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China announces standards for Food Contact Metal Materials and Articles as WTO SPS Notification 1014

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Report Highlights:

On November 19, 2015, China notified the WTO of the National Food Safety Standard of Food Contact Metal Materials and Articles, issued by the National Health and Family Planning Commission (NHFPC) as SPS/N/CHN/1014. This standard applies to metal materials and articles used for food contact and specifies the safety requirements of raw materials, organoleptic properties, hygienic indexes, test and labels of food contact materials and articles made from metals. The deadline for submission of final comments to China is January 18, 2016. The proposed date of entry is yet to be determined. Comments can be sent to China's SPS Enquiry Point at sps@aqsiq.gov.cn. The following report contains an unofficial translation of this draft measure.

General Information

BEGIN TRANSLATION

Food Contact Metal Materials and Articles

Preface

This standard replaces GB9684-2011 "National Standard for Food Safety – Stainless Steel" and GB 11333-1989 "Hygienic Standard for Aluminum Tableware and Containers".

Compared with GB9684-2011 and GB 11333-1989, this standard has the following changes:

- Extended the application scope to all kinds of food contact metal materials and products, including the metal claddings;
- Added the requirements for the components of metal materials and claddings, and the requirements for the harmful components of the welding materials
- Added the migration indexes of aluminum, tin and antimony elements;
- Revised and complemented the relevant provisions of food simulants, test conditions and test methods for migration test;
- Complemented the special requirements for product identification.

National Standard for Food Safety

Food Contact Metal Materials and Articles

1 Scope

This standard applies to the food-contact metal materials and products.

2 Terms and Definitions

The terms and definitions defined in "National Standard for Food Safety – General Safety Requirements for Food Contact Materials and Products" and the following terms and definitions apply to this standard.

2.1 Food Contact Metal Material and Product

The different metal (including alloys and metal claddings) materials and products expected to be or is in contact with food under normal or foreseen conditions for use, including metal-made packaging materials, containers, cooking and table utensils, as well as the metal parts in direct contact with food in food production and processing tools, equipment or electric appliances for food processing and treating.

2.2 Alloy

The materials with metal continuity, composed of one kind of metal with another (or several kinds) of metal or non-metal materials.

2.3 Alloy Element

When smelting metals, in order to achieve certain performance requirements (such as tensile strength, hardness, wear resistance, corrosion resistance, electrical conductivity, etc.), one kind or several kinds of metals or non-metal elements are intended to be added.

2.4 Impurity Elements

A small amount of non-intentionally added elements that are left in the metal.

2.5 Metal Cladding

The metal film formed on the surface of various solid materials or products by plating and coating.

2.6 Substrate

The materials that form the product matrix, excluding the organic coating and metal cladding.

3 Basic Requirements

The food contact metal materials and products shall be in accordance with the regulations of "National Standards for Food Safety – General Safety Requirements for Food Contact Materials and Products".

4 Technical Requirements

4.1 Raw Material Requirements

4.1.1 Metal Substrate

The materials with lead, cadmium, arsenic, mercury, beryllium and lithium as the alloying elements shall not be used. In the impurity elements, the arsenic content shall not exceed 0.01% (mass fraction), and the cadmium and lead content shall not exceed 0.01% (mass fraction).

In addition to the requirements stated in the section above, other ingredients in the material shall also be consistent with the ingredients in the product identification or the corresponding ingredients of the grade.

4.1.2 Metal Cladding

In the metal or metal compound used in the metal cladding in direct contact with food, the arsenic content shall not exceed 0.01% (mass fraction), and the cadmium, lead and mercury content shall not exceed 0.01% (mass fraction). The complexant, brightener and other agents shall not use cyanide and

lead or cadmium compounds. The zinc plating layer shall not use hexavalent chromium deactivator. The test of hexavalent chromium on the surface of the finished metal cladding should be negative.

Note: The hexavalent chromium can be tested by using the method described in Appendix B in GB/T 26125-2011/IEC 62321:2008 "Determination of Six Kinds of Restricted Substances for Use in Electronic and Electrical Products (Lead, Mercury, Cadmium, Hexavalent Chromium, and Poly-Brominated Biphenyl Ethers).

4.1.3 Welding Materials

In the welding materials used in the welding position in direct contact with food, the lead and cadmium content shall not exceed 0.1% and 0.01% (based on the mass fraction of the welding materials), respectively.

4.2 Sensory Requirements

The sensory requirements shall be in accordance with the regulations in Table 1.

Table 1 Sensory Requirements

Items	Requirements
Sample senses	The surface in contact with food should be clean, the cladding or coating should not be cracked and peeled off, and the welding position should be smooth without gas pocket, crack and burr. The products claimed that there is "no rust", "acid-resistant", "salt-resistant" or similar properties, no large area of corrosion shall appear on its food contact surface (including the metal accessories that may be in contact with the food in normal use) after migration test.
Test solution obtained in migration test	It shall be no bad smell, bad taste and other sensory deterioration

4.3 Physical and Chemical Indexes

The migration of impurity elements in the metal or metal cladding in direct contact with food shall be in accordance with the regulations in Table 2, and the migration of alloy elements shall be in accordance with the regulations in Table 3. The items in Table 3 shall be determined according to the material components (for example, S30408 stainless steel shall consider only for the migration of chromium and nickel); the metal plating materials and products can determine the restricted elements according to the coating and plating components. For the metal substrata of the plastic coating on the food contact surface or the organic coating, if the coating can effectively block the metal migration, then the determination of metal element migration is not required.

Table2 Impurity Element Migration Indexes

Element Migration (SML)/(mg/kg)	Indexes	Inspection Method

Arsenic (As)	≤	0.002	Test method for migration of arsenic in food contact material and its products and simulant
Cadmium (Cd)	≤	0.002	Test method for migration of cadmium in food contact material and its products and simulant
Lead (Pd)	≤	0.01	Test method for migration of lead in food contact material and its products and simulant

Table 3 Metal Element Migration Indexes

Element Migration (SML)/(mg/kg)		Index	Inspection method
Aluminum (Al)	≤	10	Test method for migration of aluminum in food contact material and its products and simulant
Chromium (Cr)	≤	0.25	Test method for migration of chromium in food contact material and its products and simulant
Nickel (Ni)	≤	0.14	Test method for migration of nickel in food contact material and its products and simulant
Tin (Sn)	≤	100 [a]	Test method for migration of tin in food contact material and its products and simulant
Stibonium (Sb)	≤	0.04	Test method for migration of stibonium in food contact material and its products and simulant
Zinc (Zn)	≤	5	Test method for migration of zinc in food contact material and its products and simulant
[a] The migration of tin in the tinplating container shall be in accordance with the relevant requirements of GB 2762.			

5 Others

5.1 Migration Test

5.1.1 Basic Requirements

The migration test shall be in accordance with the regulations of GB 31604.1 and GB 5009.156, except those clearly defined in this standard. For the pretreatment mode for migration test of several kinds of products, see Appendix A.

5.1.2 Food Simulant

5.1.2.1 It shall be selected according to the kind of food contacted based on Table 4 (except the uncoated iron frying pan). The uncoated iron frying pan uses 1g/L monohydrate citric acid solution for food simulant.

Table 4 Food Types and Corresponding Simulant

Food Type	Food Simulant
Non-alcohol Liquid food (pH≥5)	Artificial tap water [a]
Acidic food (pH<5)	5g/L Monohydrate citric acid solution [a]
Alcohol food	Artificial tap water [a]
Fat food or food with fat on surface	Artificial tap water [a]
[a] For the preparation of food simulants, see GB 5009.156.	

5.1.3 Specific Migration Test Conditions

The migration test conditions shall be selected based on Table 5.

Table 5 Specific Migration Test Conditions

Intended Use	Migration Test Conditions
In long term contact with food (including the heating treatment ≤2 h, at ≤70°C or ≤15min, at 100°C, and storage for 30 days and above, at room temperature or below) at room temperature or low temperature.	40°C, 10 d
In medium and short term contact with food at room temperature or below room temperature	40°C, the test time shall be selected according to the regulations in Table 3 of GB 31604.1-2015
In medium and short term contact with food at room temperature or below room temperature, and occasionally in contact with hot food	70°C, the test time shall be selected according to the regulations in Table 3 of GB 31604.1-2015
Hot filling, followed by short term storage at room temperature	70°C, 2h, followed by 40°C, 24h
In cooking, frying, baking and other high temperature contact (except for uncoated iron frying pan)	Boiling temperature, 2h
Uncoated iron frying pan	Boiling temperature, 1h
Household electrical appliances for food processing	The maximum temperature and longest use time marked in Instructions for Use of Product

5.2 Special Use Requirements

The products of which the food contact surface is uncoated aluminum and aluminum alloy, copper or copper alloy, metal cladding (except tin-sheet container) can't be used for acidic food. The products of iron based materials and low alloy steel can't be used for long time storage of acidic food.

5.3 Label Identification

5.3.1 Identify in accordance with the requirements for product identification provided in "National Standards for Food Safety - General Safety Requirements for Food Contact Materials and Products".

5.3.2 The metal substrate should be clearly identified with type and chemical components of its materials, or expressed in our country's standard grades or unified digital codes, such as "stainless steel 06Cr19Ni10" or "stainless S30408", "aluminum alloy 3004", etc.

5.3.3 For the food contact surface covered with metal cladding or organic coating, the materials of the cladding or coating material shall be identified, such as "Chrome-plating", "galvanized nickel alloy", "Teflon coating", etc. If the metal cladding is not only one layer, the metal cladding shall be identified with the metal components of all layers in the order from external layer to internal layer, and separated with slashes, such as "Chrome / Nickel / Copper".

Appendix A Pretreatment Method for Migration Test of Several Kinds of Products

A.1 Fillable Products (except tin- or chrome-plated sheet)

When the expected food contact volume of the product is undetermined, operate according to the regulations of GB 5009.156 related to hollow products.

When the product instructions marked out the rated capacity, take the minimum rated capacity and its corresponding contact area as the ratio of the food simulant volume to the sample contact area.

The container shall use appropriate method to seal the cover in the testing process to reduce the evaporation of the food simulant. If the product is provided with a fitted cover, conduct test according to the conditions for cover sealing in normal use.

A.2 Tinplated or Chrome-Plated Sheet Container

When the migration test of the food simulant is required, the sealing status of the container in normal use condition shall be simulated as close as possible, to prevent the air entering the container. The actual sealed empty tank of the user can be used, and drill a small hole at the center of the tank cover (the hole size shall be as small as possible), and use a clean syringe tubing or other suitable apparatus to inject the food simulant heated to test temperature into the tank from the small hole until it is filled up. Use the sealing film or suitable inert stopper to seal the hole, to prevent the air entering the tank. Conduct migration test according to the selected conditions, and when the specified time is reached, shake the tank to mix the content evenly; open the tank cover, pour the solution into a clean glass or plastic container immediately and use the appropriate amount of nitric acid to acidify it for measurement.

A.3 Non-fillable Products

Take the food contact positions of the product to make the contact area of the product be at least $1dm^2$.