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Certified Reference Material

BAM-K011

Mineral oil calibration standard in n-heptane

Certified Values

Characteristic	Value [1] in mg/g	Uncertainty *U* [2] in mg/g
Mass fraction of the boiling range C_{10} – C_{40}	14.71	0.32

[1] The certified mass fraction (mg/g) corresponds to a concentration of 10.00 mg/mL based on the density ρ of n-heptane of ρ = 0.68 g/cm^3 at 23 °C.

[2] Expanded uncertainty *U* with a coverage factor of *k* = 2, corresponding to a level of confidence of about 95 % according to ISO/IEC Guide 98-3 (2008) Uncertainty of measurement—part 3: guide to the expression of uncertainty in measurement (GUM:1995). International Organization for Standardization (ISO), Geneva.

Material Description

BAM-K011 (lot no. I) is bottled in amber screw capped tubes (Certan® capillary vials) containing about 4.5 mL of mineral oil dissolved in n-heptane. The mineral oil component consists of BAM-K010c, a mixture of diesel/lubricating oil with a certified mass ratio of 1:1. Furthermore, BAM-K011 contains n-decane ($C_{10}H_{22}$) and n-tetracontane ($C_{40}H_{82}$) as retention time markers (c ~ 30 mg/L). Figure 1 displays the GC-FID chromatogram of the calibration standard BAM-K011.

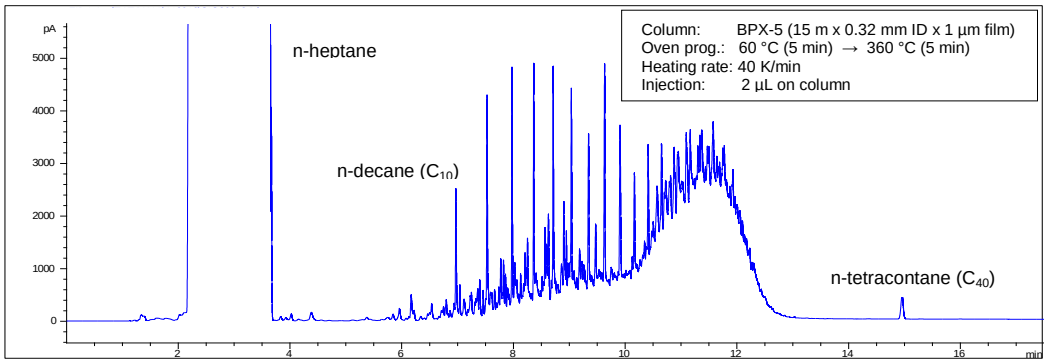

Fig.1: GC-FID chromatogram of calibration standard BAM-K011

This certificate is valid for a period of 12 months after dispatch.

Date of dispatch:

Recommended Use

The reference material BAM-K011 is used as a calibration standard for the analytical procedures ISO 9377-2 (2000), ISO 16703 (2004) and EN 14039 (2004) for the gas chromatographic determination of mineral oil hydrocarbons in water, soil and waste by means of GC-FID. According to these standard procedures n-decane and n-tetracontane, which are contained in BAM-K011, are to be used as retention time markers. BAM-K011 can be utilized as stock solution for the preparation of calibration standards by dilution with appropriate solvents according to the above mentioned methods.

Handling

Proper use of the reference material is essential for avoiding potential harm to the user. It is strongly recommended to handle and dispose the reference material in accordance with the guidelines for hazardous materials legally in force at the site of end use and disposal. After removal of a portion the container is to be closed tightly.

Transport and Storage

The calibration standard is to be stored tightly closed at room temperature in the dark. If the material should become turbid by time, it should be replaced by a fresh unit and storage conditions should be checked and adjusted.

Metrological Traceability

The mineral oil mass fraction is traceable to the certified mass fraction of BAM-K010c used for the preparation of BAM-K011. The certification of BAM-K011 is based on precise weighing of the mineral oil component (BAM-K010c) and solvent (n-heptane) to be mixed. Balance calibration was performed and a correction of buoyancy has been applied.

Literature

Guidelines for the Production of BAM Reference Materials (BAM, 2010)

Accepted as BAM-CRM on May 29, 2012

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