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**Materials in contact with food — Requirements for packaging materials**



**Compliance with this standard does not, of itself confer immunity from legal obligations**

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Requests for permission to reproduce this document should be addressed to

The Executive Director  
Uganda National Bureau of Standards  
P.O. Box 6329  
Kampala  
Uganda  
Tel: +256 414 333 250/1/2/3  
Fax: +256 414 286 123  
E-mail: [info@unbs.go.ug](mailto:info@unbs.go.ug)  
Web: [www.unbs.go.ug](http://www.unbs.go.ug)

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## **Foreword**

Uganda National Bureau of Standards (UNBS) is a parastatal under the Ministry of Trade, Industry and Cooperatives established under Cap 327, of the Laws of Uganda, as amended. UNBS is mandated to co-ordinate the elaboration of standards and is

- (a) a member of International Organisation for Standardisation (ISO) and
- (b) a contact point for the WHO/FAO Codex Alimentarius Commission on Food Standards, and
- (c) the National Enquiry Point on TBT Agreement of the World Trade Organisation (WTO).

The work of preparing Uganda Standards is carried out through Technical Committees. A Technical Committee is established to deliberate on standards in a given field or area and consists of key stakeholders including government, academia, consumer groups, private sector and other interested parties.

Draft Uganda Standards adopted by the Technical Committee are widely circulated to stakeholders and the general public for comments. The committee reviews the comments before recommending the draft standards for approval and declaration as Uganda Standards by the National Standards Council.

The committee responsible for this document is Technical Committee UNBS/TC 201, Food Packaging, Handling and Materials in contact with food.

This second edition cancels and replaces the first edition (US 1659:2017), which has been technically revised.

# Materials and articles in contact with food — Requirements for materials and surfaces

## 1 Scope

This Draft Uganda Standard provides requirements for food contact surfaces including packaging materials that are intended for that purpose and can be expected to come into contact with food under normal or foreseeable conditions of use." The standard does not include coverings or coatings and substances that are part of the food and may be eaten with it such as sausage skin for which other standards apply

## 2 Normative references

The following referenced documents referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

*ISO 4531, Vitreous and porcelain enamels — Migration from enamelled ware in contact with food — Method of test and permissible limit.*

*ISO 6486-1; Ceramic ware, glass-ceramic ware and glass dinnerware in contact with food -- Release of lead and cadmium -- Part 1: Test method*

*ISO 7086-1, Glass hollowware in contact with food — Release of lead and cadmium — Part 1: Test method*

*ISO/TS 22002-4, Prerequisite programs on food safety —Part 4: Food packaging manufacturing*

*US 1675, Determination of overall migration of constituents of plastic materials and articles intended to come in contact with foodstuffs — method of analysis*

*US 45, General standard for food additives*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at <http://www.iso.org/obp>

### 3.1 additive

substance such as hardener, plasticizer and preservative added to a base material to achieve a specific property

### 3.2 contamination

all possible pollution of the finished packaging material or article, including microbiological, chemical and physical contaminants not intentionally added to the product and may compromise food safety

### 3.3

#### **rework material**

reuse of internal scrap of certain production into material with the same composition

### 3.4

#### **food packaging**

any product to be used for containment, protection, handling, delivery, storage, transport and presentation of food

### 3.5

#### **migration**

transfer of substances from an external source to food

### 3.6

#### **active materials and articles**

materials and articles that are intended to extend the shelf-life or to maintain or improve the condition of packaged food; they are designed to deliberately incorporate components that would release or absorb substances into or from the packaged food or the environment surrounding the food

### 3.7

#### **intelligent materials and articles**

materials and articles which monitor the condition of packaged food or the environment surrounding the food

### 3.8

#### **leaching**

process of extracting substances from a solid by dissolving them in a liquid

### 3.9

#### **food grade contact material**

material which does not contaminate food with harmful substances on coming in contact with it

### 3.10

#### **resin**

solid or highly viscous substance, typically convertible into polymers

### 3.11

#### **material safety data sheet**

document that contains information on the potential hazards and how to work safely with a given chemical product

### 3.12

#### **colourant**

ingredient that alone or in combination with other ingredients impart or change the colour of the product

### 3.13

#### **certificates of analysis**

documents that confirms conformance to specifications or regulations

### 3.14

#### **food**

any substance or product, whether processed, partially processed or unprocessed, intended to be, or reasonably expected to be ingested by humans. It includes drink, chewing gum and any substance, including water, intentionally incorporated into the food during its manufacture, preparation or treatment.

### 3.15

#### **good manufacturing practices.**

those aspects of quality assurance which ensure that materials and articles are consistently produced and controlled to ensure conformity with the rules applicable to them and with the quality standards appropriate to their intended use by not endangering human health or causing an unacceptable change in the composition of the food or causing a deterioration in the organoleptic characteristics thereof.

**3.16****non-food-contact side**

surface of the material or article that is not directly in contact with food.

**3.17****food-contact side**

surface of a material or article that is directly in contact with the food.

**3.18****recycles materials**

material that has been reprocessed from recovered [reclaimed] material by means of a manufacturing process and made into a final product or into a component for incorporation into a final product

## 4 Requirements

### 4.1 General

The kind of food contact surfaces and the materials including active materials and intelligent materials used shall be manufactured in accordance to Good manufacturing practices and shall be in such a way that:

- a) the material or article itself does not have an adverse effect on the food product (for example, through chemical reactions, leaching of materials or absorption);
- b) the food product does not have an adverse effect on the packaging material, changing its properties or affecting its protective function;
- c) it does not result into unacceptable changes in the organoleptic characteristics of the food and
- d) it is strong enough to hold the contents when subjected to normal handling

### 4.2 Raw materials

#### 4.2.1 General

Raw materials used in the manufacture of items for food contact use shall be food grade contact and shall be accompanied with relevant certificates of analysis and material safety data sheets.

#### 4.2.2 Identification of raw materials

The manufacturer shall ensure that the raw materials are of the correct food grade and are correctly labelled for food contact use. Raw materials identified as prescribed shall be accepted only in clean, tamper proof containers.

#### 4.2.3 Colourants

Colourants used in materials including packaging materials which are to come into contact with food shall be food grade contact.

#### 4.2.4 Rework materials

Rework materials used in the manufacture of items for food contact use shall be prepared from raw items that have not been used or printed and have been manufactured in compliance with Good Manufacturing Practices.

#### 4.2.5 Recycles materials

Post-consumer recycled materials shall be assessed and declared suitable and safe for use in direct contact with food.

#### **4.2.5 Resins**

The resins selected shall be of food grade contact material.

#### **4.3 Storage and control**

Packaging materials and rework materials intended for food contact use shall be stored separately from other materials in closed, properly identified containers.

#### **4.4 Additives, processing aids and colorants**

The additives, processing aids and colorants selected and their dosages should be of food contact grade according to their prescribed conditions of use.

#### **4.5 Printing inks and coatings**

4.5.1 Printing inks and or coatings for food contact use shall comply with the general requirements given in 4.1 of this standard and shall be of food contact grade.

4.5.2 Printing inks applied to the non food-contact side of materials and articles shall be formulated and/or applied in such a manner that substances from the printed surface are not transferred to the food-contact side:

- (a) through the substrate or;
- (b) by set-off in the stack or the reel, in concentrations that lead to levels of the substance in the food which are not in line with the requirements of this standard.

4.5.3 Printed materials and articles shall be handled and stored in their finished and semi-finished states in such a manner that substances from the printed surface are not transferred to the food-contact side

4.5.4 The printed surfaces shall not come into direct contact with food.

#### **4.6 Performance of materials and articles**

4.6.1 The performance of the material shall be identified clearly during the manufacturing and the following shall at least be considered:

- a) nature of the food product to be contained;
- b) surface/volume ratio;
- c) expected maximum shelf-life of the food product;
- d) filling, sealing and storage methods to be used; and
- e) heating, cooling, sterilization and pasteurization processes to which the material and contents may be exposed.

4.6.2 The required performance shall, wherever possible, be translated into technical specifications such as permeability, mechanical strength, barrier properties and specific organoleptic tests to be performed

## 4.7 Migration

### 4.7.1 General

Materials and articles for food contact use shall not transfer their constituents to foodstuffs in quantities exceeding specific migration limits and/or overall migration limits when tested according to relevant standards.

This shall be attained by either:

- a) obtaining and verifying information received from supplier about the compliance with specific restrictions;
- b) controlling or verifying the composition of the raw materials;
- c) controlling or verifying the migration features of the raw materials;
- d) use of functional barriers; or
- e) testing directly the intermediate or finished products.

Where migration analysis is not considered necessary and thus not conducted, a justification shall be provided.

### 4.7.2 Plastic materials

Plastic containers intended to come into contact with food when sampled and tested according to US 1675 shall not exceed 60 mg of the constituents released per kilogram of foodstuff or food simulant (mg/kg) (overall migration limit). However, this limit shall be 10 mg/dm<sup>2</sup> of surface area of material or article in the case of the following:

- a) articles which are containers or are comparable to containers or which can be filled, with a capacity of less than 500 ml or more than 10 l; and
- b) sheet, film or other material or articles which cannot be filled or for which it is impracticable to estimate the relationship between the surface area of such material or article and the quantity of food in contact therewith.

### 4.7.3 Food contact materials made of metals and alloys

4.7.3.1 Alloys for food contact shall contain only aluminium, chromium, copper, gold, iron, magnesium, manganese, molybdenum, nickel, silicone, silver, tin titanium, zinc, cobalt, vanadium and carbon. aluminium, antimony, arsenic, barium, beryllium, cadmium, chromium,

4.7.3.2 Release of heavy metals from metals and alloys for food contact purposes shall not exceed those specified in table 1

**Table 1. Maximum release limits for heavy metals in metals and alloys for food contact use**

Heavy metal	Maximum limit mg/Kg	Test method
Aluminium	5	ISO 16918
Antimony	0.04	
Arsenic	0.002	
Barium	1.2	
Beryllium	0.01	

Cadmium	0.005
Chromium	0.250
Cobalt	0.02
Iron	40
Lead	0.010
Lithium	0.048
Manganese	1.8
Mercury	0.003
Molybdenum	0.12
Nickel	0.14
Silver	0.08
Thallium	0.0001
Tin	100
Vanadium	0.01
Zinc	5

#### 4.7.4 Glass containers

Permissible limits shall be 0.5 mg/kg for lead and 0.25 mg/kg for cadmium when tested according to ISO 7086-1.

#### 4.7.5 Ceramic packaging materials

Quantities of lead and cadmium transferred from ceramics when tested according to US ISO 6486-1 shall not exceed the limits given in Table 1.

**Table 1 — Permissible limits for lead and cadmium for ceramic items intended to come into contact with food**

Category	Description	Maximum permissible limits		Test method
		Lead	Cadmium	
1	Items which cannot be filled and items which can be filled, the internal depth of which measured from the lowest point to the horizontal plane passing through the upper rim does not exceed 25 mm.	0.8	0.07	ISO 6486-1

	mg/dm <sup>2</sup>			
2	All other items which can be filled, mg/l	4.0	0.3	
3	Items having a capacity of more than 3 l, mg/l	1.5	0.1	

#### 4.7.6 Active and intelligent food contact materials and articles

4.7.6.1 Active and intelligent food contact materials and articles should not change the composition or the organoleptic properties of food or give information about the condition of the food that could mislead consumers.

4.7.6.2 Active food contact materials and articles which produce colour changes to the food that give the wrong information concerning the condition of the food could mislead the consumer and therefore shall not be allowed either.

4.7.6.3 Intelligent materials and articles shall not give information about the condition of the food which could mislead consumers

4.7.6.4 Active food contact materials and articles that may change the composition or the organoleptic properties of the food shall comply with the requirements of US 45.

#### 4.7.7 Non-regulated substances

4.7.6.1 In instances where substances used in raw materials for packaging may not be covered by any of the available legislation, guidelines or recommendations, confirmation shall be obtained from the suppliers that they have identified and made a safety assessment of the non-regulated substances, in order to avoid the exposure of consumers to migrating substances at levels that could potentially pose a risk to consumer health.

## 5 Hygiene

Food grade contact packaging materials shall be produced and handled in hygienic manner in accordance with US ISO TS 22002-4 to prevent contamination putting into consideration that most packaging items may not be sterilized before use.

## 6 Packaging

Packaging items for food contact shall be packaged in such a manner as to ensure that the items do not become contaminated during handling and storage.

## 7 Weights and measures

The weight of the package of the product shall comply with the Weights and Measures Act.

## 8 Labelling

8.1 The following specific requirements shall apply and shall be legibly and indelibly marked on each consignment and or packing slips:

- a) name of the packaging material;
- b) name and physical address of manufacturer and/or distributor;
- c) type of food suitable for the packaging;
- d) temperature at which the food should be packaged;
- e) net weight or length in metric units;
- f) lot identification (batch number);
- g) storage conditions; and
- h) the words “ for food contact use” or the following symbol shall appear on the labelling.



**8.2** When labelling non-retail packages, information for non-retail packages shall either be given on the packages or in accompanying documents, except that the name of the produce, lot identification and the name and address of the manufacturer or packer shall appear on the package.

**8.3** Active and intelligent materials and articles already brought into contact with food shall be adequately labelled to allow identification by the consumer of non-edible parts.

**8.4** Active and intelligent materials and articles shall be adequately labelled to indicate that the materials or articles are active and/or intelligent.

## Bibliography

[1] [1] Regulation (EC) No 1935/2004 – *Materials and Articles in Contact with Food*.

[2] CFR 21 - *Code of Federal Regulations Title 21*

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## Certification marking

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