked region of the samples

IV. Cure plaques with test strips in climate controlled cabinet for 168 hours at 25 °C and 50% relative humidity.

Peel Adhesion Test Procedure

Note: A flat surface must be obtained before curing. After curing only the squeezed material from both sides of the test assemblies must be removed using a spatula or knife.

- I. Mount the assembly in the tensile machine, taking care not to load the assembly during mounting.
- II. Determine the peel adhesion N/m of the assembly by tearing it at a constant speed of 25 mm/minute. Peel the adhesion strength is defined as the average load (N) divided by the specimen width (m).

Evaluation

Report the results obtained in N/m and report failure mode (adhesive or cohesive). If adhesive failure occurs only report adhesive failure.

Note: Chemicals, materials, parts, and equipment referenced in this document must be used and handled properly. Each party is responsible for determining proper use and handling in its facilities.