

# CAST IRON WITH ORGANIC COATING

## **1. Scope**

This material sheet deals with cast iron (Fe alloy, C) with an organic coating with or without an intermediate coating (metal or enamel) and objects made exclusively of cast iron with an organic coating which, as finished products, are intended to be in direct repetitive contact with food products.

The main examples of coating are the follows: lacquers, varnish, polymer films (PTFE, resins, silicon, etc.)

The main application examples are the following elements:

- Household articles: Dishes, fryers;
- Equipment for agri-food industry: cooking elements etc.

## **2. Restrictions of use**

To avoid incorrect conditions of use, the temperature limit of use must be specified on the labelling of objects.

## **3. Definitions of criteria for aptitude to food contact**

### **3.1 Texts to be used**

#### **3.1.1 Regulatory texts**

- Coatings:
  - *Order of 2<sup>nd</sup> April 2003* relating to the use of some epoxy derivatives in materials and objects put in or intended to be in contact with foodstuffs (BADGE, BFDGE, NOGE);
  - *Order of 30<sup>th</sup> January 1984* relating to materials and objects containing vinyl chloride monomer intended to be in contact with foodstuffs and food and drink products;
  - *Order of 30<sup>th</sup> January 1984* relating to official analysis methods about the determination of the content of vinyl chloride monomer in materials and objects intended to be in contact with foodstuffs, food and drink products and the determination of vinyl chloride transferred by the materials and objects to the foodstuffs, food and drink products put in contact with them;

#### **3.1.2 Texts to be used provisionally while waiting for regulations on organic coatings**

- Order of 2<sup>nd</sup> January, 2003 relating to materials and objects in plastic put in or intended to be in contact with foodstuffs.
- CSHPF Notification of 13 February 1996.
- Resolution AP (96)5 of 02/10/96 from the Council of Europe relating to surface coating
- Information notice No 2003-27 from the DGCCRF relating to additives to plastic materials intended to be in contact with foods.
- Other texts relating to lacquers and coatings brought together in brochure 1227 of the Official Journal of the French Government (JORF).

### **3.2 Criteria to be used**

#### **3.2.1 Coating only**

The coating supplier must ensure that the monomers and additives used are included in the positive list of constituents for plastic materials (order of 02/01/2003, Information notice No.2003-37 and brochure 1227 from the Official Journal of the French Government) or in the list in resolution AP (96) 5 of the Council of Europe relating to surface coating.

Among the substances mentioned in resolution AP(96) 5, the substances in lists 1-1 & 1-2 have been evaluated by a scientific authority and their use does not appear to cause problems taking into account this evaluation. For a period of 5 years from the date of adoption of the current sheet, the substances in lists 2-1 and 2-2 can be used if they have been authorised by a member state or by the FDA. This period should allow industries to produce evidence relating to the safety of use for these substances .

When the material or metal is varnished , manufacturers should ensure that overall migration conforms to the limits laid down in the order of 2 January 2003 (Directive 2002/72/CE) according to the measurement regulations mentioned below.

When a substance is subject to restrictions of use (particularly specific migration limit), the decree of 8 July 1992 assumes that professionals must check compliance with this limit. This verification can be done in several ways: by analysis (specific migration test), by calculation based on the residual quantity of the substance in the material or from the overall migration.

### 3.2.2 Support

The cast iron which makes up the support must satisfy the inertia requirements specified in the "Cast Iron" and "Cast Iron with metallic coating" sheets.

When an enamel coating is present, it must satisfy the inertia requirements specified in the "glass, cristal, ceramic and enamelled objects" sheet.

### 3.2.3. Finished product

Overall and specific migrations: see 3.2.1.

## **4. Acceptability limits**

- Overall migration limit for organic coverings laid down in the *order dated 2 January 2003* (Art. 2), i.e. 10 mg/dm<sup>2</sup> or 60 mg/kg of food depending on the geometry of the material or the object. A material or an object whose migration level exceeds the overall migration limit by an amount not exceeding the analytical tolerance defined below will be considered as conform to the order (art.8 and chapter VI of the annex of the order):
  - 20 mg/kg or 3 mg/dm<sup>3</sup> in migration tests using rectified olive oil or its substitutes;
  - 12 mg/kg or 2 mg/dm<sup>3</sup> in migration tests using other simulators laid down in directives 82/711/CEE and 85/572/CEE.
- Specific migration limit of the finished product: Cf. 3.2.1 In the case of epoxy derivatives, the limits are specified in the order of 2 April 2003.

## **5. Rules to check the criteria defined in paragraph 3.**

### **5.1 Coating only**

The manufacturer of the material or ready-to-use object asks his coating supplier for:

5.1.1 A certificate which proved that the composition, overall migration and, if necessary, specific migrations, comply with the tests mentioned above;

5.1.2 An analysis report indicating the results of inertia tests (overall migration and if necessary specific migrations) carried out on the coating applied on an inert support (stainless steel or glass) with simulators chosen according to usage, according to directive 82/711 lastly amended by directive 97/48 and directive 85/572/CEE.

### 5.2. Support

The rules laid down in the appropriate "Iron" and "Iron with metallic coating" sheets apply to the inertia of the support.

### 5.3. Finished product

The manufacturer of the objects checks:

- a) Coating Inertia : inertia test (overall migration) to be carried out on the coating of the ready-to-use object;
  - Test conditions according to directives 82/711/CEE (lastly amended by directive 97/48/CEE) and 85/572/CEE:
    - Temperature and contact duration
    - Simulator liquids chosen according to the use:

Foodstuff	Simulator Liquid
Aqueous food (pH>4.5)	Distilled water or water of equivalent quality
Acid food (pH≤4.5)	Ethanol at 10% (v/v).
Alcoholic food	Ethanol at 10% (v/v). This concentration should be adapted according to the alcoholic content of the food if it exceeds 10% (v/v).
Fatty food	Oil or substitute simulator liquid
Dry food	No migration test

Methods to be used for overall migration according to standards in series NF EN 1186, XP CEN/TS 14235 of April 2003 (Polymeric coatings on metal substrates).

- b) Looking for absence of chromates on the interface of non-stick coatings, in the absence of evidence that they are not used in the manufacturing process.

Limit in undisclosed Cr VI with a detection threshold of 5 µg/dm<sup>2</sup> (see. BOCCRF n°8 of 24 May 1996, notification from CSHPF meeting of 13 February 1996, p. 433 Brochure n°1227 15 July 2002 edition).