



IPC-TM-650 TEST METHODS MANUAL

1 Scope This method is designed to determine the peel strength of metal foil when bonded to thin laminates. Peel strength is determined for specimens as received or after conditioning, such as solder immersion or elevated temperature exposure.

2 Applicable Documents

IPC-TM-650 Test Methods Manual

2.4.8 Peel Strength of Metallic Clad Laminates

3 Test Specimen Bonded metal foil with peel strength test patterns 3 mm wide and up to 76 mm long (each specimen is about 60 mm to 76 mm long)

4 Apparatus

4.1 Force gage or testing machine capable of a travel speed of 5 cm per minute with a range of 1 kg to 1.4 kg and 4.5 g minimum scale divisions

4.2 Keyhole test plate per Figure 1, or equivalent

4.3 Keyhole horizontal base fixture per Figure 2

4.4 Chain 61 cm to 71 cm

4.5 Surgical hemostat

4.6 Cylindrical spring paper clips (Boston clip No. 4, Hunt Mfg. Co.)

4.7 Chain to hemostat adapter, per Figure 3 (approximately 76 mm long)

4.8 Scalpel

5 Procedure

5.1 Preparation

5.1.1 Cut specimens from a laminated or bonded and etched panel and trim to the edge of the peel tabs.

Number 2.4.8.1	
Subject Peel Strength, Metal Foil (Keyhole Method For Thin Laminates)	
Date 1/86	Revision
Originating Task Group N/A	

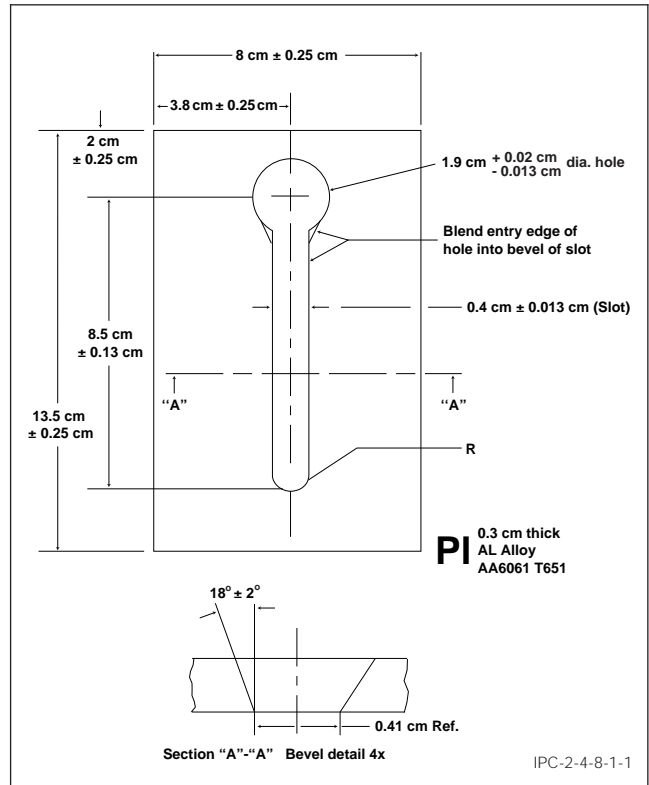


Figure 1 Keyhole Test Plate

5.1.2 Make a cut about 6.35 mm to 9.5 mm along each side of the peel tab, bend up the peel tab 90°, break the laminate, and pull up without breaking the foil.

5.1.3 Pull up the foil about 3 mm to 6.35 mm for about a 9.5 mm to 13 mm starting length (a scalpel can be used to start the foil peel).

5.2 Conditioning If specimens are to be conditioned, the conditions in IPC-TM-650, Method 2.4.8, shall be used. Other conditions of specifications working this method as applicable may be used.

5.3 Test

5.3.1 Place the specimen on the base fixture, metal foil side up, and center the peel strip on the base.

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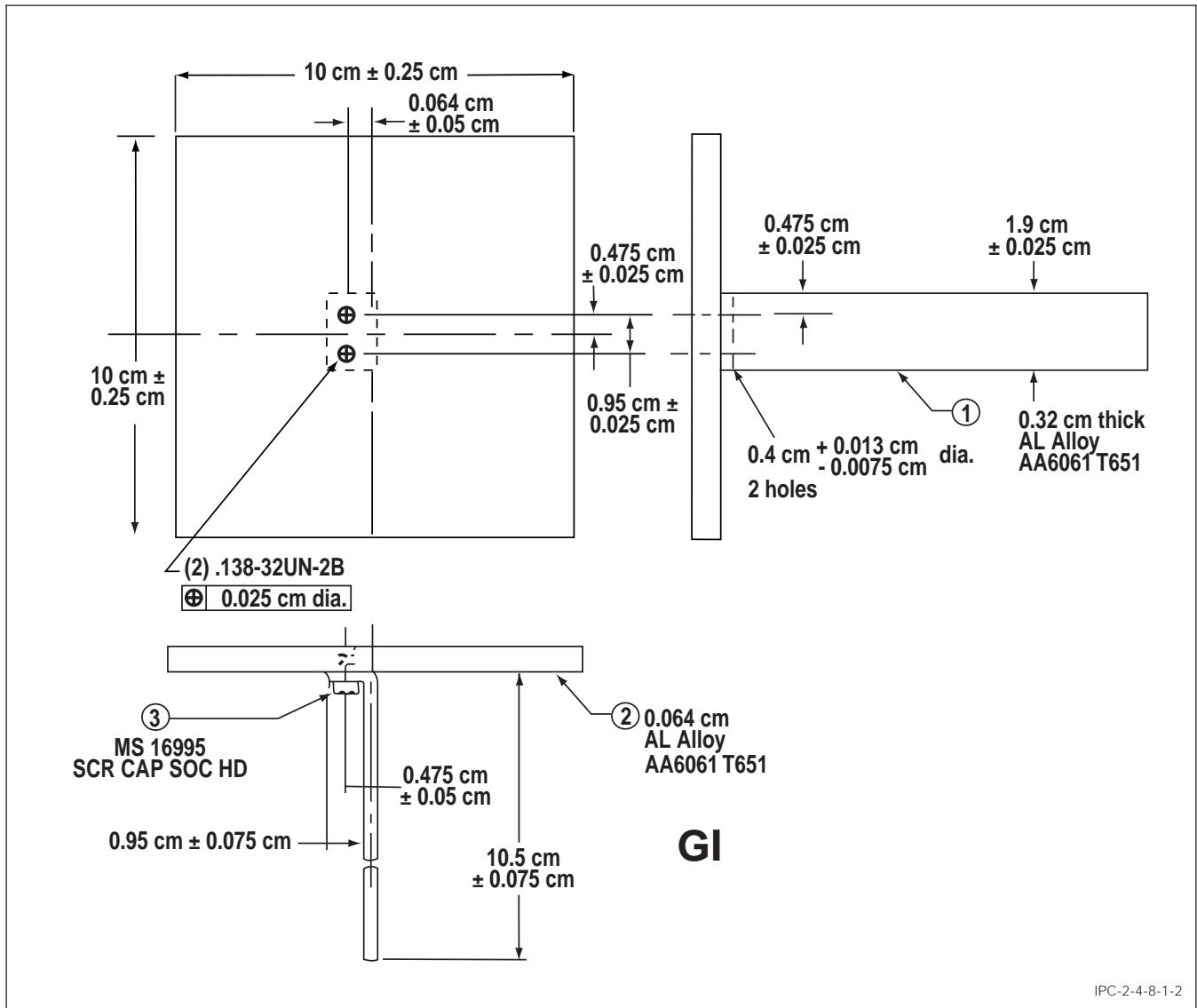


Figure 2 Keyhole Horizontal Axis

5.3.2 Place the keyhole plate over the peel strip with the tab in the large hole and the strip centered in the slot.

5.3.3 Clamp the keyhole plate to the base with the paper-clips, making sure the alignment is not disturbed.

5.3.4 Attach the hemostat to the tab so the peel will be 90° to the strip (the hemostat should be attached to the chain with the adapter and hanging from the tester jaws or force gage so that the tab can be clamped without excessive bending or damage).

5.3.5 Start the vertical pull (5 cm per minute) with the test head and initiate a chart recorder or visually observe the minimum and pull force.

5.3.6 Lower the head or force gage to position for starting the next peel strip and repeat starting at 5.2.1.

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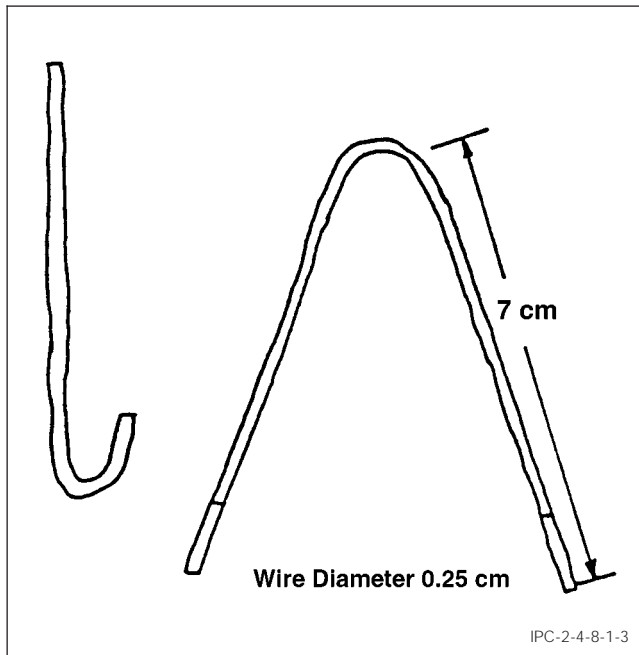


Figure 3 Chain to Hemostat Adapter

5.4 Evaluation

5.4.1 Calculate the peel strength per mm of width by measuring the strip width in mm, using the following formula:

$$\frac{1 \text{ mm}}{\text{measured strip width in mm}} \times \text{observed pull force} = \text{peel strength/mm width}$$

6 Notes

6.1 Peel strength is usually the minimum peel strength observed.