

DIN 50002-1:2020-03 (E)

Adhesive bondings in electronic applications - Bonding strength on surfaces - Part 1: Tensile test

Contents

Page

Foreword	4
Introduction	5
1 Scope	6
2 Normative references	6
3 Terms and definitions.....	6
4 Principle.....	6
5 Test apparatus	7
5.1 Tensile member	7
5.2 Tensile testing device	7
5.3 Pull-off tool.....	8
5.4 Counter holder	8
6 Description of test specimen	8
7 Test specimen preparation	9
7.1 Tests during production or for quality assurance	9
7.2 Bondability testing during the product development phase	9
8 Procedure	9
8.1 Preparation of the adhesive.....	9
8.2 Bonding of tensile members.....	9
8.2.1 General	9
8.2.2 Adjusting the adhesive layer thickness.....	10
8.2.3 Method a).....	10
8.2.4 Method b).....	10
8.3 Curing the adhesive	11
8.4 Conditioning specimens.....	11
8.5 Destructive testing.....	11
9 Evaluation and presentation of results	12
9.1 Assessment of breaking pattern.....	12
9.2 Evaluation of pull-off strength	12
10 Test report.....	13
Annex A (informative) Examples of tensile member geometries	14
Bibliography	17

Figures

Figure 1 — Examples of tensile members.....	7
Figure 2 — Possibilities for counterholding during the tensile test; left: stiff test specimen with clamping away from the bond; right: test specimen with reduced stiffness and counterholding directly next to the tensile member bond.....	8

Figure 3 — Selection of the surfaces for bonding the tensile members; left: bonding to a replacement surface; right: bonding to the bonding surface defined by the design	8
Figure 4 — Applying the tensile member according to method a)	10
Figure 5 — Applying the tensile member according to method b)	11
Figure A.1 — Tensile member A1 for adhesives with a tear strength of up to 10 MPa (e.g. silicones).....	14
Figure A.2 — Tensile member A2 for adhesives with a tear strength of up to 20 MPa (top) and tensile member B for strengths of up to 50 MPa (bottom)	14
Figure A.3 — Tensile member C for adhesives with an increased tear strength and spacers for adjusting the layer thickness; left: side view of the tensile member; right: plan view of the bond area	15
Figure A.4 — Tensile member D1 for adhesives with increased tear strength — diameter 14 mm....	15
Figure A.5 — Tensile member D2 for adhesives with increased tear strength — diameter 20 mm....	16