Deutsche Akkreditierungsstelle

Annex to the Accreditation Certificate D-PL-11334-01-00 according to DIN EN ISO/IEC 17025:2018

Valid from: **23.06.2023**

Date of issue: 23.06.2023

Holder of accreditation certificate:

ASG Analytik-Service AG
Trentiner Ring 30, 86356 Neusäß, Germany

The testing laboratory meets the requirements of DIN EN ISO/IEC 17025:2018 to carry out the conformity assessment activities listed in this annex. The testing laboratory meets additional legal and normative requirements, if applicable, including those in relevant sectoral schemes, provided that these are explicitly confirmed below.

The management system requirements of DIN EN ISO/IEC 17025 are written in the language relevant to the operations of testing laboratories and confirm generally with the principles of DIN EN ISO 9001.

chemical and physico-chemical investigations of mineral oil and related products; in particular, fuels such as diesel fuel, diesel fuel from fatty acid methyl ester (FAME) and vegetable oil, and aviation turbine fuels; heating fuels such as heating oil EL
as well as selected properties of fuels such as gasoline, liquid gases, natural gases, heating fuels such as heating gases in refineries; petrochemical products such as alcohols (glycerol) as well as NOx reduction agents; sampling at public and commercial service stations

Within the given test fields the testing laboratory is permitted, without being required to inform and obtain prior approval from DAkkS, the following: the modification, development and refinement of testing methods. The listed testing methods are exemplary.

The testing laboratory maintains a current list of all testing methods within the flexible scope of accreditation.

Test Method	Title	Process-Matrix-Number[+)]
1. Gasoline		
Density		
DIN EN ISO 12185 1997-11	Crude petroleum and petroleum products – Determination of density – Oscillating U-tube method	1.1.22
ASTM D 4052 2022	Standard Test Method for Density, Relative Density, and API Gravity of Liquids by Digital Density Meter	1.1.22
Distillation		
DIN EN ISO 3405 2019-09	Petroleum and related products from natural or synthetic sources – Determination of distillation characteristics at atmospheric pressure	1.1.21
ASTM D 86 2020	Standard Test Method for Distillation of Petroleum Products and Liquid Fuels at Atmospheric Pressure	1.1.21
Vapour Pressure		
DIN EN 13016-1 2018-06	Liquid petroleum products – Vapour pressure – Part 1: Determination of air saturated vapour pressure (ASVP) and calculated dry vapour pressure equivalent (DVPE)	1.1.20
Total Sulfur		
DIN EN ISO 20884 2022-01	Petroleum products – Determination of sulfur content of automotive fuels – Wavelength-dispersive X-ray fluorescence spectrometry	1.1.89
ASTM D 2622 2021	Standard Test Method for Sulfur in Petroleum Products by Wavelength Dispersive X-ray Fluorescence Spectrometry	1.1.89
DIN EN ISO 20846 2019-12	Petroleum products – Determination of sulfur content of automotive fuels – Ultraviolet fluorescence method	1.1.89
ASTM D 5453 2019	Standard Test Method for Determination of Total Sulfur in Light Hydrocarbons, Spark Ignition Engine Fuel, Diesel Engine Fuel, and Engine Oil by Ultraviolet Fluorescence	1.1.89

Test Method	Title	Process-Matrix-Number[+)]
Gum		
DIN EN ISO 6246 2020-01	Petroleum products – Gum content of fuels – Jet evaporation method	1.1.1
Copper Corrosion		
DIN EN ISO 2160 1999-04	Petroleum products – Corrosiveness to copper – Copper strip test	1.1.60
ASTM D 130 2019	Standard Test Method for Corrosiveness to Copper from Petroleum Products by Copper Strip Test	1.1.60
Hydrocarbon types and oxygenates (PONA)		
DIN EN ISO 22854 2021-10	Liquid petroleum products – Determination of hydrocarbon types and oxygenates in automotive-motor gasoline and in ethanol (E85) automotive fuel – Multidimensional gas chromatography method	1.1.9 1.1.56 1.1.86
Manganese and Iron		
DIN EN 16136 2015-04	Automotive fuels – Determination of manganese and iron content in unleaded petrol – Inductively coupled plasma optical emission spectrometry (ICP OES) method	1.1.7 1.1.9
Water		
DIN EN ISO 12937 2002-03	Petroleum products – Determination of water – Coulometric Karl Fischer titration method	
Sampling		
DIN EN 14275 2013-05	Automotive fuels – Assessment of petrol and diesel fuel quality – Sampling from retail site pumps and commercial site fuel dispensers	

Test Method	Title	Process-Matrix-Number[+)]
Oxidation Stability		
DIN EN ISO 7536 1996-08	Petroleum products – Determination of oxidation stability of gasoline – Induction period method	
Knock Characteristics (MON and RON)		
DIN EN ISO 5163 2014-10	Petroleum products – Determination of knock characteristics of motor and aviation fuels – Motor method	
ASTM D 2700 2022	Standard Test Method for Motor Octane Number of Spark-Ignition Engine Fuel	
DIN EN ISO 5164 2014-10	Petroleum products – Determination of knock characteristics of motor fuels – Research method	
ASTM D 2699 2022	Standard Test Method for Research Octane Number of Spark-Ignition Engine Fuel	

Test Method	Title	Process-Matrix-Number[+)]
2. Diesel Fuels		
Density		
DIN EN ISO 12185 1997-11	Crude petroleum and petroleum products – Determination of density – Oscillating U-tube method	1.2.22
ASTM D 4052 2022	Standard Test Method for Density, Relative Density, and API Gravity of Liquids by Digital Density Meter	1.2.22
Boiling range distribution		
DIN EN ISO 3924 2019-12	Petroleum products – Determination of boiling range distribution – Gas chromatography method	
Distillation		
DIN EN ISO 3405 2019-09	Petroleum and related products from natural or synthetic sources – Determination of distillation characteristics at atmospheric pressure	1.2.21
ASTM D 86 2020	Standard Test Method for Distillation of Petroleum Products and Liquid Fuels at Atmospheric Pressure	1.2.21
DIN EN 17306 2019-12	Liquid petroleum products – Determination of distillation characteristics at atmospheric pressure – Micro-distillation	
Viscosity		
DIN 51562-1 1999-01 + Corrigendum 1 2018-11	Viscometry – Measurement of kinematic viscosity by means of the Ubbelohde viscometer – Part 1: Viscometer specification and measurement procedure	
DIN EN ISO 3104 2021-01	Petroleum products – Transparent and opaque liquids – Determination of kinematic viscosity and calculation of dynamic viscosity	1.2.62
ASTM D 445 2021	Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids (and the Calculation of Dynamic Viscosity)	1.2.62

Test Method	Title	Process-Matrix-Number[+)]
ASTM D 446 2012	Standard Specifications and Operating Instructions for Glass Capillary Kinematic Viscometers	1.2.62
ASTM D 7042 2021	Standard Test Method for Dynamic Viscosity and Density of Liquids by Stabinger Viscometer (and the Calculation of Kinematic Viscosity)	
DIN EN 16896 2017-02	Petroleum products and related products – Determination of kinematic viscosity – Method by Stabinger type viscosimeter	
ISO 23581 2020-07	Petroleum products and related products – Determination of kinematic viscosity – Method by Stabinger type viscometer	
Flash Point		
DIN EN ISO 2719 2021-06	Determination of flash point - Pensky-Martens closed cup method	1.2.28
ASTM D 93 2020	Standard Test Methods for Flash Point by Pensky-Martens Closed Cup Tester	1.2.28
DIN EN ISO 3679 2015-06	Determination of flash no-flash and flash point – Rapid equilibrium closed cup method	
Sulfur		
DIN EN ISO 20884 2022-01	Petroleum products – Determination of sulfur content of automotive fuels – Wavelength-dispersive X-ray fluorescence spectrometry	1.2.89
ASTM D 2622 2021	Standard Test Method for Sulfur in Petroleum Products by Wavelength Dispersive X-ray Fluorescence Spectrometry	
DIN EN ISO 20846 2019-12	Petroleum products – Determination of sulfur content of automotive fuels – Ultraviolet fluorescence method	1.2.89
ASTM D 5453 2019	Standard Test Method for Determination of Total Sulfur in Light Hydrocarbons, Spark Ignition Engine Fuel, Diesel Engine Fuel, and Engine Oil by Ultraviolet Fluorescence	

Test Method	Title	Process-Matrix-Number[+)]
Filterability Limit (CFPP)		
DIN EN 116 2018-04	Diesel and domestic heating fuels – Determination of cold filter plugging point – Stepwise cooling bath method	1.2.98
ASTM D 6371 2017	Standard Test Method for Cold Filter Plugging Point of Diesel and Heating Fuels	
DIN EN 16329 2023-01	Diesel and domestic heating fuels – Determination of cold filter plugging point – Linear cooling bath method	
Cloud Point		
DIN EN ISO 3015 2019-09	Petroleum and related products from natural or synthetic sources – Determination of cloud point	
DIN EN 23015 1994-05	Petroleum products; Determination of cloud point *(withdrawn standard)*	
ASTM D 2500 2017	Standard Test Method for Cloud Point of Petroleum Products and Liquid Fuels	
DIN EN ISO 22995 2019-09	Petroleum products – Determination of cloud point – Automated step-wise cooling method	
Pour Point		
DIN EN ISO 3016 2017-11	Petroleum products – Determination of pour point *(withdrawn standard)*	
DIN EN ISO 3016 2019-09	Petroleum and related products from natural or synthetic sources – Determination of pour point	

Test Method	Title	Process-Matrix-Number[+)]
Coke Residue		
DIN EN ISO 10370 2015-03	Petroleum products – Determination of carbon residue – Micro method	1.2.57
ASTM D 4530 2015	Standard Test Method for Determination of Carbon Residue (Micro Method)	1.2.57
Ash		
DIN EN ISO 6245 2003-01	Petroleum products – Determination of ash	1.2.74
ASTM D 482 2019	Standard Test Method for Ash from Petroleum Products	1.2.74
Water		
DIN EN ISO 12937 2002-03	Petroleum products – Determination of water – Coulometric Karl Fischer titration method	1.2.106
ASTM D 6304 2020	Standard Test Method for Determination of Water in Petroleum Products, Lubricating Oils, and Additives by Coulometric Karl Fischer Titration	1.2.106
Neutralization number		
DIN ISO 6618 2015-07	Petroleum products and lubricants – Determination of acid or base number – Colour-indicator titration method	1.2.70
ASTM D 974 2021	Standard Test Method for Acid and Base Number by Color-Indicator Titration	
Ignitability (Cetane number)		
DIN EN 15195 2015-02	Liquid petroleum products – Determination of ignition delay and derived cetane number (DCN) of middle distillate fuels by combustion in a constant volume chamber	

Test Method	Title	Process-Matrix-Number[+)]
ASTM D 6890 2022	Standard Test Method for Determination of Ignition Delay and Derived Cetane Number (DCN) of Diesel Fuel Oils by Combustion in a Constant Volume Chamber	
IP 617 2018	Determination of indicated cetane number (ICN) of fuels using a constant volume combustion chamber - primary reference fuels calibration (PRFC) method	
DIN EN 17155 2018-09	Liquid petroleum products – Determination of indicated cetane number (ICN) of middle distillate fuels – Primary reference fuels calibration method using a constant volume combustion chamber	
ASTM D 8183 2022	Standard Test Method for Determination of Indicated Cetane Number (ICN) of Diesel Fuel Oils using a Constant Volume Combustion Chamber-Reference Fuels Calibration Method	
Sampling		
DIN EN 14275 2013-05	Automotive fuels – Assessment of petrol and diesel fuel quality – Sampling from retail site pumps and commercial site fuel dispensers	
Cetane Index		
DIN EN ISO 4264 2018-10	Petroleum products – Calculation of cetane index of middle-distillate fuels by the four variable equation	1.2.12
DIN EN ISO 12185 1997-11	Crude petroleum and petroleum products – Determination of density – Oscillating U-tube method	1.2.22
ASTM D 4737 2021	Standard Test Method for Calculated Cetane Index by Four Variable Equation	1.2.12
Copper Corrosion		
DIN EN ISO 2160 1999-04	Petroleum products – Corrosiveness to copper – Copper strip test	1.2.60
ASTM D 130 2019	Standard Test Method for Corrosiveness to Copper from Petroleum Products by Copper Strip Test	1.2.60

Test Method	Title	Process-Matrix-Number[+)]
Total Contamination		
DIN EN 12662 1998-10	Liquid petroleum products — Determination of contamination in middle distillates *(withdrawn standard)*	1.2.48
DIN EN 12662 2008-07	Liquid petroleum products – Determination of contamination in middle distillates *(withdrawn standard)*	1.2.48
DIN EN 12662 2014-07	Liquid petroleum products – Determination of total contamination in middle distillates, diesel fuels and fatty acid methyl esters	1.2.48
Oxidation Stability		
DIN EN ISO 12205 1996-11	Petroleum products – Determination of the oxidation stability of middle-distillate fuels	1.2.75
ASTM D 2274 2014	Standard Test Method for Oxidation Stability of Distillate Fuel Oil (Accelerated Method)	1.2.75
DIN EN 15751 2014-06	Automotive fuels – Fatty acid methyl ester (FAME) fuel and blends with diesel fuel – Determination of oxidation stability by accelerated oxidation method	
DIN EN 16091 2022-12	Liquid petroleum products – Middle distillates and fatty acid methyl ester (FAME) fuels and blends – Determination of oxidation stability by rapid small scale oxidation test (RSSOT)	
Lubricity		
DIN EN ISO 12156-1 2019-09	Diesel fuel – Assessment of lubricity using the high-frequency reciprocating rig (HFRR) – Part 1: Test method	1.2.88

Test Method	Title	Process-Matrix-Number[+)]
Aromatic hydrocarbon groups		
DIN EN 12916 2022-10	Petroleum products – Determination of aromatic hydrocarbon types in middle distillates – High performance liquid chromatography method with refractive index detection	1.2.7
Fatty Acid Methylester (FAME)		
DIN EN 14078 2014-09	Liquid petroleum products – Determination of fatty acid methyl ester (FAME) content in middle distillates – Infrared spectrometry method	1.2.27
Refractive Index		
DIN 51423-1 2010-02	Testing of mineral oils – Part 1: Measurement of the relative refractive index with the precision refractometer	
Filter Blocking Tendency		
IP 387 2017	Determination of filter blocking tendency	
EHN		
DIN 51449 2016-08	Automotive fuels – Determination of the 2-ethylhexyl nitrate (EHN) content of diesel fuels – GC/MS test methods	
Manganese and Iron		
DIN EN 16576 2015-02	Automotive fuels – Determination of manganese and iron content in diesel – Inductively coupled plasma optical emission spectrometry (ICP OES) method	

Test Method	Title	Process-Matrix-Number[+)]
3. Liquefied petroleum gases (LPG)		
Composition		
DIN EN 27941 1993-12	Commercial propane and butane; analysis by gas chromatography	1.3.36
Vapor Pressure		
DIN EN ISO 8973 2020-07	Liquefied petroleum gases - Calculation method for density and vapour pressure	1.3.20
DIN EN 589 2022-04	Automotive fuels - LPG - Requirements and test methods	1.3.20
ASTM D 2598 2021	Standard Practice for Calculation of Certain Physical Properties of Liquefied Petroleum (LP) Gases from Compositional Analysis	1.3.20
ASTM D 6897 2016	Standard Test Method for Vapor Pressure of Liquefied Petroleum Gases (LPG) (Expansion Method)	1.3.20
Density		
DIN EN ISO 8973 2020-07	Liquefied petroleum gases - Calculation method for density and vapour pressure	1.3.22
ASTM D 2598 2021	Standard Practice for Calculation of Certain Physical Properties of Liquefied Petroleum (LP) Gases from Compositional Analysis	
Knock Resistance (MON)		
DIN EN 589 2022-04	Automotive fuels - LPG - Requirements and test methods	1.3.10
ASTM D 2598 2021	Standard Practice for Calculation of Certain Physical Properties of Liquefied Petroleum (LP) Gases from Compositional Analysis	1.3.10

Test Method	Title	Process-Matrix-Number[+)]
Diene (as 1,3-Butadiene)		
DIN EN 27941 1993-12	Commercial propane and butane; analysis by gas chromatography	1.3.36
Sulfur		
DIN EN 24260 1994-05	Petroleum products and hydrocarbons; Determination of sulfur content; Wickbold combustion method *(withdrawn standard)*	
Sampling of liquefied gases		
DIN EN ISO 4257 2002-03	Liquefied petroleum gases - Method of sampling	
DIN 51610 1983-06	Testing of liquefied petroleum gases; sampling	

Test Method	Title	Process-Matrix-Number[+)]
4. Compressed Natural Gas (CNG) und Biomethane		
Calorific value		
DIN EN ISO 6976 2016-12	Natural gas - Calculation of calorific values, density, relative density and Wobbe indices from composition	
Methane Number		
DIN 51624 2008-02	Automotive fuels – Compressed natural gas – Requirements and test methods Appendix B: Calculation of the methane number *(withdrawn standard)*	
Sulfur		
DIN EN ISO 6326-1 2009-10	Natural gas – Determination of sulfur compounds – Part 1: General introduction *(withdrawn standard)*	
DIN EN 24260 1994-05	Petroleum products and hydrocarbons; determination of sulfur content; Wickbold combustion method *(withdrawn standard)*	
Methane		
DIN EN ISO 6975 2005-09 + Corrigendum 1 2008-09	Natural gas - Extended analysis - Gas-chromatographic method	
C2-Hydrocarbons		
DIN EN ISO 6975 2005-09 + Corrigendum 1 2008-09	Natural gas - Extended analysis - Gas-chromatographic method	
>C2-Hydrocarbons		
DIN EN ISO 6975 2005-09 + Corrigendum 1 2008-09	Natural gas - Extended analysis - Gas-chromatographic method	

Test Method	Title	Process-Matrix-Number[+)]
Propane		
DIN EN ISO 6975 2005-09 + Corrigendum 1 2008-09	Natural gas - Extended analysis - Gas-chromatographic method	
Butane		
DIN EN ISO 6975 2005-09 + Corrigendum 1 2008-09	Natural gas - Extended analysis - Gas-chromatographic method	
Pentane		
DIN EN ISO 6975 2005-09 + Corrigendum 1 2008-09	Natural gas - Extended analysis - Gas-chromatographic method	
Hexane and higher Hydrocarbons		
DIN EN ISO 6975 2005-09 + Corrigendum 1 2008-09	Natural gas - Extended analysis - Gas-chromatographic method	
Oxygen		
DIN EN ISO 6975 2005-09 + Corrigendum 1 2008-09	Natural gas - Extended analysis - Gas-chromatographic method	
Hydrogen		
DIN EN ISO 6975 2005-09 + Corrigendum 1 2008-09	Natural gas - Extended analysis - Gas-chromatographic method	

Test Method	Title	Process-Matrix-Number[+)]
Nitrogen and Carbon Dioxide		
DIN EN ISO 6975 2005-09 + Corrigendum 1 2008-09	Natural gas - Extended analysis - Gas-chromatographic method	
Sampling of natural gas		
DIN EN ISO 10715 2000-09	Natural gas - Sampling guidelines	

Test Method	Title	Process-Matrix-Number[+)]
5. Fatty Acid Methyl Ester (FAME) as Diesel Fuel and Vegetable Oil as Fuel, and their blends with mineral oil hydrocarbons		
Ester		
DIN EN 14103 2020-04	Fat and oil derivatives - Fatty Acid Methyl Esters (FAME) - Determination of ester and linolenic acid methyl ester contents	1.6.40
Density		
DIN EN ISO 12185 1997-11	Crude petroleum and petroleum products – Determination of density – Oscillating U-tube method	1.6.22
ASTM D 4052 2022	Standard Test Method for Density, Relative Density, and API Gravity of Liquids by Digital Density Meter	
Viscosity		
DIN 51562-1 1999-01 + Corrigendum 1 2018-11	Viscometry – Measurement of kinematic viscosity by means of the Ubbelohde viscometer – Part 1: Viscometer specification and measurement procedure	
DIN EN ISO 3104 2021-01	Petroleum products – Transparent and opaque liquids – Determination of kinematic viscosity and calculation of dynamic viscosity	1.6.54
ISO 3105 1994-12	Glass capillary kinematic viscometers - Specifications and operating instructions	
ASTM D 445 2021	Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids (and the Calculation of Dynamic Viscosity)	
ASTM D 446 2012	Standard Specifications and Operating Instructions for Glass Capillary Kinematic Viscometers	
ASTM D 7042 2021	Standard Test Method for Dynamic Viscosity and Density of Liquids by Stabinger Viscometer (and the Calculation of Kinematic Viscosity)	

Test Method	Title	Process-Matrix-Number[+)]
DIN 51659-2 2017-02	Lubricants - Test methods - Part 2: Determination of the kinematic viscosity of used lubricating oils by Stabinger viscometer	
DIN EN 16896 2017-02	Petroleum products and related products – Determination of kinematic viscosity – Method by Stabinger type viscosimeter	
ISO 23581 2020-07	Petroleum products and related products – Determination of kinematic viscosity – Method by Stabinger type viscometer	
Flash Point		
DIN EN ISO 3679 2015-06	Determination of flash no-flash and flash point – Rapid equilibrium closed cup method	1.6.28
DIN EN ISO 2719 2021-06	Determination of flash point - Pensky-Martens closed cup method	
ASTM D 93 2020	Test Methods for Flash Point by Pensky-Martens Closed Cup Tester	
Sulfur		
DIN EN ISO 20884 2022-01	Petroleum products – Determination of sulfur content of automotive fuels – Wavelength-dispersive X-ray fluorescence spectrometry	1.6.89
ASTM D 2622 2021	Standard Test Method for Sulfur in Petroleum Products by Wavelength Dispersive X-ray Fluorescence Spectrometry	
DIN EN ISO 20846 2019-12	Petroleum products – Determination of sulfur content of automotive fuels – Ultraviolet fluorescence method	1.6.89
ASTM D 5453 2019	Standard Test Method for Determination of Total Sulfur in Light Hydrocarbons, Spark Ignition Engine Fuel, Diesel Engine Fuel, and Engine Oil by Ultra-violet Fluorescence	1.6.89

Test Method	Title	Process-Matrix-Number[+)]
Coke Residue		
DIN EN ISO 10370 2015-03	Petroleum products – Determination of carbon residue – Micro method	1.6.57
ASTM D 4530 2015	Standard Test Method for Determination of Carbon Residue (Micro Method)	
Distillation		
ASTM D 1160 2018	Standard Test Method for Distillation of Petroleum Products at Reduced Pressure	
Ignitability (Cetane Number)		
DIN EN 15195 2015-02	Liquid petroleum products – Determination of ignition delay and derived cetane number (DCN) of middle distillate fuels by combustion in a constant volume chamber	
ASTM D 6890 2022	Standard Test Method for Determination of Ignition Delay and derived cetane number (DCN) of Diesel Fuel Oils by Combustion in a Constant Volume Chamber	
IP 617 2018	Determination of indicated cetane number (ICN) of fuels using a constant volume combustion chamber - primary reference fuels calibration (PRFC) method	
DIN EN 17155 2018-09	Liquid petroleum products – Determination of indicated cetane number (ICN) of middle distillate fuels – Primary reference fuels calibration method using a constant volume combustion chamber	
ASTM D8183 2022	Standard Test Method for Determination of Indicated cetane number (ICN) of Diesel Fuel Oils using a Constant Volume Combustion Chamber - Reference Fuels Calibration Method	

Test Method	Title	Process-Matrix-Number[+)]
Sulfated Ash		
ISO 3987 2010-11 Technical Corrigendum 1 2011-02	Petroleum products - Determination of sulfated ash in lubricating oils and additives	1.6.93
ASTM D 874 2013	Standard Test Method for Sulfated Ash from Lubricating Oils and Additives	
Water		
DIN EN ISO 12937 2002-03	Petroleum products – Determination of water – Coulometric Karl Fischer titration method	1.6.106
ASTM D 6304 2020	Standard Test Method for Determination of Water in Petroleum Products, Lubricating Oils, and Additives by Coulometric Karl Fischer Titration	
Total Contamination		
DIN EN 12662 1998-10	Liquid petroleum products – Determination of contamination in middle distillates *(withdrawn standard)*	1.6.48
Copper Corrosion		
DIN EN ISO 2160 1999-04	Petroleum products – Corrosiveness to copper – Copper strip test	1.6.60
ASTM D 130 2019	Standard Test Method for Corrosiveness to Copper from Petroleum Products by Copper Strip Test	

Test Method	Title	Process-Matrix-Number[+)]
Oxidation Stability		
DIN EN 14112 2021-02	Fat and oil derivatives - Fatty Acid Methyl Esters (FAME) - Determination of oxidation stability (accelerated oxidation test)	1.6.75
DIN EN 15751 2014-06	Automotive fuels – Fatty acid methyl ester (FAME) fuel and blends with diesel fuel – Determination of oxidation stability by accelerated oxidation method	
DIN EN 16091 2022-12	Liquid petroleum products – Middle distillates and fatty acid methyl ester (FAME) fuels and blends – Determination of oxidation stability by rapid small scale oxidation test (RSSOT)	
Acid Value		
DIN ISO 6618 2015-07	Petroleum products and lubricants – Determination of acid or base number – Colour-indicator titration method	
DIN EN 14104 2003-10	Fat and oil derivates - Fatty acid methyl ester (FAME) - Determination of acid value *(withdrawn standard)*	1.6.87
DIN EN 14104 2021-04	Fat and oil derivates - Fatty acid methyl ester (FAME) - Determination of acid value	1.6.87
DIN EN ISO 660 2020-12	Animal and vegetable fats and oils - Determination of acid value and acidity	
ASTM D 974 2021	Standard Test Method for Acid and Base Number by Color-Indicator Titration	

Test Method	Title	Process-Matrix-Number[+)]
Iodine Value		
DIN EN 14111 2022-08	Fat and oil derivatives - Fatty acid methylesters (FAME) - Determination of iodine value	1.6.53
DIN EN 16300 2012-11	Automotive fuels - Determination of iodine value in fatty acid methyl esters (FAME) - Calculation method from gas chromatographic data	
DIN EN ISO 3961 2018-11	Animal and vegetable fats and oils - Determination of iodine value	
Polyunsaturated Fatty Acid Methyl Esters (PUFA)		
DIN EN 15779 2013-12	Petroleum products and fat and oil derivates - Fatty acid methyl esters (FAME) for diesel engines - Determination of polyunsaturated (≥ 4 double bonds) fatty acid methyl esters (PUFA) by gas chromatography	
Methanol		
DIN EN 14110 2019-06	Fat and oil derivatives - Fatty Acid Methyl Esters - Determination of methanol content	1.6.64

Test Method	Title	Process-Matrix-Number[+)]
Free and Total Glycerol and Mono-, Di-, Triglycerides		
DIN EN 14105 2003-04	Fat and oil derivatives - Fatty Acid Methyl Esters (FAME) - Determination of free and total glycerol and mono-, di-, triglyceride contents *(withdrawn standard)*	1.6.23, 1.6.38, 1.6.39, 1.6.67, 1.6.100
DIN EN 14105 2011-07	Fat and oil derivatives - Fatty Acid Methyl Esters (FAME) - Determination of free and total glycerol and mono-, di-, triglyceride contents *(withdrawn standard)*	1.6.23, 1.6.38, 1.6.39, 1.6.67, 1.6.100
DIN EN 14105 2021-03	Fat and oil derivatives - Fatty Acid Methyl Esters (FAME) - Determination of free and total glycerol and mono-, di-, triglyceride contents	1.6.23, 1.6.38, 1.6.39, 1.6.67, 1.6.100
ASTM D 6584 2021	Standard Test Method for Determination of Total Monoglycerides, Total Diglycerides, Total Triglycerides, and Free and Total Glycerin in B-100 Biodiesel Methyl Esters by Gas Chromatography	
Alkali Metals		
DIN EN 14538 2006-09	Fat and oil derivatives - Fatty acid methyl ester (FAME) - Determination of Ca, K, Mg and Na content by optical emission spectral analysis with inductively coupled plasma (ICP OES)	1.6.35
Alkaline Earth Metals		
DIN EN 14538 2006-09	Fat and oil derivatives - Fatty acid methyl ester (FAME) - Determination of Ca, K, Mg and Na content by optical emission spectral analysis with inductively coupled plasma (ICP OES)	1.6.37

Test Method	Title	Process-Matrix-Number[+)]
Phosphorus		
DIN EN 14107 2003-10	Fat and oil derivatives - Fatty acid methylesters (FAME) - Determination of phosphorus content by inductively coupled plasma (ICP) emission spectrometry	1.6.77
ASTM D 4951 2014	Standard Test Method for Determination of Additive Elements in Lubricating Oils by Inductively Coupled Plasma Atomic Emission Spectrometry	
Filterability Limit (CFPP)		
DIN EN 116 2018-04	Diesel and domestic heating fuels – Determination of cold filter plugging point – Stepwise cooling bath method	1.6.98
ASTM D 6371 2017	Standard Test Method for Cold Filter Plugging Point of Diesel and Heating Fuels	
DIN EN 16329 2023-01	Diesel and domestic heating fuels – Determination of cold filter plugging point – Linear cooling bath method	
Gross Calorific Value / Net Calorific Value		
DIN 51900-1 2000-04 + Corrigendum 1 2004-02	Testing of solid and liquid fuels - Determination of gross calorific value by the bomb calorimeter and calculation of net calorific value - Part 1: Principles, apparatus, methods	
DIN 51900-2 2003-05	Testing of solid and liquid fuels - Determination of the gross calorific value by the bomb calorimeter and calculation of the net calorific value - Part 2: Method using isoperibol or static, jacket calorimeter	
ASTM D 240 2019	Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter	

Test Method	Title	Process-Matrix-Number[+)]
Oxide Ash		
DIN EN ISO 6245 2003-01	Petroleum products – Determination of ash	
ASTM D 482 2019	Standard Test Method for Ash from Petroleum Products	
Cloud Point		
DIN EN ISO 3015 2019-09	Petroleum and related products from natural or synthetic sources – Determination of cloud point	
DIN EN 23015 1994-05	Petroleum products; Determination of cloud point *(withdrawn standard)*	
ASTM D 2500 2017	Standard Test Method for Cloud Point of Petroleum Products and Liquid Fuels	
DIN EN ISO 22995 2019-09	Petroleum products – Determination of cloud point – Automated step-wise cooling method	
Trace Elements		
DIN 51627-6 2011-03	Automotive Fuels - Test methods – Part 6: Direct determination of trace elements in vegetable oils by inductively coupled plasma optical emission spectroscopy (ICP OES)	
Pour Point		
DIN EN ISO 3016 2017-11	Petroleum products – Determination of pour point *(withdrawn standard)*	
DIN EN ISO 3016 2019-09	Petroleum and related products from natural or synthetic sources – Determination of pour point	
Filter Blocking Tendency		
IP 387 2017	Determination of filter blocking tendency	

Test Method	Title	Process-Matrix-Number[+)]
6. Aviation Turbine Fuels		
Distillation		
ASTM D 86 2020	Standard Test Method for Distillation of Petroleum Products and Liquid Fuels at Atmospheric Pressure	1.4.21
Flash Point		
ASTM D 93 2020	Standard Test Methods for Flash Point by Pensky-Martens Closed Cup Tester	
Copper Corrosion		
ASTM D 130 2019	Standard Test Method for Corrosiveness to Copper from Petroleum Products by Copper Strip Test	1.4.60
Gum Content		
ASTM D 381 2022	Standard Test Method for Gum Content in Fuels by Jet Evaporation	
Smoke Point		
ASTM D 1322 2022	Standard Test Method for Smoke Point of Kerosene and Aviation Turbine Fuel	1.4.84
Electrical Conductivity		
ASTM D 2624 2022	Standard Test Methods for Electrical Conductivity of Aviation and Distillate Fuels	1.4.61
Boiling Range Distribution		
ASTM D 2887 2022	Standard Test Method for Boiling Range Distribution of Petroleum Fractions by Gas Chromatography	
Thermal Oxidation Stability		
ASTM D 3241 2020	Standard Test Method for Thermal Oxidation Stability of Aviation Turbine Fuels	1.4.99

Test Method	Title	Process-Matrix-Number[+)]
Acid Value		
ASTM D 3242 2011	Standard Test Method for Acidity in Aviation Turbine Fuel	1.4.70
Density		
ASTM D 4052 2022	Standard Test Method for Density, Relative Density, and API Gravity of Liquids by Digital Density Meter	1.4.22
Nitrogen		
ASTM D 4629 2017	Standard Test Method for Trace Nitrogen in Liquid Hydrocarbons by Syringe/Inlet Oxidative Combustion and Chemiluminescence Detection	
Net Calorific Value		
ASTM D 4809 2018	Standard Test Method for Heat of Combustion of Liquid - Hydrocarbon Fuels by Bomb Calorimeter (Precision Method)	
Lubricity		
ASTM D 5001 2019 e1	Standard Test Method for Measurement of Lubricity of Aviation Turbine Fuels by the Ball-on-Cylinder Lubricity Evaluator (BOCLE)	1.4.88
Carbon, Hydrogen and Nitrogen		
ASTM D 5291 2021	Standard Test Methods for Instrumental Determination of Carbon, Hydrogen, and Nitrogen in Petroleum Products and Lubricants	-
Sulfur		
ASTM D 5453 2019	Standard Test Method for Determination of Total Sulfur in Light Hydrocarbons, Spark Ignition Engine Fuel, Diesel Engine Fuel, and Engine Oil by Ultraviolet Fluorescence	1.4.89

Test Method	Title	Process-Matrix-Number[+)]
Freezing Point		
ASTM D 5972 2016	Standard Test Method for Freezing Point of Aviation Fuels (Automatic Phase Transition Method)	
Water		
ASTM D 6304 2020	Standard Test Method for Determination of Water in Petroleum Products, Lubricating Oils, and Additives by Coulometric Karl Fischer Titration	
Viscosity		
ASTM D 7042 2021	Standard Test Method for Dynamic Viscosity and Density of Liquids by Stabinger Viscometer (and the Calculation of Kinematic Viscosity)	
Trace Elements		
ASTM D 7111 2016	Standard Test Method for Determination of Trace Elements in Middle Distillate Fuels by Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES)	
Fluorine, Chlorine and Sulfur		
ASTM D 7359 2018	Standard Test Method for Total Fluorine, Chlorine and Sulfur in Aromatic Hydrocarbons and Their Mixtures by Oxidative Pyrohydrolytic Combustion followed by Ion Chromatography Detection (Combustion Ion Chromatography-CIC)	
Aromatic Hydrocarbons		
ASTM D 8267 2019	Standard Test Method for Determination of Total Aromatic, Monoaromatic and Diaromatic Content of Aviation Turbine Fuels Using Gas Chromatography with Vacuum Ultraviolet Absorption Spectroscopy Detection (GC-VUV)	

Test Method	Title	Process-Matrix-Number[+)]
7. NOx-Reduction Agents (AUS 32)		
Urea		
ISO 22241-2 Annex B 2019-02	Diesel engines - NOx reduction agent AUS 32 - Part 2: Test methods - Annex B: Determination of urea content by total nitrogen	
ISO 22241-2 Annex C 2019-02	Diesel engines - NOx reduction agent AUS 32 - Part 2: Test methods - Annex C: Refractive index and determination of urea content by refractive index	
Density		
DIN EN ISO 12185 1997-11	Crude petroleum and petroleum products – Determination of density – Oscillating U-tube method	
Refractive Index		
ISO 22241-2 Annex C 2019-02	Diesel engines - NOx reduction agent AUS 32 - Part 2: Test methods - Annex C: Refractive index and determination of urea content by refractive index	
Alkalinity		
ISO 22241-2 Annex D 2019-02	Diesel engines - NOx reduction agent AUS 32 - Part 2: Test methods - Annex D: Determination of alkalinity	
Biuret		
ISO 22241-2 Annex E 2019-02	Diesel engines - NOx reduction agent AUS 32 - Part 2: Test methods - Annex E: Determination of biuret content	
Aldehyde		
ISO 22241-2 Annex F 2019-02	Diesel engines - NOx reduction agent AUS 32 - Part 2: Test methods - Annex F: Determination of aldehyde content	

Test Method	Title	Process-Matrix-Number[+)]
Insoluble Matter		
ISO 22241-2 Annex G 2019-02	Diesel engines - NOx reduction agent AUS 32 - Part 2: Test methods - Annex G: Determination of insoluble matter content by gravimetric method	
Phosphate		
ISO 22241-2 Annex H 2019-02	Diesel engines - NOx reduction agent AUS 32 - Part 2: Test methods - Annex H: Determination of phosphate content by photometric method	
Trace Elements		
ISO 22241-2 Annex I 2019-02	Diesel engines - NOx reduction agent AUS 32 - Part 2: Test methods - Annex I: Determination of trace element content (Al, Ca, Cr, Cu, Fe, K, Mg, Na, Ni, Zn) by ICP-OES method	
Identity		
ISO 22241-2 Annex J 2019-02	Diesel engines - NOx reduction agent AUS 32 - Part 2: Test methods - Annex J: Determination of identity by FTIR spectrometry method	

Test Method	Title	Process-Matrix-Number[+)]
8. Heating fuels – Heating Oil EL		
Viscosity		
DIN 51562-1 1999-01 + Corrigendum 1 2018-11	Viscometry – Measurement of kinematic viscosity by means of the Ubbelohde viscometer – Part 1: Viscometer specification and measurement procedure	2.1.62
DIN EN ISO 3104 2021-01	Petroleum products – Transparent and opaque liquids – Determination of kinematic viscosity and calculation of dynamic viscosity	2.1.62
ISO 3105 1994-12	Glass capillary kinematic viscometers - Specifications and operating instructions	
ASTM D 445 2021	Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids (and the Calculation of Dynamic Viscosity)	
ASTM D 446 2012	Standard Specifications and Operating Instructions for Glass Capillary Kinematic Viscometers	
ASTM D 7042 2021	Standard Test Method for Dynamic Viscosity and Density of Liquids by Stabinger Viscometer (and the Calculation of Kinematic Viscosity)	
DIN EN 16896 2017-02	Petroleum products and related products – Determination of kinematic viscosity – Method by Stabinger type viscosimeter	
ISO 23581 2020-07	Petroleum products and related products – Determination of kinematic viscosity – Method by Stabinger type viscometer	
Sulfur		
DIN EN 24260 1994-05	Petroleum products and hydrocarbons; Determination of sulfur content; Wickbold combustion method *(withdrawn standard)*	2.1.89
DIN EN ISO 20884 2022-01	Petroleum products – Determination of sulfur content of automotive fuels – Wavelength-dispersive X-ray fluorescence spectrometry	2.1.89

Test Method	Title	Process-Matrix-Number[+)]
ASTM D 2622 2021	Standard Test Method for Sulfur in Petroleum Products by Wavelength Dispersive X-ray Fluorescence Spectrometry	2.1.89
DIN EN ISO 20846 2019-12	Petroleum products – Determination of sulfur content of automotive fuels – Ultraviolet fluorescence method	2.1.89
ASTM D 5453 2019	Standard Test Method for Determination of Total Sulfur in Light Hydrocarbons, Spark Ignition Engine Fuel, Diesel Engine Fuel, and Engine Oil by Ultraviolet Fluorescence	2.1.89
Oxidation Stability		
DIN EN 16091 2022-12	Liquid petroleum products – Middle distillates and fatty acid methyl ester (FAME) fuels and blends – Determination of oxidation stability by rapid small scale oxidation test (RSSOT)	
Carbon Residue		
DIN EN ISO 10370 2015-03	Petroleum products – Determination of carbon residue – Micro method	2.1.57
ASTM D 4530 2015	Standard Test Method for Determination of Carbon Residue (Micro Method)	
Neutralization Number		
DIN ISO 6618 2015-07	Petroleum products and lubricants – Determination of acid or base number – Colour-indicator titration method	
Flash Point		
DIN EN ISO 2719 2021-06	Determination of flash point - Pensky-Martens closed cup method	2.1.28
ASTM D 93 2020	Standard Test Methods for Flash Point by Pensky-Martens Closed Cup Tester	2.1.28
DIN EN ISO 3679 2015-06	Determination of flash no-flash and flash point – Rapid equilibrium closed cup method	

Test Method	Title	Process-Matrix-Number[+)]
Density		
ASTM D 4052 2022	Standard Test Method for Density, Relative Density, and API Gravity of Liquids by Digital Density Meter	2.1.22
DIN EN ISO 12185 1997-11	Crude petroleum and petroleum products – Determination of density – Oscillating U-tube method	2.1.22
Water		
DIN EN ISO 12937 2002-03	Petroleum products – Determination of water – Coulometric Karl Fischer titration method	2.1.106
ASTM D 6304 2020	Standard Test Method for Determination of Water in Petroleum Products, Lubricating Oils, and Additives by Coulometric Karl Fischer Titration	2.1.106
Gross Calorific Value / Net Calorific Value		
DIN 51900-1 2000-04 + Corrigendum 1 2004-02	Testing of solid and liquid fuels - Determination of gross calorific value by the bomb calorimeter and calculation of net calorific value - Part 1: Principles, apparatus, methods	2.1.15
DIN 51900-2 2003-05	Testing of solid and liquid fuels - Determination of the gross calorific value by the bomb calorimeter and calculation of the net calorific value - Part 2: Method using isoperibol or static, jacket calorimeter	2.1.15
ASTM D 240 2019	Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter	
Carbon, Hydrogen and Nitrogen		
DIN 51732 2014-07	Testing of solid mineral fuels - Determination of total carbon, hydrogen and nitrogen - Instrumental methods	

Test Method	Title	Process-Matrix-Number[+)]
Ash		
ASTM D 482 2019	Standard Test Method for Ash from Petroleum Products	
DIN EN ISO 6245 2003-01	Petroleum products – Determination of ash	2.1.74
Cloud Point		
DIN EN ISO 3015 2019-09	Petroleum and related products from natural or synthetic sources – Determination of cloud point	
DIN EN 23015 1994-05	Petroleum products; Determination of cloud point *(withdrawn standard)*	
ASTM D 2500 2017	Standard Test Method for Cloud Point of Petroleum Products and Liquid Fuels	2.1.19
DIN EN ISO 22995 2019-09	Petroleum products – Determination of cloud point – Automated step-wise cooling method	
Pour Point		
DIN EN ISO 3016 2019-09	Petroleum and related products from natural or synthetic sources – Determination of pour point	2.1.79
DIN EN ISO 3016 2017-11	Petroleum products – Determination of pour point *(withdrawn standard)*	
Filterability Limit (CFPP)		
DIN EN 116 2018-04	Diesel and domestic heating fuels – Determination of cold filter plugging point – Stepwise cooling bath method	
ASTM D 6371 2017	Standard Test Method for Cold Filter Plugging Point of Diesel and Heating Fuels	

Test Method	Title	Process-Matrix-Number[+)]
DIN EN 16329 2023-01	Diesel and domestic heating fuels – Determination of cold filter plugging point – Linear cooling bath method	
Distillation		
DIN EN ISO 3405 2019-09	Petroleum and related products from natural or synthetic sources – Determination of distillation characteristics at atmospheric pressure	2.1.21
ASTM D 86 2020	Standard Test Method for Distillation of Petroleum Products and Liquid Fuels at Atmospheric Pressure	
Total Contamination		
DIN EN 12662 1998-10	Liquid petroleum products — Determination of contamination in middle distillates *(withdrawn standard)*	2.1.48
DIN EN 12662 2014-07	Liquid petroleum products – Determination of total contamination in middle distillates, diesel fuels and fatty acid methyl esters	
Nitrogen		
DIN 51444 2020-10	Testing of petroleum products - Determination of nitrogen - Oxidative combustion method with chemiluminescence detector	2.1.91
ASTM D 4629 2017	Standard Test Method for Trace Nitrogen in Liquid Petroleum Hydrocarbons by Syringe/Inlet Oxidative Combustion and Chemiluminescence Detection	2.1.91
Thermal stability		
DIN 51371 2008-08	Liquid fuels - Determination of thermal stability of fuel oil EL	2.2.99
Refractive Index		
DIN 51423-1 2010-02	Testing of mineral oils – Part 1: Measurement of the relative refractive index with the precision refractometer	

Test Method	Title	Process-Matrix-Number[+)]
EHN		
DIN 51449 2016-08	Automotive fuels – Determination of the 2-ethylhexyl nitrate (EHN) content of diesel fuels – GC/MS test methods	
9. Refinery Fuel Gases		
Net Calorific Value		
DIN EN 15984 2022-04	Petroleum industry and products - Determination of composition of refinery heating gas and calculation of carbon content and calorific value - Gas chromatography method	
Carbon Content		
DIN EN 15984 2022-04	Petroleum industry and products - Determination of composition of refinery heating gas and calculation of carbon content and calorific value - Gas chromatography method	

Test Method	Title	Process-Matrix-Number[+)]
10. Petrochemistry - Alcohols – Glycerol		
Glycerol		
BS 5711-3 1979-11	British Standard Methods of - Sampling and test for glycerol - Part 3: Determination of glycerol content *(withdrawn standard)*	
Oxide Ash		
BS 5711-6 1979-11	British Standard Methods of sampling and test for glycerol Part 6: Determination of ash - Gravimetric method *(withdrawn standard)*	
ISO 2098 1972-05	Glycerols for industrial use - Determination of ash - Gravimetric method *(withdrawn standard)*	
MONG		
BS 5711-9 1979-11	British Standard Methods of sampling and test for glycerol Part 9: Calculation of Matter (Organic) Non-Glycerol (MONG) *(withdrawn standard)*	
ISO 2464 1973-10	Crude Glycerine for industrial use - Calculation of Matter (Organic) Non-Glycerol (MONG) *(withdrawn standard)*	
Water		
DIN EN ISO 12937 2002-03	Petroleum products – Determination of water – Coulometric Karl Fischer titration method	
BS 5711-8 1979-11	British Standard Methods of sampling and test for glycerol Part 8: Determination of water content: Karl Fischer method *(withdrawn standard)*	

Abbreviations used:

ASTM	American Society for Testing and Materials
BS	British Standard
DIN	Deutsches Institut für Normung e.V.
EN	European Standard
FAME	Fatty acid methyl ester
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
IP	IP Method, Energy Institute, London, UK
Process-Matrix-Number[+)]	Property number of the process matrix mineral oil (FO-Antrag GB_Mineralöl.xlsx, Vers. 1.1, 23. March 2022)