

Deutsche Akkreditierungsstelle

Annex to the Accreditation Certificate D-PL-17640-01-00 according to DIN EN ISO/IEC 17025:2018

Valid from: 18.06.2024

Date of issue: 18.06.2024

Holder of accreditation certificate:

**Haltermann Carless Deutschland GmbH
Schlengendeich 17, 21107 Hamburg**

with the location

**Haltermann Carless Deutschland GmbH
Schlengendeich 17, 21107 Hamburg**

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 they conform to the principles of DIN EN ISO 9001.

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),
aviation fuels**

*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.*

This certificate annex is only valid together with the written accreditation certificate and reflects the status as indicated by the date of issue. The current status of any given scope of accreditation can be found in the directory of accredited bodies maintained by Deutsche Akkreditierungsstelle GmbH at <https://www.dakks.de>.

Abbreviations used: see last page

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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	
DIN EN ISO 12185 2024-06	Crude petroleum, petroleum products and related products - Determination of density - Laboratory density meter with an oscillating U-tube sensor	
ASTM D 4052 2022	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 2019-09	Petroleum products - Determination of distillation characteristics at atmospheric pressure	
ASTM D 86 2023a	Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure	
ASTM D 7345 2023	Standard Test Method for Distillation of Petroleum Products and Liquid Fuels at Atmospheric Pressure (Micro Distillation Method)	
	Vapor Pressure	1.1.20
ASTM D 5191 2022	Standard Test Method for Vapor Pressure of Petroleum Products (Mini Method)	
DIN EN 13016-1 2018-06	Vapor Pressure part 1: Determination of air saturated vapor pressure (ASVP) and calculation of equivalent to dry vapor pressure (DVPE)	
DIN EN 13016-2 2007-11	Vapor Pressure part 2: Determination of absolute vapor pressure (AVP) in temperature range 40°C to 100°C	

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Test Method	Title	Process-Matrix-Number⁴⁾
DIN EN ISO 20846 2019-12	Sulphur content Petroleum products - Determination of sulfur content of automotive fuels - Ultraviolet fluorescence method	1.1.89
ASTM D 5453 2019a	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	
DIN EN ISO 6246 2020-01	Residue from evaporation Petroleum products - Gum content of fuels - Jet evaporation method	1.1.1
ASTM D 381 2022	Standard Test Method for Gum Content in Fuels by Jet Evaporation	
DIN EN ISO 2160 1999-04	Corrosiveness to Copper 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	
DIN EN ISO 22854 2021-10	Benzene content 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
ASTM D 6839 2021a	Standard Test Method for Hydrocarbon Types, Oxygenated Compounds and Benzene in Spark Ignition Engine Fuels by Gas Chromatography	
DIN EN 12177 2023-01	Liquid petroleum products - Unleaded petrol - Determination of benzene content by gas chromatography	

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Test Method	Title	Process-Matrix-Number⁴⁾
ASTM D 4815 2022	Oxygen-containing compounds Standard Test Method for Determination of MTBE, ETBE, TAME, DIPE, tertiary-Amyl Alcohol and C1 to C4 Alcohols in Gasoline by Gas Chromatography	1.1.86
ASTM D 7754 2023	Standard Test Method for Determination of Trace Oxygenates in Automotive Spark-Ignition Engine Fuel by Multidimensional Gas Chromatography	
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	
ASTM D 6839 2021a	Standard Test Method for Hydrocarbon Types, Oxygenated Compounds and Benzene in Spark Ignition Engine Fuels by Gas Chromatography	
ASTM D 5501 2020	Standard Test Method for Determination of Ethanol and Methanol Content in Fuels containing greater 20 % Ethanol by Gas Chromatography	
DIN EN 13132 2002-03	Liquid petroleum products - Unleaded petrol - Determination of organic oxygenate compounds and total organically bound oxygen content by gas chromatography using column switching	

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Test Method	Title	Process-Matrix-Number ^{+))}
DIN EN ISO 22854 2021-10	Hydrocarbon Types Liquid petroleum products - Determination of hydrocarbon types and oxygenates in automotive-motor gasoline and in ethanol (E85) automotive fuel - Multidimensional gas chromatography method	1.1.56
ASTM D 6839 2021a	Standard Test Method for Hydrocarbon Types, Oxygenated Compounds and Benzene in Spark Ignition Engine Fuels by Gas Chromatography	
ASTM D 1319 2020a	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	
ASTM D 974 2021	Neutralisation number Standard Test Method for Acid and Base Number by Color-Indicator Titration	
ASTM D 2268 2021	n-Heptan, i-Octan und Toluol Standard Test Method for Analysis of High-Purity n-Heptane and Isooctane by Capillary Gas Chromatography	1.1.82
ASTM D 7504 2023	Standard Test Method for Trace Impurities in Monocyclic Aromatic Hydrocarbons by Gas Chromatography and Effective Carbon Number	
DIN EN ISO 12937 2002-03	Water content Petroleum products - Determination of water - Coulometric Karl Fischer titration method	

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Test Method	Title	Process-Matrix-Number⁴⁾
ASTM D 6304 2020	Standard Test Method for Determination of Water in Petroleum Products, Lubricating Oils, and Additives by Coulometric Karl Fischer Titration	
ASTM E 1064 2024	Standard Test Method for Water in Organic Liquids by Coulometric Karl Fischer Titration	
ASTM D 3338/D 3338M 2020a	Calculation of the calorific value Standard Test Method for Estimation of Net Heat of Combustion of Aviation Fuels	
ASTM D 3343 2022	Hydrogen content Standard Test Method for Estimation of Hydrogen Content of Aviation Fuels	
DIN 51423-1 2010-02	Measurement of the refractive index Testing of mineral oils - Part 1: Measurement of the relative refractive index with the precision refractometer	
DIN 51423-2 2010-02	Testing of mineral oils - Part 2: Measurement of the relative refractive index with the Abbe-refractometer	
DIN 51405 2004-01	GC-Composition Testing of mineral oil hydrocarbons, similar liquids and solvents for paints and varnishes - Analysis by gas chromatography - General working principles	
ASTM D 5580 2021	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 5769 2022	Standard Test Method for Determination of Benzene, Toluene, and Total Aromatics in Finished Gasolines by Gas Chromatography/Mass Spectrometry	

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Test Method	Title	Process-Matrix-Number ⁺⁾
ISO 6227 1982-09	<p>Miscellaneous Chemical products for industrial use; General method for determination of chloride ions – Potentiometric method</p>	
ASTM D 3703 2018	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)	
ASTM D 525 2012a	Standard Test Method for Oxidation Stability of Gasoline (Induction Period Method)	
DIN EN ISO 7536 1996-08	Petroleum products - Determination of oxidation stability of gasoline - Induction period method	
DIN EN ISO 6271 2016-05	Clear liquids - Estimation of colour by the platinum-cobalt colour scale	

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1.2. Diesel fuel *

Test Method	Title	Process-Matrix-Number⁺⁾
DIN 51757 2011-01	Density Testing of mineral oils and related materials - Determination of density	1.2.22
DIN EN ISO 12185 2024-06	Crude petroleum and petroleum products - Determination of density - Oscillating U-tube method	
ASTM D 4052 2022	Standard Test Method for Density, Relative Density, and API Gravity of Liquids by Digital Density Meter	
ASTM D 7345 2023	Distillation characteristics Standard Test Method for Distillation of Petroleum Products and Liquid Fuels at Atmospheric Pressure (Micro Distillation Method)	1.2.21
DIN EN ISO 3405 2019-09	Petroleum and related products from natural or synthetic sources - Determination of distillation characteristics at atmospheric pressure	
ASTM D 86 2023a	Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure	
DIN EN ISO 3104 2024-04	Viscosity Petroleum products - Transparent and opaque liquids - Determination of kinematic viscosity and calculation of dynamic viscosity	1.2.62
ASTM D 445 2024	Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids (and Calculation of Dynamic Viscosity)	
ASTM D 7042 2021a	Standard Test Method for Dynamic Viscosity and Density of Liquids by Stabinger Viscometer (and the Calculation of Kinematic Viscosity)	

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Test Method	Title	Process-Matrix-Number⁴⁾
DIN EN 16896 2017-02	Petroleum products and related products - Determination of kinematic viscosity - Method by Stabinger type viscosimeter	
ASTM D 93 2020	Flash point Standard Test Methods for Flash Point by Pensky-Martens Closed Cup Tester	1.2.28
DIN EN ISO 2719 2021-06	Determination of flash point - Pensky-Martens closed cup method	
DIN EN ISO 20846 2019-12	Sulphur content Petroleum products - Determination of sulfur content of automotive fuels - Ultraviolet fluorescence method	1.2.89
ASTM D 5453 2019a	Standard Test Method for Determination of Total Sulfur in Light Hydrocarbons, Spark Ignition Engine Fuel, Diesel Engine Fuel, and Engine Oil by Ultraviolet Fluorescence	
ASTM D 6371 2024	Temperature limit of filterability (CFPP) Standard Test Method for Cold Filter Plugging Point of Diesel and Heating Fuels	1.2.98
DIN EN 116 2018-04	Diesel and domestic heating fuels - Determination of cold filter plugging point - Stepwise cooling bath method	
DIN EN 23015 1994-05	Cloudpoint Petroleum products - determination of cloud point <i>(withdrawn)</i>	1.2.19
DIN EN ISO 3015 2019-09	Petroleum and related products from natural or synthetic sources - Determination of cloud point	

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Test Method	Title	Process-Matrix-Number⁴⁾
DIN EN ISO 22995 2019-09	Petroleum products - Determination of cloud point - Automated step-wise cooling method	
ASTM D 2500 2023	Standard Test Method for Cloud Point of Petroleum Products	
DIN EN ISO 3016 2019-09	Pourpoint Petroleum and related products from natural or synthetic sources - Determination of pour point	1.2.79
ASTM D 97 2017b	Standard Test Method for Pour Point of Petroleum Products	
ASTM D 6892 2003 (reapproved: 2020)	Standard Test Method for Pour Point of Petroleum Products (Robotic Tilt Method)	
DIN EN ISO 10370 2015-03	Coke-residue 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)	
DIN EN ISO 12937 2002-03	Water-content 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	
ASTM E 1064 2024	Standard Test Method for Water in Organic Liquids by Coulometric Karl Fischer Titration	
ASTM D 974 2021	Neutralisation-number Standard Test Method for Acid and Base Number by Color-Indicator Titration	

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Test Method	Title	Process-Matrix-Number⁴⁾
DIN EN ISO 4264 2018-10	Cetan index Petroleum products - Calculation of cetane index of middle-distillate fuels by the four variable equation	1.2.12
ASTM D 4737 2021	Standard Test Method for Calculated Cetane Index by Four Variable Equation <i>in combination with: 1.2.2 and 1.2.3</i>	
ASTM D 976 2021	Standard Test Method for Calculated Cetane Index of Distillate Fuels	
DIN EN ISO 2160 1999-04	Corrosiveness to Copper 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	
DIN EN 12662 2014-07	Total pollution Liquid petroleum products - Determination of total contamination in middle distillates, diesel fuels and fatty acid methyl esters	1.2.48
DIN EN ISO 12156-1 2019-09	Lubrication Diesel fuel - Assessment of lubricity using the high-frequency reciprocating rig (HFRR) - Part 1: Test method	1.2.88
ASTM D 6079 2022	Standard Test Method for Evaluating Lubricity of Diesel Fuels by the High-Frequency Reciprocating Rig (HFRR)	

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Test Method	Title	Process-Matrix-Number⁴⁾
DIN 51422-2 2004-09	Cetan and 1-Methylnaphthalene Testing of mineral products - Determination of grade of purity by gaschromatography - Part 2: Cetane and 1-Methyl-naphthaline	1.2.81
DIN EN 12916 2024-05	Aromatic Hydrocarbon Types Petroleum products - Determination of aromatic hydrocarbon types in middle distillates - High performance liquid chromatography method with refractive index detection	1.2.7
DIN EN 14078 2014-09	FAME Liquid petroleum products - Determination of fatty acid methyl ester (FAME) content in middle distillates - Infrared spectrometry method	1.2.27
ASTM D 3338/D 3338M 2020a	Calorific value Standard Test Method for Estimation of Net Heat of Combustion of Aviation Fuels	
ASTM D 3343 2022	Hydrogen content Standard Test Method for Estimation of Hydrogen Content of Aviation Fuels	
DIN EN 15751 2014-06	Oxidation stability Automotive fuels - Fatty acid methyl ester (FAME) fuel and blends with diesel fuel - Determination of oxidation stability by accelerated oxidation method	1.2.75
DIN EN ISO 12205 1996-11	Petroleum products - Determination of the oxidation stability of middle-distillate fuels	
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)	

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Test Method	Title	Process-Matrix-Number⁺⁾
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)	
DIN 51423-1 2010-02	Measurement of the relative refractive index Testing of mineral oils - Part 1: Measurement of the relative refractive index with the precision refractometer	
DIN 51423-2 2010-02	Testing of mineral oils - Part 2: Measurement of the relative refractive index with the Abbe-refractometer	
DIN 51405 2004-01	GC-composition Testing of mineral oil hydrocarbons, similar liquids and solvents for paints and varnishes - Analysis by gas chromatography - General working principles	
ASTM D 3703 2018	Peroxide number Standard Test Method for Hydroperoxide Number of Aviation Turbine Fuels, Gasoline and Diesel Fuels	
DIN EN 14214 Anhang C.3 2019-05	Liquid petroleum products - Fatty acid methyl esters (FAME) for use in diesel engines and heating applications - Requirements and test methods Appendix C.3: Calculation of the content of saturated monoglycerides in diesel fuel according to EN 590	
	In combination with <i>DIN EN 14105 2011-07:</i> <i>Fat and oil derivatives - Fatty Acid Methyl Esters (FAME) - Determination of free and total glycerol and mono-, di-, triglyceride contents</i> <i>DIN EN 23015 1994-05 (withdrawn):</i> <i>Petroleum products; determination of cloud point</i>	1.6.67

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1.3. Diesel Fuel from Fatty Acid Methylene Ester (FAME) *

Test Method	Title	Process-Matrix-Number⁺⁾
DIN EN 14103 2020-04	Ester Content Fat and oil derivatives - Fatty Acid Methyl Esters (FAME) - Determination of ester and linolenic acid methyl ester contents	1.6.40
DIN EN ISO 12185 2024-06	Density Crude petroleum and petroleum products - Determination of density - Oscillating U-tube method	1.6.22
DIN 51757 2011-01	Testing of mineral oils and related materials - Determination of density procedure 3	
DIN EN ISO 3104 2024-04	Viscosity Petroleum products - Transparent and opaque liquids - Determination of kinematic viscosity and calculation of dynamic viscosity	1.6.54
DIN EN ISO 20846 2019-12	Sulphur Content Petroleum products - Determination of sulfur content of automotive fuels - Ultraviolet fluorescence method	1.6.89
ASTM D 5453 2019a	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	
DIN EN ISO 12937 2002-03	Water-content Petroleum products - Determination of water - Coulometric Karl Fischer titration method	1.6.106
DIN EN 12662 2014-07	Total Contamination Liquid petroleum products - Determination of total contamination in middle distillates, diesel fuels and fatty acid methyl esters	1.6.48

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Test Method	Title	Process-Matrix-Number⁺⁾
DIN EN ISO 2160 1999-04	Corrosiveness to Copper Petroleum products - Corrosiveness to copper - Copper strip test	1.6.60
DIN EN 14112 2021-02	Oxidation Stability Fat and oil derivatives - Fatty Acid Methyl Esters (FAME) - Determination of oxidation stability (accelerated oxidation test)	1.6.75
DIN EN 14104 2021-04	Acid Fat and oil derivates - Fatty acid methyl ester (FAME) - Determination of acid value	1.6.87
DIN EN 14111 2022-08	Iodine Value Fat and oil derivatives - Fatty acid methylesters (FAME) - 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	
DIN EN 14110 2019-06	Methanol Fat and oil derivatives - Fatty Acid Methyl Esters - Determination of methanol content	1.6.64

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Test Method	Title	Process-Matrix-Number⁺⁾
	Content of free and total Glycerol and Mono-, Di-, Triglyceride	1.6.67 1.6.38 1.6.39
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	
	Cold Filter Plugging Point (CFPP)	1.6.98
DIN EN 116 2018-04	Diesel and domestic heating fuels - Determination of cold filter plugging point - Stepwise cooling bath method	
	Cloudpoint	
DIN EN 23015 1994-05	Petroleum products; determination of cloud point <i>(withdrawn)</i>	
DIN EN 14214 Anhang C.2 2019-05	Liquid petroleum products - Fatty acid methyl esters (FAME) for use in diesel engines and heating applications - Requirements and test methods <i>Appendix C.2: Calculation of the content of saturated monoglycerides in pure FAME</i>	
	in combination with: <i>DIN EN 14105 – 2011-07:</i> <i>Fat and oil derivatives - Fatty Acid Methyl Esters (FAME) - Determination of free and total glycerol and mono-, di-, triglyceride contents</i>	1.6.67
	<i>DIN EN 23015 – 1994-05 (withdrawn):</i> Petroleum products; determination of cloud point	

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Test Method	Title	Process-Matrix-Number⁺⁾
	Flash Point	1.2.28
ASTM D 93 2020	Standard Test Methods for Flash Point by Pensky-Martens Closed Cup Tester	
DIN EN ISO 2719 2016-11	Determination of flash point - Pensky-Martens closed cup method	

1.4. Aviation Fuels *

Test Method	Title	Process-Matrix-Number⁺⁾
	Density	1.4.3
ASTM D 4052 2022	Standard Test Method for Density, Relative Density, and API Gravity of Liquids by Digital Density Meter	
	Distillation Characteristics	1.4.21
ASTM D 86 2023a	Standard Test Method for Distillation of Petroleum Products and Liquid Fuels at Atmospheric Pressure	
	Hydrocarbon Types	1.4.56
ASTM D 1319 2020a	Standard Test Method for Hydrocarbon Types in Liquid Petroleum Products by Fluorescent Indicator Adsorption	
	Sulphur Content	1.4.89
ASTM D 5453 2019a	Standard Test Method for Determination of Total Sulfur in Light Hydrocarbons, Spark Ignition Engine Fuel, Diesel Engine Fuel, and Engine Oil by Ultraviolet Fluorescence	
	Corrosiveness to Copper	1.4.60
ASTM D 130 2019	Standard Test Method for Corrosiveness to Copper from Petroleum Products by Copper Strip Test	
	Calorific Value	1.4.13
ASTM D 3338/D 3338M 2020a	Standard Test Method for Estimation of Net Heat of Combustion of Aviation Fuels	

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Abbreviations used:

ASTM	American Society for Testing and Materials
DIN	German Institute for Standardization (Deutsches Institut für Normung e. V.)
EN	European Standard
FAME	fatty acid methyl ester (Fettsäuremethylester)
ISO	International Organization for Standardization
IEC	International Electrotechnical Commission
Process-Matrix-Number ⁺)	Number of the characteristics within the Process-Matrix for Mineral Oel (FO-Antrag GB_Mineralöl.xlsx, Vers. 1.2, 11 th April 2024)

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