



"Guidelines on testing conditions for articles in contact with foodstuffs"



G. Beldi, C. Senaldi, P. Robouch, E. Hoekstra



Scope: Comparability of measurements



Revision of the "Guidelines on testing conditions for articles in contact with foodstuffs (with a focus on kitchenware)" 1st edition 2009 to harmonize implementation of Regulation (EU) 2017/625



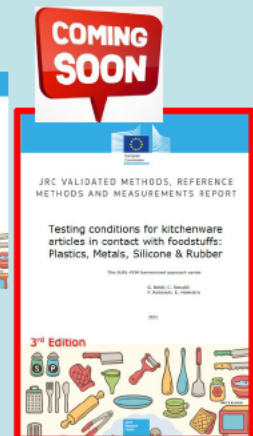
HOW

EURL-FCM and NRLs have agreed on a set of test condition (i.e. contact temperature and contact time) for kitchenware articles to ensure the comparability of measurement results reported in the frame of official controls



Deliverables

- ✓ 2019 – Guideline on "Testing conditions for kitchenware articles in contact with foodstuffs - Part 1: Plastics;
- ✓ 2020 – Guideline on "Testing conditions for kitchenware articles in contact with foodstuffs - Part 2: Plastics and Metals;
- ✓ 2021 – Guideline on "Testing conditions for kitchenware articles in contact with foodstuffs - Part 3: Plastics , Metals, Silicone & Rubber;ONGOING



Test conditions plastic, metals, silicone & rubber

- The test conditions for migration from plastics are based on expert judgement on the “worst case” foreseeable conditions of use by the consumer, not on the use intended by the producer. following principles of sections 2.1.3 and 2.1.4 (SM) and 3.1 (OM) of Annex V of Regulation (EU) No 10/2011.
- No material specific EU legislation exists for metals and alloys, silicone and rubber in contact with food (except Art. 3 of Regulation (EC) No 1935/2004) → national legislation shall apply. In the absence of national legislation, the test conditions in presented guidelines.
- Since in most cases consumers would make the same use of a specific utensil, independently of the material it is made of, the test conditions presented in these guidelines are generally based on the test conditions for plastics articles.



Test conditions plastic, metals, silicone & rubber

- The test conditions for migration from plastics are based on expert judgement on the “worst case” foreseeable conditions of use by the consumer, not on the use intended by the producer. following principles of sections 2.1.3 and 2.1.4 (SM) and 3.1 (OM) of Regulation (EU) No 10/2011.
- No material specific EU legislation exists for metals and alloys, silicone and rubber in contact with food (except Art. 3 of Regulation (EC) No 1935/2004) → national legislation shall apply. In the absence of national legislation, the test conditions in presented guidelines.
- Since in most cases consumers would make the same use of a specific utensil, independently of the material it is made of, the test conditions presented in these guidelines are generally based on the test conditions for plastics articles.

Still
non-harmonized
situation



Food simulants plastic, metals, silicone & rubber

- **Plastics: Regulation (EU) No 10/2011**
- **Metals and alloys, silicone and rubber:** follow **national legislation** and in absence
 - other guidance may be used, e.g. the practical guideline of the CoE or recommendations and in absence of those
 - food simulants for plastics
 - Metals: if tested with a food simulant for acidic foods ($\text{pH} \leq 4.5$), additional testing in artificial tap water is not required.
- If for any reason the indicated food simulants are not appropriate, testing with **food** should be considered
- NOTE: results in food prevail over the results obtained in food simulant.



Guidance recommendations

This guideline recommends also on:

- **sample preparation** e.g. cutting or not
- **test type:** immersion, filling, migration cell or by real use for assembled articles
- **surface-to-volume:** The test results need to be recalculated based on real S/V ratio according to Article 17 of Regulation (EU) No 10/2011.
 - This concept is also valid for metals.
 - The "envelop volume method" developed by the Council of Europe can be used



How to select the test conditions (1):

1. At first, select the test conditions recommended by the **present guide**
2. When this guideline assigns several possible test conditions for the same type of article, the **most conservative** test condition should be used appropriate for the **specific article**
3. If the prescribed **test conditions** may damage the test specimen to be investigated (e.g. physico-chemical changes) the migration tests shall be carried out under the “worst foreseeable conditions of use” to avoid any physico-chemical changes to occur
4. If a **food simulant** causes changes to the test specimen, e.g. swelling, that does not occur with food, this food simulant is not suitable. The migration test should then be performed using food or another equivalent food simulant not causing such changes



How to select the test conditions (2):

5. For articles used only under **specific conditions** (e.g. time, temperature) and/or for **specific foods** the selected test conditions and food simulants should comply with those specific conditions of use
6. If a **permanent label** is present on the article (e.g. embossed or engraved) defining limiting conditions of use or providing operating instructions, the test conditions should be adapted accordingly **BUT** if the instructions are **ONLY on the packaging** (can be discharged) or not present at all the most severe test condition for that type of article needs to be selected.



Structure (1): How does it look like?

Introduction: Defines the scope and explains how to read and use the guideline

Table 1 provides a not exhaustive list of examples of articles clustered in material independent classes and subclasses of kitchen and tableware.

Kitchenware examples

Main Class	Subclass	Examples
Food Preparation Wear	FWW/CA1	Aprons, Bibs
	FWW/CA2	Gloves
	FWW/CA3	Towels, Wipes, Napkins, Tablecloth, Placemats
	FWW/CA4	Cheese cloth (dairy product), Plastic mat for cheese draining
Food Preparation Utensil for Cold/Ambient use (FPU/CA)	FPU/CA1	Utensils use in ambient temperature for short time: Rolling pin, Lattice cutter, Grater, Garlic press, Zester, Vegetable peeler, Apple peeler, Food scales, Apple corer, Apple cutter, Biscuit press, Cherry pitter, Egg separator, Fish scaler, Flour sifter, Herb chopper, Squeezer, Reamer, Mandolin, Wires, Meat tenderizer, Fruit baller, Nutmeg grater, Pastry blender, Mortar and pestle, Roller docker, Pasta cutter, Salad spinner, Julienne peeler, Avocado slicer, Rawoki maker, Vegetable cutter with container, Hamburger press, Coconut scraper, Empanadilla mould type, Meat grinder, Vegetable brush, Cake measuring tape, Cocktail shaker, Coffee measuring spoon
	FPU/CAH1	Utensils use in ambient or hot temperature for short time: Baster, Bottle Top Baster, Pastry spatula, Pastry scraper, Pastry brush, Pastry bag, Egg peeler, Pastry mat, Salad/omelette/fitness shaker, Whisk, Marmade syringe, Funnel, Potatoes shaker, Dessert/Appetizers rings, Measuring spoon, Measuring cup, Tea net, Rice, Food mill, Chocolate thermometer, Chocolate forms
Food Preparation Utensils for Cold/Ambient or Hot use	FPU/CAH2	Cutting boards (not for storage)
	FPU/CAH3	Kitchen countertop, Worktop, Bench
	FPU/CAH4	Colander, Drum sieve, Chinois, strainer, Cooling rack
	FPU/CAH5	Bowls
	FPU/CAH6	Microwave materials (only warming up or defrosting)
	FPU/CAH7	Puree masher, Potato masher, Tongue-not foreseeable use at temperatures above 100 °C
	FPU/CA1	Articles that could be used during cooking/frying/grilling: Spoon, Ladle, Spatula, Tongue
Food Serving Utensils for Hot use	FPU/H2	Cookware, cooking items, microwave cookingware: Steamer basket, lids (sold alone), Spice/fragrance bags, Beil over greener, Frying pan splatter screens, Fondue forks, bougignon fork, Cooking rings, Susceptor, microwave cooker
	FPU/H3	Bakeware and Ovenware items: Cake pan, Gratin dish, Cookie sheet, Muffin pan, Cooking tray, Oven liners
	FPU/H4	Roasting bags
	FPU/CA1	Bread Bag, Basket (not for storage)
Food Serving Utensils for Cold/Ambient use	FPU/CA2	Decanters, Fitness/bicycle bottles, Baby food pouches
	FPU/CA3	Dispenser: Candy dispenser, Honey dispenser, Oil dispenser, Sauce dispenser
	FPU/CAH1	Cup, Glasses, Drinkware
Food Serving Utensils for Cold/Ambient or Hot use	FPU/CAH2	Open flask, Carafe, Cans, Jugs
	FPU/CAH3	Bottles without caps
	FPU/CAH4	Baby bottles
	FPU/CAH5	Tableware, Plates, Dishes, Serving stand
	FPU/CAH6	Food trays, Serving board, French fries box, Finger food bags, Snack box, Popcorn box
	FPU/CAH7	Thermos flask, isothermic drinking beaker



Structure (2):

Tables 2, 3 and 4 present the relevant test conditions, for each main class and subclass of kitchen articles made of plastic, metal and silicone & rubber, respectively.

- foreseeable use of the article
- Sample preparation
- Test type
- Food simulant
- Specific migration test conditions
- Surface-to-volume
- Overall migration test conditions

Table 2 - Test conditions for plastic kitchenware

Material	Class	Subclass	Use	Sample preparation	Part type	Food simulant	Test condition	EU Commission	EU	Notes
Plastic	FWW	FWW/CA1	FWW/CA1.1	FWW/CA1.1.1	FWW/CA1.1.1.1	FWW/CA1.1.1.1.1	FWW/CA1.1.1.1.1.1	FWW/CA1.1.1.1.1.1.1	FWW/CA1.1.1.1.1.1.1.1	FWW/CA1.1.1.1.1.1.1.1.1



Structure (2)

Table 5 describes the rationale behind the selection of test time and temperature for specific migration

time	temperature	Sub-class	Rationale/justification
0.5 h	20 °C	FSU/CA1	According to Regulation 10/2011, for utensils in contact with food for a short time (≤ 0.5 h) at cold temperature (refrigerated), these test conditions apply: 20 °C for 0.5 h.
0.5 h	40 °C	FFU/CA1-3 FFU/CA1 FSU/CA2	According to Regulation 10/2011: - for utensils in contact with food for a short time (≤ 0.5 h) at ambient temperature; or - for gloves, placemats and tablecloths, used for ≤ 2 h at ambient temperature, having a short contact time (≤ 0.5 h) with the same portion of food; these test conditions apply: 40 °C for 0.5 h.
0.5 h	70 °C	FFU/CA1 FSU/CA15 NSU/CA15	According to Regulation 10/2011, for utensils in contact with hot food (≤ 70 °C) for a short time (≤ 0.5 h) these test conditions apply: 70 °C for 0.5 h.
1 h	40 °C	FSU/CA4	Foodstuffs may be in contact with these articles for short periods of time at temperatures up to 40 °C.
2 h	70 °C	FFU/CA2-4 FFU/CA7 FSU/CA3-6 FSU/CA5-2	According to Regulation 10/2011, for utensils in contact with food for short periods of time at temperatures between 70 and 100 °C (i.e. "hot fill"), these test conditions apply: 2 hours at 70 °C.
2 h at 70 °C followed by 24h at 40 °C		FFU/CA15 FSU/CA1-4 FSU/CA2 FC/CA8	Foodstuffs may be in contact with these utensils for short periods of time at temperatures between 70 and 100 °C. The food/beverage could then be stored in the same "container" for a day at room temperature or colder. According to Regulation 10/2011 these test conditions apply: 2 h at 70 °C (i.e. "hot fill") followed by 24 h at 40 °C.
24 h	40 °C	FSU/CA1-2 FSU/CA1-2 FSU/CA2	According to Regulation 10/2011, for utensils in contact with food (drinking, tableware and cutlery used for cold and RT purpose ONLY) for up to 1 day at ambient temperature, these test conditions apply: 24 h and 40 °C.
24 h	100 °C	FSU/CA7	Fill with food simulant @ 100 °C, and keep the container closed for 24 h - as real use for
30 d	5 °C	FC/CA2	According to Regulation 10/2011, ... for articles in contact with any food at frozen and refrigerated conditions.
30 d	20 °C	FSU/CA1	According to Regulation 10/2011, ... for utensils in contact with food for more than 30 days at frozen temperature.
30 d	40 °C	FFU/CA15 FFU/CA16 FSU/CA1-4 FSU/CA3 FSU/CA2	According to Regulation 10/2011, ... for utensils in contact with food for more than 30 days at refrigerated or frozen temperature, including hot-fill conditions and/or heating up to 70 °C ≤ T ≤ 100 °C for maximum t = 120(24) 70/30 minutes - for utensils in contact with food for up to 30 days at room temperature.



Acknowledgment : TF members, NRL, OCL

Task Force on Kitchenware consisting of representatives of:

- National Reference Laboratories of Belgium, Germany, Greece, Italy and Spain,
- the European Directorate for the Quality of Medicines & Health Care of the Council of Europe and
- the Federation of European manufacturers of Cookware and cutlery (FEC)
- Commission (DG SANTE and JRC)

The tables were reviewed by the **National Reference Laboratories** and **official control laboratories** dealing with food contact materials, in accordance with Article 94 (2)(a) of Regulation (EU) 2017/625

