



# UL Medium Voltage Cable Supplier Audit Program Requirements

*Medium Voltage cables, are a subset of the wire and cable industry that serves utilities, independent power producers, commercial and industrial users. The Medium Voltage Cable Supplier Audit program offers a method of validation of manufacture and testing of these cable types. UL Personnel perform audits to determine if manufacturers production locations meet the requirements of the UL LLC Medium Voltage Cable Supplier Audit Program.*

Purchasers of medium voltage cable may specify UL medium voltage cable supplier audits as part of their technical purchase specifications to manufacturers and suppliers of these cable types. The specification shall inform the supplier of the requirement to have their production locations which will be used to supply cable to the end user to be audited by UL as part of this program and if a Certificate Of Inspection is required by the purchaser as evidence of such audits. Certificates of Inspection are valid for a period of 1 year (12 Months) from issue date.

This document provides requirements applicable to the supplier audit program for medium voltage cable supplier production locations. This service is carried out under the terms of the Medium Voltage Cable Supplier Audit Program (MVCSA) Service terms found at: [www.ul.com/contracts](http://www.ul.com/contracts).

## REQUIREMENTS

### Audit Requirements

Utilities, independent power producers, commercial and industrial users of medium voltage cables may elect to specify this program as part of their specifications or purchase orders to manufacturers of medium voltage cable. The manufacturer shall notify UL of the requirement to have their production locations audited. Results from the inspection are reviewed by UL Wire and Cable engineers for compliance with the audit requirements developed and maintained by UL LLC. Upon completion of the engineering review the manufacturer shall be eligible to receive a Certificate of Inspection or a non-compliance report dependent upon the results of the audit.

### Audit Frequency

Those users of medium voltage cable specifying to have UL perform supplier audits under this program are responsible for requesting Certificates of Inspection annually from their suppliers. Certificates of Inspection under this program are only valid for a period of 1 year (12 Months). UL LLC will contact the manufacturer within 3 months of the scheduled expiration of their current certificates of inspection to see if the manufacturer would like to receive an audit covering the next 1 year (12 Month) Period.

### Relevant Standards for Reference During Inspection

Under this program manufacturers locations where audits will occur are required to have copies of the most up to date versions of specific standards which the product is manufactured and tested in accordance with and are required to maintain these documents. These standards shall be made available to UL Personnel upon request.

Standards which may be referenced include, but may not be limited to, those listed.

### ASTM

- ASTM D412: Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension
- ASTM D1693: Standard Test Method for Environmental Stress-Cracking of Ethylene Plastics

**1** For more information, please contact your local UL Wire and Cable Representative



- ASTM D3349: Standard Test Method for Absorption Coefficient of Ethylene Polymer Material Pigmented with Carbon Black
- ASTM G-153: Standard Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials
- ASTM G-155: Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials
- ASTM D746: Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact
- ASTM D2275: Standard Test Method for Voltage Endurance of Solid Electrical Insulating Materials Subjected to Partial Discharges (Corona) on the Surface

## AEIC/ICEA/NEMA

- AEIC CS8: Specification for Extruded Dielectric, shielded power cables rated 5 through 46 kV
- AEIC CS9: Specification for Extruded Insulation Power Cables and their accessories rated above 46 kV through 345 kV ac
- ICEA S-108-720: Standard for Extruded Insulation Power Cables rated above 46 through 345 kV
- ICEA S-94-649: Standard for Concentric Neutral Cables rated 5 through 46 kV
- ICEA S-97-682: Standard for Utility Shielded Power Cables rated 5 through 46 kV
- ICEA T-24-380: Standard for Partial Discharge Test Procedure
- ICEA T-28-562: Test Method for Measurement of Hot Creep of Polymeric Insulations
- ICEA T-34-664: Test Method for conducting longitudinal water penetration resistance tests on longitudinal water blocked cables
- NEMA WC 74/ ICEA S-93-639: 5-46 kV Shielded power cable for use in the transmission and distribution of electric energy
- NEMA WC 53/ICEA T-27-581: Standard test methods for extruded dielectric Power, Control, Instrumentation, and portable cables for test

- NEMA WC 54/ ICEA T-26-465: Guide for frequency of sampling extruded dielectric power, control, instrumentation, and portable cables for test

## IEC

- IEC 60228: Conductors of insulated cables
- IEC 60229: Electric cables- Test on extruded oversheaths with a special protective function
- IEC 60270: High-voltage test techniques- Partial discharge measurements
- IEC 60502-1: Power cables with extruded insulation and their accessories for rated voltages from 1 kV ( $U_m = 1,2\text{kV}$ ) up to 30 kV ( $U_m=36\text{ kV}$ ) – Part 1: Cables for rated voltages of 1 kV ( $U_m = 1,2\text{ kV}$ ) and 3 kV ( $U_m = 3,6\text{ kV}$ )
- IEC 60502-2: Power cables with extruded insulation and their accessories for rated voltages from 1 kV ( $U_m = 1,2\text{kV}$ ) up to 30 kV ( $U_m=36\text{ kV}$ ) – Part 2: Cables for rated voltages of 6 kV ( $U_m = 7,2\text{ kV}$ ) up to 30 kV ( $U_m = 36\text{ kV}$ )
- IEC 60811-201: Electric and optical fibre cables – Test methods for non-metallic materials –Part 201: General tests – Measurement of insulation thickness
- IEC 60811-202: Electric and optical fibre cables – Test methods for non-metallic materials –Part 202: General tests – Measurement of thickness of non-metallic sheath
- IEC 60811-203: Electric and optical fibre cables – Test methods for non-metallic materials –Part 203: General tests – Measurement of overall dimensions
- IEC 60811-507: Electric and optical fibre cables – Test methods for non-metallic materials –Part 507: Mechanical tests – Hot set test for cross-linked materials
- IEC 60885-3: Electrical test methods for electric cables – Part 3: Test methods for partial discharge measurements on lengths of extruded power cables

**2** For more information, please contact your local UL Wire and Cable Representative



## Certificate Issuance

Production locations found to be in compliance with the audit requirements will be eligible to be issued a Certificate of Inspection.

Those locations found not to be in compliance with the audit requirements may result in the customer receiving a report of non-compliance(s). Customers may work with UL to show correction of the non-compliances or to re-schedule an audit to receive a Certificate of inspection.

## Inspection Criteria

As part of the overall audit UL Personnel may inspect for the following related to recognized standards, industry best practices, elements of ISO, industry feedback and feedback of personnel responsible for conducting audits. A comprehensive document may be obtained by request.

Production Locations are audited on the following topics:

- Incoming Material Inspection
- Incoming Material Storage
- Production Control and Monitoring
  - > In-process reel handling and maintenance
  - > In-process product handling and tracking
  - > In-process testing and verification
  - > In-process record keeping
  - > Compound handling, segregation and storage
  - > Extrusion & Curing types
  - > Extrusion alarms and extrusion production review
  - > Use of re-grind material
- Calibration of measuring and test equipment used in production inspection
- Handling and storage of production materials
- Calibration of final production testing equipment

- > Electrical Testing
- > Material Testing
- Routine Production Testing
  - > Electrical Testing
    - Partial Discharge
    - AC Withstand
    - Test Records
    - Others
  - > Material Testing
    - Test procedures
    - Environmental conditions
    - Test Records
    - Consumable materials
- Quality Management System
- Technical complaints
- Verification of production to qualified versions of the product
- Marking
- Packaging

## UL Engineering Review

UL Wire and Cable Engineering shall review the information contained in the audit report. Where there is a discrepancy or non-compliance, UL shall notify the manufacturer's representative of the non-compliance or discrepancy for further clarification or resolution prior to issuance of a non-compliance report or Certificate of Inspection.

## Records

All inspection records are stored on secured UL Databases unless otherwise indicated. Standard inspection records include the Audit Report, the resulting inspection documentation. Records are stored for a minimum of five years from the inspection.

**3** For more information, please contact your local UL Wire and Cable Representative



## Sample Certificate of Inspection



### Certificate of Inspection

#### Medium Voltage Cable Supplier Audit

**UL Certificate/Project Number:** Click or tap here to enter text.

**Issue Date:** Click or tap to enter a date.  
**Expiration Date:** Click or tap to enter a date.

**Manufacturer Name:** Click or tap here to enter text.

**Inspection Address**  
**Street:** Click or tap here to enter text.  
**City:** Click or tap here to enter text.   **State/Province:** Click or tap here to enter text.  
**Zip/Postal code:** Click or tap here to enter text.   **Country:** Click or tap here to enter text.  
**Date of Inspection:** Click or tap to enter a date.

**Inspection Report Number:** Click or tap here to enter text.

This certificate is valid for a period of 12 months (1 year) from the date of issue. This certificate only applies to the manufacturer's location listed which has been inspected by UL LLC and conforms to the requirements as provided in UL LLC Document #00-WC-P0852. A copy of the audit report may be requested from the manufacturer if it is reproduced in full.

**Remarks:**

**Signature:** \_\_\_\_\_  
Program Owner  
Paul Knapp

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**Inspection Body:**  
UL LLC  
353 Pingastan Rd., Northbrook, IL 60062, USA  
Tel. +1 847-272-6000  
www.ul.com

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This certificate is only valid for the specific manufacturer location inspected. UL has not established Follow-Up Service or other surveillance of the product. The Applicant/Manufacturer is solely and fully responsible for conformity of all products to all applicable Standard(s), specifications or requirements. The UL Mark may not be applied to any product, advertising or promotional material. Clients may provide this certificate to other parties provided reproduction is in full and does not violate UL LLC policies for use of the UL Mark.

4 For more information, please contact your local UL Wire and Cable Representative