

MICROPLASTIC'S IN TABLET DETERMINATION WITH DIFFERENT
ANALYTICAL TECHNIQUES

PROTOCOL OF INTERLABORATORY COMPARISON MICROPLASTIC'S IN TABLET DETERMINATION WITH DIFFERENT ANALYTICAL TECHNIQUES

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**MICROPLASTIC'S IN TABLET DETERMINATION WITH DIFFERENT
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The purpose of this interlaboratory comparison is to compare and evaluate the measurement capacity of the participating laboratories using different instrumentation on the same sample.

2. Contact details of the organizer of the interlaboratory discussion

This interlaboratory comparison is organized by: Food Contact Services s.r.l. (FCS)

Coordinator Contacts:

Dr. Eleonora Schiavi

Mail qualita@foodcontactservices.com

Address: Via Aldo Moro 16, 25124 Brescia

Technical manager:

Dr. Andrea Stocchi

It should be noted that FCS, by organizing this interlaboratory comparison, can also make use of experts in the evaluation of the compatibility of the experimental results and the drafting of the final report.

3. Reference measurements

The Reference value will be assigned by Consensus between participating laboratories as per point 7.7 of UNI ISO 13528:2022, considering the competence of the laboratories.

The calculation of the assigned value and the evaluation of the consistency of the measures will be carried out in accordance with the corresponding internal procedure.

The traceability of the reference measurements of this interlaboratory comparison is guaranteed by FCC (ILAC-P10:07/2020).

The analysis for the evaluation of the stability of the sample is contracted to the Food Contact Center s.r.l. laboratory.

FCS remains in any case responsible for the activities carried out by the contracting entity towards the participating laboratories.

4. Participants and calendar of the discussion

Point 7.3 indicates the programming timing.

Each participant has fifteen days to carry out the program of activities.

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Any difficulty encountered that may affect the program must be promptly communicated to the coordinator of the discussion through the contacts indicated in point 2. The coordinator of the cycle is also available to solve any technical and administrative problems that may arise during the course of the cycle. For any request for information or doubt, it is therefore always possible to contact the coordinator of the comparison through the contacts indicated in point 2.

5. Samples

The reference sample consists of a tablet made of KBr with encapsulated microplastics of different nature and dimension. The possible plastics are:

- Polyamide
- Polyethylene
- Polypropylene
- Polystyrene
- Polycarbonate
- Polymethyl methacrylate
- Polyurethane
- Polyvinylchloride
- Polyethylene terephthalate
- Polytetrafluoroethylene

6. Sample management

The Sample is sent to the participants stored in aluminum foil, which is then placed in a small polystyrene box.

All these are contained in a shipping box with shock-absorbing material – please see the following image



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Two of these are sent to each laboratory: one with the tablets and one empty. The empty boxes can be used to re-send the samples to Food Contact Center (see 7.2 for the address). Please use the external cardboard box for the subsequent shipment or a suitable one, in order to guarantee the safety of the tablets.

Each participant will receive **one tablet with microplastics and one without as a blank** for the execution of the test, to be performed once per tablet.

Upon receipt, it is necessary to check the condition of the packaging. Notify the coordinator of receipt within two working days.

The sample must be handled with special care, obviously avoiding possible internal contamination and possible breakdown due to fragility of the item. Before conducting the determination, **store in a desiccator at least for 4h.**

6.1 Parameters that can affect the stability of samples

Contamination and humidity can affect the determination and the consequent result.

7. Execution of activities

7.1 Preliminary activities and environmental conditions

Before starting the program of activities, the sample must be treated according to the specifications of the quality system of the laboratories, aimed at ensuring the stability of the material.

Environmental conditions

The test requires the application of internal procedures that guarantee the tablet from contamination.

Storage

Store the sample in a desiccator all the time.

7.2 Measuring and performing measurements

Each laboratory will be provided with the same KBr tablet containing microplastics, together with a blank KBr tablet without microplastics. Both tablets shall be analyzed, and the results obtained shall be reported for each tablet.

The KBr pellets are very fragile and readily absorb moisture. Therefore, it is important to handle them carefully using tweezers and to store them in a desiccator. Before, during, and after the

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analysis, particular care must be taken to prevent any form of contamination of the tablets that may compromise the analytical results.

All microplastics are embedded on **one side of the KBr tablet**. Therefore, the microplastic-containing surface must be identified prior to analysis.

Each laboratory shall be analyzed **the total filter area**.

Please report the number of detected particles in the corresponding range (μm). To measure the dimension, **use Feret maximum diameter criterion**.

Upon completion of the analysis, the tablets should be repackaged using the original packaging in which they were received.

Laboratories will have **two weeks** from notification of shipment to complete the analysis and return the two provided tablets to FCC at the address:

Food Contact Center s.r.l. – Via del Redolone 65, 51034 Serravalle Pistoiese (Italy)

FCC will inspect the tablets, verify that they are free from contamination, and subsequently forward them to the next laboratory in the list of the 10–12 laboratories participating in the ILSI interlaboratory study.

Please use the downloaded excel file, adding any information different from the scheduled ones, in the field “notes”.

7.3 End of the activity

To be defined / updated

7.4 Delivery of results

Please download the excel file from the platform as expressed in “participant guide”.

After the determination, please attach the excel file (not renamed)

Within 15 days of the end of the activities, the Certificates or Reports relating to the analysis of the samples must be sent to the coordinator through **the platform**.

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Within 45 days of the conclusion of the activities of the reference laboratory, a suitable technical document will be sent to the participating laboratories containing the results, the performance assessment and the origin of the traceability of the measurements carried out, drawn up in accordance with the UNI CEI EN ISO/IEC 17043:2023 standard (Comparison report).

Finally, in the event that the laboratory does not send its measurement results to the cycle coordinator in due time, a final report will be drawn up showing the assigned value but not the evaluation of the performance of the laboratory itself.

9. Participant Performance Evaluation Criteria

The evaluation of the results of each laboratory will be carried out by principles of the UNI CEI EN ISO/IEC 17043:2023 and UNI ISO 13528:2022 standards.

10. Use and confidentiality of results

FCS guarantees that the information acquired during the interlaboratory evaluation activity is confidential and will be used with the utmost caution, in accordance with the confidentiality agreement that will be signed by both parties during the course of the cycle.

11. Regulatory references

UNI CEI EN ISO/IEC 17043:2023 "Conformity assessment – General requirements for proficiency testing"

UNI CEI EN ISO/IEC 17025:2018 "General requirements for the competence of testing and calibration laboratories"

ILAC P10:2020 "ILAC Policy on Metrological Traceability of Measurement Results"

CIPM MRA Mutual Recognition Agreement

End of Document
