

Deutsche Akkreditierungsstelle GmbH

Annex to the Accreditation Certificate D-PL-21472-01-00 according to DIN EN ISO/IEC 17025:2018

Valid from: 14.01.2021

Date of issue: 14.01.2021

Holder of certificate:

**Siemens Energy Global GmbH & Co. KG
Materialprüflabor Siemens Trafowerk Nürnberg
Katzwanger Straße 150, 90461 Nürnberg**

Tests in the fields:

Determination of material properties of insulating liquids especially transformer oil and magnetic properties of electrical sheet for use in transformers

Within the given fields the laboratory is permitted, without being required to inform and obtain prior approval from DAkkS, to use standard test methods listed here with different issue dates or revision status updates.

The laboratory maintains a current list of all test methods in a flexible scope of accreditation.

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

*The certificate together with its annex reflects the status at the time of the date of issue. The current status of the scope of accreditation can be found in the database of accredited bodies of Deutsche Akkreditierungsstelle GmbH.
<https://www.dakks.de/en/content/accredited-bodies-dakks>*

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Test Method	Title	Process-Matrix-Number¹⁾
ISO 2049 1996	Petroleum products - Determination of colour (ASTM scale)	
ISO 12185 1996	Crude petroleum and petroleum products - Determination of density - Oscillating U-tube method	
DIN EN 12766-1 2000-11	Petroleum products and used oils - Determination of PCBs and related products - Part 1: Separation and determination of selected PCB congeners by gas chromatography (GC) using an electron capture detector (ECD)	
DIN EN 12766-2 2001-12	Petroleum products and used oils - Determination of PCBs and related products - Part 2: Calculation of polychlorinated biphenyl (PCB) content	
DIN EN 14210 2004-03	Surface active agents - Determination of interfacial tension of solutions of surface active agents by the stirrup or ring method	
IEC 62961 2018-09	Insulating liquids - Test methods for the determination of interfacial tension of insulating liquids - Determination with the ring method	
IEC 60156 2018	Insulating liquids - Determination of the breakdown voltage at power frequency - Test method	
IEC 60247 2004	Insulating liquids - Measurement of relative permittivity, dielectric dissipation factor ($\tan \delta$) and d.c. resistivity	
IEC 60404-3 2010	Magnetic materials - Part 3: Methods of measurement of the magnetic properties of magnetic sheet and strip by means of a single sheet tester (IEC 60404-3:1992 + amendment1:2002 + amendment2:2009 + corrigendum:2009)	
IEC 60404-11 2012	Magnetic materials - Part 11: Method of test for the determination of surface insulation resistance of magnetic sheet and strip (IEC 60404-11:1991 + amendment 1:1998 + amendment 2:2012)	

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Test Method	Title	Process-Matrix-Number¹⁾
IEC 60422 2013	Mineral insulating oils in electrical equipment - Supervision and maintenance guidance (only: <i>Chapter 5.2 Colour and appearance</i>)	
IEC 60450 2004 Änderung 1 2007	Measurement of the average viscometric degree of polymerization of new and aged cellulosic electrically insulating materials	
IEC 60567 2011	Oil-filled electrical equipment - Sampling of gases and analysis of free and dissolved gases - Guidance	
IEC 60666 2010 Anhang 3.2	Detection and determination of specified additives in mineral insulating oils - Annex 3.2: Determination of 2,6- di-tert-butyl-para-cresol by infrared spectrometry - procedure B	
IEC 60666 2010 Anhang B	Detection and determination of specified additives in mineral insulating oils - Annex B: Analysis method for determination of passivators in petroleum products by High Performance Liquid Chromatography	
IEC 60814 1997	Insulating liquids - Oil-impregnated paper and pressboard - Determination of water by automatic coulometric Karl Fischer titration	
PA3-042-2019_4_11 2019-04	In-house Method: Gaschromatographical water content determination of liquid Ester by HID (Helium Ionisation Detector)	
IEC 61198 1993	Mineral insulating oils - Methods for the determination of 2-furfural and related compounds	
IEC 61619 1997	Insulating liquids - Contamination by polychlorinated biphenyls (PCBs) - Method of determination by capillary column gas chromatography	
IEC 62021-1 2003	Insulating liquids - Determination of acidity - Part 1: Automatic potentiometric titration	

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Test Method	Title	Process-Matrix-Number¹⁾
IEC 62021-2 2007	Insulating liquids - Determination of acidity - Part 2: Colourimetric titration	
IEC 62535 2008	Insulating liquids - Test method for detection of potentially corrosive sulphur in used and unused insulating oil	
IEC 62697-1 2012	Test methods for quantitative determination of corrosive sulfur compounds in unused and used insulating liquids - Part 1: Test method for quantitative determination of dibenzylsulfide (DBDS)	
ASTM D 7042 2016e3	Standard Test Method for Dynamic Viscosity and Density of Liquids by Stabinger Viscometer (and the Calculation of Kinematic Viscosity)	

Abbreviations used:

ASTM	American Society for Testing and Materials
EN	European Standard
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
PA	In-house Method "Materialprüflabor Trafowerk Nürnberg"
Process-Matrix- Number ¹⁾	Number of the characteristics within the Process-Matrix for Mineral Oil (72 FB 005.26 Version 1.2, August 2017)