

Deutsche Akkreditierungsstelle GmbH

Annex to the Accreditation Certificate D-PL-17640-01-00 according to DIN EN ISO/IEC 17025:2005

Period of validity: 18.12.2017 to 04.11.2018

Date of issue: 18.12.2017

Holder of certificate:

**Haltermann Carless Deutschland GmbH
Qualitätssicherungs-Labor Werk Hamburg**

at the locations:

**Schlangendeich 17, 21107 Hamburg
Joachim-Becher-Str. 1, 67346 Speyer**

Tests in the fields:

chemical and physical-chemical testing of mineral oil and related products, selected properties of gasoline fuel, diesel fuels, diesel fuels from fatty acid methyl ester (FAME); printing ink distillates

Abbreviations used: see last page

*Within the fields marked with * the testing laboratory is permitted, without being required to inform and obtain prior approval from DAkkS, the following: usage of different versions of standard test methods granted here. The testing laboratory maintains a current list of all testing methods within the flexible scope of accreditation.*

Location Hamburg:

- 1. Fuels**
- 1.1 Gasoline***

Test Method	Title	Process-Matrix-Number⁺⁾
Density		1.1.22
DIN 51757 2011-01	Testing of mineral oils and related materials - Determination of density procedure 3 (<i>withdrawn</i>)	
DIN EN ISO 12185 1997-11	Crude petroleum and petroleum products - Determination of density - Oscillating U-tube method	
ASTM D 4052 2016	Standard Test Method for Density, Relative Density, and API Gravity of Liquids by Digital Density Meter	
Distillation Characteristics		1.1.21
DIN EN ISO 3405 2011-04	Petroleum products - Determination of distillation characteristics at atmospheric pressure	
ASTM D 86 2017	Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure	
Vapor Pressure		1.1.20
ASTM D 5191 2015	Standard Test Method for Vapor Pressure of Petroleum Products (Mini Method)	
DIN EN 13016-1 200711	Vapor Pressure part 1: Determination of air saturated vapor pressure (ASVP) and calculation of equivalent to dry vapor pressure (DVPE)	

Test Method	Title	Process-Matrix-Number^{*)}
Content of Lead		1.1.16
DIN EN 237 2004-12	Determination of low contents lead by atomic absorption spectroscopy	
ASTM D 3237 2012	Standard Test Method for Lead in Gasoline by Atomic Absorption Spectroscopy	
Content of sulphur		1.1.89
DIN EN ISO 20846 2012-01	Determination of sulfur content of automotive fuels - Ultraviolet fluorescence method	
ASTM D 5453 2016	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	
evaporation residue		1.1.1
DIN EN ISO 6246 2017-07	Evaporation residue of volatile and middle distillate fuels - jet evaporation	
ASTM D 381 2012	Standard Test Method for Gum Content in Fuels by Jet Evaporation	
DIN 53172 2009-08	Solvents for coating materials- determination of evaporation residue	
corrosiveness		1.1.60
DIN EN ISO 2160 1999-04	Petroleum products - Corrosiveness to copper - Copper strip test - corrosiveness to copper - copper strip test	

Test Method	Title	Process-Matrix-Number ^{*)}
ASTM D 130 2012	Standard Test Method for Corrosiveness to Copper from Petroleum Products by Copper Strip Test	
content of benzene		1.1.9
DIN EN 238 2004-04	Determination of the benzene content by infrared spectrometry	
DIN EN ISO 22854 2016-08	Determination of hydrocarbon types and oxygenates in automotive-motor gasoline and in ethanol (E85) automotive fuel - Multidimensional gas chromatography method	
ASTM D 6839 2017	Standard Test Method for Hydrocarbon Types, Oxygenated Compounds and Benzene in Spark Ignition Engine Fuels by Gas Chromatography	
Oxygenates		1.1.86
ASTM D 4815 2015b	Standard Test Method for Determination of MTBE, ETBE, TAME, DIPE, tertiary-Amyl Alcohol and C1 to C4 Alcohols in Gasoline by Gas Chromatography	
DIN EN ISO 22854 2016-08	Determination of hydrocarbon types and oxygenates in automotive-motor gasoline and in ethanol (E85) automotive fuel - Multidimensional gas chromatography method	

Test Method	Title	Process-Matrix- Number ^{*)}
ASTM D 6839 2017	Standard Test Method for Hydrocarbon Types, Oxygenated Compounds and Benzene in Spark Ignition Engine Fuels by Gas Chromatography	
ASTM D 5501 2012 (reapproved 2016)	Standard Test Method for Determination of Ethanol and Methanol Content in Fuels containing greater 20 % Ethanol by Gas Chromatography	
Hydrocarbon types		1.1.56
DIN EN ISO 22854 2016-08	Determination of hydrocarbon types and oxygenates in automotive-motor gasoline and in ethanol (E85) automotive fuel - Multidimensional gas chromatography method	
ASTM D 6839 2017	Standard Test Method for Hydrocarbon Types, Oxygenated Compounds and Benzene in Spark Ignition Engine Fuels by Gas Chromatography	
ASTM D 1319 2015	Standard Test Method for Hydrocarbon Types in Liquid Petroleum Products by Fluorescent Indicator Adsorption	
ISO 3837 1993-12 + Corrigendum 2 1996-07	Liquid petroleum products - Determination of hydro-carbon types -fluorescent indicator adsorption method	
Neutralization number		
ASTM D 974 2014	Standard Test Method for Acid and Base Number by Color-Indicator Titration	

Test Method	Title	Process-Matrix-Number ^{*)}
n-heptane, i-octane und toluene		1.1.82
ASTM D 2268 1993 (reapproved 2013)	Standard Test Method for Analysis of High-Purity n-Heptane and Isooctane by Capillary Gas Chromatography	
ASTM D 2360 2011	Standard Test Method for Trace Impurities in Mono-cyclic Aromatic Hydrocarbons by Gas Chromatography	
water content		
DIN EN ISO 12937 2002-03	Determination of water - Coulometric Karl Fischer titration method	
ASTM D 6304 2016	Standard Test Method for Determination of Water in Petroleum Products, Lubricating Oils, and Additives by Coulometric Karl Fischer Titration	
ASTM E 1064 2016	Standard Test Method for Water in Organic Liquids by Coulometric Karl Fischer Titration	
Calculation of net heat of combustion		
ASTM D 3338/D 3338M 2009 (reapproved: 2014)	Standard Test Method for Estimation of Net Heat of Combustion of Aviation Fuels	
Calculation of hydrogen content		
ASTM D 3343 2016	Standard Test Method for Estimation of Hydrogen Content of Aviation Fuels	
Refractive Index Measurement		
DIN 51423-1 2010-02	measurement of relative refractive index by precision refractometer	

Test Method	Title	Process-Matrix-Number ^{*)}
DIN 51423-2 2010-02	Testing of mineral oils part 2: measurement of relative refractive index by abbe-refractometer	
GC-Composition		
DIN 51405 2004-01	Testing of mineral oil hydrocarbons, similar liquids and solvents for paints and varnishes - Analysis by gas chromatography - General working principles	
ASTM D 5580 2015	Standard Test Method for Determination of Benzene, Toluene, Ethylbenzene, p/m-Xylene, o-Xylene, C9 and Heavier Aromatics, and Total Aromatics in Finished Gasoline by Gas Chromatography	
ASTM D 5134 2013	Standard Test Method for Detailed Analysis of Petroleum Naphthas through n-Nonane by Capillary Gas Chromatography (Benzene- and n-Hexane- Content)	
Miscellaneous		
ISO 6227 1982-09	General method for determination of chloride ions - Potentiometric method	
ASTM D 3703 2013	Standard Test Method for Hydroperoxide Number of Aviation Turbine Fuels, Gasoline and Diesel Fuels	
ASTM D 7525 2014	Standard Test Method for Oxidation Stability of Spark Ignition Fuel - Rapid Small Scale Oxidation Test (RSSOT)	
DIN ISO 6271-1 2005-03	Clear liquids - Estimation of colour by the platinum-cobalt colour scale (<i>withdrawn</i>)	

1.2 Diesel Fuel *

Test Method	Title	Process-Matrix-Number⁺⁾
Density		1.2.22
DIN 51757 2011-01	Testing of mineral oils and related materials - Determination of density - procedure 3	
DIN EN ISO 12185 1997-11	Crude petroleum and petroleum products - Determination of density - Oscillating U-tube method	
ASTM D 4052 2016	Standard Test Method for Density, Relative Density, and API Gravity of Liquids by Digital Density Meter	
Distillation Characteristics		1.2.21
DIN EN ISO 3405 2011-04	Petroleum products - Determination of distillation characteristics at atmospheric pressure	
ASTM D 86 2017	Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure	
Viscosity		1.2.62
DIN EN ISO 3104 1999-12	Petroleum products - Transparent and opaque liquids - Determination of kinematic viscosity and calculation of dynamic viscosity	
ASTM D 445 2017a	Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids (and Calculation of Dynamic Viscosity) <i>(withdrawn standard)</i>	

Test Method	Title	Process-Matrix-Number ^{†)}
Flash Point		1.2.28
ASTM D 93 2016a	Standard Test Methods for Flash Point by Pensky-Martens Closed Cup Tester <i>(withdrawn standard)</i>	
DIN EN ISO 2719 2016-11	Determination of flash point - Pensky-Martens closed cup method	
Sulphur Content		1.2.89
DIN EN ISO 20846 2012-01	Determination of sulfur content of automotive fuels - Ultraviolet fluorescence method	
ASTM D 5453 2012	Standard Test Method for Determination of Total Sulfur in Light Hydrocarbons, Spark Ignition Engine Fuel, Diesel Engine Fuel, and Engine Oil by Ultraviolet Fluorescence	
Cold Filter Plugging Point (CFPP)		1.2.98
ASTM D 6371 2017	Standard Test Method for Cold Filter Plugging Point of Diesel and Heating Fuels	
DIN EN 116 2015-11	Determination of cold filter plugging point - Stepwise cooling bath method	
Cloud Point		1.2.19
DIN EN 23015 1994-05	Petroleum products - determination of cloud point	
ISO 3015 1992-08	Petroleum products - Determination of cloud point	
ASTM D 2500 2016b	Standard Test Method for Cloud Point of Petroleum Products	

Test Method	Title	Process-Matrix-Number^{†)}
Pour Point		1.2.79
DIN ISO 3016 2017-11	Petroleum products - Determination of pour point	
ASTM D 97 2017a	Standard Test Method for Pour Point of Petroleum Products	
ASTM D 6892 2003 (reapproved: 2014)	Standard Test Method for Pour Point of Petroleum Products (Robotic Tilt Method)	
Carbon Residue		1.2.57
DIN EN ISO 10370 2015-03	Determination of carbon residue - Micro method	
ASTM D 4530 2015	Standard Test Method for Determination of Carbon Residue (Micro Method)	
Water Content		1.2.106
DIN EN ISO 12937 2002-03	Determination of water - Coulometric Karl Fischer titration method	
ASTM D 6304 2016	Standard Test Method for Determination of Water in Petroleum Products, Lubricating Oils, and Additives by Coulometric Karl Fischer Titration	
ASTM E 1064 2016	Standard Test Method for Water in Organic Liquids by Coulometric Karl Fischer Titration	
Neutralization Number		
ASTM D 974 2014	Standard Test Method for Acid and Base Number by Color-Indicator Titration	

Test Method	Title	Process-Matrix-Number[†]
Cetane Index		1.2.12
DIN EN ISO 4264 2013-08	Calculation of cetane index of middle-distillate fuels by the four-variable equation	
ASTM D 4737 2010 (reapproved 2016)	Standard Test Method for Calculated Cetane Index by Four Variable Equation in Verbindung mit: 1.2.2 und 1.2.3	
ASTM D 976 2006 (reapproved 2011)	Standard Test Method for Calculated Cetane Index of Distillate Fuels	
Corrosiveness		1.2.60
DIN EN ISO 2160 1999-04	Petroleum products - Corrosiveness to copper - Copper strip test (ISO 2160:1998)	
ASTM D 130 2012	Standard Test Method for Corrosiveness to Copper from Petroleum Products by Copper Strip Test	
Total Contamination		1.2.48
DIN EN 12662 2014-07	Determination of total contamination in middle distillates, diesel fuels and fatty acid methyl esters	
Lubricity		1.2.88
DIN ISO 12156-1 2016-11	Assessment of lubricity using the high-frequency reciprocating rig (HFRR) - Part 1: Test method	
ASTM D 6079 2011 (reapproved 2016)	Standard Test Method for Evaluating Lubricity of Diesel Fuels by the High-Frequency Reciprocating Rig (HFRR)	

Test Method	Title	Process-Matrix-Number[†]
Cetane and 1-Methylnaphthalene		1.2.81
DIN 51422-2 2004-09	Determination of purity by gaschromatography - part 2: cetane and 1-methylnaphthalene	
Aromatic Hydrocarbons		1.2.7
DIN EN 12916 2016-06	Determination of aromatic hydrocarbon types in middle distillates - High performance liquid chromatography method with refractive index detection	
FAME		1.2.27
DIN EN 14078 2014-09	Determination of fatty acid methyl ester (FAME) content in middle distillates - Infrared spectrometry method	
Calorific Value		
ASTM D 3338/D 3338M 2009 (reapproved: 2014)	Standard Test Method for Estimation of Net Heat of Combustion of Aviation Fuels	
Hydrogen Content		
ASTM D 3343 2016	Standard Test Method for Estimation of Hydrogen Content of Aviation Fuels	
Oxidation Stability		1.2.75
DIN EN 15751 2014-06	Fatty acid methyl ester (FAME) fuel and blends with diesel fuel - Determination of oxidation stability by accelerated oxidation method	

Test Method	Title	Process-Matrix-Number⁺
DIN EN ISO 12205 1996-11	Determination of the oxidation stability of middle-distillate fuels	
DIN EN 16091 2012-02	Middle distillates and fatty acid methyl ester (FAME) fuels and blends - Determination of oxidation stability by rapid small scale oxidation method	
ASTM D 7545 2014	Standard Test Method for Oxidation Stability of Middle Distillate Fuels - Rapid Small Scale Oxidation Test (RSSOT)	
ASTM D 2274 2014	Standard Test Method for Oxidation Stability of Distillate Fuel Oil (Accelerated Method)	
Conductivity		
ASTM D 2624 2015	Standard Test Methods for Electrical Conductivity of Aviation and Distillate Fuels	
DIN 51412-1 2005-06	Determination of electrical conductivity – part 1: laboratory method	
Refractive Index Measurement		
DIN 51423-1 2010-02	measurement of relative refractive index by precision refractometer	
DIN 51423-2 2010-02	Testing of mineral oils part 2: measurement of relative refractive index by abbe-refractometer	

Test Method	Title	Process-Matrix- Number ^{†)}
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GC-Composition

DIN 51405 2004-01	Testing of mineral oil hydrocarbons, similar liquids and solvents for paints and varnishes - Analysis by gas chromatography - General working principles	
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Aniline Point

DIN ISO 2977 2000-11	Determination of aniline point and mixed aniline point	
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Peroxid Number

ASTM D 3703 2013	Standard Test Method for Hydroperoxide Number of Aviation Turbine Fuels, Gasoline and Diesel Fuels	
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DIN EN 14214 Anhang C.3 2014-06	Calculation of saturated monoglycerides content in diesel fuels by EN 590	
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in combination with:

<i>DIN EN 14105 2011-07</i>	<i>Determination of monoglyceridecontent</i>	1.6.67
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<i>DIN EN 23015 1994-05</i>	<i>Determination of cloudpoint FAME</i>	
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1.3 Diesel Fuel from Fatty Acid Methylene Ester (FAME) *

Test Method	Title	Process-Matrix-Number⁺⁾
Ester Content		
		1.6.40
DIN EN 14103 2015-06	Determination of ester and linolenic acid methyl ester contents	
Density		
		1.6.22
DIN EN ISO 12185 1997-11	Crude petroleum and petroleum products - Determination of density - Oscillating U-tube method	
DIN 51757 2011-01	Testing of mineral oils and related materials - Determination of density procedure 3	
Viscosity		
		1.6.54
DIN EN ISO 3104 1999-12	Petroleum products - Transparent and opaque liquids - Determination of kinematic viscosity and calculation of dynamic viscosity	
Sulphur Content		
		1.6.89
DIN EN ISO 20846 2012-01	Determination of sulfur content of automotive fuels - Ultraviolet fluorescence method	
ASTM D 5453 2016	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	

Test Method	Title	Process-Matrix-Number^{*)}
Water Content		
DIN EN ISO 12937 2002-03	Determination of water - Coulometric Karl Fischer titration method	1.6.106
Total Contamination		
DIN EN 12662 2014-07	Determination of total contamination in middle distillates, diesel fuels and fatty acid methyl esters	1.6.48
Corrosiveness		
DIN EN ISO 2160 1999-04	corrosiveness to copper - copper strip test	1.6.60
Oxidation Stability		
DIN EN 14112 2016-12	Determination of oxidation stability (accelerated oxidation test)	1.6.75
Acid		
DIN EN 14104 2003-10	Determination of acid value	1.6.87
Iodine Value		
DIN EN 14111 2003-10	Determination of iodine value	1.6.53
DIN EN 16300 2012-11	Determination of iodine value in fatty acid methyl esters (FAME) - Calculation method from gas chromatographic data	

Test Method	Title	Process-Matrix-Number ^{*)}
Methanol		1.6.64
DIN EN 14110 2003-10	Determination of methanol content	
Content of free and total Glycerol and Mono-, Di-, Triglyceride		1.6.67/1.6.38 / 1.6.39
DIN EN 14105 2011-07	Determination of free and total glycerol and mono-, di-, triglyceride contents	
Cold Filter Plugging Point (CFPP)		1.6.98
DIN EN 116 2015-11	Determination of cold filter plugging point	
Cloud Point		
DIN EN 23015 1994-05	Petroleum products; determination of cloud point	
DIN EN 14214 Anhang C.2 2014-06	Calculation of saturated monoglycerides content in FAME	
	in combination with:	
	<i>DIN EN 14105 - Determination of monoglyceride content</i>	1.6.67
	<i>DIN EN 23015 - Determination of cloudpoint FAME</i>	

2. Printing Ink Distillates *

Test Method	Title	Process-Matrix-Number⁺
Density		
DIN EN ISO 12185 1997-11	Crude petroleum and petroleum products - Determination of density - Oscillating U-tube method	
Aniline Point		
DIN ISO 2977 2000-11	Determination of aniline point and mixed aniline point	

Location Speyer:

3. Fuels

3.1 Gasoline *

Test Method	Title	Process-Matrix-Number⁺
ASTM D 5769 2015	Standard Test Method for Determination of Benzene, Toluene, and Total Aromatics in Finished Gasolines by Gas Chromatography/ Mass Spectrometry	

Abbreviations used:

ASTM	American Society for Testing and Materials
FAME	fatty acid methyl ester (Fettsäuremethylester)
ISO	International Organization for Standardization
Process-Matrix-Number ⁺	Number of the characteristics within the Process-Matrix for Mineral Oil (72 FB 005.26 Version 1.2, August 2017)