



DETERMINATION OF BOND STRENGTH USING THE WEDGE METHOD

Application

This procedure is used to determine the adhesion strength of foam to substrates using a wedge fixture.

Apparatus and Materials Required

Tensile Testing Machine

Universal Testing Machine, Instron or equivalent capable of using the integral method of calculation.

Wedge Fixture -See Figure 1

Preparation of Test Specimens

Number of specimens required will be identified in the material or performance specification. If the number of specimens is not specified then test 3 specimens.

Test Specimen Dimensions

Width: 50 mm

Length: 200 mm

Procedure

- 1) Cut a 50 mm by 200 mm specimen unless otherwise specified.
- 2) Manually separate the layers per the specification along the width of each test specimen for a distance of approximately 20 mm in the direction of the specimen length.
- 3) Attach the wedge fixture to the bottom of the tensile testing machine.(See Figure 2 for wedge dimensions)
- 4) Manually insert the specimen so the blade is between the substrate and foam. Make sure that the foam is braced against the wedge fixture cross bars (See Figure 3).
- 5) Using a textured grip face, attach the grip face to the substrate. NOTE: If the grip face is narrower than the specimen make sure the grip is centered on the specimen.
- 6) Start the machine at a rate of 300 mm/minute and separate the specimen. (Different rates may be specified in the material/performance specification). Obtain separation data for a distance of at least 100 mm. Note: Make sure to stop testing before complete separation of substrate to foam occurs. See Figure 4.
- 7) Ignore data for the first and last 10% of traverse and determine the average value (integral method preferred) as calculated per the specification requirement.
- 8) Report values in Newtons per meter or as required in the material/performance specification.

Example calculation:

$$\frac{\text{Load}}{\text{Specimen width}} = \text{N/m}$$

Date	Action	Revisions	Rev. 0
2016 02 29	Released		



Documents

S. Gatzek, NA

Document Sharing Hub

Data Reporting

The report should include the following:

- 1) Specimen width
- 2) Cross head speed
- 3) Report failure mode with individual and average data
- 3) Pre-conditioning requirements (ex. Autoclave, wet, short term heat, etc.)
- 4) Deviations from method (ex. Specimen size due to component limitations)

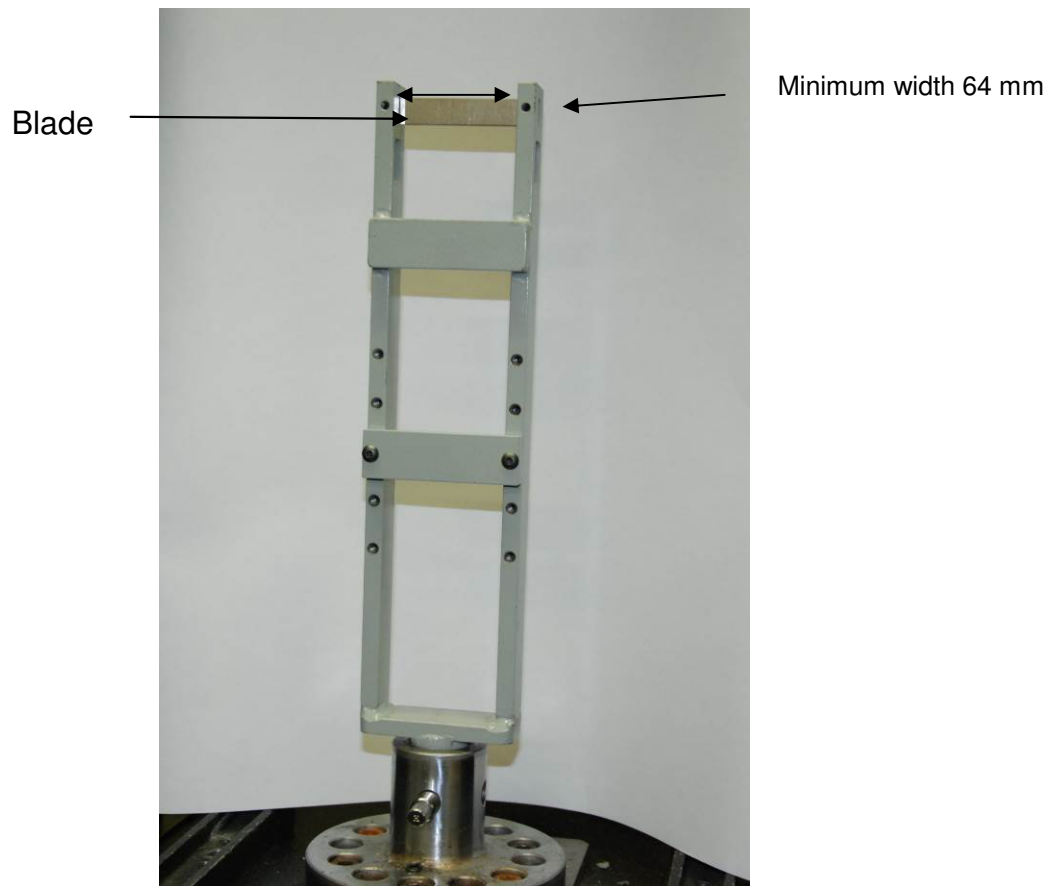


Figure 1: Wedge Fixture