



CERTIFICATE OF ACCREDITATION

This is to attest that

ELTEK INTERNATIONAL LABORATORIES

248 HUGHES LANE
ST. CHARLES, MISSOURI 63301, U.S.A.

Testing Laboratory TL-457

has met the requirements of AC89, *IAS Accreditation Criteria for Testing Laboratories*, and has demonstrated compliance with ISO/IEC Standard 17025:2017, *General requirements for the competence of testing and calibration laboratories*. This organization is accredited to provide the services specified in the scope of accreditation.

Effective Date August 26, 2022



A handwritten signature in black ink, reading "Raj Nathan".

President

SCOPE OF ACCREDITATION

International Accreditation Service, Inc.

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ELTEK INTERNATIONAL LABORATORIES

www.elteklabs.com

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Accredited to ISO/IEC 17025:2017

Effective Date August 26, 2022

Electrical	
ASTM D149	Standard test method for dielectric breakdown voltage and dielectric strength of solid electrical insulating materials at commercial power frequencies
ASTM D150	Standard test methods for ac loss characteristics and permittivity (dielectric constant) of solid electrical insulation
ASTM D257	Standard test methods for DC resistance or conductance of insulating materials
ASTM D495	Standard test method for high-voltage, low-current, dry arc resistance of solid electrical insulation
ASTM D1676	Standard test methods for film-insulated magnet wire
ASTM D1830	Standard test method for thermal endurance of flexible sheet materials used for electrical insulation by the curved electrode method
ASTM D1932	Standard test method for thermal endurance of flexible electrical insulating varnishes
ASTM D2132	Standard test method for dust-and-fog tracking and erosion resistance of electrical insulating materials
ASTM D2303	Standard test methods for liquid-contaminant, inclined-plane tracking and erosion of insulating materials
ASTM D2304	Standard test method for thermal endurance of rigid electrical insulating materials
ASTM D2307	Standard test method for thermal endurance of film-insulated round magnet wire
ASTM D3251	Standard test method for thermal endurance characteristics of electrical insulating varnishes applied over film-insulated magnet wire
ASTM D3455	Standard test methods for compatibility of construction material with electrical insulating oil of petroleum origin
ASTM D3638	Standard test method for comparative tracking index of electrical insulating material
ASTM D3755	Standard test method for dielectric breakdown voltage and dielectric strength of solid electrical insulating materials under direct-voltage stress

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ASTM D5642	Standard test method for sealed tube chemical compatibility test
IEC 60034-1	Rotating electrical machines - part 1: rating and performance
IEC 60034-15	Rotating electrical machines - part 15: impulse voltage withstand levels of form-wound stator coils for rotating A.C. machines
IEC 60034-18-1	Rotating electrical machines - part 18-1: functional evaluation of insulation systems - general guidelines
IEC 60034-18-21	Rotating electrical machines - part 18-21: functional evaluation of insulation systems - test procedures for wire-wound windings - thermal evaluation and classification
IEC 60034-18-22	Rotating electrical machines - part 18-22: functional evaluation of insulation systems - test procedures for wire-wound windings - classification of changes and insulation component substitutions
IEC 60034-18-31	Rotating electrical machines - part 18-31: functional evaluation of insulation systems - test procedures for form-wound windings - thermal evaluation and classification of insulation systems used in rotating machines
IEC 60034-18-32	Rotating electrical machines - part 18-32: functional evaluation of insulation systems - test procedures for form-wound windings - evaluation by electrical endurance
IEC 60034-18-33	Rotating electrical machines - part 18-33: functional evaluation of insulation systems - test procedures for form-wound windings - multifactor evaluation by endurance under simultaneous thermal and electrical stresses
IEC 60034-18-34	Rotating electrical machines - part 18-34: functional evaluation of insulation systems - test procedures for form-wound windings - evaluation of thermomechanical endurance of insulation systems
IEC 60034-18-41	Rotating electrical machines - part 18-41: partial discharge free electrical insulation systems (type i) used in rotating electrical machines fed from voltage converters - qualification and quality control tests
IEC 60034-18-42	Rotating electrical machines - part 18-42: partial discharge resistant electrical insulation systems (type ii) used in rotating electrical machines fed from voltage converters - qualification tests
IEC 60034-31	Rotating electrical machines - part 31: selection of energy-efficient motors including variable speed applications - application guide
IEC 60076-3	Power transformers - part 3: insulation levels, dielectric tests and external clearances in air
IEC 60093	Recommended methods of test for volume and surface resistivities of electrical insulating materials
IEC 60112	Method for the determination of the proof and the comparative tracking indices of solid insulating materials

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IEC 60167	Methods of test for the determination of the insulation resistance of solid insulating materials
IEC 60172	Test procedure for the determination of the temperature index of enamelled and tape wrapped winding wires
IEC 60216-1	Electrical insulating materials - thermal endurance properties - part 1: ageing procedures and evaluation of test results
IEC 60216-2	Electrical insulating materials - thermal endurance properties - part 2: determination of thermal endurance properties of electrical insulating materials - choice of test criteria
IEC 60216-6	Electrical insulating materials - thermal endurance properties - part 6: determination of thermal endurance indices (TI and RTE) of an insulating material using the fixed time frame method
IEC 60243-1	Electric strength of insulating materials - test methods - part 1: tests at power frequencies
IEC 60243-2	Electric strength of insulating materials - test methods - part 2: additional requirements for tests using direct voltage
IEC 60343	Recommended test methods for determining the relative resistance of insulating materials to breakdown by surface discharges
IEC 60505	Evaluation and qualification of electrical insulation systems
IEC 60587	Electrical insulating materials used under severe ambient conditions - test methods for evaluating resistance to tracking and erosion
IEC 60851-4	Winding wires - test methods - part 4: chemical properties
IEC 61033	Test methods for the determination of bond strength of impregnating agents to an enamelled wire substrate
IEC 61621	Dry, solid insulating materials - Resistance test to high-voltage, low-current arc discharges
IEC 61857-1	Electrical insulation systems - procedures for thermal evaluation - part 1: general requirements - low-voltage
IEC 61857-21	Electrical insulation systems - procedures for thermal evaluation - part 21: specific requirements for general-purpose models - wire-wound applications
IEC 61857-22	Electrical insulation systems - procedures for thermal evaluation - part 22: specific requirements for encapsulated-coil model - wire-wound electrical insulation system (EIS)
IEC 61857-31	Electrical insulation systems - procedures for short time thermal evaluation - part 31: applications with a designed life of 5 000 h or less
IEC 61857-32	Electrical insulation systems - procedures for thermal evaluation - part 32: multifactor evaluation with increased factors during diagnostic testing

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IEC 61857-33	Electrical insulation systems - procedures for thermal evaluation - part 33: multifactor evaluation with increased factors at elevated temperature
IEC 61857-41	Electrical insulation systems- procedures for thermal evaluation - part 41: specific requirements for electrical insulation systems for use in dry-type high-voltage transformers with operating voltages of 1kV and above
IEC 61858-1	Electrical insulation systems - thermal evaluation of modifications to an established electrical insulation system (EIS) - part 1: wire-wound winding EIS
IEC 61858-2	Electrical insulation systems - thermal evaluation of modifications to an established electrical insulation system (EIS) - part 2: form-wound EIS
IEC/TR 60894	Guide for test procedure for the measurement of loss tangent of coils and bars for machine windings
IEEE 99	Preparation of test procedures for the thermal evaluation of insulation systems for electrical equipment (section 9)
IEEE 117	Test procedure for thermal evaluation of systems of insulating materials for random-wound ac electric machinery
IEEE 259	Test procedure for evaluation of systems of insulation for dry-type specialty and general-purpose transformers
IEEE 1043	Recommended practice for voltage-endurance testing of form-wound bars and coils
IEEE 1776	Thermal evaluation of unsealed or sealed insulation systems for ac electric machinery employing form-wound pre-insulated stator coils for machines rated 15000 V and below
IEEE C57.12.56	Thermal evaluation of insulation systems for ventilated dry-type power and distribution transformers
IEEE C57.12.60	Test procedure for thermal evaluation of insulation systems for dry-type power and distribution transformers, including open-wound, solid-cast, and resin-encapsulated transformers
IEEE C57.100	Thermal evaluation of insulation systems for liquid-immersed distribution and power transformers
NEMA MW 1000	Magnet Wire
UL 746A	Standard for polymeric materials - short term property evaluations (only sections 21, 22, 23, 24, 25, 26)
UL 746B	Standard for polymeric materials - long term property evaluations (only sections 6-17, 19, 20, and 20A)
UL 984	Hermetic refrigerant motor-compressors (section 41)
UL 1446	Standard for systems of insulating materials - general

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UL 1446A	Outline of Investigation for Dry Type Transformer Insulation Systems Rated Above 1 kV
UL 2157	Electric clothes washing machines and extractors (sections 26.13, 26.14)
UL 2353	Standard for safety for single- and multi-layer insulated winding wire
UL 5703	Outline of investigation for determination of the maximum operating temperature rating of photovoltaic (pv) backsheet materials
Mechanical	
ASTM D256	Standard test methods for determining the izod pendulum impact resistance of plastics
ASTM D570	Standard test method for water absorption of plastics
ASTM D638	Standard test method for tensile properties of plastics active standard
ASTM D790	Standard test methods for flexural properties of unreinforced and reinforced plastics and electrical insulating materials
ASTM D882	Standard test method for tensile properties of thin plastic sheeting
ASTM D1653	Standard test methods for water vapor transmission of organic coating films
ASTM D1822	Standard test method for tensile-impact energy to break plastics and electrical insulating materials
ASTM D1876	Standard test method for peel resistance of adhesives (t-peel test)
ASTM D2240	Standard test method for rubber property—durometer hardness
ASTM D2519	Standard test method for bond strength of electrical insulating varnishes by the helical coil test
ASTM D3145	Standard test method for thermal endurance of electrical insulating varnishes by the helical coil method
ASTM E96/96M	Standard test methods for water vapor transmission of materials
ISO 62	Plastics - determination of water absorption
ISO 178	Plastics - determination of flexural properties
ISO 180	Plastics - determination of izod impact strength
ISO 527-1	Plastics – determination of tensile properties – part 1: general principles
ISO 527-2	Plastics - determination of tensile properties - part 2: test conditions for moulding and extrusion plastics
ISO 527-3	Plastics - determination of tensile properties - part 3: test conditions for films and sheets
ISO 868	Plastics and ebonite – Determination of indentation hardness by means of a durometer (shore hardness)

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ISO 8256	Plastics - determination of tensile-impact strength
NEMA RE-2	Electrical Insulating Varnish (section 4.11)
UL 746A	Standard for polymeric materials - short term property evaluations (sections 10, 11, 12, 13, 14, 16, 20, 38)
UL 2157	Electric clothes washing machines and extractors (sections 26.2.6 and 26.2.7)
Fire	
ASTM D635	Standard test method for rate of burning and/or extent and time of burning of plastics in a horizontal position
ASTM D3801	Standard test method for measuring the comparative burning characteristics of solid plastics in a vertical position
ASTM D3874	Standard test method for ignition of materials by hot wire sources
ASTM D5048	Standard test method for measuring the comparative burning characteristics and resistance to burn-through of solid plastics using a 125-mm flame
ASTM D6194	Standard test method for glow-wire ignition of materials
IEC 60695-2-10	Fire hazard testing - part 2-10: glowing/hot-wire based test methods - glow-wire apparatus and common test procedure
IEC 60695-2-11	Fire hazard testing – part 2-11: glowing/hot-wire based test methods – glow-wire flammability test method for end-products (GWEPT)
IEC 60695-2-12	Fire hazard testing - part 2-12: glowing/hot-wire based test methods - glow-wire flammability index (GWFI) test method for materials
IEC 60695-2-13	Fire hazard testing - part 2-13: glowing/hot-wire based test methods - glow-wire ignition temperature (GWIT) test method for materials
IEC 60695-2-20	Fire hazard testing - part 2: glowing/hot wire based test methods - section 20: hot-wire coil ignitability test on materials
IEC 60695-11-10	Fire hazard testing - part 11-10: test flames - 50 W horizontal and vertical flame test methods
IEC 60695-11-20	Fire hazard testing - part 11-20: test flames - 500 W flame test method
ISO 1210	Plastics - determination of the burning behaviour of horizontal and vertical specimens in contact with a small-flame ignition source
ISO 9773	Plastics - determination of burning behaviour of thin flexible vertical specimens in contact with a small-flame ignition source
UL 94	Standard for tests for flammability of plastic materials for parts in devices and appliances (sections 7, 8, 9, 10 and 11)
UL 746A	Standard for polymeric materials - short term property evaluations (sections 31, 32, 33, 34, 35)

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UL 746C	Standard for polymeric materials - use in electrical equipment evaluations (sections 9, 10, 11, 12, 13, 14, 16, 17 35, 51, 52) (Except section 12.2)
UL 1441	Coated electrical sleeving (sections 5.6 and 5.7)
UL 2157	Electric clothes washing machines and extractors (sections 26.5, 26.6, 26.12 and 26.19)