

Subject 764

Melville, New York
Issued: July 31, 1998

SUBJECT 764

FOLLOW-UP AND INSPECTION INSTRUCTIONS

RECOGNIZED PROCESSED WIRE

RECOGNIZED PROCESSED WIRE - RESPOOLED

(ZKLU2, ZKLU8)

FOLLOW-UP AND INSPECTION INSTRUCTIONS

TABLE OF CONTENTS

	<u>Pa</u>
<u>ge</u>	
Scope.....	1
General.....	1
Responsibilities of the Manufacturer.....	2
Responsibilities of the UL Representative.....	3
Bulletins Currently in Effect List.....	4
General Inspection Guidelines.....	4
Application of UL Mark (Label) to the Product.....	4
General.....	4
The Inspection of Processed Wire/Processed Wire-Respooled.....	5
Follow-Up Program at the Factory.....	5
General.....	5
UL Representative's Countercheck Program.....	5
Tests to be Witnessed by UL Representative at Factory-	
Table L1.....	6
Conductor Secureness.....	6
Visual Inspection.....	7

SCOPE

A. These requirements apply to both Recognized "Processed Wire" and "Processed Wire-Respooled", which are covered under the "Processed Wire" category and CCN 'ZKLU2', and to Canadian Recognized "Processed Wire" and "Processed Wire-Respooled", which are covered under the "Processed Wire" category and CCN 'ZKLU8'

The following are the relevant definitions for these inspection instructions:

PROCESSED WIRE:

This is defined as U.S. and/or Canadian Recognized Appliance Wiring Material that has been cut into certain lengths, from which the insulation may be stripped from one or both ends. The stripped ends may be soldered, or tinned, and may have simple terminals of the eyelet, ring, open spade or quick-connect type attached by crimping, soldering or welding. These lengths may be packaged for further processing. Processed wire also covers the coloring and striping of wire, cable and cord. As an example, Processed Wire may be a 5-foot length of 3-conductor Recognized Appliance Wiring Material with open spade terminals soldered onto each exposed insulated wire and coated with a yellow stripe which does not obliterate the cable manufacturer's original surface markings.

PROCESSED WIRE-RESPOOLED:

This is defined as a single, continuous length of U.S. and/or Canadian Recognized Appliance Wiring Material cut from a longer length and coiled or placed on a spool or reel. Coloring and striping is also covered.

SIMPLE TERMINALS:

This is defined as terminals of the eyelet, ring, open-spade or quick-connect type that can be crimped, soldered, or welded onto the end of a wire. The attached terminals may be either male or female, and they may either be Listed, Recognized or Unlisted.

LOT

A lot is considered to be all material of one AWG size in current production or stock using the same type of terminal end treatment.

GENERAL

B. As a part of Underwriters Laboratories Inc.'s (UL's) Follow-Up Service Inspection Program, it is required that a member of the UL staff periodically visit the factory and select, for test or examination or both, samples of the most recent production of the product covered.

C. The Follow-Up Service Procedure covering the product is loaned to the manufacturer and constitutes the basis on which the product is judged for compliance with the applicable requirements.

RESPONSIBILITIES OF THE MANUFACTURER

D. It is the manufacturer's responsibility to restrict the use of markings that reference UL (either directly by use of the name, an abbreviation of it, or the symbol, or indirectly by means of agreed upon markings that are understood to indicate acceptance by UL) to those products that are found by the manufacturer's own inspection to comply with the Follow-Up Service Procedure description. The use of such markings is further limited by the agreements that have been executed by the subscriber and UL.

E. The manufacturer shall confine the markings referencing UL as indicated in Paragraph D, to the location or locations authorized in these instructions or the Follow-Up Service Procedure.

F. During hours in which the factory is in operation, the manufacturer shall permit the UL Representative free access to any portion of the premises where the product or components thereof are being fabricated, processed, finished, or stored, and to the test area assigned for the UL Representative's use. The UL Representative shall be permitted to inspect and subject to the prescribed tests, prior to shipment, any product bearing or intended to bear markings referencing UL as indicated in Paragraph D.

G. The manufacturer shall provide, at a convenient location, all required test equipment and facilities and any required personnel for conducting all tests that are to be performed at the factory. These shall be available when needed so that the inspection work can proceed without undue delay.

H. The manufacturer shall determine that the test equipment is functioning properly and have it calibrated **annually**, or whenever it has been subject to abuse (such as being dropped or struck with an object) or its accuracy is questionable. The test equipment and instruments shall be calibrated either by the manufacturer or by an outside laboratory. In either case, they shall be calibrated by comparison with a Standard that is traceable to a National Standard. For in-house calibrations, the Standard (weight and gauge blocks) used shall be calibrated every three years, or whenever the Standard has been subjected to some form of abuse that may affect the Standard's fitness for use. The Standard shall be stored to protect it from damage or deterioration per the standard manufacturer's recommendations. Records of calibration of the test equipment and Standard shall be maintained until the next required calibration is completed and recorded. The records shall be readily available for review by a UL Representative.

I. Where so specified by these Follow-Up and Inspection Instructions, the manufacturer shall forward samples, selected by the UL Representative, to UL for Follow-Up Tests. Packaging and shipment of the samples are the responsibility of the manufacturer. The manufacturer shall forward these samples to UL within five working days of the UL Representative's inspection visit.

RESPONSIBILITIES OF THE UL REPRESENTATIVE

J. The UL Representative shall examine the construction of production bearing, or is intended to bear the UL Mark, to determine compliance with the provisions of the Follow-Up Service Procedure, and these Follow-Up and Inspection Instructions. A product which is found by the UL Representative to have features that make it unacceptable to bear a marking referencing UL shall be acceptably corrected if the marking is to be retained. The UL Representative shall carefully check subsequent production for such features until conditions are again considered normal.

K. A product that does not comply with the provisions of the Follow-Up Service Procedure and these Follow-Up and Inspection Instructions shall have each UL referencing mark removed from the product, or obliterated from the product where the marking is imprinted, die-stamped, molded, or the like. If the rejection of the product is questioned by the manufacturer, they may hold the material at the point of inspection, typically at the factory, pending an appeal. The UL Representative shall provide the name of the UL engineer to whom the appeal is to be made. Should UL grant temporary authorization for the continued use of the UL Mark, such temporary authorization shall only be for the time needed to review and/or process the Procedure revisions, or as otherwise specified to cover a particular lot or production run. The manufacturer shall satisfy the UL Representative that all marks referencing UL are removed from the rejected material. Those marks referencing UL not destroyed during their removal from the product shall be turned over to the UL Representative for destruction.

L. The UL Representative shall report to the manufacturer and Follow-Up Services Department by means of a Variation Notice (VN) if:

- a. Variations in construction are found;
- b. Nonconforming test results are witnessed during tests conducted specifically for the UL Representative;
- c. Other items not in compliance with UL requirements (e.g. calibration of equipment, access to the factory, etc.).

The UL Representative shall explain to the manufacturer that a Variation Notice is a means of communication with the manufacturer and documents those items where nonconformances with the Procedure have been found.

M. Where so specified by these Follow-Up and Inspection Instructions, the UL Representative shall forward samples to UL for Follow-Up Tests.

N. When reviewing Certificates of Calibration for test equipment, the UL Representative shall verify that the Certificate indicates that all reference standards used to calibrate the test equipment are traceable to the applicable U.S. or Foreign National Standard. A letter from the outside laboratory or from an off-site manufacturer's calibration lab stating that their lab standards are directly traceable to their country's National Standard and outlining their traceability pathway is considered adequate proof of traceability.

BULLETINS CURRENTLY IN EFFECT LIST

O. The UL Representative shall make reference to the Subject 801E "Bulletins Currently in Effect List" for this Label Account (764) and category, in order to determine which bulletin(s) in effect, if any, would supplement these Follow-Up and Inspection Instructions.

GENERAL INSPECTION GUIDELINES

APPLICATION OF UL MARK (LABEL) TO THE PRODUCT

General

L1 The UL Representative shall examine a minimum of ten coils, reels or unit containers to assure that the application of the label to the product throughout is in compliance with the requirements of Underwriters Laboratories Inc.

L2 U.S. and Canadian Recognized Processed Wire and Processed Wire-Respooled are identified by the applicable Type L labels, whose format and contents are identified in the Section General of the Follow-Up Service Procedure. The labels are applied to the attached tag, the reel, or the smallest unit container in which the product is packaged. The UL Representative shall assure that each individual tag, reel, or unit container is labeled, and not "bulk-labeled" (e.g., on an overall plastic shrink wrapping, a labeled carton containing several spools of wire, etc.). The UL Representative shall assure that the piece count for Processed Wire labels shall be equal to or greater than the number of cut lengths in the unit container.

L3 **Authorization to use the Canadian Recognized Processed Wire and Processed Wire-Respooled Marks on the product must be specified in the Follow-Up Service Procedure. In addition, these Marks will only be applied to product that is received with the UL Mark for Canada, and which contains references to Canadian Recognition Service coverage (e.g., on the original tags from the wire manufacturer, and in the surface print, if so marked).**

THE INSPECTION OF PROCESSED WIRE/PROCESSED WIRE-RESPOOLED

FOLLOW-UP PROGRAM AT THE FACTORYGeneral

L4 At each visit to the factory, the UL Representative shall see the entire lot of processed wire and/or processed wire-respooled which bears or is intended to bear the Recognition Mark, and shall then select representative samples.

L5 The UL Representative is required to inspect and report on the randomly selected samples which are considered to be representative of the factory output. These samples shall not be taken from a lot which other samples have been taken during a previous inspection, unless the lot was previously rejected, has been culled and reworked, and is being resubmitted for inspection. The actual number of coils to be taken as random samples may vary in individual cases according to conditions, but the UL Representative shall follow paragraphs L7 to L16 as closely as possible.

L6 The UL Representative shall check the construction details of the processed wire and/or processed wire-respooled with the requirements.

UL Representative's Countercheck Program

L7 At each inspection, samples of current production and/or stock shall be examined for compliance with the applicable descriptions and requirements contained in this Procedure. In making this determination, consideration shall also be given to the following general requirements applying to the products covered by this Procedure.

- a. Markings - The UL Representative shall assure that all tag markings provided by the original wire manufacturer [e.g., voltage, temperature, type, supplemental ratings ("Oil Resistance", "Sunlight Resistance", etc.), gauge, number of conductors, etc.] have been transferred onto the tags provided by the processor. This is applicable for both Processed Wire and Processed Wire-Respooled.

In addition, all original surface print markings shall remain legible after any processing operation including coloring and striping. If surface printing is being performed, the UL Representative shall assure that the new/additional surface print text applied by the processor provides the same engineering markings that were present in the wire manufacturer's original surface print text.

- b. Terminals - The simple terminals detailed in the applicable Descriptive Section of the Follow-Up Service Procedure are suitably attached to the appropriate type and size of conductor.

L8 At each inspection, representative samples of Recognized Processed Wire and/or Processed Wire-Respooled having simple terminations shall be subjected to the tests described in Table L1. For Recognized Processed Wire and/or Processed Wire-Respooled having simple terminations attached, the UL Representative will verify that the processed wire size and construction is within the wire connector's wire range.

Table L1

Tests to be Witnessed by the UL Representative at the Factory

- 1 - Detailed examination per Descriptive Section
- 2 - Conductor Secureness of Simple Terminals
- 3 - Visual Examination of Simple Terminals

Conductor Secureness Test

L9 At each inspection, representative samples of Recognized Processed Wire and/or Processed Wire-Respooled having simple terminals attached by crimping, soldering, or welding shall be subject to the Conductor Secureness Test. **Please note that all terminals (Listed, Recognized, and Unlisted) are subject to this test.**

SAMPLES

L10 Eight samples shall be randomly selected from each lot for this test. A lot is considered to be all material of one AWG size in current production or stock, using the same type terminal or end treatment.

TEST METHOD

L11 All samples shall be checked for stray strands prior to test. Terminations (including those insulated by Recognized insulating tubing which is heat-shrinkable, or secured in place by a heat-bonding process) are to be subjected to a conductor secureness (pull) test. The pull is to be applied between the conductor and its terminal. Constructions using more than one conductor in a crimp connection shall be tested by applying the pull between each conductor and the terminal. The pull shall be 8 lb. (3.6 kg) for No. 20 AWG, and smaller conductors and 20 lb. (9.1 kg) for No. 19 AWG and larger size conductors. The pull shall be applied for 1 min.

BASIS OF ACCEPTABILITY

L12 There shall be no separation of the connections or stray strands as a result of the described pull.

PROCEDURE IN THE EVENT OF NONCONFORMANCE

L13 If there are no nonconformances, accept the lot. In the case of one nonconformance, select sixteen additional samples from the lot for examination. Accept the lot if no more nonconformances are observed. Reject the lot if two or more nonconformances are observed from all samples (first and second) selected. The rejected lot may be culled or reworked and resubmitted to the UL Representative for testing.

Visual Inspection

SAMPLES AND TEST METHOD

L14 Representative samples of processed wire having simple terminals attached are to be selected at random and are to be checked for stray strands. Select four samples from each lot for examination of stray strands.

BASIS OF ACCEPTABILITY

L15 There shall be no stray strands resulting from the termination operation.

PROCEDURE IN THE EVENT OF NONCONFORMANCE

L16 If there are no nonconformances, accept the lot. In the case of one nonconformance, select sixteen additional samples from the lot for examination. Accept the lot if no more nonconformances are observed. Reject the lot if two or more nonconformances are observed from all samples (first and second) selected. The rejected lot may be culled or reworked and resubmitted to the UL Representative for testing.