



भारतीय मानक ब्यूरो

(उपभोक्ता मामले, खाद्य एवं सार्वजनिक वितरण मंत्रालय, भारत सरकार)

BUREAU OF INDIAN STANDARDS

(Ministry of Consumer Affairs, Food & Public Distribution, Govt. of India)

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**DRAFT IN
WIDE CIRCULATION**

Reference	Date
CHD 14 (14457)C	09-08-2019

TECHNICAL COMMITTEE : Printing Inks Starionety And Allied Products, CHD 14

To,
All members of

- Printing Inks Starionety And Allied Products, CHD 14
- Printing Inks Starionety And Allied Products, CHD 14
- Others Intrested

Dear Sir(s)/Madam(s),

Please find enclosed the following document prepared by the Printing Inks Starionety And Allied Products, CHD 14

SI No.	Doc No.	Title
1	CHD 14 (14457) WC	Printing Ink for food packaging - Code of practice

Kindly examine this draft Indian standard and forward your views stating any difficulties which you are likely to experience in your business or profession, if this is finally adopted as National Standard.

Last date for Comments : 08 September 2019

Comments, if any, may please be made in the commenting template and mailed (chd@bis.gov.in) to the undersigned at Bureau of Indian Standard, Manak Bhawan, 9, Bahadur Shah Zafar Marg, New Delhi. This draft has also been uploaded on BIS website <http://www.bis.gov.in> .

In case no comments are received, we would presume your approval of the documents. However, in case we receive any comments on the document, the same shall be put up to the Sectional Committee for necessary action.

Thanking You,

Yours faithfully,

(Shri U.K.Das)
Head (Chemical Department)
Email: chd@bis.gov.in

Encl: As above.

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WIDE CIRCULATION DOCUMENT

LAST DATE OF COMMENTS 26 04 2019

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भारतीय मानक मसौदा
खाद्य पैकेजिंग के लए मुद्रण स्याही -
रीति संहिता
(पहला पुनरीक्षण)

Draft Indian Standard

**PRINTING INK FOR FOOD PACKAGING —
CODE OF PRACTICE**
(First Revision)

ICS 55.040;67.230;87.080

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

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Price Group

FOREWORD

(formal clause to be added later)

This Indian Standard was first published in 2004. This standard was 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.

This standard is now being revised to incorporate prohibition of Toluene under 'Solvents' category, Phthalates (Di-n-butylphthalate, Di-isononyl phthalate) under 'Plasticizers' category and Titanium Acetylacetonate under 'Various Compounds' category in Annex-A of exclusion list on the basis of their health hazards. Provision also incorporated in the revised version to restrict limit of the sum of concentration levels of Lead, Cadmium, Mercury and Chromium (VI) shall not exceed 100 ppm besides not exceeding their individual prescribed limits in case of pigment and dye based on heavy metal.

There is no ISO standard on the subject.

The composition of the committee member significantly contributed for formulation of the 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.

Draft Indian Standard

**PRINTING INK FOR FOOD PACKAGING —
CODE OF PRACTICE
(First Revision)**

1 SCOPE

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

2 REFERENCES

The following Indian standard contains 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 edition of the standard 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 additional wrapper layer between it and the food. The very low mass of the ink is generally used to print on 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 likely possible ~~that of~~ migration of some ink 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 food grade varnish/coating to provide a functional barrier between the printed side and the food may not, under all conditions, prevent migration of some ink ingredients from ~~the ink printing surface~~ 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 applied on ~~a the~~ 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~~ which are proven non toxic nor hazardous to health and shall also 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 migration 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~~ excluded of those covered in Annex A or those, which are otherwise known to be toxic and hazardous to health. 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 form 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.

5.9 The sum of concentration levels of Lead, Cadmium, Mercury and Chromium (VI) (all together) shall not exceed 100 ppm besides not exceeding their individual prescribed limits (see Annex A) in case of pigment and dye based on heavy metal.

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. Ink 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	1000, <i>Max</i> [U K DAS1]
Cd	75, <i>Max</i> (<i>see note</i>)
Cr (VI)	60, <i>Max</i> (<i>see note</i>)
Hg	60, <i>Max</i> (<i>see note</i>)
Pb	90, <i>Max</i> (<i>see note</i>)
Sb	60, <i>Max</i>

- NOTE — Restriction of limits of sum of conc. Of Pb, Cd, Hg and Cr (VI) (all together) shall not exceed 100 ppm (*see* 5.9)

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.

A-3 SOLVENTS

Benzene
Dichlorobenzene
2-ethoxy ethanol
2-ethoxy ethyl acetate Methanol³⁾
2-methoxy ethanol
2-methoxy ethyl acetate
Monochlorobenzene
2-nitropropane
Toluene
Volatile chlorinated hydrocarbons ³⁾
Volatile fluorochlorinated hydrocarbons

A-4 PLATICIZERS

Chlorinated naphthalenes
Chlorinated paraffins
Di-n-butylphthalate ([DBP](#))
Di-isononyl phthalate ([DINP](#))
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
Titanium Acetylacetonate
Vinyl chloride monomer