Update on FCM activities of the Joint Research Centre

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- Proficiency tests
- Update Kitchenware guideline on test conditions
- Vitreous materials
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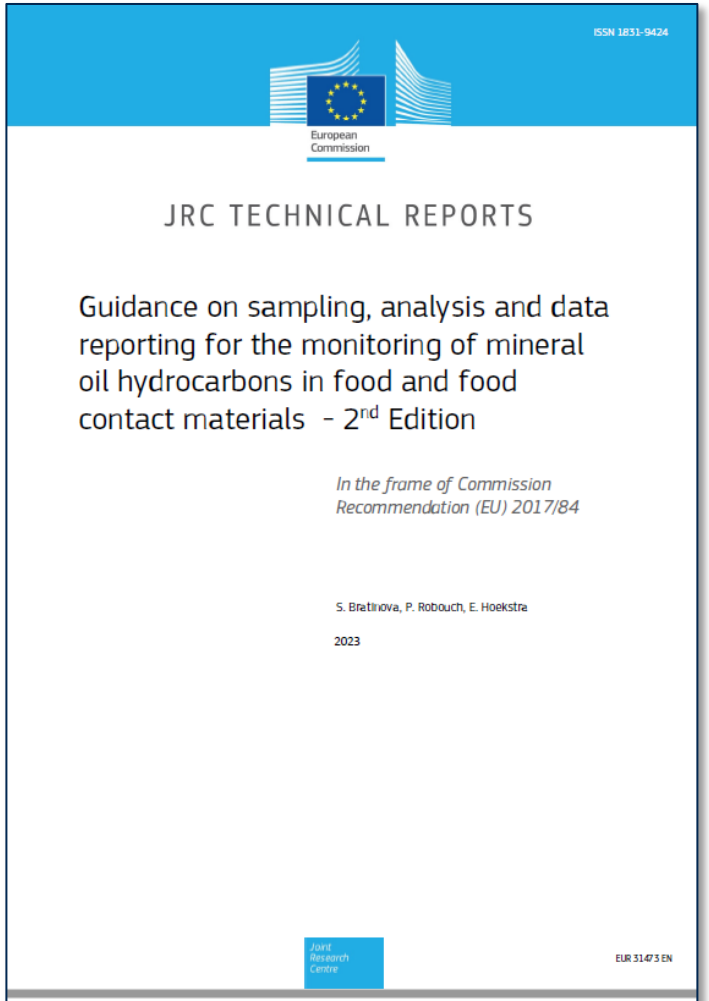
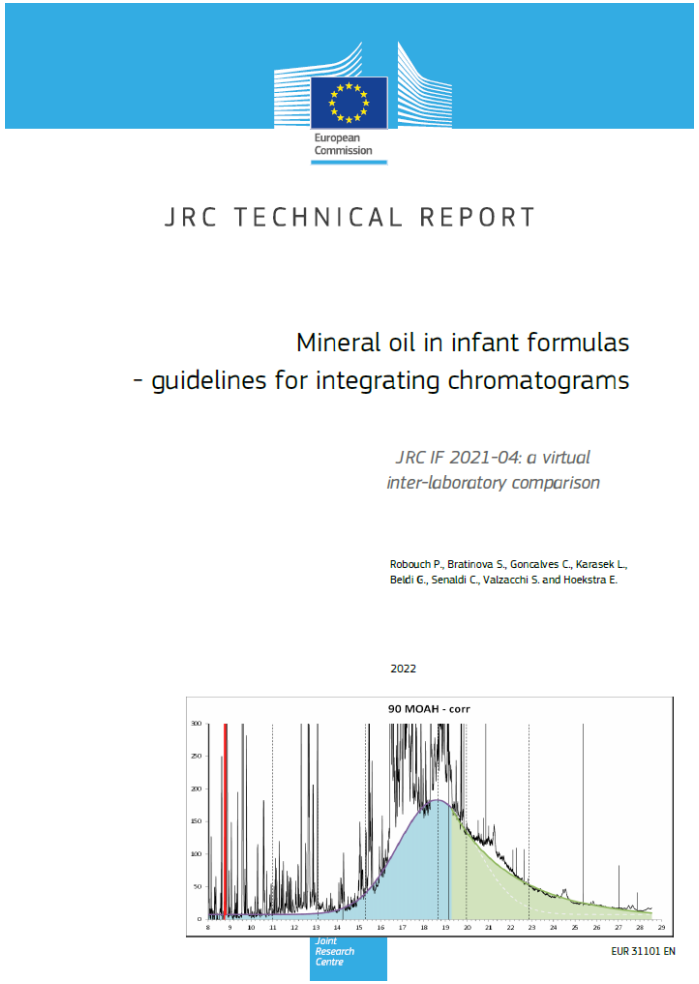
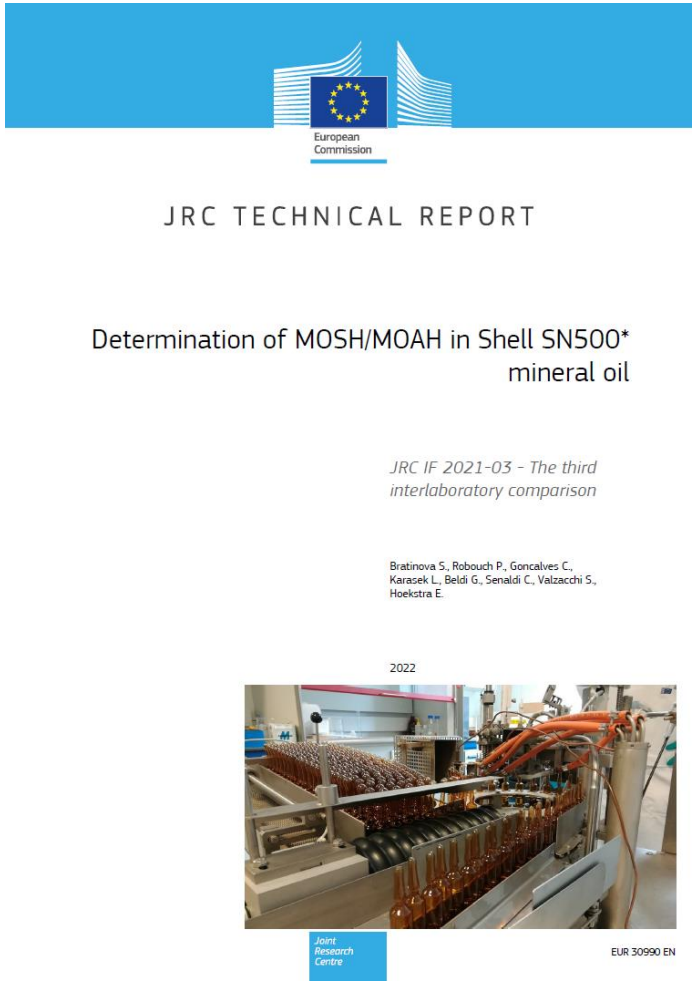
Mineral oil







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Proficiency tests

2022

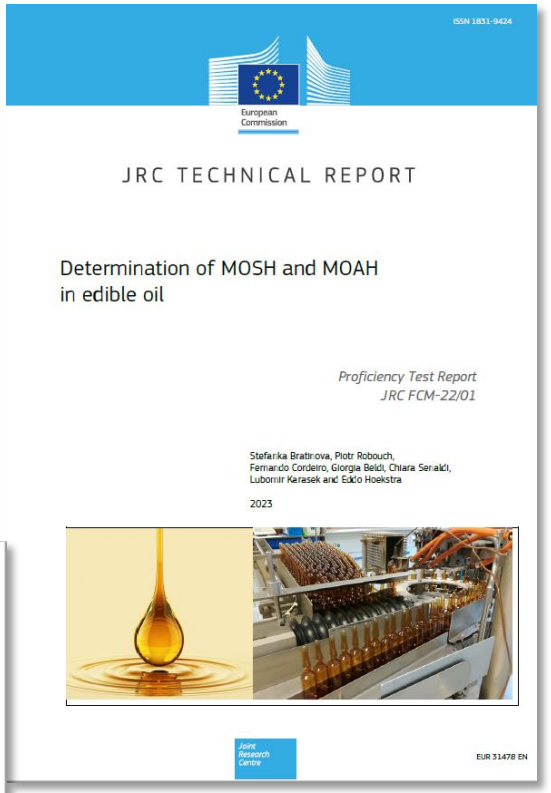
MOSH-MOAH in olive oil

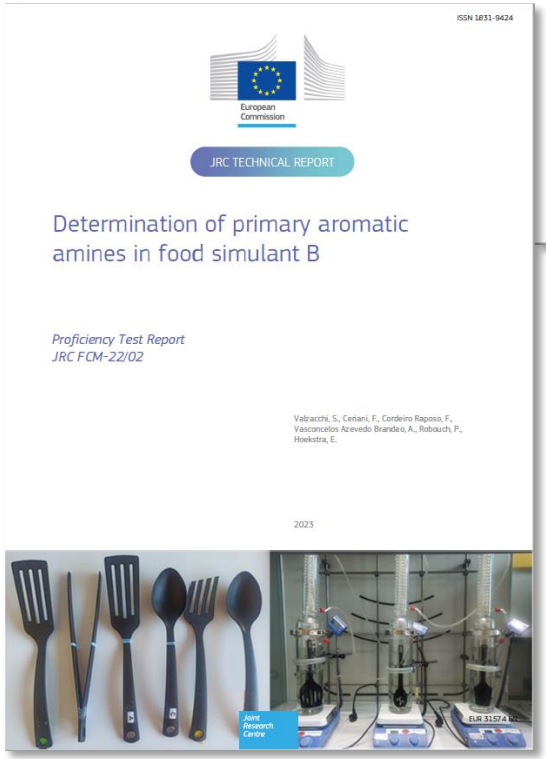
PAA in food simulant B and spiked food simulant B migration extract

2023

Migration of melamine and formaldehyde from bamboo/melamine ware

Migration of styrene from PS cups into milk





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Proficiency tests

- Well controlled migration step is important
  - Temperature control
    - of the ***food simulant*** during the migration test
    - by recording with datalogger
  - Pre-heating of the test item?
  - Avoidance of evaporation during the migration test

Kitchenware guidelines

Aim: comparability of measurement results

2019 – Guideline on "Testing conditions for kitchenware articles in contact with foodstuffs - Part 1: Plastics;

2020 – Part 2: Plastics and Metals;

2021 – Part 3: Plastics , Metals, Silicone & Rubber

2023 – Part 4: plastics , metals, silicone & rubber, paper & board next

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How to select the test conditions (2)

Embossed; 260°C

2. When
   - ✓ a **permanent label on the article** (e.g. embossed or engraved) **OR**
   - ✓ **instructions ONLY** on the packaging of the article (can be discharged)

   defining limiting conditions of use or providing operating instructions, then adapt the test conditions accordingly

   BUT only if in-line with foreseeable conditions in this Guideline
3. When **no label/instructions** and this guideline assigns several possible test conditions for the same type of article, then select the **most severe** test conditions appropriate for the specific article.

Not fixed; 450°F (232°C)

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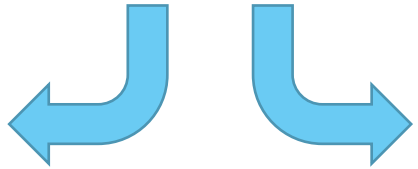
How to select the test conditions (4)

7. For materials (e.g. paper and board) that do not withstand the combination of test conditions and food simulants set for plastics, other migration/extraction methods may be defined.

Coated/treated paper vs. uncoated/untreated paper

Migration according to Regulation (EU) No 10/2011

- includes a barrier layer against fat/grease/water (e.g. a plastic layer)
- does not absorb moist and/or oil
- no loss of physical structure



“extraction”

- do not withstand migration test conditions and food simulants prescribed by Reg. (EU) No 10/2011
- lose physical structure

Kitchenware – paper & board

Articles that do not withstand migration test conditions of Regulation (EU) No 10/2011:

- In absence of national requirements migration test results to be reported in mg/dm^2 taking into account
  - the one-sided area and
  - the grammage of the paper.
- Test results can be converted into mg/kg of food using the real S/V ratio in actual or foreseen use.
- For articles where it is impractical to estimate this ratio and for those articles with a capacity < 0.5 L or > 10 L, the conventional factor of 6 dm^2/kg of food should be used.

Kitchenware – paper & board

EN 15519 does not specify when ethanol 95 % or isooctane has to be used for extraction/migration,

Harmonisation with the last paragraph of section 2.1.3 of Annex V of Regulation (EU) No 10/2011 is made:

> ***The highest extraction in ethanol 95 % and isooctane shall be used for compliance assessment. If the temperature under the worst foreseeable conditions of intended use exceeds 100 °C the highest extraction in ethanol 95 %, isooctane and food simulant E shall be used for compliance assessment.***

Ceramics, glass, enamel

- Support revision Ceramic Directive 84/500/EEC
- More elements than Cd, Pb
- Realistic test conditions
  - compared to current 22°C for 24 h using 4% v/v acetic acid
- Repeated use
- Replacement of acetic acid for elevated temperatures

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Migration modelling – data request form (1)

Nature of the plastic FCM

- **The mandatory parameters are highlighted in bold**
- For a multi-layer plastic, please give information on the nature of each FCM layer (up to the absolute barrier if present).

Type of polymer as specific as possible
Migration test conditions • **Temperatures (T; °C)** • **Contact times (t; min, h, day)**
Contact area between FCM and Food (A) during the migration test performed (dm^2)
Density of FCM (ρP; kg/L)
Thickness of the FCM layer (d)
Specific contribution of the FCM to the diffusion activation energy (t) (only if determined)
Polymer-specific constant (A_P*) (only if determined)
FCM-Food partition coefficient (K) (only if determined)

Migration modelling – data request form (2)

Description of food/food simulant parameters

Type of food /food simulant
Volume of the food/food simulant (V) during the migration test performed (dm^3)
Density of the food (ρF)

Migration modelling – data request form (3)

Description of the substance

List of the substance(s)
CAS No. for each substance (if available)
SMILES for each substance
Molecular weight (M; Da) for each substance
Initial concentration for each substance in the FCM (Ci; mg/kg polymer)
Diffusion coefficient for each substance in FCM (DF; cm^2/s)
Octanol-water coefficient (in log10) (only if available)
Migration result for each substance (M; mg/kg food)

Acknowledgements

- National Reference Laboratories
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- TF kitchenware

Thank you

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