

Certificate of the Reference Material

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**Name of the Material** : Multiparameter in Diesel  
**Material Code** : UME CRM 1502  
**Issue Date** : 18.05.2016  
**Revision Date** : 18.09.2019 (Revision history can be found on the last page)  
**Validity Period of the Certificate** : One year from the sales date  
**Certified Values** :

Parameter	Certified Value <sup>[5]</sup>	Uncertainty <sup>[6]</sup>
Cetane Index <sup>[1]</sup>	56.8	1.6
Flash Point <sup>[2]</sup> (°C)	61.9	3.1
Kinematic Viscosity at 40 °C <sup>[3]</sup> (mm <sup>2</sup> /s)	3.081	0.019
Density at 15 °C <sup>[4]</sup> (kg/m <sup>3</sup> )	832.09	0.09

[1] As defined by the measurement method/procedure specified in the EN ISO 4264 standard.

[2] As defined by the measurement method/procedure specified in the EN ISO 2719 standard.

[3] As defined by the measurement method/procedure specified in the EN ISO 3104/T1 standard.

[4] As defined by the measurement method/procedure specified in the EN ISO 12185 standard.

[5] Calculated from the unweighted mean of the accepted results submitted by different laboratories. The certified values (excluding cetane index) are traceable to the International System of Units (SI).

[6] The expanded uncertainty of certified value includes characterization, homogeneity, stability components and is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with GUM "Guide to the Expression of Uncertainty in Measurement".

TÜBİTAK UME, as a reference material producer, has been accredited by TÜRKAK according to TS EN ISO 17034 with the accreditation number AB-0001-RM.

Sales Date



Dr. Mustafa ÇETİNTAŞ  
Director

The following pages are an integral part of the certificate. The use of current certificate is customers' responsibility.

Most recent certificate can be downloaded from [www.ume.tubitak.gov.tr](http://www.ume.tubitak.gov.tr).

**Certified Values (Continued):**

	Parameter	Certified Value <sup>[2]</sup>	Uncertainty <sup>[3]</sup>
	Recovery at 250 °C (%)	27.0	2.4
	Recovery at 350 °C (%)	93.8	2.1
Distillation <sup>[1]</sup>	5 % Recovery Temperature (°C)	191.3	12.9
	10 % Recovery Temperature (°C)	209.4	7.9
	20 % Recovery Temperature (°C)	235.9	9.8
	30 % Recovery Temperature (°C)	255.5	5.4
	40 % Recovery Temperature (°C)	270.9	2.8
	50 % Recovery Temperature (°C)	283.5	3.3
	60 % Recovery Temperature (°C)	295.2	2.5
	70 % Recovery Temperature (°C)	307.1	3.9
	80 % Recovery Temperature (°C)	320.8	3.3
	90 % Recovery Temperature (°C)	339.8	5.1
	95 % Recovery Temperature (°C)	354.4	4.6

[1] As defined by the measurement method/procedure specified in EN ISO 3405 standard.

[2] Calculated from the unweighted mean of the accepted results submitted by different laboratories. The certified values are traceable to the International System of Units (SI).

[3] The expanded uncertainty of certified value includes characterization, homogeneity, long term stability components and is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k = 2$ , which for a normal distribution corresponds to a coverage probability of approximately 95 %. The standard measurement uncertainty has been determined in accordance with GUM "Guide to the Expression of Uncertainty in Measurement".

**Informative Values**

Parameter	Value <sup>[1]</sup>
Cold Filter Plugging Point (CFPP) (°C)	-5.6

[1] The value was calculated from the mean of ten laboratory results each obtained from two independent measurement results on two units.

**Description**

The material is about 500 mL of diesel in an amber glass bottle.

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### Intended Use

This material is intended to be used for method development, method validation, verification and quality control purposes for the measurement of cetane index, flash point, kinematic viscosity (at 40 °C), density (at 15 °C) and distillation (recovery at 250 °C, recovery at 350 °C and temperatures to obtain 5, 10, 20, 30, 40, 50, 60, 70, 80, 90, 95 % recovery) parameters.

### Instructions for Use

EN ISO 3104/T1, EN ISO 12185, EN ISO 3405, EN ISO 4264 and EN ISO 2719 standard methods must be used for the determination of kinematic viscosity (at 40 °C), density (at 15 °C), distillation, cetane index and flash point, respectively. Measurements must be carried out on sample amounts indicated in the standard methods. The material can be safely dispatched at ambient temperature where the temperature does not exceed 50 °C and the transportation period of 4 weeks.

### Storage Conditions

The material should be stored at  $(20 \pm 4)$  °C, in a dark and clean environment. TÜBİTAK UME cannot be held responsible for changes that might happen to the material at customer's premises due to noncompliance of the instructions for use, and the storage conditions given in the certificate.

### Safety Information

Material contains diesel. It is strongly recommended that the material must be handled and disposed according to the safety guidelines where applicable. All safety precautions, e.g. working in a fume hood and or using suitable masks, must be taken. All precautions for flammable materials are also valid for this material. Please refer to the Safety Datasheet before any use of the material.

## Participants

Information about the laboratories participated in the characterization study are given in the following table.

Laboratory	Address
TÜBİTAK UME	TÜBİTAK Gebze Yerleşkesi, Barış Mahallesi, Dr. Zeki Acar Caddesi No.1, 41470 Gebze - Kocaeli / Türkiye
İnönü Üniversitesi Petrol Araştırma Laboratuvarı (PAL)	İnönü Üniversitesi Mühendislik Fakültesi Kimya Mühendisliği Bölümü 44280 Malatya/ TURKEY
KTÜ-YUAM	Karadeniz Teknik Üniversitesi Prof. Dr. Saadettin Güner Yakıt Uygulama Araştırma Merkezi 61080 Trabzon/ TURKEY
OMV POAŞ-İzmir	İzmir Aliağa Terminal Müdürlüğü Siteler Mah. Petrol Ofisi Cad. No: 10 35800 Aliağa - İzmir/ TURKEY
OMV-POAŞ- Haramidere	Haramidere Terminali Avcılar - İstanbul/ TURKEY
OPET-MARLAB	Merkez Mah. Ereğli Cad. No:78 Sultanköy Marmara Ereğlisi - Tekirdağ/ TURKEY
OPET-MERLAB	Karaduvar Mah. 1031 Sok. No:4 Mersin/ TURKEY
OPET-KORLAB	Güney Mah. Hamit Kaptan Sok No:8 41780 Körfez - Kocaeli/ TURKEY
TÜBİTAK MAM Enerji Enstitüsü	TÜBİTAK Gebze Yerleşkesi Barış Mah. Dr. Zeki Acar Cad. No.1 41470 Gebze - Kocaeli/ TURKEY
TÜPRAŞ İzmir Rafinerisi	Atatürk Mah. İnönü Bulvarı No: 52 35800 Aliağa - İzmir/ TURKEY
TÜPRAŞ İzmit Rafinerisi	Güney Mah. Petrol Cad. No: 25/1 41780 Körfez - Kocaeli/ TURKEY

### Methods and/or Techniques Used for the Determination of the Certified Values

Information about the methods and/or techniques are given in below.

Method/Technique	Parameter
EN ISO 4264	Cetane Index
EN ISO 2719	Flash point
EN ISO 3104/T1	Kinematic Viscosity
EN ISO 12185	Density
EN ISO 3405	Distillation

### Revision History

Date	Remarks
18.05.2016	First Issue
08.11.2018	Certificate was updated due to format change of the document. The uncertainty values of distillation parameters, recovery at 250 °C and temperature of 30% and 90% recovery was updated. The significant digit of some certified and uncertainty values was revised.
18.09.2019	Information about shipping conditions is added. Certificate is updated due to changes in the format of certificate for reference materials.