JRC guidance on migration from paper and board: what is available and what is missing?

A presentation of the new "Guidelines on testing conditions for articles in contact with foodstuffs"

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The EURL-FCM harmonised approach series

"Guidelines on testing conditions for articles in contact with foodstuffs (with a focus on kitchenware)" **1st edition 2009** in view of the implementation of Regulation (EU) No 10/2011

EURL-FCM and NRLs have agreed on a set of test condition for kitchen articles testing

ensure comparability of measurement results
in the frame of the implementation of official controls for FCM (Regulation (EU) 2017/625)

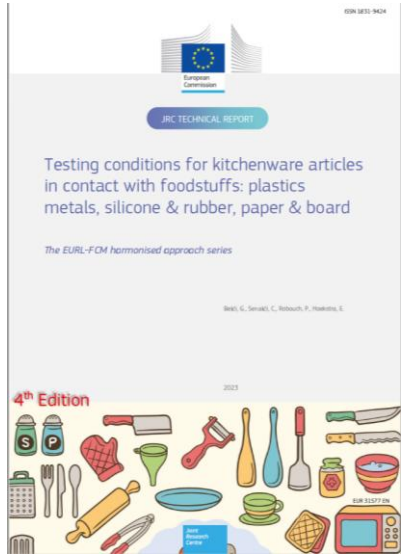
Editions

2019 – Guideline on Testing conditions for kitchenware articles in contact with foodstuffs – 1st edition: Plastics

2020 – 2nd edition: Plastics and Metals

2021 – 3rd edition: Plastics, Metals, Silicone & Rubber

2023 – 4th edition: Plastics, Metals, Silicone & Rubber, Paper & Board



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Guideline structure

Ready-to-use, minimal structure

- Introduction : defines the scope and explains how to read and use the guideline
- Tables : test condition for each material kitchenware

Table 1: Kitchenware categories (with examples)

Food Preparation Utensils for Cold/Ambient or Hot use	FPU/CAH1	Utensils used at ambient or hot temperature for short time: Baster, Bottle Top Baster, Pastry spatula, Pastry scraper, Pastry brush, Pastry bag, Egg piercer, Pastry mat, Salad/omelette/fitness shaker, Marinade Syringe, Funnel, Potatoes slicer, Dessert/appetizers ring, Measuring spoon, Measuring cup, Tea net, Filter, Ricer, Food mill, Chocolate thermometer, Chocolate form
	FPU/CAH2	Cutting board (not for storage)
	FPU/CAH3	Kitchen countertop, Worktop, Bench
	FPU/CAH4	Colander, Drum sieve, Chinois, Gravy strainer, Cooling rack
	FPU/CAH5	Bowl
	FPU/CAH6	Microwave materials (only warming up or defrosting)
	FPU/CAH7	Puree masher, Potato masher, Whisk, Tongs-not foreseeable use at temperatures above 100 °C
	FPU/CAH8	Cheese cloth (dairy product), Mat for cheese draining

Current (4th edition) guideline structure

- Table 2: Test conditions for **plastic** kitchenware
- Table 3: Test conditions for **metal** kitchenware
- Table 4: Test conditions for **silicon and rubber kitchenware**
- Table 5A: **Migration** test conditions for **paper & board** kitchenware
- Table 5B: **Extraction** test conditions for **paper & board** kitchenware

Kitchenware Guidance (upcoming **5th edition**) what's new?

- Table 2: Test conditions for plastics and plastic containing articles
- Table 3: Test conditions for inorganic materials and coatings: metals, alloys, ceramics, glass, stoneware and enamels
- Table 4: Test conditions for organic materials and coatings (other than plastics): silicone, rubber, and organic coated articles, including treated/coated paper and board
- Table 5: Test conditions for untreated/non-coated paper and board

Tables

Table 2 – Test conditions for plastic kitchenware

		Use				Sample prep			Test type				Food/Food simulant							SM Conditions (only food simulants)			S/V				OM conditions	Notes
Main Class	Subclass	cold (< 20 °C)	Room Temperature	hot (> 40 °C)	storage (in months)	cut test specimen	intact article	part of it	actual use	article fill	migration cell	(total) immersion	food	A§	B	C	D1	D2	E	time	Temp (°C)	label/instructions	Real	Real (infant/young)	6 (V < 0.5L or V > 10L)	6 impractical s/v		
Food Preparation Wear	FPW/CA1	x	x			x	x			x	x	x	x	x	x			x		0.5 h	40			x		x	0	
	FPW/CA2	x	x				x#			x		x	x	x	x			x		0.5 h	40					x	0	# or turn inside out
	FPW/CA3	x	x			x					x	x	x	x	x			x		0.5 h	40			x		x	0	

Testing conditions:

(i) based on the foreseeable worst-case conditions of use of the article, or

(ii) according to the instructions on the label

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Notes on testing conditions

- **Time & Temperature**: **In the absence of national legislation**, the test conditions presented in the guidelines (based on plastic) may apply, assuming that in most cases consumers would make the same use of a specific utensil, independently of the material of which it is made.

- **Food simulants**: If national legislation are not available, national recommendations or recommendations of the Council of Europe can be considered. If nonexistent, the food simulants presented in these guidelines (based on the test conditions for plastic articles) should be used.

- For **Paper & Board** articles that do not withstand migration conditions other methods are suggested.

N.B. If the indicated food simulants are not appropriate, testing with food should be considered (**food prevails**).

Recommended approach (1)

1. Identify the **category** of the article to be tested

2. Select the applicable table (Tables 2–5) based on the **material** of the kitchenware article

3. Select the **test conditions** recommended by this guideline

! If the article is accompanied by a **label and/or instructions** specifying limiting conditions of use, adapt the test accordingly, using the most severe of the proposed test conditions

! If the prescribed test conditions (i.e. contact time and temperature) may **physically damage the test specimen**, testing shall be carried out under the “worst foreseeable conditions of use” that **do not** cause such damages

Recommended approach (2)

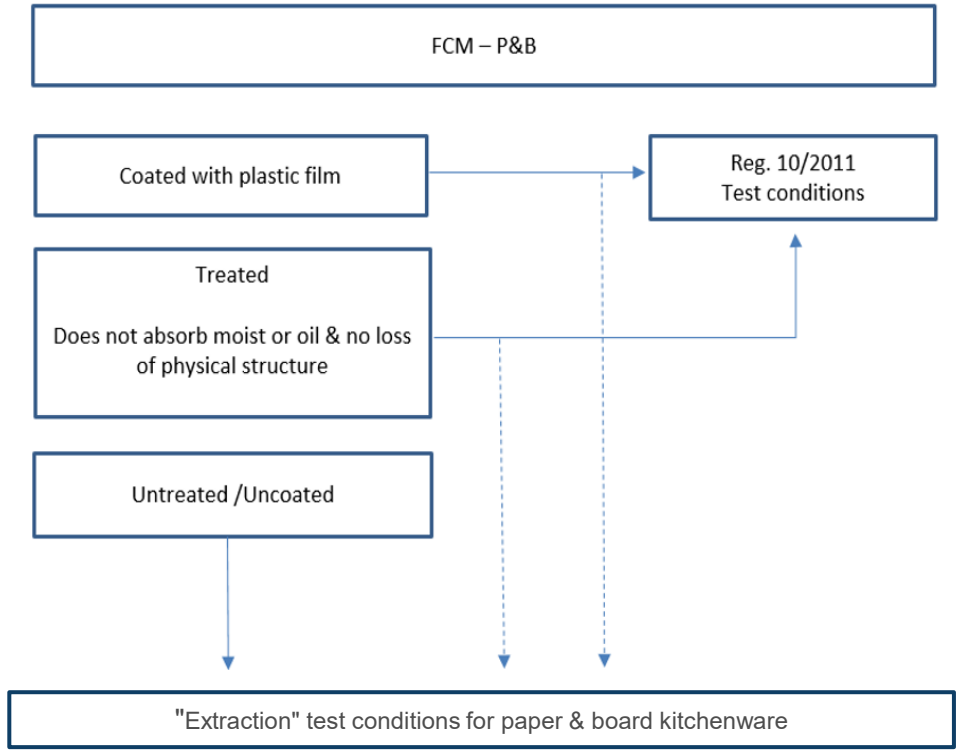
- If a **food simulant** causes changes to the test specimen (e.g. swelling), that would not occur with actual food, migration tests should be performed using food or another equivalent food simulant that does not induce such changes.

- For materials, such as **untreated or non-coated paper and board** that cannot withstand the combination of test conditions and food simulants established for plastics, alternative migration or extraction methods may be defined (even if the extraction solvent causes physical changes to the test specimen).

Paper & board (4th edition)

Table 5A: "**Migration**" test conditions for **coated/treated paper and board** kitchenware. If the paper and board item is coated treated or does not lose the physical structure in contact with aqueous food simulants, the test conditions prescribed by Regulation (EU) 2011/10 for plastic can be applied.

Table 5B: "**Extraction**" conditions for **uncoated/untreated paper and board** articles and for those that are coated/treated that **do not withstand** migration testing conditions. Based on currently available CEN standards and the practical guideline for manufacturers and regulators on "Paper and Board used in food contact materials and articles" published by the Council of Europe (CoE EDQM).



Paper & board: available standard

- EN 645:1993 - Paper and board intended to come into contact with foodstuffs - Preparation of a **cold water extract**
- EN 647:1993 - Paper and board intended to come into contact with foodstuffs - Preparation of a **hot water extract**
- EN 14338:2004 - Paper and board intended to come into contact with foodstuffs - Conditions for determination of migration from paper and board using modified polyphenylene oxide (**MPPO** or Tenax) as a simulant
- EN 15519:2007 - Paper and board intended to come into contact with foodstuffs - Preparation of an **organic solvent extract** → **Question**

EN 15519:2007 – MS consultation

- EN 15519 does not specify when **ethanol 95 % or isooctane** has to be used for extraction or migration testing.
- For compliance assessment, the choice between these two options should be done by laboratories on a **case-by-case basis**, based on their **experience** and scientifically **justified**.
- When in **doubt**, the approach included in the last paragraph of Section 2.1.3 of Annex V of Regulation (EU) No 10/2011 would be applied – requiring the use of ethanol 95 % **and** isooctane. The higher extracted content obtained in ethanol 95 % or isooctane would then be used.

S/V for expression of final results

- To check the compliance, the specific migration values shall be expressed in mg/kg applying the real surface to volume ratio in actual or foreseen use.
- For materials and articles for which, it is impracticable to estimate the relationship between the surface area and the quantity of food in contact, the conventional **≥6 dm^2/kg** is still recommended.
- If the real S/V is unknown, the results in mg/L obtained from EN 645:1993 and EN 647:1993 should be considered, by convention, equivalent to migration in mg/kg of food, according to “Paper and Board used in food contact materials and articles”, CoE guideline.

Further steps

- Publication of the 5th edition of ‘Guidelines on testing conditions for kitchenware articles in contact with foodstuffs’ **to conclude** the first harmonised approach series (living document)

- Creation/extension of a Task-Force dedicated to drafting a complementary **JRC migration guideline**, including all steps of compliance assessment (sampling, sample preparation, storage, migration/extraction tests, etc.).

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EURL team at the JRC

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Thank you

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