JOINT RESEARCH CENTRE
Institute for Reference Materials and Measurements

CERTIFICATE OF ANALYSIS

ERM®- FC395k

GAS OIL		
	Certified value [3] [°C]	Uncertainty [4] [°C]
Cold filter plugging point (CFPP) [1]	-7.9	1.6
Cloud point (CP) [2]	-7.2	3.0

1) As defined by EN 116 or ASTM D6371 using the automatic or manual procedure.

2) As defined by EN 23015, ISO 3015 or ASTM D2500 using the automatic or manual procedure.

3) Unweighted mean value of the means of accepted sets of data, each set being obtained in a different laboratory and/or with a different method of determination. The certified value and its uncertainty are traceable to the International System of units (SI).

4) The certified uncertainty is the expanded uncertainty with a coverage factor k = 2 corresponding to a level of confidence of about 95 % estimated in accordance with ISO/IEC Guide 98-3, Guide to the Expression of Uncertainty in Measurement (GUM:1995), ISO, 2008.

This certificate is valid for one year after purchase.

Sales date:

The minimum amount of sample to be used is 50 mL.

NOTE

European Reference Material ERM®FC395k was produced and certified under the responsibility of the Institute for Reference Materials and Measurements of the European Commission's Joint Research Centre according to the principles laid down in the technical guidelines of the European Reference Materials® co-operation agreement between BAM-IRMM-LGC. Information on these guidelines is available on the internet (http://www.erm-crm.org).

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Signed: 

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DESCRIPTION OF THE MATERIAL

ERM-FC395k is a gas oil without flow improving additives. It is a mixture of straight-run and cracked distillates, which were both severely hydro-treated. It does not contain fatty acid methyl esters. Each unit of reference material consists of a set of two amber glass ampoules, each containing 27 mL of gas oil.

ANALYTICAL METHODS USED FOR CERTIFICATION

Cold filter plugging point: EN 116, ASTM D6371 (manual as well as automated procedures)

Cloud point: EN 23015, ISO 3015, ASTM D2500 (manual as well as automated procedures)

PARTICIPANTS

ASG Analytik-Service Gesellschaft mbH, Neusäss, DE
(measurements under the scope of ISO/IEC 17025 accreditation D-PL-11334-01-00)

Asociación “BTC” para laInvestigación de Combustibles Convencionales y Renovables, y Medio Ambiente, Bilbao, ES
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Hansa Group AG, Duisburg, DE
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Intertek OCA France, Donges, FR
(measurements under the scope of ISO/IEC 17025 accreditation Cofrac No 1-2158)

Intertek (Schweiz) AG, Schlieren, CH
(measurements under the scope of ISO/IEC 17025 accreditation STS No 452)

ITS Testing Services (UK) Ltd (West Thurrock Laboratory), West Thurrock, UK
(measurements under the scope of ISO/IEC 17025 accreditation UKAS No 0102)

ITS Testing Services (UK) Ltd (Teesside Laboratory), Cleveland, UK
(measurements under the scope of ISO/IEC 17025 accreditation UKAS No 4106)

Laboratorio de Combustibles, Ferrol, ES
(measurements under the scope of ISO/IEC 17025 accreditation ENAC No 814/LE1688)

Oilcheck Pty Ltd, Sefton, AU
(measurements under the scope of ISO/IEC 17025 accreditation NATA 2031)

Southwest Research Institute, San Antonio, Texas, US
(measurements under the scope of ISO/IEC 17025 accreditation A2LA No 0702.04)

Stazione Sperimentale per Combustibili, San Donato Milanese, IT
(measurements under the scope of ISO/IEC 17025 accreditation ACCREDIA No 0173-1)

Vúrup, a.s., Bratislava, SK
(measurements under the scope of ISO/IEC 17025 accreditation SNAS No 049/S-119)

SAFETY INFORMATION

The usual hazard and precautionary phrases for gas oil apply:

H350: May cause cancer

P201: Obtain special instructions before use. P202: Do not handle until all safety precautions have been read and understood. P281: Use personal protective equipment as required.P308+P313: If exposed or concerned: Get medical advice/attention. P405: Store locked up.

INSTRUCTIONS FOR USE AND INTENDED USE

The contents of the two ampoules shall be pooled to obtain one sample of 50 mL. No further sample treatment or mixing is necessary.

The main purpose of the material is to assess method performance, i.e. for checking accuracy of analytical results/calibration. As any reference material, it can also be used for control charts or validation studies.

Comparing an analytical result with the certified value

A result is unbiased if the expanded uncertainty of measurement results and certified value covers the difference between the certified value and the measurement result (see also ERM Application Note 1, www.erm-crm.org.)

For assessing the method performance, the measured values of the CRM are compared with the certified values. The procedure is described here in brief:

- Calculate the absolute difference between mean measured value and the certified value (Δ_m).
- Combine measurement uncertainty (u_m) with the uncertainty of the certified value (u_{CRM}): $u_\Delta = \sqrt{u_m^2 + u_{CRM}^2}$
- Calculate the expanded uncertainty (U_Δ) from the combined uncertainty (u_Δ) using an appropriate coverage factor, corresponding to a level of confidence of approximately 95 %
- If $\Delta_m \leq U_\Delta$ then there is no significant difference between the measurement result and the certified value, at a confidence level of about 95 %.

Use in quality control charts

The materials can be used for quality control charts. Different CRM-units will give the same result as heterogeneity was included in the uncertainties of the certified values.

STORAGE

The materials shall be stored at 18 ± 5 °C in the dark.

Repeated tests on the same sample showed no significant change of CFPP and CP within 10 consecutive measurements, indicating that samples can be re-used. However, the European Commission cannot be held responsible for changes that happen during storage of the material at the customer's premises, especially of opened samples.

LEGAL NOTICE

NOTE

A detailed technical report is available on www.irmm.jrc.be. A paper copy can be obtained from the Joint Research Centre, Institute for Reference Materials and Measurements on request.

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