National Certified Reference Material (NCRM)

Code：GBW08724

Reference Material Certificate

PCB103 in 2,2,4-Trimethylpentane

Batch Number：

Certification Date：

Period of Validity：

Reference Material Producer：National Institute of Metrology

Address：No.18, Bei San Huan Dong Lu, Chaoyang Dist, Beijing

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Version：1.0

PCB103 in this certified reference material (CRM) is one of pentachlorobiphenyls of PCBs. The CRM can be used for assessment of analytical methods, instrument calibration and measurement quality control in the fields of food safety, environmental protection and inspection and quarantine.

1. Sample Preparation

This CRM was prepared at national institute of metrology (NIM) by weighing and dissolving PCB103 pure materials in 2,2,4-trimethylpentan for residue analysis.

2. Traceability and Characterization Method(s)

Qualitative analysis of the material was performed by gas chromatography-mass spectrometry (GC-IDMS) and nuclear magnetic resonance (NMR); liquid chromatography (HPLC-DAD) and gas chromatography (GC-FID) were used to quantify the main components, qualitative and quantitative analysis of organic impurities was carried out with gas chromatography - mass spectrometry (GC-MS), Karl Fischer Coulomb method was used to determine the moisture content, and inductively coupled plasma mass spectrometry (ICP-MS) was used to analyze the content of inorganic impurities, purity value was calculated by mass balance method. The property value of this reference material was verified by using the gas chromatography-isotope dilution mass spectrometry (GC-IDMS) method.

Through the use of validated absolute quantitative measurement method and calibrated measuring instruments which meet metrological traceability requirements, the values of this CRM can be traced to SI unit kilogram (kg) and mole (mol). The international comparison CCQM-K40 (PCBs in organic solution) was used to validate the measurement method.

3. Property Value and Uncertainty

The property values and expanded uncertainties of PCB103 are as follows：

Code	Analyte	Chemical name	CAS NO.	Property value (μg/g)	Uncertainty (%), (k=2)
GBW08724	PCB 103	2,2',4,5',6-Pentachlorobiphenyl	60145-21-3	10.0	2

The coverage factor was chosen to obtain an approximate 95% level of confidence. The uncertainty evaluation considered sources from characterization, between-unit homogeneity and stability.

4. Homogeneity and Stability Assessment

According to national technical specification of JJF1343 (equivalent to ISO Guide 35), homogeneity and stability study for this certified reference were carried out through random sampling by using GC-IDMS. The results demonstrated good homogeneity and stability of this CRM.

The certification of this CRM is valid until Jun. 2022. The stability of this CRM will be regularly monitored by NIM. During the validity period, the customer will be informed of any

change of the certified value just-in-less-time.

5. Packaging, Storage and Use

Packaging: The batch of material is divided and sealed into 2mL clean brown glass ampoule bottles, each containing approximately 1 mL of solution.

Storage：This CRM should be stored under cool and dark condition.

Use: Prior to use, it should be equilibrated to room temperature. It should be used once after being opened and CANNOT be used as reference material after re-sealing. This standard substance is a toxic and hazardous substance. Pay attention to protection when using it. Wear masks and latex gloves to avoid inhalation and direct contact with skin.

Statement

1. The reference material is only for lab study and analytical testing. In case of any complaint due to the improper use or storage by the user, the institute will bear no responsibility.
2. After receiving it, please immediately check variety, quantity and packaging. Relevant compensation is only limited to the reference material itself.
3. The institute is only responsible for the complete certificate affixed with the “Dedicated Seal for Reference Material of National Institute of Metrology”. Please properly keep this certificate.
4. To obtain more application related information, please contact the Department of Technical Consultation.

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