Draka

Industry & Specialty | Cableteq USA

Draka Cableteq USA, Inc. Test Laboratory

Headquartered in North Dighton, MA, our 6,000 square foot lab is an integral part of Draka's global commitment to innovation.
The Draka Test Lab is just one of a handful of labs in the United States to have been certified by Nationally Recognized Testing Laboratories (NRTL). This certification allows test results generated at our lab to be used for product approval and certification. Without the need for an outside testing firm, our customers can complete the product testing and approval process at one location, saving both time and money.

DRAKA CABLETEQ USA, INC. TEST LABORATORY

Introduction

The Draka Test Laboratory, located in North Dighton Massachusetts, specializes in the testing of electrical and optical wire and cable. This testing facility is an integral part of the Research and Development organization and provides services to all Draka USA companies as well as to worldwide Draka Holding Group members.

Personnel

The Test Laboratory is staffed with skilled and experienced service oriented engineers, technicians and support personnel having extensive knowledge in the testing of wire and cable. Laboratory and R&D personnel average 20 years of service in wire and cable with some individuals exceeding 30 years in the industry.

Credentials

The Laboratory has been certified by the leading Nationally Recognized Testing Laboratories (NRTL) allowing test results generated in the Draka Cableteq USA Test Laboratory to be used for product approval and certification. The Laboratory has been Category certified by Canadian Standards Association (CSA), received Applicant Testing Authorization by Intertek Testing Services (ITS) and has been qualified to Underwriter's Laboratories (UL) Client Test Data Program (CTDP). The Laboratory is ISO 9001 approved through Det Nos Vietras (DNV) with test equipment calibrated in accordance with ISO 10012-1, ISO 17025, and traceable to the National Institute of Standards and Technology (NIST).

Standards

The Laboratory uses recognized procedures for testing to current standards associated with the wire and cable industry. These include:

UL (Underwriters Laboratories Inc.)
CSA (Canadian Standards Association)
ICEA (Insulated Cable Engineers Association)
ASTM (American Society for Testing and Materials)
IEEE (Institute for Electrical and Electronic Engineers Inc.)
MilSpec (Military Specifications and Standards)
Telcordia Technologies
TIA (Telecommunications Industry Association)
EIA (Electronic Industries Alliance)
IEC (International Electrotechnical Commission)

Testing Programs

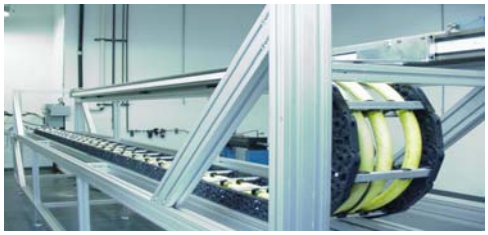
The Draka Test Laboratory develops, implements and manages numerous tasks for the Draka organizations. These include fulfilling basic requests for acceptance testing of standard products, first article or qualification testing, product or process modification evaluations, material and compound development evaluations and new product development evaluations. The Laboratory also assists the Process Engineering and Quality Control Departments in the resolution of customer complaints and defective products.

Compound Property Database

The Laboratory maintains an extensive database on all active Draka Cableteq USA insulating and jacketing compounds. This database of compound properties is used to assist Engineers in compound selection optimization as well as providing proactive and reactive resources for process engineering and quality control personnel, identifying trends or deviations in compound characteristics.

Testing Facility and Capabilities

The Draka USA Test Laboratory occupies over 6000 square feet of floor space adjacent to Draka Cableteq USA Headquarters in North Dighton, Massachusetts. The Lab is equipped with an extensive range of state of the art testing and data acquisition equipment. Primary fields of testing follow:



Physical Properties

Physical property tests measure the strength and quality of materials and include tensile strength, elongation and modulus. Tests are performed on unaged and aged insulation and jacket materials in accordance with numerous industry standards. The Laboratory is equipped with computer controlled tensile testers that use extensometers to measure elongation. Test equipment includes:

- Instron 4465 Tensile Tester with 5kN load frame with 500N tensile/compression load cell and extensometer.
- Instron 4465 Tensile Tester with 5kN load frame with 5kN tensile/compression load cell
- Instron 4481 Tensile Tester with 50kN load frame with 50kN tensile/compression load cell
- MTS 5kN Tensile Tester with load frame with 125N and 1250N load cells and extensometer

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Thermal Aging

Thermal (elevated temperature) aging is recognized as a major cause of electrical insulation failure. Thermal endurance relates to the rate at which important properties deteriorate as a function of temperature and time and is determined by accelerated testing. Accelerated aging tests are generally performed using mechanical convection air ovens. However, environmental chambers and furnaces are also used in specialized areas. The Draka Cableteq USA Test Laboratory has the following equipment:

Circulating Air Ovens

- Eight Blue M ovens with 0.1m³ volume
- Four Blue M ovens with 0.2m³ volume
- Two Blue M ovens with 0.3m³ volume
- One Blue M oven with 0.7m³ volume

Environmental Chambers

- Cincinnati Sub-Zero Walk-in -67 to 85°C, 2.4m wide, 2.4m deep, 2.4m high,
- Cincinnati Sub-Zero -70 to 190°C, Relative Humidity, 1.0m wide, 1.0m deep, 1.0m high
- Despach -29 to 177°C, Relative Humidity, 0.8m wide, 0.7m deep, 0.8m high,
- Thermotron -70 to 190°C, Relative Humidity, 0.6m wide, 0.6m deep, 0.6m high
- Despach -73 to 177°C, 0.5m wide, 0.6m deep, 0.6m high

Box Furnace – Ambient to 1200°C, 0.4m wide, 0.4m deep, 0.4m high
Tube Furnace – Ambient to 1100°C
Gas Horizontal Channel Furnace

Low Temperature

The flexibility of wire and cable generally decreases as temperature decreases due to the changing elastic characteristics of insulating and jacketing materials incorporated in constructions. Test equipment used in the Laboratory to evaluate the mechanical behavior of cables and cable components at low temperatures down to -70^{0}C include the following:

- Environmental Chambers
- Brittleness Tester
- Impact Testers
- Twisting Endurance Testers
- Bending Endurance Testers
- Flexibility Tester

Electrical

The Laboratory is well equipped to evaluate the electrical characteristics of wire and cable manufactured by all Draka USA companies. This includes performance of long-term tests under temperature extremes, both in air and in water. The Laboratory also performs extended voltage aging tests (up to 2 years in duration) under various levels of stress. Electrical test capabilities include:

- Dielectric Voltage Withstand AC up to 75kV and DC up to 30kV (300 kV capability available in the factory)
- Insulation Resistance
- DC Resistance - Resolution to 1 nano ohm using Buster 2304 DC resistance test set with 2382 temperature controlled clamp set.
- Capacitance
- Impedance
- Inductance
- Partial Discharge
- Attenuation
- Crosstalk
- Transfer Impedance
- Current Overload – Up to 700 amperes AC

Fiber Optic

The Laboratory has state of the art optical test and data acquisition equipment. Cables incorporating single and multimode fibers can be evaluated in accordance with Telcordia and EIA/TIA standards, Milspec, RUS and numerous other standards. Up to 18 fibers can be monitored under test while cables are subjected to environmental and mechanical stresses. Laboratory fiber optic equipment includes the following:

- Fotec 18 Channel Multimode Optical Transmittance Measurement System
- Exfo 17 Channel Multimode / Singlemode Optical Transmittance Measurement System
- Exfo Optical Time Domain Reflectometer for Multimode and Single Mode Fiber
- Photon Kinetics Fiber Analysis System to perform swept attenuation

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Fire Safety

The Laboratory is equipped with a flame chamber for performing vertical tray flame tests, fume hoods for performing small scale flame tests, and a sealed chamber to perform smoke generation and toxicity tests

Fire Safety tests performed by the Lab include:

- 70,000 Btu Vertical Tray Flame Tests Performed: UL 1581, UL 1685, CSA FT4, IEEE 383, IEEE 1202
- 210,000 Btu Vertical Tray Flame Tests Performed: ICEA T-29-520
- 500 Watt Vertical Flame Performed: UL VW1, CSA FT1, ICEA
- 500 Watt Horizontal Flame Performed: UL Horizontal Test, CSA FT1
- MSHA Flame Test
- Mil-DTL-24643 Gas Flame Test
- ASTM D2863 Oxygen Index Test
- IEEE 1717 Circuit Integrity test
- Smoke Generation Tests Performed: ASTM E662, NES 711 Smoke Index, BSS 7238
- Toxicity Tests Performed: NES 713 Toxicity Index, BSS 7239 Toxic Gas Generation
- Acid Gas Tests Performed: Mil-DTL-24643, Burn and Roe, IEC 754-1

Ozone Resistance

Ozone in concentrations as low 0.5 parts per million can attack vulcanized rubber and cause cracks when stressed. To evaluate the ozone resistance of insulation and jacket materials the laboratory is equipped with an ozone chamber capable of conditioning materials between 0.5 and 300 parts per million. Ozone resistance tests are performed in accordance ASTM, Milspec, and ICEA Standards.

Hydrostatic Pressure

To perform water penetration and pressure cycling tests the Laboratory has several pressure vessels with capabilities up to 10.3 MPa. MIL-S-24235 stuffing tubes and packing assemblies are maintained to cover a broad range of cable diameters. Test equipment includes:

- Hydrostatic Chambers
  - 1.5 meters Long by 0.8 meters in Diameter, Rated up to 7.6 MPa.
  - 1.5 meters Long by 0.2 meters in Diameter, Rated up to 6.9 MPa.
  - 3 meters Long by 0.1 meters in Diameter, Rated up to 10.3 MPa.

Mechanical

Performance and durability of wire and cable products depend upon physical integrity. The Laboratory has numerous capabilities for determining the physical and mechanical stress limits of cables and cable components. These capabilities include but are not limited to the following:

- Tensile Strength Testers
- Impact Testers
- Twisting Endurance Testers
- Bending Endurance Testers
- Abrasion Testers
- Power Track Apparatus
- Reeling Tester
- Flexibility Tester

Test Reports

The Laboratory generates informative and thoroughly documented test reports. These include routine factory acceptance and qualification reports to government, commercial, institutional and international standards.

About US

Draka Cableteq USA is a member of the Draka family of wire and cable companies owned by Draka Holding N.V., based in Amsterdam, the Netherlands. Draka Cableteq USA is the name given to the recently combined BIW Cable Systems, Inc. (based in Massachusetts, established in 1905) and Tamaqua Cable Products, Corp. (based in Pennsylvania, established 1969). As a member of the Draka family, we have global resources to offer all of our customers.

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