

CERTIFIED REFERENCE MATERIAL - CRM ISO 17034

Deoxynivalenol in Acetonitrile LCMS grade

The Certified Reference Material is produced in compliance with NF ISO 33401, ISO 17034, ISO/IEC 17025, ISO33405, ISO TR 16476 and JCGM 100.

Description of the CRM

Product name:	Deoxynivalenol	
Product number:	FIA000390	
CAS number:	Deoxynivalenol 51481-10-8	
Lot number:	DON20061501	
Expiry date:	16-Jun-2027	
Certified value (s):	Deoxynivalenol 100,07 ± 2,31 with k=2 µg/mL	
Physical description:	Clear solution of toxin in Acetonitrile LCMS grade	
Packing:	1 mL in amber glass vial	
Storage conditions:	≤ -10°C	
Matrix and starting material:	This material was prepared with/from:	
	Acetonitrile LCMS grade	Batch: P4N670234N
	Deoxynivalenol	Internal ID: DON018A

Intended use of the CRM:

The main purpose of this material is :

- Calibration & Control of measuring instruments or systems;
- Validation of analytical methods and recommended for the accuracy;
- Determination of recovery rates from matrix separation such as extraction.

Instruction for the correct use:

The vial should be stored in a dark place at ≤ -10°C . Before usage of the CRM, allow the vial to warm to room temperature. If condensation is present on the bottle, the bottle should be wiped before opening. Homogenization can be done by vortexing for at least 10 seconds. There is no indication as to the vortex speed, but the vortex must be visible to the user. The bottle should not be left open on the bench, it should be opened only to take the necessary quantity and immediately closed. If storage after opening is necessary, the Certified Reference Material should be tightly closed and kept from light and moisture in amber glass.

Hazardous situation:

H225 : Flammable liquid - Category 2 - Highly flammable liquid and vapour

H302 : Acute toxicity - Oral - Category 4 - Harmful if swallowed

H312 : Acute toxicity - Dermal - Category 4 - Harmful in contact with skin

H319 : Eye irritation - Category 2 - Causes serious eye irritation

H332 : Acute toxicity - Inhalation - Category 4 - Harmful if inhaled

In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Avoid exposure. Wear suitable protective clothing.

Safety measures:

Special care must be taken when manipulating this CRM. Avoid contact with eyes, skin and clothing. Avoid prolonged or repeated exposure. Use in a chemical fume hood. Safety shower and eye bath must be near. In case of spills, cover and absorb with an inert dry material such as dry-lime, sand or soda ash and place in an appropriate waste disposal container.

Keep container tightly closed. Do not store in direct sunlight. Keep away from heat, sparks, flame and incompatible material. Storage area should be cool, dry and away from incompatible materials.

Final users should conduct their own investigations to determine the suitability of the information for their particular research purposes. Under no circumstances will the supplier of this CRM be held responsible for any damage resulting from handling or contact with the product.

More information are available on the SDS online on www.fianovis.com/documentation.

Commutability

As part of the CRM produced by Fianovis, the property values are guaranteed for chromatography analysis. For another use, the user must make additional qualification to use it in this context.

Traceability

The certified value is established by gravimetric and volumetric preparation. The mass of the material is determined using a balance calibrated by an accredited external laboratory and verified internally with control weights, ensuring metrological traceability to the International System of Units. The purity and identity of the compound are determined by quantitative ¹H NMR, using an internal standard certified reference material compliant with ISO 17034. This establishes International System of Units traceability through metrological traceability pathway 2, via a certified reference material linked to the International System of Units through an unbroken chain of comparisons.

The material is dissolved in a Class A volumetric flask. Production is carried out using dedicated glassware, and only Class A equipment is used for volumetric operations.

The certified value is therefore traceable to the International System of Units through a metrological traceability chain including pathway 2.

Calculation of uncertainties

The uncertainty (u_{CRM}) is the combination of the batch characterization (u_{Char}), between-unit variation (u_{Hom}) and stability (including shipment) (u_{Stab}). The constant is $k=2$ used for the total uncertainty (U_{Total}). The Certified Reference Material uncertainty is expressed in the following table :

$$U_{Total} = u_{CRM} \times 2 = \sqrt{u_{Char}^2 + u_{Homo}^2 + u_{Stab}^2} \times 2$$

Compound	Uncertainty	U_{Total} μg/mL
Deoxynivalenol		2,31
NA		#VALEUR!

Note: Following the Guide to the Expression of Uncertainty in measurement (GUM) the expanded uncertainty of toxin level is obtained by multiplication with a coverage factor k for which 2 is usually chosen to obtain a confidence level of 95 %.

Quality control

The material has a high degree of homogeneity as it is a pure solution. The homogeneity was tested with HPLC-PDA and evaluated by variance analysis (ANOVA). The within a between unit variability was determined. The characterisation of the Certified Reference Material is done by ¹H-qNMR. The shelf-life & stability has been determined with the uncertainty of shipment, on the bench & long-term storage.

References:

- NF ISO 33401 (2024) Reference Materials - Contents of certificates, labels and accompanying documentation.
- ISO 17034 (2016) General requirements for the competence of reference material producers.
- ISO/IEC 17025 (2017) General requirements for the competence of testing and calibration laboratories.
- ISO 33405 (2024) Reference Materials - Approaches for characterization and assessment of homogeneity and stability.
- ISO TR 16476 (2016) Reference Materials - Establishing and expressing metrological traceability of quantity values assigned to reference materials.
- JCGM 100(2008) (E) - Evaluation of measurement data - Guide to the expression of uncertainty in measurement.

Control and Certification

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