UL FUStart

Preparing for Your Field Engineering Services Inspections

11/17/2017

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In a hurry?

If you don't have time to review the entire FUStart tool today, please click on the links below for information on some of the key elements of UL's Field Engineering Services program:

- Obtaining UL Certification Marks
- Scheduling an Initial Production Inspection visit
- Follow-Up Service website which contains information about:
  - UL Mark surveillance requirements
  - Traceability guidelines
  - Variation Notices information
  - Calibration information
- Contacting your local Field Services office
- Contacting UL's Customer Service team

UL recommends that you review and share the entire FUStart presentation with your company for complete information about preparing for UL's Field Engineering Services inspections

Section 1: About FUStart

FUStart is a resource for manufacturers to help them prepare for UL's Field Engineering Services program.

This resource will:

- Introduce you to UL's Field Engineering Services program
- Prepare you for your first Field Engineering Services inspection
- Help you understand your role and responsibilities regarding Field Engineering Services

About FUStart

FUStart provides information to customers involved in the production of UL Listed, Classified, Recognized or Unrecognized products. While FUStart gives an introduction to important topics, additional information can be obtained from the Field Engineer assigned to the account

How you benefit

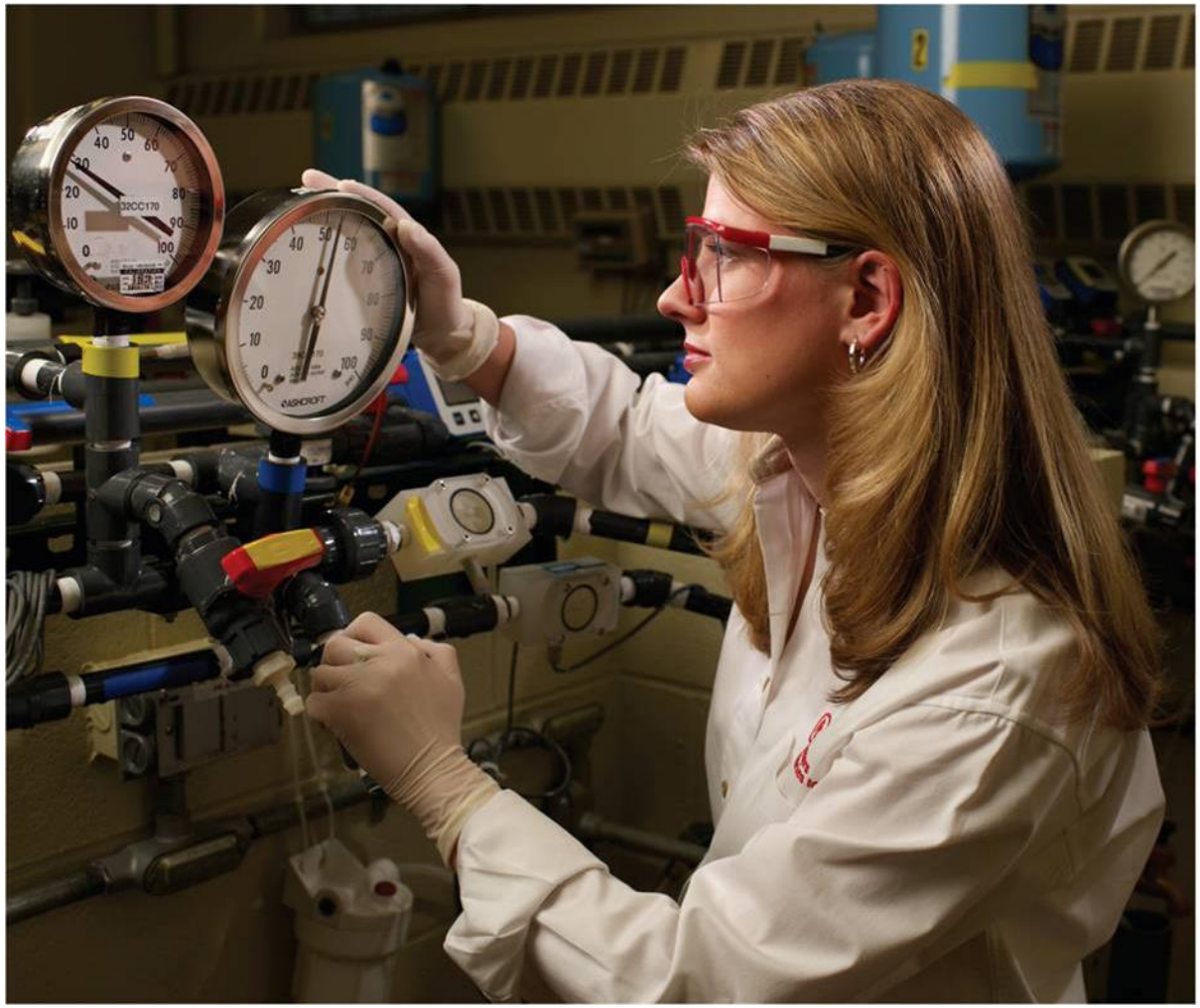
- You'll be able to plan your production and documentation needs by knowing UL's policies and the requirements of the Field Engineering Services program
- Knowing the required traceability, marking, testing and other requirements will allow you to incorporate these in your factory's manufacturing process controls and quality management system. Knowing and addressing these requirements will speed up the inspection and instill confidence in your factory's ability to produce compliant products
- This, in turn, will help you avoid unnecessary delays in your use of UL Marks

What you'll be able to do after this session

- Understand the role of Field Engineering Services in the certification process
- Understand what takes place during a Field Engineering Services inspection

Section 2: About UL

- About UL
- The UL Certification Process



About UL

- Underwriters Laboratories is an independent product safety testing and certification organization working for public safety since 1894
- Each year, more than 20 billion UL Marks are applied to products worldwide
- Since its founding, UL has held the reputation as the undisputed leader in product safety and certification
- Today, UL gives customers, regulators, retailers and consumers peace of mind about the products they use

See About UL for more information

The UL Certification Process

Product submittal

- Applicant sends the product to UL for initial assessment

Product investigation

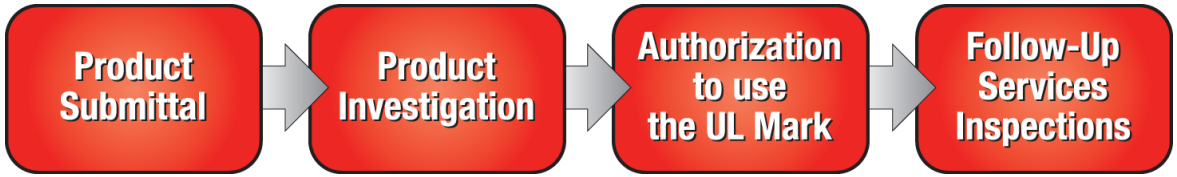
- UL engineers thoroughly test and inspect the product to determine compliance with requirements

Authorization to use the UL Mark

- Once compliance is determined, Applicant is authorized to use the UL Mark at agreed upon manufacturing locations

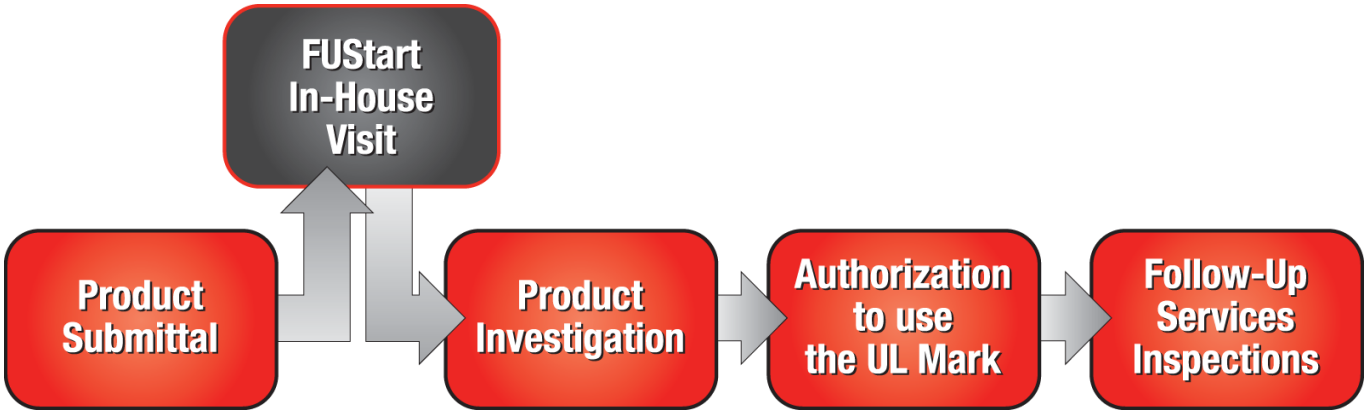
Field Engineering Services inspections

- Throughout the lifetime of the UL certification, products undergo regular inspections at the manufacturing facility to verify continued compliance with requirements



The UL Certification Process

The optimum time to review FUStart and consider an in-house customer assistance visit is between the product submittal and the product investigation



Section 3: Field Engineering Services Details

- Field Engineering Services Overview
- UL Agreements
- Types of UL Field Engineering Services
- Frequency of UL Follow-Up Inspections
- Responsibilities of UL Field Engineers
- Responsibilities of a Manufacturer Producing UL Certified Products

Field Engineering Services Overview

- A required program designed to verify that the manufacturer continues to produce UL Certified products in compliance with UL requirements
- Takes place through inspections/audits of locations where UL Certified products are manufactured
- Inspections are conducted by UL Field Engineers at a frequency appropriate for the UL Certified product or system
  - Normally inspections are unannounced
  - During each factory visit, a UL Field Engineer is looking for products with a UL Mark. However, there may be occasions when no UL Marks are being used when a UL Field Engineer is present. In these cases, a UL Field Engineer will conduct a Production Ready Visit
- Occasionally, UL may select samples from the factory, the open market or elsewhere for further determination of compliance

UL Agreement

Mark Integrity – UL Mark Surveillance requirements

- UL defines responsibilities, duties and requirements for both manufacturers and UL Field Engineers involved with Field Engineering Services inspection programs associated with UL/C-UL/ULC Mark product certification programs

Global Services Agreement

- Sets the service terms and conditions for the specific services requested and provided to UL customers. These include, but are not limited to:
  - Controlling the use of the UL Certification Mark
  - Follow-Up Service inspections
  - Unannounced inspections
  - Confidentiality
  - Sample selection

See Program Responsibilities, UL contracts, or visit the Follow-Up Service webpage for more information about UL Mark Surveillance requirements.

Types of UL Field Engineering Services

Type L

- Primarily intended for life safety products and products where the manufacturing process is susceptible to higher degrees of variability
- Visits are scheduled as unannounced inspections based on the number of UL Marks actually used by the manufacturer
- Typically, manufacturers purchase UL Marks on labels from UL or an Authorized Label Supplier
- Also referred to as “Label Service”

See Authorized Label Suppliers for more information

Types of UL Field Engineering Services

Type R

- Primarily intended for electrical appliances, components and other products
- Visits will normally be unannounced and usually at least four times per year
- Manufacturers may produce their own UL Marks using artwork approved by UL, or outsource the printing of UL Marks using an Authorized Label Supplier
- UL certification marking can be applied using several methods, depending on the category. Examples include adhesive label or through a molding, stamping, etching or silk-screening process

Types of UL Field Engineering Services

Initial Production Inspection

- Coincides with the first production run of UL Certified products
- Conducted whenever a new factory is added
- When UL LLC CB staff determines that it is necessary to assess the actual production of the Certified product before marked products can be shipped from the factory.
- Verifies that a manufacturer of a UL Certified product is producing the product in accordance with the requirements of the Follow-Up Services Procedure
- When an IPI is required, but there is no production, a successful PPV visit will satisfy the requirement for an IPI.
- Very similar to other inspections, except that it's scheduled with the customer
- If the product complies with the requirements described in the Follow-Up Services Procedure, a UL Field Engineer may release labels for use on subsequent production

Types of UL Field Engineering Services

Critical notes

- Products should not be shipped with the UL Mark until the Initial Product Inspection has been completed and UL has found that representative products at the factory comply with the Follow-Up Service Procedure and associated documents
- If an Initial Product Inspection is required, a UL Field Engineer will visit the factory in approximately two months if no prior inspection has been scheduled. This visit is required to verify control of the UL certification Mark
- Following an Initial Product Inspection, regular inspections will take place. If no UL Marks are being applied to products, a UL Field Engineer will perform Production-Ready Visit

Types of UL Field Engineering Services

Production-Ready Visits – May occur when there are no products available for a complete inspection that bear the UL Mark or are intending to bear the UL Mark

During the Production-Ready Visit UL will:

- Determine / validate when UL Mark product was last produced
- Review future production plans including orders, schedules, production records, forecasts
- Follow-up on open VNs if applicable

At the customer's request UL may determine production readiness by reviewing such items as:

- Follow-up Procedure
- Testing capability
- Test equipment
- Traceability of components and subassemblies.
- UL Mark control

Types of UL Field Engineering Services

Split inspections

- Inspections to verify compliance of components, materials or testing for products assembled in stages at multiple manufacturing locations
  - Example: An appliance manufacturer with multiple locations consolidates the manufacture of printed wiring boards at a single location. The completed boards will be inspected by a UL Field Engineer only at the factory location where they were built

Frequency of UL Follow-Up Inspections

Frequency of inspections varies depending upon the product, production volume (for some products), and the manufacturer's ability to manufacture products in accordance with requirements

Responsibilities of UL Field Engineers

A UL Field Engineer is responsible for performing each element of the inspection to verify manufacturers compliance with UL requirements. At the end of the inspection, a UL Field Engineer will issue an Inspection Report to document the inspection and identify the models inspected. If necessary, a Variation Notice will be issued to document and communicate any nonconformances identified during the inspection

There is more information about Inspection Reports on p/28 and Variation Notices on p/29

Responsibilities of UL Field Engineers

A UL Field Engineer also:

- Determines product compliance using the Follow-Up Services Procedure during inspections
- Documents the type of product reviewed during an inspection
- Verifies manufacturer's control of UL Certification Marks
- Verifies manufacturer's compliance with factory test programs
- Documents non-conformances
- Works with manufacturer when corrective action is needed to address non-conformances
- Selects follow-up testing samples and provides mailing instructions to the manufacturer when instructed by the Follow-Up Services Procedure

Responsibilities of a Manufacturer Producing UL Certified Products

Control of UL Certification Marks

- Determine that only products fully meeting all UL requirements carry UL Marks
- Maintain traceability of components and materials required by the Follow-Up Service Procedure
- Assure no references are made to UL Certification for products that are not authorized or do not fully comply with UL requirements, including:
  - All advertising materials (click here for additional guidelines)
  - All electronic references, e.g., Web sites, e-mail, etc.
  - All promotional and trade show products
- Grant immediate access to the UL Field Engineer
- Initiate corrective action on non-conformances
- Maintain a hardcopy or have access to current inspection documents at UL.com MyHome.
- Apply UL Certification Marks only at locations authorized by UL

Additional information on UL Mark Surveillance requirements can be found here

Responsibilities of a Manufacturer Producing UL Certified Products

Test records for most required tests, conducted by the manufacturer on UL Certified products, need to be retained for specified periods of time to confirm:

- Calibration of testing and measuring equipment
- Methods of testing
- Frequency and date of testing
- Disposition or corrective action for testing failures

Section 4: Field Engineering Services Tools

- Follow-Up Services Procedure
- Inspection Report
- Variation Notice
- Sample Tag
- MyHome @UL

Field Engineering Services Tools

Follow-Up Services Procedure Overview

- Describes the authorized construction of a product after successful UL product evaluation
  - Products that meet the requirements outlined in the Follow-Up Services Procedure are eligible to carry a specified UL Mark, which is the only way to identify a UL Certified product
- Contains requirements used by the manufacturer and a UL Field Engineer to assess ongoing compliance with UL requirements
- Sent to the manufacturer before the first Field Engineering Services inspection or Initial Production Inspection
- Applicant and manufacturer must understand the purpose of the Follow-Up Services Procedure, its requirements and the accuracy of contents
- The Follow-Up Service Procedure and subsequent revisions must be reviewed by the applicant for typos and accuracy
- **Questions?** Contact the individual issuing the Follow-Up Services Procedure or the local Field Services office responsible for your factory location

Field Engineering Services Tools

Follow-Up Services Procedure Key elements

- Authorization Page: Identifies the manufacturing facilities authorized by UL to apply UL Marks to products complying with UL requirements
- Listing Mark Data Page: Identifies the UL Certified Mark elements (similar pages exist for Recognized Components and Classified products)
- Appendix: Contains instructions for the manufacturer and a UL Field Engineer, outlining responsibilities and tests for UL Certified products. Also describes tests required on Follow-Up Service samples forwarded to UL's facilities
- Follow-Up Inspection Instructions: Contains specific instructions and responsibilities applicable to UL's Field Engineering Services program. These instructions are the same for all manufacturers within a particular product category
- Section General: Contains instructions, construction details and marking information related to multiple products
- Procedure Sections: Normally numbered numerically, describing the product(s) evaluated by UL

Field Engineering Services Tools

Follow-Up Services Procedure Recommendations

- Carefully review the contents of the Follow-Up Services Procedure and any new or revised pages as soon as they become available
  - Not doing so could cause delays in authorizing use of UL Marks on products
- Keep the Follow-Up Services Procedure in good condition, readily accessible and up-to-date as revised or additional pages become available
  - It is the manufacturer's responsibility to maintain the Follow-Up Services Procedure
  - Maintaining an up-to-date Follow-Up Services Procedure will help avoid nonconformance's that lead to additional expenses and increased inspection time

For 24x7 access to a current version of your Follow-Up Services Procedure and other documents, please establish a free account on MyHome @UL

Field Engineering Services Tools

Inspection Report

- Inspection Reports are used by UL Field Engineers to document in-factory inspections
- An Inspection Report identifies:
  - Basic information about the visit, name of the UL Field Engineer, manufacturer's name, location, factory representative, etc.
  - The type of visit (regular inspection, Initial Production Inspection or special inspection)
  - All models examined during the visit
  - Information about any product samples that need to be sent to a UL testing laboratory for additional Follow-Up testing
- Manufacturers always receive a copy of the inspection report via email

Field Engineering Services Tools

Variation Notice

- A Variation Notice (VN) is a document issued by a UL Field Engineer when conducting product inspections to record any non-conformances with the requirements. A product inspection will typically include a review of these aspects of production process:
  - Test equipment calibration
  - Manufacturer's tests
  - Document control
  - Components and materials
  - Product construction
  - Markings and manuals
  - Traceability
- A Variation Notice is also issued to record any situation when a misuse of the UL Mark is involved

Field Engineering Services Tools

- **Resolving a VN:** When a Variation Notice is issued, the manufacturer has three options for handling non-conforming UL Marked products:
  - Bring products into compliance with the Follow-up Services Procedure
  - Remove or obliterate any markings on the product referring to UL
  - Scrap the products that are not in compliance with UL Requirements
- **Alternate Construction Evaluation:** If the Field Engineer provided a VN disposition of *"Alternate Construction – Please contact UL to submit the alternate construction for evaluation"* and you wish to continue production with the alternate construction you must contact UL Customer Service and submit the variation as an alternate construction. This action requires involvement of the Applicant. If you choose to ship product during the review period you do so at your own risk.
- **Maintaining Compliance and Corrective Action:** It is the manufacturer's responsibility to maintain compliance to UL requirements. In order to prevent future non-conformances, the manufacturer should perform a root cause analysis and create a corrective action plan. Training is available here. See the *"Variation Notices and Corrective Action"* document on the Follow-Up Service webpage for more information.
- **VN Follow-up:** The UL Field Engineer will follow-up on all Variation items to verify that the disposition was followed and variation resolved.

Field Engineering Services Tools

Sample Tag

- If samples are to be sent to a UL testing laboratory for Follow-Up testing, a UL Field Engineer will complete and secure a sample tag to each set of samples
- A manufacturer is responsible for seeing that the selected samples are sent to the correct UL testing laboratory in a timely manner
  - UL Field Engineer will provide mailing instructions
- The results of this testing are also used to determine continued compliance with UL's requirements

MyHome @UL

- MyHome @UL provides secure access to online tools and databases that can simplify your compliance activities. Once your account is established you will have access to UL Reports/CDA, progress on projects, Variation Notices, Inspection Reports, UL staff directory, and technical data for components such as plastics, appliance wiring material and printed circuits boards

Section 5: Key Elements of a Field Engineering Services Inspection

- Construction requirements
- Component and Material Traceability
- Required Product Line Testing
- Calibration of Testing and Measuring Equipment
- Electrical Knockout Test
- Appeals Process
- Making Changes to UL Certified Products

Key Elements of a Field Engineering Services Inspection

Construction requirements

- If products bear references to UL, the manufacturer must be able to provide verification that the product is constructed to meet Follow-Up Service Procedure requirements
- Components may be verified through UL's Component Recognition program or through other means
- Required product markings and instructions described in the Follow-Up Services Procedure must be verifiable

Key Elements of a Field Engineering Services Inspection

Component and Material Traceability Documentation

- A key element in verifying compliance with UL requirements is determining that materials and components used in UL Certified products are consistent with their descriptions in UL Follow-Up Services procedures
- It is a manufacturer's responsibility to assure that all components and materials are as described in the UL Follow-Up Services procedure and to maintain all required records so they are readily available for review by a UL Field Engineer
- During Field Engineering Services visits UL Field Engineers will verify that a manufacturer maintains traceability by one of the following methods: UL Recognized Component, fabricated parts program, processed wire program, wiring harness program, printed wiring board assemblies, high technologies equipment subassemblies, repackaged product program, split Inspection program, or document audit

See the "UL Traceability requirements" document on the Follow-Up Service webpage for more information

Key Elements of a Field Engineering Services Inspection

Required Production Line Testing

- Many products are required to have production line testing to determine compliance with applicable safety requirements
  - In these situations, manufacturers are required to perform tests and maintain test records for non-conforming test results and the disposition of non-conforming products
- In addition to the manufacturer's production line testing, Follow-Up testing at a UL test laboratory or testing witnessed by a UL Field Engineer is required for some products
  - UL Follow-Up Services Procedure describes sample requirements, test methods and acceptable criteria
  - UL Field Engineer randomly selects production or stock produced since the last product inspection for shipment by the manufacturer to a UL test laboratory

Key Elements of a Field Engineering Services Inspection

Calibration of Inspection, Measuring and Test Equipment

- All manufacturer's inspection, measuring and test equipment required as part of the Follow-Up Services Procedure or used by a UL Field Engineer during inspections at a factory must be calibrated at least annually to a traceable national standard
- Instruments used as part of processing equipment, i.e., equipment used in the manufacturing of the product, generally are not affected by this requirement unless specifically identified in the Follow-Up Services Procedure

See the "UL Calibration Requirements" document on the UL Follow-Up Service webpage for more information.

Appeals Process

If a manufacturer disagrees with UL on Field Engineering Services related matters and a satisfactory resolution cannot be reached, the manufacturer can, without prejudice, present views to supervisory levels of UL for resolution

Please contact UL's Customer Service team if you need to appeal a UL Field Engineering Services decision

Making Changes to UL Certified Products

If you need to make construction changes to your UL Certified product, please contact UL's Customer Service team to implement the changes to your Follow-Up Services Procedure

Key steps

- Submit changes for UL acceptance prior to implementing those changes on products bearing UL Marks
- UL will evaluate the changes and, if acceptable, issue authorization for the changes and revise the Follow-Up Services Procedure
- Revised pages for the Follow-Up Services Procedure will be sent to the manufacturer or available at MyHome@UL. The revised pages become part of the Follow-Up Services Procedure used to maintain UL Mark integrity

Section 6: UL's Certification Marks

- UL's Certification Marks
- Composition and Design of UL Marks
- Sourcing UL Marks
- Misuse of the UL Mark

UL's Certification Marks

Types of Certifications

- **Listing** – UL has determined that a product complies with UL's requirements and that the product has been manufactured under UL's Listing and Field Engineering Services program
- **Classification** – A manufacturer has demonstrated the ability to produce a product that complies with UL's requirements with respect to a specific product attribute
- **Component Recognition** – Used for parts or subassemblies intended for use in products Listed or Classified by UL

For a complete list of UL certification Marks visit UL Marks - Appearance and Significance

Composition and Design of UL Marks

The UL Marks appearing on products are composed of four key elements:

- The UL symbol
- The words “Listed” or “Classified” in capital letters, depending on the service covering the product
  - A Classification marking also includes a statement describing the scope of UL’s coverage
- Product identity or name in close proximity to the UL symbol
- A tracking number may be one of the following as described in the UL Follow-Up Service Procedure:
  - Issue number or serial number ordered through a UL Label Center
  - Alphanumeric code or File Number, assigned by UL and ordered through an Authorized Label Supplier once design is approved

Composition and Design of UL Marks

Critical notes

- Use downloadable UL Mark artwork rather than composing your own version of the UL Mark
- The Enhanced UL Mark may be available for your product. For more information, visit the Marks Hub.

See downloadable UL Mark artwork for more information

- UL may require additional information on a product that can be displayed on the same label containing the elements of the UL Mark

See marking requirements for more information

Sourcing UL Marks

Ordering UL Labels

- Type L Marks: UL Label Centers
- Type R Marks: Authorized Label Suppliers

Items to be Considered when Sourcing UL Marks

- Elements and composition
- Location and methods of application
- Is the label material rated appropriately for the conditions it will be exposed to? (temperature, type of surface, environment)
- Limit UL Mark orders (paper or hologram) to your immediate needs since the shelf life is limited to three years. After three years, UL Marks must be replaced with new stock

Critical notes

- For answers to questions about what UL Mark should appear on your product or what UL markings should appear on UL Recognized Components, contact UL's Customer Service team or UL's Label Centers

For more information about the meaning of UL Marks, please visit UL's marks and labels web site

Misuse of the UL Mark

Use of the UL Mark is a privilege available only to those complying with UL's certification requirements. If a manufacturer does not comply with UL's requirements, UL may choose to increase frequency of inspections at the manufacturing facility and return control of UL certification Marks to a UL Field Engineer.

- Normal inspection schedules will be reinstated once appropriate control of the use of UL Marks has been demonstrated to UL's satisfaction
- Any additional inspection and administrative costs associated with the monitoring and implementation of additional controls are the applicants responsibility unless arrangements have been made to invoice the manufacturer
- Future occurrences of unauthorized use of UL Marks may result in more severe actions up to withdrawal of UL certification
- If you are aware of a misuse of the UL Mark, please let us know.

Section 7: Resources

- Resources for Contacting, Training, and Working with UL
- Appendix – Glossary of Terms

Resources

UL's Field Services department offers customized on-site support and training to help you prepare for your first Field Engineering Services inspection benefits

- Prepare for Follow-Up Service inspections
- Effectively plan production to achieve compliance
- Eliminate unnecessary delays in the use of UL Marks
- Eliminate repeat inspections

Contact your closest Field Services office for a cost estimate and to schedule your on-site visit

Answers to frequently asked questions about UL, industries and services, UL Standards, How to submit products and UL Marks are available at www.ul.com

Additional Resources

UL's global Customer Service team

- This team is available to answer questions, provide information and assist customers during the certification and compliance process
- These professionals are an excellent resource for helping customers understand the compliance process, identifying project engineers and explaining additional compliance services

Contact UL's Customer Service team for more information

Additional Resources

UL Knowledge Services

- UL Knowledge Services recognizes that individuals and companies vary widely in their capabilities, learning styles and needs when it comes to how knowledge and training is best delivered. As a result, UL Knowledge Services offers an array of delivery methods and training programs that are available to participants
- UL Knowledge Services partners with customers to provide customized seminars to aid in the understanding of how to produce products in compliance with UL certification. UL Knowledge Services also provides variety of seminar topics in various locations. More specific information may be obtained from the Field Engineer assigned to the account

Contact UL Knowledge Services for more information

Additional Resources

UL certification Marks are to be placed on products only during the manufacturing process. However, UL recognizes that there are some instances in which UL Marks may be needed for products in the field. In these cases, UL offers two special field programs:

- **Field Evaluation Services -** Through Field Evaluations, UL can assess the safety compliance of installed products for acceptance by local regulatory authorities. Products are typically unCertified or have been modified significantly since certification

- **Field Inspections -** Field Inspections are reserved for recently installed UL Certified products that are missing the proper UL labels and can help you avoid costly removal and replacement of products, saving both time and money

For more information see Field Evaluation and Field Inspection

Additional Resources

Online Certifications Directory

The online version of UL's product directory containing information on all UL Certified products

Camera-ready versions of UL Marks

Find digital files of UL Marks in a variety of formats

UL Label Centers

Get answers to questions about UL labels

Secure, online access to your UL reports and procedures – please go to **http://my.home.ul.com** to request access

Appendix

Glossary of terms

Contains definitions of many of the terms used in the product certification