



SLOVENSKI STANDARD

SIST EN 753-1:1998

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Identification card systems - Intersector thin flexible cards - Part 1: General technical specifications

Identification card systems - Intersector thin flexible cards - Part 1: General technical specifications

Identifikationskartensysteme - Branchenübergreifende dünne biegsame Karten - Teil 1: Allgemeine technische Angaben

Systemes de cartes d'identification - Cartes souples minces intersectorielles - Partie 1: Spécifications techniques générales

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Ta slovenski standard je istoveten z: EN 753-1:1997

ICS:

35.240.15	Identifikacijske kartice in sorodne naprave	Identification cards and related devices
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EUROPEAN STANDARD

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Descriptors: identification cards, magnetic cards, classifications, specifications, dimensions, materials, magnetic tapes, physical properties, magnetic properties, codification, utilization, presentation, printing

English version

**Identification card systems - Intersector thin
flexible cards - Part 1: General technical
specifications**

Systèmes de cartes d'identification - Cartes
souples minces intersectorielles - Partie 1:
Spécifications techniques générales

Identifikationskartensysteme -
Branchenübergreifende dünne biegsame Karten -
Teil 1: Allgemeine technische Angaben

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 224 "Machine-readable cards, related device interfaces and operations", the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 1997, and conflicting national standards shall be withdrawn at the latest by December 1997.

This European Standard is one of a series of standards, under the general title "Identification card systems - Intersector thin flexible cards" and the different parts are the following :

- Part 1 : General technical specifications ;
- Part 2 : Magnetic recording technique ;
- Part 3 : Test methods.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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Introduction

Thin flexible cards (TFCs), the subject of this European Standard, are used to automate the controls for access to goods or services such as mass transit, highway toll systems, car parks, vouchers, stored value, etc.

For this purpose, TFC data can be written and/or read by machines using various recording techniques such as magnetic stripe, optical character recognition (OCR), bar code, etc. The cards are preferably made from recyclable material.

1 Scope

This part of EN 753 specifies the physical characteristics of thin flexible cards. Thicker cards, for example ID-1 cards, do not come within its scope.

The principal card sizes are identified and the characteristics and dimensions are specified.

Guidance concerning the storage and usage of cards under various environmental conditions is given.

2 Normative references

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 753-2	Identification card systems - Intersector thin flexible cards - Part 2 : Magnetic recording technique
prEN 753-3	Identification card systems - Intersector thin flexible cards - Part 3 : Test methods
EN 20284	Conveyor belts - Electrical conductivity - Specification and method of test (ISO 284:1982)
EN 20534	Paper and board - Determination of thickness and apparent bulk density or apparent sheet density (ISO 534:1988)
ISO 536	Paper and board - Determination of grammage
ISO 1184	Plastics - Determination of tensile properties of films
ISO 1831	Printing specifications for optical character recognition
ISO 1924-2	Paper and board - Determination of tensile properties - Part 2 : Constant rate of elongation method
ISO 2144	Paper and board - Determination of ash
ISO 2471	Paper and board - Determination of opacity (paper backing) - Diffuse reflectance method

ISO 2758	Paper - Determination of bursting strength
ISO 4593	Plastics - Film and sheeting - Determination of thickness by mechanical scanning
ISO 5626	Paper - Determination of folding endurance
ISO 5627	Paper and board - Determination of smoothness (Bekk method)
ISO 5629	Paper and board - Determination of bending stiffness - Resonance method
ISO 5636-3	Paper and board - Determination of air permeance (medium range) - Part 3 : Bendtsen method
ISO 6383-2	Plastics - Film and sheeting - Determination of tear resistance. - Part 2 : Elmendorf method
ISO 8226-2	Paper and board - Measurement of hygroexpansivity - Part 2 : Hygroexpansivity up to a maximum relative humidity of 86%
ISO 8295	Plastics - Film and sheeting - Determination of the coefficients of friction
ISO 8570	Plastics - Film and sheeting - Determination of cold-crack temperature

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3 Definitions

For the purposes of this standard, the following definitions apply :

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- 3.1 back** : The face of the card opposite the front.
- 3.2 finished card** : Card at the point of issue to the public.
- 3.3 front** : The reference face of the card (which normally bears printed information relating to its origin and ownership).
- 3.4 heavy usage** : Class of TFC able to withstand up to 2 500 transaction cycles.
- 3.5 height** : The dimension parallel to the shortest edge of the card.
- 3.6 light usage** : Class of TFC able to withstand up to 50 transaction cycles.
- 3.7 medium usage** : Class of TFC able to withstand up to 500 transaction cycles.
- 3.8 print contrast signal (PCS)** : The ratio : print contrast divided by the reflectance of the paper on which the character is printed. [ISO 1831].
- 3.9 recording technique** : Any technique used to store data on the card, such as magnetic or optical encoding etc.
- 3.10 recyclable** : Property of a material that may be re-processed to produce the same or other product.

3.11 reference edges : Datum edges for dimensioning and orientation, having a fixed relationship to the front of the card.

3.12 regular card : Card without thermal sensitive coating.

3.13 tactile identifier : A feature used to determine the orientation of the card.

3.14 thermal card : Card with thermal sensitive coating.

3.15 usage (class of TFC) : The number of transaction cycles which the particular class of TFC is required to withstand in normal operation.

3.16 width : The dimension parallel to the longest edge of the card.

4 Symbols and abbreviations

R_p reflectance of a machine readable printed mark, measured in accordance with ISO 1831 for the B 900 spectral band

R_W reflectance of the background surrounding a machine readable printed mark, measured in accordance with ISO 1831 for the B 900 spectral band

PCS print contrast signal

TFC thin flexible card

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5 General characteristics

5.1 Introduction

Six card formats are recognised, and classified as follows to correspond with other existing schemes of classification :

- TFC.0, size 66 mm x 30 mm ;
- TFC.1, size 85 mm x 54 mm ;
- TFC.2, size 105 mm x 74 mm ;
- TFC.3, size 125 mm x 88 mm ;
- TFC.4, size 120 mm x 54 mm ;
- TFC.5, size 187 mm or 203 mm x 83 mm.

Classes TFC.2, TFC.3 and TFC.4 are not specified in this standard.

For each format of card, the geometrical and topographical characteristics are specified separately in the relevant clause of this part of the standard. The remaining physical characteristics, which are common to all sizes, are specified in this clause.

Magnetic stripe and track characteristics are specified in EN 753-2.

All clauses in all parts of EN 753 apply to finished cards or to the reels/packs from which such cards are taken. Certain clauses however concern the characteristics of the card throughout its life.

As a matter of convenience and practicality, certain tests can be carried out on unfinished cards where it can be demonstrated that no significant change in that characteristic can arise during subsequent processing.

5.2 Requirements common to all formats

5.2.1 General requirements

Thin flexible cards may be finished in a variety of ways, in accordance with the requirements of the system in which they are to be used. They may be

- printed or pre-printed except in areas used by recording techniques and machine functions (e.g. magnetic stripes, positioning marks, where used) ;
- equipped for one or more recording techniques (e.g. magnetic stripes, optical bar codes).

Thin flexible cards shall not be embossed.

Regardless of any of these finishing processes, the finished cards shall continue to conform to the requirements of this standard, including the relevant annex given in table 1.

All cards, however presented, shall be free from defects which could interfere with usage, such as joins, excessive dust, cutting debris, folds, tears, creases and thick spots. No part of the card shall adhere to, or leave an impression on, the adjacent cards in a reel or pack.

5.2.2 Reference edges

Any specification for a thin flexible card conforming to this standard shall nominate a reference face (the front) and two reference edges, having the relationship shown in figure 1, such that all features of the finished card can be located within the same frame of reference.

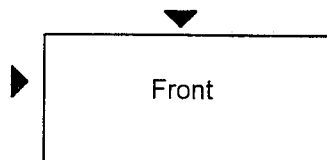


Figure 1 : Relationship between card front and reference edges

It is preferred that the front of the card should be that which is designated to carry the major printed identification information (e.g. system logo or name) and that human readable information on the front shall be upright when the card is held with one of the two reference edges at the top.

Once identified, these same reference edges shall be used exclusively and consistently when locating all features specified in this and the other applicable parts of EN 753.

5.2.3 Card life

5.2.3.1 Before issue

The minimum life expectancy of cards stored in their original packing, under conditions specified in 5.3.2, shall be one year.

Cards stored in operational devices (e.g. issuing machines), under the conditions specified in 5.3.3, shall have a minimum life expectancy of two months.

5.2.3.2 After issue

Finished cards stored under the conditions specified in 5.3.2 without further use shall still be functional after at least one year.

Cards shall remain functional throughout the number of transaction cycles appropriate to their usage class (see 3.15). Table 1 shows the number of automated transaction cycles each class is required to withstand in normal operation and the annex specifying the relevant material characteristics.

Table 1 : Requirements for usage classes

Usage class	Number of transaction cycles	Material characteristics specification
Light	≥ 50	annex A
Medium	≥ 500	annex B
Heavy	≥ 2 500	annex C

NOTE : Performance requirements of additional features for these three usage categories are given in the appropriate parts of this standard. For example, those for magnetic stripes are given in EN 753-2.

Cards shall resist deterioration from exposure to light and other environmental factors encountered in normal use.

Where abnormally demanding conditions of use are likely to affect life expectancy, these shall be taken into account when selecting suitable card materials and methods of manufacture.

5.3 Environmental conditions

5.3.1 Testing environment

Each of the characteristics specified in this standard shall be measured under the environmental conditions specified in prEN 753-3. For most characteristics, these conditions are 23°C and 50% relative humidity.

NOTE : Under different conditions, certain characteristics will change significantly, including :

- dimensions (width, height, thickness) ;
- weight ;
- flatness ;
- many of the physical parameters listed in tables A.1, B.1 and C.1.

At the extremes of the usage environment (see 5.3.3), these changes can be substantial, and should be taken into account in the design of TFC handling devices.

5.3.2 Storage environment and packaging

Cards shall be stored under the conditions specified in table 2.

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Table 2 : Storage conditions

Card type	Temperature °C	Relative humidity % (see NOTE)
Regular cards	0 to 50	30 to 65
Thermal cards	0 to 40	30 to 65
NOTE : Relative humidity conditions are subject to a maximum wet bulb temperature of 25°C.		

The purpose of the packaging is to protect cards from physical damage and to reduce the rate of humidity variation. As a consequence :

- cards shall be kept in their original packaging for as long as is practical ;
- boxes shall be stored on a flat surface, respecting "top" and "bottom" indications ;
- boxes shall not show any apparent distortion or other damage.

The packaging may be defined by the user but shall enable the above conditions to be met.

5.3.3 Usage environment

Sudden changes in environmental conditions can cause card distortion. Packages containing cards should therefore be approximately in equilibrium with surrounding conditions before they are opened.

Cards shall retain their structural integrity and remain usable within the range of ambient conditions specified in table 3.

Table 3 : Usage conditions

Card type	Temperature °C (see NOTE 1)	Relative humidity % (see NOTE 2)
All cards	-35 to 50	15 to 85
NOTE 1 : In some applications, the temperature range can be limited by the cold crack temperature (see annex C). NOTE 2 : Relative humidity conditions are subject to a maximum wet bulb temperature of 25°C.		

5.4 Classification of card characteristics

5.4.1 Scheme of classification

Classification of card physical characteristics shall be by nominal outline dimensions, thickness and usage (see 3.15).

This part of EN 753 provides each class of TFC with a unique identifier having the general prefix "TFC" and a number of classification parameters arranged in the form :

TFC.D.T.U.{optional parameters}.

Optional parameters may be appended to define characteristics outside the scope of this part of the standard (for example, the magnetic recording technique defined in EN 753-2).

Table 4 summarizes the standardized physical characteristics and defines the classification parameters relevant to this part of EN 753.