SLOVENSKI STANDARD
SIST ENV 12281:1997

01-september-1997

Papir - Tiskovni papir in papirji za poslovne namene - Zahteve za kopirni papir pri uporabi suhega tonerja v prahu

Paper - Printing and business paper - Requirements for copy paper for dry toner imaging processes

Papier - Druck- und Büropapiere - Anforderungen an Kopierpapier für Vervielfältigen mit Trockentoner

Papier - Papier d'impression et de bureau - Spécifications pour papier pour photocopie pour procédés de reproduction par toner sec

Ta slovenski standard je istoveten z: **ENV 12281:1996**

ICS:

85.080.10 Pisarniški papir Office paper

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EUROPEAN PRESTANDARD

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Descriptors: paper, printing paper, photocopying, specifications, dimensions, specific area

English version

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This European Prestandard (ENV) was approved by CEN on 1996-10-05 as a prospective standard for provisional application. The period of validity of this ENV is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the ENV can be converted into an European Standard (EN).

CEN members are required to announce the existance of this ENV in the same way as for an EN and to make the ENV available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the ENV) until the final decision about the possible conversion of the ENV into an EN is reached.

CEN members are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

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

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Content

Foreword

This European Prestandard has been prepared by Technical Committee CEN/TC 172 "Pulp, paper and board", the secretariat of which is held by DIN.

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

3.5.3 curl paper machine direction K_{MD}: Measurement of curl as the reciprocal of the radius of curvature in the grain direction of paper. This means that for long grain paper, the curl of the 210 mm edge of a sheet or a group of ten sheets, is measured.

3.5.4 curl paper cross direction K_{CD}: Measurement of curl as reciprocal of the radius of curvature in the grain direction of paper. This means that for short grain paper, the curl of the 297 mm edge of a sheet or a group of ten sheets, is measured.

3.5.5 angle of curl: The angle of curl is the angle measured between the axis of the machine direction of the paper, and the axis around which the paper is curling. It is positive if the calculated angle of the axis of curl towards machine direction is clockwise. The range is between 0° and 90°. Angle of curl is expressed in degrees.

4 Principle

Printability and runnability are the main functional properties and a number of characteristics related to these properties are specified. Some of these properties are also very much dependent on the machines and the required limits should be agreed between customer and supplier. These properties are curl before and after copy, and toner adhesion.

For some properties, limiting values are now given in this European Prestandard, these are jamming, moisture content and surface resistivity. For opacity, a minimum value is given for paper to be used for duplex copying.

Full tolerance values will be set for coefficient of friction (see ENV 12448), edge dust (see ENV 12282) and cutting quality at a future date as the test methods for these properties are either new, or are not frequently used for this type of paper. Until more experience is gained only target values or no limit values will be specified. Those with experience of abrasion resistance testing may use this in place of surface strength test. As this test method is very much machine dependant, low tolerance limits have been set.

To fully describe the kind of papers, it is recommended to test also some other properties. These are grammage, thickness and whiteness.

Provision is made to prevent harmfull contamination of machinery by paper or packaging components.

5 Sampling

Samples shall be taken in accordance with EN ISO 186.

For the testing of jamming, curl, moisture content and cutting quality, the samples are to be taken directly out of the package.

6 Conditioning

The sample from which the specimens are taken shall be conditioned under standard atmosphere 23/50 in accordance with EN 20187, unless specifically stated otherwise.

7 Requirements

The performance requirements for copy paper are listed in table 1.

Table 1: Requirements for copy paper

Characteristic	Unit	Values	Test Methods	Remarks
curl	m^{-1}	1)	see ISO/DIS 14968	use CEN-Master in accordance with Annex B
curl before copy	m^{-1}	1)	see ISO/DIS 14968	use CEN-Master in accordance with Annex B
runnability	--	see Annex A	see Annex A	--
edge dust	%	2)	see ENV 12282	--
cutting quality	--	2)	see Annex C	--
surface strength	m/s	2)	see ISO 3783	to be used with medium viscosity oil and max. speed: 2,4 m/s
abrasion resistance	mg	(recommended values) ≤ 20 mg/100 revolutions	see NF Q 03055 or DIN 53109	to be used with a 500 g weight
surface resistivity	Ω	10^8 to 10^{11}	see IEC 93	to be used with 500 V on isolated base-electrod for 15 s
moisture content	%	4,7 ± 0,9	see EN 20287	--
coefficient of static friction	--	(recommended values) (0,6 ± 0,1)	see ENV 12448	cross direction to cross direction
toner adhesion	--	1)	see ENV 12283	--
opacity	%	> 85	see ISO 2471	for duplex use
whiteness	--	1)	see ISO/DIS 11475	--
thickness	µm	1)	see EN 20534	--
grammage	g/m²	1)	see EN ISO 536	--
size	mm	--	see EN 20216	--
machine direction	--	--	see EN 644	--

1) By agreement between customer and supplier.
2) See clause 4.

8 Migratory substances

Paper manufacturer's should control the paper raw materials and production processes in order to keep the presence of any migratory material that could contaminate the imaging systems to the lowest practical level. Dispersed migratory chemicals and spot contaminants are considered to be migratory materials; in either case all efforts shall be made to avoid their presence at or near the sheet surface.

Examples of migratory substances are talc, wax, sticky resin.

9 Packaging

9.1 Physical packaging

To protect the sheets from harmful effects of mechanical forces, atmospheric conditions and contamination during in-house storage and use, the paper shall be packed as specified below. The inner packing is typically a ream, or box.

For transport purposes a second (all-weather) protective packing is necessary.

The inner packing shall be tightly closed. The packing material is recommended to have a moisture barrier with migration coefficient $\leq$ 10 g/m² per day.

9.2 Absence of contamination

Packaging materials (from moisture protective coatings and low melting adhesives) should not contaminate the paper. The maximum number of packages, having major contamination defects should not be greater than 2 per 1000. A major defect is defined as having at least one dimension $\geq$ 1 mm.

NOTE: Since quality inspection would be destructive to the packages, this quality standard may be met by providing a certificate from the converting manufacturer, stating that a procedure for prevention of harmful contamination, in line with said limits, has been used.

10 Test report

The test report shall refer to this European Prestandard and state:

a) precise identification of the paper lot tested;

b) date and place of testing;

c) type of copier or printer used;

d) the test results obtained when testing as specified in table 1, expressed as stated in the relevant standards;

e) any other observations made, or statement of conformance supplied by the manufacturers, that may be of importance for the function of the paper in a copier machine;

f) a statement that the paper either meets or fails to meet the requirements of this European Prestandard. As some of the requirements are to be agreed by customer and supplier, these limits should be specified separately;

g) test conditions and any deviation from specified test conditions.

Annex A (normative)

Runnability

A.1 Basis of the procedure

The runnability test comprises a copy/print sequence under defined conditions that are as close as possible to the practice. The nature and the number of performance problems found, should enable a judgemet to be made regarding the paper volume demand of copiers and printers. Accordingly, three categories have been defined using the criterion "image-speed".

Table A.1: Classification of imaging machines

machine category	low volume	mid volume	high volume
image speed in images/-min	< 30	30 to 49	≥ 50

A.2 Preparation of imaging machine

The test machine shall be clean and set up according to the manufacturer's specifications. All components should have adequate capability and remaining service life to meet the volumes of the test run planned. Substitution may be required in case a previous test has caused abnormal effects.

If applicable, other supplies such as developer, silicone oil and the like shall be renewed.

It is also compulsory to warm-up the machine by running blank sheets (without the image to be printed) for two minutes before testing.

A.3 Test master

For the purpose of the test, a special CEN test master has been designated (see Annex B).

A.4 Runnability test conditions

Conditions of test

a) sampling in accordance with EN ISO 186;

b) the test shall be carried out under initial ambient temperature and humidity conditions defined by EN 20187. Any deviation during the test shall be reported;

c) paper shall be at ambient temperature;

d) paper shall be loaded immediately after unwrapping without fanning unless manufacturer instructs otherwise;

e) CEN test master to be rotated 180° every 1000 images.

NOTE: Tests for curl should be made concurrent with the use of the machine.

In order to give a runnability test representative of a printer's or copiers's typical usage, table A.2 sets out the proportions of paper to be run in available print modes according to the machine category.