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IS 15495 (2004): Printing Ink for food packaging - Code of practice [CHD 14: Printing, Inks, Stationary and Allied Products]



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“Knowledge is such a treasure which cannot be stolen”

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भारतीय मानक

खाद्य पैकेजिंग के लिए मुद्रण स्याही — रीति संहिता

Indian Standard

PRINTING INK FOR FOOD PACKAGING —
CODE OF PRACTICE

ICS 55.040; 67.230; 87.080

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BUREAU OF INDIAN STANDARDS
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NEW DELHI 110002

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Inks, Stationery and Allied Products Sectional Committee had been approved by the Chemical Division Council.

This standard has been formulated with a view to assist the manufacturers of printing inks to produce inks, which are intended for use on food packages and which do not contain any hazardous chemicals that may get transferred to the food packed, and help food packers and manufacturers of packages in selecting proper quality printing ink. General guidelines for exclusion of certain substances from printing ink formulations intended for use on food packages have also been prescribed in this standard.

In the preparation of this standard, considerable assistance has been derived from BCF GUIDE, Guide to materials and substances for exclusion from Printing Inks, Coatings, Printers and Overprint Varnishes, November 1996 and the European Confederation of Paint, Printing Ink and Artists Colours Manufacturers Association — Exclusion List, CEPE, January 1996.

At present, there is no ISO Standard on the subject.

The composition of the Committee responsible for formulation of this standard is given in Annex B.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

PRINTING INK FOR FOOD PACKAGING — CODE OF PRACTICE

1 SCOPE

This standard prescribes guidelines for printing inks for use on food packages.

2 REFERENCES

The standards listed below contain provisions, which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

<i>IS No.</i>	<i>Title</i>
4395 : 1987	Glossary of terms relating to inks and allied industries (<i>first revision</i>)
6931 : 1972	Methods of test for printing inks

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 4395 shall apply.

4 PRINTING INKS FOR USE ON FOOD PACKAGES

4.1 The packaging of food, as far as printing ink is concerned, can be divided into the following four categories.

4.1.1 *External Packaging*

Any packing additional to an immediate food wrapping. This relates to inks for printing external food wrappings, where there is a barrier in the form of another wrapper between the printed surface and the food.

4.1.2 *Immediate Food Wrappings*

Wrapping material in direct contact with food.

4.1.3 *Print in Direct Food Contact*

Printed wrapper or insert, where the printed side is in direct contact with food.

4.1.4 *Disposables*

This covers paper plates, drinking straws, table napkins and other disposables, which might be used to wrap or hold food.

4.2 **Printing Inks for External Packing**

In external packing, the printed matter has a barrier in the form of another wrapper between it and the food. The very low mass of the ink generally used to print such a packing and the remoteness of ink itself from the food make any additional safeguards unnecessary. The components in printing ink need to comply to exclusion list given in Annex A.

4.3 **Printing Inks for Immediate Food Wrappings**

4.3.1 In case the printed ink film is deliberately applied to the surface intended to be in contact with food, it is possible that migration of some ingredients into the food may occur and therefore, the printing ink for such a purpose shall have to be formulated with materials which are permissible as food additives and comply with the appropriate regulations of the Government of India.

4.3.2 The overcoating of printed matter with a varnish to provide a functional barrier between the printed side and the food may not, under all conditions, prevent migration of some ingredients from the ink into the food and therefore, may not prevent contamination. It is, therefore, necessary that inks for immediate food wrappings must be applied to the outside of the wrapper. The wrapper itself shall form a functional barrier between the printed surface and the food.

4.3.3 The ink film on a wrapper is generally extremely thin and consequently, the total quantity of ink involved is very small. However, in order to impose the safeguard, inks for immediate food wrappings shall be formulated with materials other than those known to be toxic and shall not contain material listed in Annex A.

4.3.4 The immediate food wrappers shall be printed in such a manner that set-off in the printing process is avoided. This is necessary to ensure that the surface of the wrapper in contact with food is free from printing ink.

4.3.5 The materials and articles in contact with food, that is, food packages or wrappers shall be so manufactured that under normal or foreseeable condition of use, they shall not transfer their constituents to the food in quantities which may endanger human health, cause a deterioration in the

organoleptic characteristics or unacceptable change in the nature, substance and/or quality of food.

4.4 Printing Inks for Prints in Direct Food Contact

As prescribed in 4.3.1 to 4.3.4 and as far as possible, the printed surface should not be in immediate contact with food. However, if it is necessary for the printed surface to be in direct contact with food, the guidelines prescribed in 4.3.5 shall apply and the printing inks shall have to be formulated with materials, which are acceptable as food additives under the appropriate regulations of the Government of India.

4.4.1 In case of printed films or coupon inserts for dry granular foods, printed inks shall be formulated in such a way that there is no reasonable risk of the print migrating onto the food. In general, requirements of 4.3.1 and 4.3.2 apply there.

4.5 Printing Inks for Disposables

Printing inks for disposables shall be formulated with materials necessarily excluding those covered in Annex A or those, which are otherwise known to be toxic. As far as possible and practicable, the printing ink manufacturers shall ensure that inks are formulated in such a way as to avoid migration of dyes or other colouring agents, liable to bleed under the expected conditions of use, onto the food. Whenever there are issues related to biodegradability of the packaging material, printing ink manufacturers need to cope up with the ink nature regarding biodegradability of ink raw materials.

5 GENERAL CODE OF PRACTICES

5.1 Inks for printing external food wrappers, where there is a functional barrier in the form of another wrapper between the printed wrapper and the food, may be formulated without restriction, provided the ingredients are considered to be non-toxic and non-injurious to health. The general exclusion list is given in Annex A, which are not present in the printing ink composition.

5.2 As far as possible and practicable, the printed surface should not come in contact with food and printing inks for immediate food wrappers shall be applied on outside of the wrapper, which, by itself, shall form a barrier between the ink and the food.

5.3 Immediate food wrappers shall be of sufficiently low permeability to prevent migration and shall be printed in such a manner that set-off in the printing process is avoided.

5.4 Where the nature of the food packaging is such that migration or bleeding from dyes or other soluble colouring agents is likely to occur, printing inks shall not be formulated with such colouring agents.

5.5 If, for some specific requirements, it is necessary for the printed surface to be in contact with food, the

printing inks shall be formulated with materials acceptable as food additives under the appropriate regulations of the Government of India, be manufactured in an appropriate manner to prevent contamination and, where printed, produce a non-toxic printed surface that complies with appropriate Regulations of the Government of India.

5.6 The printing ink manufacturers are expected to take all necessary precautions to meet the guidelines of this standard. However, as they have no overall control over the printing process or the actual wrapping/packing, the final responsibility for ensuring that there is no deterioration in the organoleptic characteristics of the food rests with the food packager.

5.7 The printing ink manufacturers shall inform the converters and point buyers on suitability of ink type towards packages of food and the norms followed in formulation whenever there is such need.

5.8 The general exclusion list may be amended in the light of new data on safety, health, environment and relevant regulation

6 RESPONSIBILITY

6.1 Responsibility of Print Buyer/Printer — Packaging Design, Selection, Etc

Packaging should be designed with the restrictions of printing in mind. For example, printing should not occur in areas, which, by folding, come into contact with food. It is important that the substrate itself should not cause taint and odour of the packaged product. Taint and odour tests should be conducted to ensure that a particular substrate is suitable for use. The relationship between press speed and curing/drying power needs to be fully understood to ensure adequate curing/drying takes place.

6.2 Responsibility of Ink Manufacturers

Only raw materials other than those known to be toxic, carcinogenic, sensitizing or mutagenic are used in the formulation of its inks and coatings, to be governed by exclusion list given in Annex A. Inks companies should conduct regular testing on ink components, retained solvents from flexo/gravure packages; and distillates from conventional offset products, which have the possibility to migrate from the packaging into food. This capability brings control on risk assessments and ensures that printed packages are suitable for food packaging. Printed matter, following approval by appropriate quality control tests, should be stored such that no deterioration in its performance against these tests occurs. The storage environment should be free from potential volatile contaminants, which could adversely affect the organoleptic characteristics of the food.

6.3 Responsibility of the Printer

The responsibility of the printer and converter is to ensure that food packages are manufactured and stored

in such a manner by which all preventable transfer of material from the ink or coating to the food contents is avoided, even if such transfer is unobjectionable on the grounds of health, odour and flavour.

ANNEX A

(Clauses 4.2, 4.3.3, 4.5, 5.1 and 6.2)

GUIDE TO MATERIAL AND SUBSTANCES FOR EXCLUSION FROM PRINTING INK FORMULATIONS

A-1 Pigments and compounds based on antimony¹⁾, arsenic, cadmium, chromium (VI), lead²⁾, mercury and selenium.

A-2 DYE COLOURANTS

Auramine (Basic Yellow 2 — CI 41000)
Chrysoidine (Basic Orange 2 — CI 11270)
Cresylene Brown (Basic Brown 4 — CI 21010)
Fuschine (Basic Violet 14 — CI 42510)

NOTE — Formerly listed as 'magenta'.

Induline (Solvent Blue 7 — CI 50400)

Azo dyes which can decompose in the body to bioavailable aromatic amines that are classified as category 1 or 2 carcinogens.

NOTE — In case of pigment and dye based on heavy metal, the permissible limit for heavy metal shall be as follows:

<i>Metal</i>	<i>Requirement (ppm)</i>
As	25, <i>Max</i>
Ba	1 000, <i>Max</i>
Cd	75, <i>Max</i>
Cr (VI)	60, <i>Max</i>
Hg	60, <i>Max</i>
Pb	90, <i>Max</i>
Sb	60, <i>Max</i>

A-3 SOLVENTS

Benzene
Dichlorobenzene
2-ethoxy ethanol
2-ethoxy ethyl acetate
Methanol³⁾
2-methoxy ethanol

2-methoxy ethyl acetate
Monochlorobenzene
2-nitropropane
Volatile chlorinated hydrocarbons³⁾
Volatile fluorochlorinated hydrocarbons

A-4 PLATICIZERS

Chlorinated naphthalenes
Chlorinated paraffins
Monocresyl diphenyl phosphate
Monocresyl phosphate
Polychlorinated biphenyls
Polychlorinated terphenyls
Tricresyl phosphate

A-5 VARIOUS COMPOUNDS

Asbestos
Brominated flame retardants
Diaminostibene and derivatives
2,4 dimethyl 6 tertiary butyl phenol
Dioxins
Hexachlorocyclohexane
Nitrosamines
Pentachlorophenol and its salts
Polychlorinated bi- or terphenyls
Polychlorinated dibenzofuranes
4,4 tetramethyldiamino benzophenone (Michlers
Ketone)
Toluene di-isocyanate
Vinyl chloride monomer

¹⁾With the exception of non-biodegradable antimony titanate present in titanium dioxide pigments.

²⁾Except where necessary in certain screen inks to meet specified resistance requirements.

³⁾With the exception of their use as denaturants for ethanol to meet legal requirements.

ANNEX B
(Foreword)
COMMITTEE COMPOSITION

Inks, Stationery and Allied Products Sectional Committee, CHD 14

<i>Organization</i>	<i>Representative (s)</i>
Asian Ink Company, New Delhi	SHRI Y. M. CHANDHOK (<i>Chairman</i>)
All India Printing Ink Manufacturers Association, Mumbai	SHRI MANISH CHANDHOK (<i>Alternate</i>)
All India Federation of Master Printers, New Delhi	SHRI L. R. MHAMBREY SHRI V. K. SETH (<i>Alternate</i>)
Ambitious Gold Nibs Manufacturing Co Pvt Ltd, New Delhi	SHRI V. N. CHHABRA SHRI V. K. MALIK (<i>Alternate</i>)
Bal Krishna Pens Pvt Ltd, Mumbai	SHRI B. R. CHARLA SHRI ATUL CHAGLA (<i>Alternate</i>)
BASF India, New Delhi	REPRESENTATIVE SHRI S. R. PATHAK SHRI ANIL KARRANE (<i>Alternate</i>)
Camlin Ltd, Mumbai	SHRI S. D. DANDEKAR SHRI M. S. SALUNKHE (<i>Alternate</i>)
Chelpark Company Pvt Ltd, Bangalore	SHRI B. S. RAWAT SHRI V. SRIDHAR (<i>Alternate</i>)
Coates India Ltd, Kolkata	SHRI S. K. GUPTA SHRI R. N. GHOSH (<i>Alternate</i>)
Currency Note Press, Nasik	SHRI GANGA PRAKASH SHRI SUMIT SINHA (<i>Alternate</i>)
Department of Industrial Development, New Delhi	SHRI P. K. JAIN SHRI N. C. TIWARI (<i>Alternate</i>)
Gestener (India) Ltd, Kolkata	REPRESENTATIVE SHRI R. K. ROY SHRI S. K. GANGOPADHYAY (<i>Alternate</i>)
Govt of India Stationery Office, Kolkata	SHRI S. S. KULKARNI SHRI N. V. PATHORA (<i>Alternate</i>)
Hindustan Inks and Resin Ltd, Mumbai	SHRI S. M. KHANNA SHRI K. K. MISHRA (<i>Alternate</i>)
Kriskem Industries, Ghaziabad	SHRI V. K. SHARMA SHRI SALESH KAPOOR
Luxor Writing Instruments Ltd, New Delhi	SHRI L. K. PURI SHRI PANKAJ GUPTA SHRI K. B. NAGPAL (<i>Alternate</i>)
Ministry of Communication, New Delhi	DR R. P. MALIK DR (SHRIMATI) YOSHADHARA JOSHI (<i>Alternate</i>)
National Institute of Science Communication and Information Resources, New Delhi	DR S. K. SAHA DR R. GHOSH (<i>Alternate</i>)
National Archives of India, New Delhi	SHRI S. R. SINGH DR J. S. REKHI (<i>Alternate</i>)
National Test House (NR), Ghaziabad	SHRI GUR PRAKASH SHRI V. K. GUPTA (<i>Alternate</i>)
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Office of Director, Survey of India, Dehra Dun	SHRI J. D. SANGHVI SHRI KETAN MEHTA (<i>Alternate</i>)
Poyesha Industrial Company Ltd, Thane	DR P. K. KAICHER SHRI A. MAJUMDAR (<i>Alternate</i>)
Rainbow Ink and Varnish Manufacturing Company Ltd, Mumbai	SHRI RAJIV JAIN SHRI SUNIL MONGA (<i>Alternate</i>)
Sanghvi Writing Industries Ltd, Thane	REPRESENTATIVE DR U. C. SRIVASTAVA, Director & Head (CHD) [Representing Director General (<i>Ex-officio</i>)]
Shriram Institute for Industrial Research, Delhi	
The All India Plastic Manufacturer's Association, Mumbai	
Thomson Press India Ltd, Faridabad	
BIS Directorate General	

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Bureau of Indian Standards

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