SLOVENSKI STANDARD
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Grafiļ na tehnologija - Odtisi in tiskarske barve - Ugotavljanje odpornosti proti razliļ nim dejavnikom

Graphic technology -- Prints and printing inks -- Assessment of resistance to various agents

Technologie graphique -- Impressions et encres d'imprimerie -- Évaluation de la résistance à divers agents

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INTERNATIONAL STANDARD

ISO 2836

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Graphic technology — Prints and printing inks — Assessment of resistance to various agents

Technologie graphique — Impressions et encres d'imprimerie — Évaluation de la résistance à divers agents

Reference number
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Contents

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 2836 was prepared by Technical Committee ISO TC 130, *Graphic technology.*

This second edition cancels and replaces ISO 2836:1974, ISO 2838:1974, ISO 2839:1974, ISO 2840:1974, ISO 2841:1974, ISO 2842:1974, ISO 2843:1974 and ISO 2844:1974.

Introduction

Before the developement of this International Standard a series of International Standards existed each describing the resistance of prints and/or printing inks to a single fluid or solid agent such as water (ISO 2836), alkalis (ISO 2838), soaps (ISO 2839) detergents (ISO 2840), cheese (ISO 2841), oils and fats (ISO 2842), paraffin wax (ISO 2843) and spices (ISO 2844). Since the main difference between those International Standards were the exposure conditions it was decided in TC 130 to develop one single International Standard including all of the above-mentioned agents and relevant exposure conditions appropriate for a number of resistance tests. For the assessment of resistance of prints to solvents and acids see ISO 2837 [1] and ISO 11628 [2].

Graphic technology — Prints and printing inks — Assessment of resistance to various agents

1 Scope

This International Standard specifies methods for assessing the resistance of prints and printing inks to water, alkalis, oils and fats, cheese, detergents, soaps, wax and spices.

It applies to all printing substrates such as paper, board, metals (thin metal sheet and plate) and plastic materials and to all printing processes, e.g. lithographic, gravure, letterpress, flexo, screen and non-impact printing.

2 Normative reference

The following normative document contains provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the normative document indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 2834:—[1], *Graphic technology — Test print preparation for offset and letterpress inks.*

3 Test methods

3.1 Principle

The test methods described in 3.3 shall be used with either production prints or test samples, prepared according to ISO 2834, i. e. using a printability tester or any other less accurate method allowing to form a uniform distribution of ink on the substrate in a desired thickness range. A test piece is brought into static contact with the agent used. Assessment is made of any changes in the print and in the receptor surface which has been in contact with the test print.

3.2 Apparatus

— 2 glass plates, 60 mm × 90 mm × 2 mm

— White neutral laboratory filter paper, for qualitative chemical analysis, with a very smooth and soft surface. The size of the strips of filter paper should be 60 mm × 90 mm.

— Petri dish, diameter ⩾ 100 mm

[1] To be published. (Revision of ISO 2834:1981)

3.3 Testing

3.3.1 Liquid agents

Immerse four sheets of filter paper to be used for the test totally in the liquid agent being tested and then drain them until no free agent drips from the filter paper.

Place two saturated sheets of filter paper on the lower glass plate.

Place a 20 mm × 50 mm sample of the print to be evaluated on the filter paper and cover it with the other two sheets of saturated filter paper.

Cover with the other glass plate and place a 1 kg weight on top. Leave it for the test duration specified in Table 1.

Rinse the prints being tested for alkali, detergent or soap resistance with deionized water and dry prints (except those for oil resistance) in an oven for 30 min at a temperature of about 40 °C.

3.3.2 Solid agents

Place a 20 mm × 50 mm test piece with its printed side in contact with the freshly prepared smooth surface of the solid agent to be tested.

Exert sufficient pressure on the test piece to ensure optimum contact with the solid agent.

Store this package for the test duration under the conditions specified in Table 1.

Then carefully remove the test piece and, if required, allow to dry naturally.

3.3.3 Meltable solid agents (Waxes)

Melt 50 g of the solid agent in the Petri dish and maintain a temperature of not more than 40 °C greater than its melting point.

Immerse a 20 mm × 50 mm test piece for 5 min, leaving a small section unimmersed to facilitate handling.

Remove the test piece and allow to drip on a white filter paper while it is cooling.

3.3.4 Solid spices

Place a 20 mm × 50 mm test piece on the bottom of the Petri dish, with the printed side up.

Place a filter paper on top of the test piece and spread a layer of the test agent to a depth of at least 3 mm.

Place a glass plate on the layer of the test agent and cover the Petri dish with the lid. Expose at the conditions specified in Table 1.

3.4 Test conditions

The test conditions for various liquid and solid agents are summarized in Table 1.

4 Evaluation

— Compare the treated test piece to an untreated test piece. Observe any changes including whether the ink film is completely intact.

— Observe the receptor surface that has been used in the test, for staining and/or ink transfer.

Table 1 — Test conditions for various liquid and solid agents

Test agent	Receptor surface	Temperature °C	Test duration	Contact conditions	Test method
Water	Filter paper	23 ± 2	24 h	1 kg on 54 cm^2	3.3.1
NaOH (1 % sol.)	Filter paper	23 ± 2	10 min	1 kg on 54 cm^2	3.3.1
Cheese	Cheese	23 ± 2 [a]	72 h [a]	no pressure	3.3.2
Solid fat (butter)	Solid fat	23 ± 2	24 h	no pressure	3.3.2
Oils	Filter paper	23 ± 2	24 h	1 kg on 54 cm^2	3.3.1
Detergent (1 % sol.)	Filter paper	23 ± 2	3 h	1 kg on 54 cm^2	3.3.1
Spice	Filter paper	23 ± 2	7 d	vapour	3.3.4
Soaps (1 % sol.)[b]	Filter paper	23 ± 2	3 h	1 kg on 54 cm^2	3.3.1
Wax	Molten wax	m.p. + 40	5 min	liquid	3.3.3

[a] Fresh cheese: 4 °C and 24 h in a water vapour saturated atmosphere

[b] Standard soap: soda soap with high fatty acid content (89 %)

5 Test report

The report shall include the following:

— nature of the printed sample and its substrate;

— the agent used for the test;

— observation whether the ink film is completely intact and report all changes observed, i.e. changes of the colour of the print and all changes of the substrate;

— whether or not the agent has changed colour;

— the actual test conditions used, if different from those specified in Table 1.