

WIRE AND CABLE
SOLUTIONS





WHAT SETS US APART

History of Trust – UL's proud 120-year history motivates us each and every day.

Technical Know-how and Integrity – UL's services are backed by the safety science, engineering and regulatory expertise. Engineers and safety experts at UL are unbiased third-party advisors who can effectively impart UL's technical knowledge to customers, helping them improve results and build a culture of safety.

Worldwide Recognition – From 2011 to 2013, the CB certificates issued by UL ranked no. 2 out of all certificates issued worldwide*.

International Affiliations – UL's connection with highly recognized regulatory authorities and certification bodies across the globe helps us provide insightful knowledge and services to our customers.

Global Reach - Reaching beyond the widely recognized UL Mark for North America, UL offers testing and certification services for most Latin American, European and Asian countries, which enable our customers to gain unrestricted access to the global marketplace.

*Based on Statistics Released by IECEE in 2013

UL takes its dedication to safety and compliance to a new level by providing companies globally with all of their assessment and certifications needs going forward to the future.

DEDICATION



BEHIND THE MARK

It's what's behind the UL Mark that makes the difference

UL's **Compliance System** helps ensure compliance and reduces liability and risk for the entire supply chain

The **Enhanced Mark Integrity Program (eMIP)** helps manufacturers compete based on quality, reputation and service, making it more difficult for cheaters to survive.

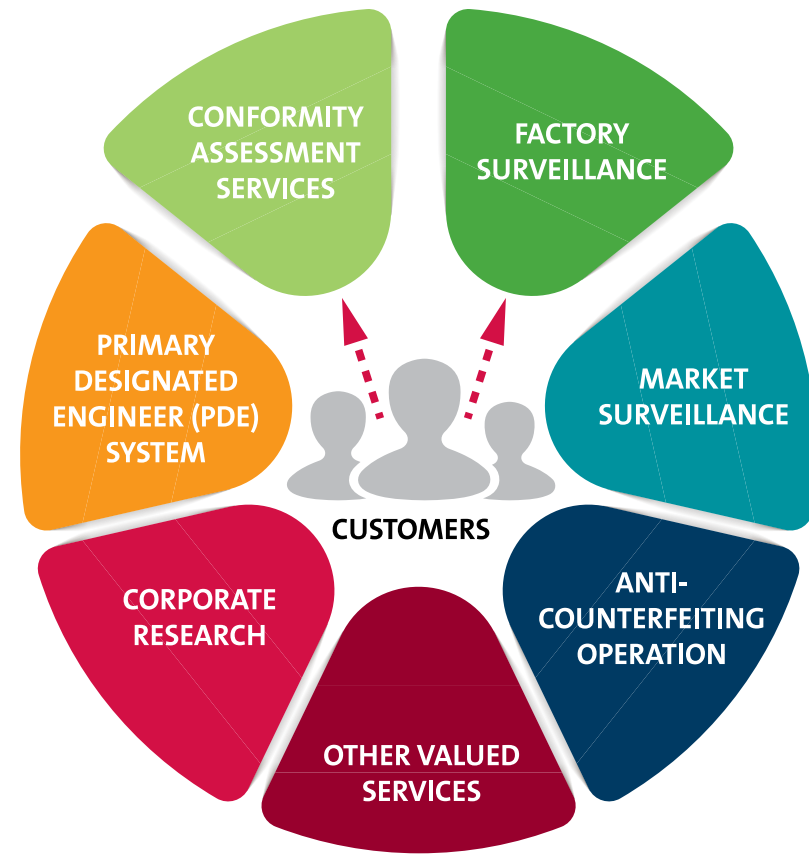
The **Thought Leadership** in both certification and standard development places UL in a unique position in the compliance arena, providing up-to date research, knowledge and expert technical solutions to customers on new and changing technologies.

Comprehensive Factory Surveillance System ensures a more compliant supply chain, fair competition in the marketplace and reduces the liability, risk and cost associated with unsafe products while protecting brand reputation.

Unmatched, Well Proven Anti-Counterfeiting Program leverages law enforcement expertise of its fully dedicated Anti-Counterfeiting Operation team and works with global customs agencies and authorities to combat counterfeiting

Aggressive Market Surveillance Program protects the integrity of the UL Mark throughout the supply chain. The holographic label system sets UL apart by establishing a unique identifier for customs, regulators, buyers, retailers, and users.

Product Promotion through UL's iQ™ Family of Databases offers an on-demand service for select product categories to link directly to our cable customers' webpages, as a company website, contact page, brochure, data sheet, or flyer through UL's iQ™ databases



Listing Service – UL tests and evaluates samples of wire or cable product to determine if it complies with UL's published standards for safety. Upon successful compliance with laboratory tests, factory will then participate in UL's Follow-Up Service.



Component Recognition Service – Intended solely for use on components of equipment that is UL Listed or Classified/Verified, component recognition evaluates components or materials for use in a complete wire or cable product. Recognized Components are subject to UL's Follow-Up Service.



Classification Service – Product evaluation and testing with respect to certain performance characteristics and a limited range of hazards, such as flammability or suitability for use under special conditions. Products covered under this service are authorized to bear the Classification Marking.



Performance Verification – Focused on evaluation of specific performance characteristics against pre-defined standards, such as transmission performance, products covered under this service are authorized to bear the Verification Marking.



UL Smart and Enhanced Marks and Badges are interchangeable

Customers can make the transition to the UL Smart and Enhanced Marks when they see value. Please visit <https://markshub.ul.com/> for more information

TYPES OF WIRE & CABLE

Appliance Wiring Material
AWM used inside enclosures or to connect components.

Building Wire
Wire and cable used to wire homes, factories, offices and other locations.

Flexible Power Cable
Flexible cord, cord sets and power supply cords.

Local Area Network (LAN) Cable
Safety, performance and quality assurance services for LAN cable products.

Optical Fiber
Fiber optic cables and accessories.

Seasonal Lighting
Decorative Lighting Strings and Decorative Outfits for Seasonal Use; Artificial Pre-Lit Christmas Trees.

Telecommunications/ Hi-Speed Digital Video Interface Cable
Electronic cable used to carry signals and data.

Wiring Harnesses
Multiple wire assembly devices.

Visit <http://industries.ul.com/wire-and-cable> for more information

MANAGING PRODUCT SAFETY AND COMPLIANCE ACROSS THE SUPPLY CHAIN



FLAMMABILITY TESTING

UL's 120-year history of being the world's leading source for fire safety research and technologies uniquely positions us to provide large and small scale flammability testing for certification to UL, domestic, international and other industry standards and requirements. Besides, a small-scale testing apparatus developed by UL also provides a cost-effective means to help predict real world risk for fire.

Examples include:

Large Scale Flame Test	NFPA 262; UL 1666; UL 1685; CSA FT4
Small Scale Flame Test	VW-1; FT1; FT2; Vertical Flame and Horizontal Flame
International Test Protocols	IEC 61034-2; IEC 60332-1-2; IEC 60332-3 Series
Cone Calorimeter	Cost-effective tool to predict NFPA 262 and UL 1666 performance

Key Benefits

- Helps you gain global market access through well-proven global programs
- Provides worldwide recognition through UL's trusted flammability testing services

SEASONAL / DECORATIVE LIGHTING

UL works with the seasonal lighting industry to ensure that products sold in the U.S. and Canada markets comply with the applicable requirements. Along with the Follow-Up program, UL conducts regular surveillance in the marketplace to help minimize the presence of noncompliant products.

Country	Mark	Standard	Service	Product
US	UL	UL 588	• Listing	• Decorative Lighting Strings
		UL Subject 2358	• Recognition	• Decorative Outfits
Canada	cUL	UL 2388	• Energy Star	• Decorative Lamps
			• Research Large Scale Flame Testing	• Electric Ornaments
			• In-House Quality Program/ Testing support	• Decorative Accessories
Mexico	NOM		• Custom Retailer Quality/ Performance Testing Protocol Development	• Artificial Pre-Lit Christmas Trees
			• Pre-Shipment Inspection Services	• Flexible Lighting Products
			Certification	• Decorative Lighting Strings
				• Decorative Outfits

Key Benefits

- Provides recognition and recommendation by US regulatory authorities
- Saves time and money by integrating UL and cUL certification requirements under UL's one-stop solution service
- Ensures compliance and reduce liability and risk to all stakeholders in the supply chain through UL's Comprehensive Mark Integrity Program
- Protects products through UL's well-proven Anti-Counterfeiting Program



COMPLIANCE



COPPER-CLAD ALUMINUM CONDUCTORS

The Recognition Program is designed for limited-power wire and cable using copper-clad aluminum conductors (0.5mA/15W maximum or 30V/15W maximum, evaluated to UL Outline SU 2880). The conductor materials evaluated under this program meet the tensile strength, elongation percentage, resistivity and copper thickness requirements of ASTM B 566, which is the standard specification for CCA wire in sizes 36 AWG – 1/0.

Key Benefits

- Offers clear differentiation in the highly competitive market
- Enhances product traceability and supports your global manufacturing and procurement footprint
- Reduces redundant testing, accelerates time-to-market, and protects company reputation
- Builds customer trust and brand equity in a sustainable way
- Protects products through UL’s valuable well-proven Anti-Counterfeiting Program
- Provides opportunity for product promotion through the new, optional features of UL’s IQ™ Family of Databases

MSHA TESTING FOR MINING CABLES

UL has been successfully evaluated by the Mine Safety and Health Administration (MSHA) to act as a third-party test lab to perform the flame testing to the Code of Federal Regulations (CFR) Title 30, Part 7:

- 7.407: Test for flame resistance of electric cables and cable splices
- 7.408: Test for flame resistance of signaling cables

Key Benefits

- Gains recognition through trusted UL’s testing service
- Provides quick test report turn-around time
- Offers option to integrate with other global testing and certification requirements in UL’s one-stop solution
- Utilizes UL’s expert test technicians and facilities and eliminates the need to maintain your own facilities

FACILITATING ACCESS TO THE GLOBAL MARKETPLACE

GLOBAL MARKET ACCESS (GMA)

This is a full service platform for global certification that integrates required testing and follow-up inspections and provides cost efficient solutions to achieve safety certification for multiple countries.

Region	Global Marks	Product Types
North America	UL Mark, cUL Mark, c/UL Mark, NOM	<ul style="list-style-type: none"> • Low voltage cables ($\leq 1000V$) • Plugs and socket-outlets
South America	UL-AR S Mark, UL-BR INMETRO Mark, ANATEL Mark	<ul style="list-style-type: none"> • Appliance couplers • Cord sets
Europe	ENEC Mark, D Mark, Nordic Certification, UL-EU Mark	<ul style="list-style-type: none"> • Interconnecting cords • Extension cords • EV Cable
Asia	CCC Mark, BSMI Mark, EAC Mark, PSE Mark, S Mark, KC Mark, SNI Mark, SIRIM Mark, Safety Mark, TISI Mark, CR Mark, ISC Mark, ISI Mark, UL-JP Mark	<ul style="list-style-type: none"> • Telecommunication Wires & Cables (Multipairs and Optical) • LAN Cables • Optical Fibers • Coaxial Cables

Many UL laboratories and UL’s subcontracted laboratories are accredited as National Certification Bodies (NCB) and CB Testing Laboratories (CBTL). Holders of CB Test Certificates and Test Reports released by UL are eligible for certification in 50 member countries under the CB Scheme.

Key Benefits

- Provides diverse knowledge of regional regulatory requirements
- Accelerates time-to-market and reduces costs
- Minimizes missteps and time lost due to rework
- Optimizes process flow and procedures for follow-up factory inspection



VERIFYING PERFORMANCE

UL's Performance Verification services and its associated Certification Mark allows manufacturers to demonstrate that their cable and/or cabling products are certified for safety and comply with industry performance standards. Products such as fiber optic connectors, patchcords, and LAN cables can be tested to common published specifications such as Telcordia, ANSI/TIA, NEMA, EN, IEC or custom specifications. UL will test the submitted product and issue a letter report upon project completion.

With 4K display technology becoming widely accepted in the marketplace, UL has developed its first performance Certification program for high speed 4K cable (10.2 Gbps & 18 Gbps) that integrate comprehensive follow-up and market surveillance program with a view to ensure the cable can deliver the transmission performance indicated on its packaging.

Key Benefits

- Includes Online Certifications Directory listing – referenced by distributors, LAN system designers, installers and the regulatory community
- Offers clear differentiation in the highly competitive market
- Provides technical expertise and guidance
- Gains global Mark acceptance and recognition
- Ensures compliance and reduce liability and risk in the supply chain through UL's Comprehensive Mark Integrity Program
- Builds customer trust and brand equity in a sustainable way
- Protects products through our well-proven Anti-Counterfeiting Program

EVALUATING ENVIRONMENTAL IMPACT



ENVIRONMENTAL PRODUCT DECLARATIONS

Environmental Product Declaration (EPD) is an internationally-accepted, published report detailing the ways in which a product—throughout its lifecycle—affects the environment. EPDs enable you to compare environmental impacts of like products, and they help architects, designers, specifiers and purchasers better understand a product's sustainable qualities and environmental impacts. Environmental Product Declarations (EPDs) certified by UL enable manufacturers to disclose product impacts in a credible, streamlined and universally understood manner.

Key Benefits

- Gain confidence of manufacturers' lifecycle assessment through UL's trusted EPDs service
- Caters to the US and Europe's policy requirement for "green" government and commercial procurement policies
- Empowers both manufacturers and purchasers to transform environmental stewardship into market leadership
- Drives manufacturers to create better products in a more environmentally responsible way and enables customers to make smarter, more environmentally preferable purchasing decisions

CERTIFICATION FOR COMBUSTION CORROSIVITY PROPERTIES, HALOGEN-FREE MATERIALS & LOW SMOKE HALOGEN FREE "LSHF" CABLE

UL offers a recognition program specifically for wire and cable materials based on the IEC 60754 series of standards for gases that develop during combustion of materials from cables. The program evaluates two parts: Determination of the halogen acid gas content and determination of acidity (by pH measurement) and conductivity.

UL also has another material recognition program specifically for wire and cable materials based on the IEC 62821 series of standards (Part 1: General Requirement & Part 2: Test Methods). Materials evaluated to the above standard would be authorized to allow the Halogen Free or "HF" designation for materials used in wire and cable constructions.

Besides, a finished cable certification program is developed based on the IEC 62821 series of standards (Part 3: Flexible cables (cords)). Cables evaluated to this standard would be authorized to allow the Low Smoke Halogen Free or "LSHF" surface mark.

Key Benefits

- Eliminates repetitive lot testing
- Ensures consistency within the industry with globally recognized standard / test methods
- Creates level playing field across industry
- Includes Online Certifications Directory listing – referenced by cable and end-use product manufacturers and designers
- Offers an opportunity for product promotion through the new, optional features of UL's iQ™ Family of Databases



GAIN VISIBILITY INTO PRODUCT PERFORMANCE REQUIREMENTS IN EARLY STAGE



PRE-CERTIFICATION EVALUATION

The Pre-Certification Evaluation program is designed to help prepare for the formal product certification process for any of the Wire & Cable services offered by UL. As part of the deliverables for this service, UL will provide a test program, sample requirements, expected turnaround time to certify product, and a quote to conduct the testing. The program allows high flexibility to conduct Research & Development, and product manufacturing for submittal to UL on one's own timeline.

Key Benefits

- Accelerates time-to-market and saves money by reducing rework and additional testing and avoiding delays due to communication down time
- Provides clearly defined project scope prior to the main certification process which also help provide accurate certification quote
- Provides information about applicable requirements so you can incorporate them into product development early
- Helps identify and address potential non-compliant issues that can delay product launches
- Gains additional visibility into the certification process timeline
- Higher flexibility to schedule sample production in order to minimize disruptions to manufacturing operations
- Certification questions are answered ahead of the main certification process
- Includes credit of Pre-Certification project costs toward the overall product certification cost
- Early engagement with responsible UL engineer builds a strong working relationship at an early stage

RESEARCH TESTING

Research Testing helps clients build compliance into their products from the start by involving UL in the pre-production development phase, enabling a decreased product-to-market cycle. Targeted testing based on investigation needs helps identify the compatibility of insulation/jacketing materials before cables go into production. Certain research test data may also be eligible for a subsequent UL Certification project.

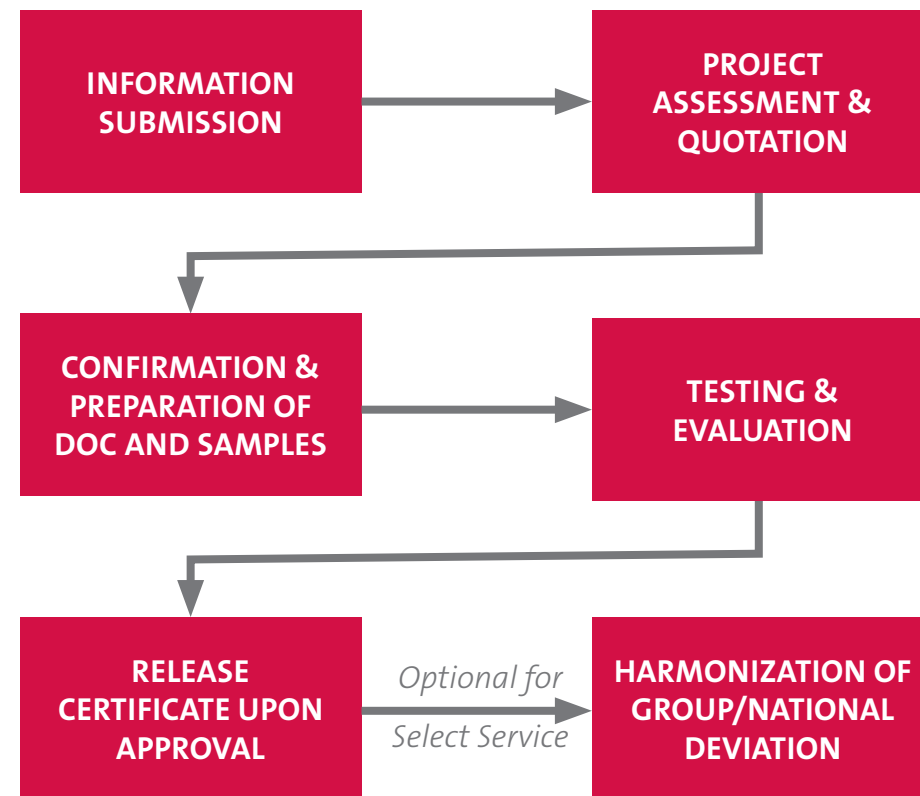
Research testing is applicable to copper and optical-fiber products and comprised of any test from the portfolio of UL's Wire and Cable standards, as well as tests from various national and international requirements.

Key Benefits

- Discovers material weaknesses and advantages at an early stage in the product development process
- Performs only those tests that are critical to client's research
- Understands UL testing requirements at an early stage for adaptation to product development accordingly
- Acquires knowledge that may be vital to the development of new products
- Obtains a UL Letter Report upon completion of Research Testing, which contains data which may be applied later during the UL Certification process



WORK FLOW FOR APPLICATION



USEFUL RESOURCES

iQ™ database (<http://iq.ul.com>)

The iQ™ family of databases is a suite of relational databases that enables users to search for UL Certified Components (e.g. Power Supply Cord, Flexible Cord, Appliance Wiring Material) and view important safety Certification information.

Online Certification Directory (www.ul.com/database)

Online Directory used by customers globally for verification of a UL Certification, Classification, or Recognition; UL Listed product use, UL Recognized component use; and product safety standard. The products listed there are viewed by brand owners, retailers and end-use product manufacturers around the world, helping cable and conductor material manufacturers extend their marketing reach.

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Please visit www.ul.com/contactus for office addresses of Wire and Cable division, telephone number, and email address for customer service.

