# ISO/IEC 15457-3:2008-03 (E)

## Identification cards - Thin flexible cards - Part 3: Test methods

## Contents

Page


Foreword ..... vii

1 Scope ..... 1

2 Normative references ..... 1

3 Terms and definitions ..... 2

4 Test methods for physical characteristics ..... 4
4.1 General ..... 4
4.1.1 Reference ..... 4
4.1.2 Apparatus ..... 4
4.1.3 Sampling, preparation and storage of samples ..... 4
4.1.4 Conditioning and testing environment ..... 4
4.1.5 Test report ..... 5
4.2 Dimensions (except thickness) ..... 5
4.2.1 Reference ..... 5
4.2.2 Principle ..... 5
4.2.3 Procedure ..... 5
4.3 Thickness ..... 5
4.3.1 Reference ..... 5
4.3.2 Apparatus ..... 5
4.3.3 Procedure ..... 5
4.4 Separation force ..... 5
4.4.1 Reference ..... 5
4.4.2 Principle ..... 6
4.4.3 Apparatus ..... 6
4.4.4 Procedure ..... 6
4.4.5 Expression of result ..... 6
4.5 Reel winding ..... 6
4.5.1 Reference ..... 6
4.5.2 Apparatus ..... 7
4.5.3 Procedure ..... 7
4.6 Bursting strength ..... 7
4.6.1 Reference ..... 7
4.6.2 Procedure ..... 7
4.7 Stiffness ..... 8
4.7.1 Reference ..... 8
4.7.2 Procedure ..... 8
4.8 Folding endurance ..... 8
4.8.1 Reference ..... 8
4.8.2 Apparatus ..... 8
4.8.3 Procedure ..... 8
4.9 Ash content ..... 8
4.9.1 Reference ..... 8
4.9.2 Procedure ..... 8
4.10 Smoothness ..... 8
4.10.1 Reference ..... 8
4.10.2 Procedure ..... 8
4.11 Opacity (paper backing) and opacity (700-1 000 nm) ..... 9
4.11.1 Reference ..... 9
4.11.2 Procedure ..... 9

4.12 Coefficient of friction and destacking force ..... 9
4.12.1 Reference ..... 9
4.12.2 Procedure ..... 9
4.13 Reflectance factor ..... 10
4.13.1 Reference ..... 10
4.13.2 Procedure ..... 10
4.14 Air permeance ..... 10
4.14.1 Reference ..... 10
4.14.2 Procedure ..... 10
4.15 Sizing and pen-writing factor ..... 10
4.15.1 Reference ..... 10
4.15.2 Principle ..... 11
4.15.3 Apparatus and reagents ..... 11
4.15.4 Preparation of test pieces ..... 12
4.15.5 Procedure ..... 12
4.15.6 Expression of results ..... 13
4.16 Tear resistance ..... 13
4.16.1 Reference ..... 13
4.16.2 Procedure ..... 13
4.17 Delamination resistance ..... 14
4.17.1 Reference ..... 14
4.17.2 Principle ..... 14
4.17.3 Apparatus ..... 14
4.17.4 Preparation for test ..... 15
4.17.5 Procedure ..... 15
4.17.6 Expression of results ..... 16
4.17.7 Test report ..... 16
4.18 Cold-crack temperature (brittleness) ..... 17
4.18.1 Reference ..... 17
4.18.2 Procedure ..... 17
4.18.3 Expression of results ..... 19

5 Test methods for magnetic stripe physical characteristics ..... 20
5.1 Preparation and storage of samples ..... 20
5.2 Conditioning and test environments ..... 20
5.3 Protrusion ..... 20
5.3.1 Reference ..... 20
5.3.2 Principle ..... 20
5.3.3 Apparatus ..... 20
5.3.4 Procedure ..... 20
5.4 Profile deviation ..... 20
5.4.1 Reference ..... 20
5.4.2 Principle ..... 21
5.4.3 Procedure ..... 21
5.5 Roughness Ra and Rz ..... 22
5.5.1 Reference ..... 22
5.5.2 Principle ..... 22
5.5.3 Procedure ..... 22
5.6 Warpage ..... 22
5.6.1 Reference ..... 22
5.6.2 Procedure ..... 22
5.7 Adherence ..... 22
5.7.1 Reference ..... 22
5.7.2 Apparatus ..... 22
5.7.3 Procedure ..... 22
5.8 Wear test ..... 23
5.8.1 Reference ..... 23
5.8.2 Principle ..... 23
5.8.3 Procedure ..... 23
5.9 Dimensional measurement of the magnetic stripe ..... 23
5.9.1 Principle ..... 23
5.9.2 Procedure ..... 23

6 Test methods for static magnetic characteristics ..... 23
6.1 Principle ..... 23
6.2 Apparatus ..... 24
6.3 Preparation and storage of sample ..... 24
6.3.1 Preparation ..... 24
6.3.2 Storage ..... 25
6.3.3 Conditioning and testing environment ..... 25
6.4 Procedure ..... 25
6.4.1 VSM ..... 25
6.4.2 HM ..... 26
6.5 Expression of results ..... 26
6.6 Coercivity, HcM ..... 27
6.6.1 Reference ..... 27
6.6.2 Procedure ..... 27
6.7 Squareness, SQ ..... 27
6.7.1 Reference ..... 27
6.7.2 Procedure ..... 28
6.8 Switching field distribution, (SFD) ..... 28
6.8.1 Reference ..... 28
6.8.2 Procedure ..... 28
6.9 Test report ..... 28

7 Test method for dynamic magnetic characteristics ..... 28
7.1 Principle ..... 28
7.2 Reference cards ..... 29
7.3 Apparatus ..... 29
7.3.1 Measuring instrument for classes L and S ..... 29
7.3.2 Measuring instrument for class H ..... 29
7.4 Preparation and preservation of test samples ..... 29
7.4.1 Preparation ..... 29
7.4.2 Preservation ..... 29
7.4.3 Conditioning and testing environment ..... 30
7.5 Test procedure ..... 30
7.5.1 Test densities (Dmax and Dmin) ..... 30
7.6 Expression of results ..... 30
7.6.1 Resolution ..... 30
7.6.2 Modulation ..... 30
7.7 Test report ..... 31

8 Tests for cards containing contactless chips and antennas ..... 31
8.1 Reliability of the chip/antenna connection for a strip of connected cards ..... 31
8.1.1 Reference ..... 31
8.1.2 Principle ..... 31
8.1.3 Equipment ..... 31
8.1.4 Procedure ..... 32
8.1.5 Test report ..... 32
8.2 Reliability of the chip/antenna connection for a single card ..... 32
8.2.1 Reference ..... 32
8.2.2 Principle ..... 32
8.2.3 Equipment ..... 33
8.2.4 Procedure ..... 33
8.2.5 Test report ..... 33
8.3 Test for chip/antenna connection withstanding scratch test ..... 34
8.3.1 Reference ..... 34
8.3.2 Principle ..... 34
8.3.3 Equipment ..... 34
8.3.4 Procedure ..... 35
8.3.5 Test report ..... 35
8.4 Test for card withstanding to Crumpling / Folding ..... 35
8.4.1 Reference ..... 35
8.4.2 Principle ..... 35

**8.4.3 Procedure ..... 35**
**8.4.4 Test report ..... 36**

**Bibliography ..... 37**