

Understanding and Using the 2014 UL White Book and UL Product Spec



WHITE BOOK 2014

GUIDE INFORMATION FOR ELECTRICAL EQUIPMENT

*UL Product Categories correlated to the 2011 & 2014
National Electrical Code® (NEC®)*

Content in effect as of January 29, 2014



UL PRODUCT SPEC™

Quickly find, specify, or verify UL Certified products for your projects.

1. HOW DO YOU WANT TO SEARCH?

2. RESULTS

- > Installation Code
- > Product Type
- > Products, Systems or Assemblies
- > UL Product Category Code
- > Master Format Number

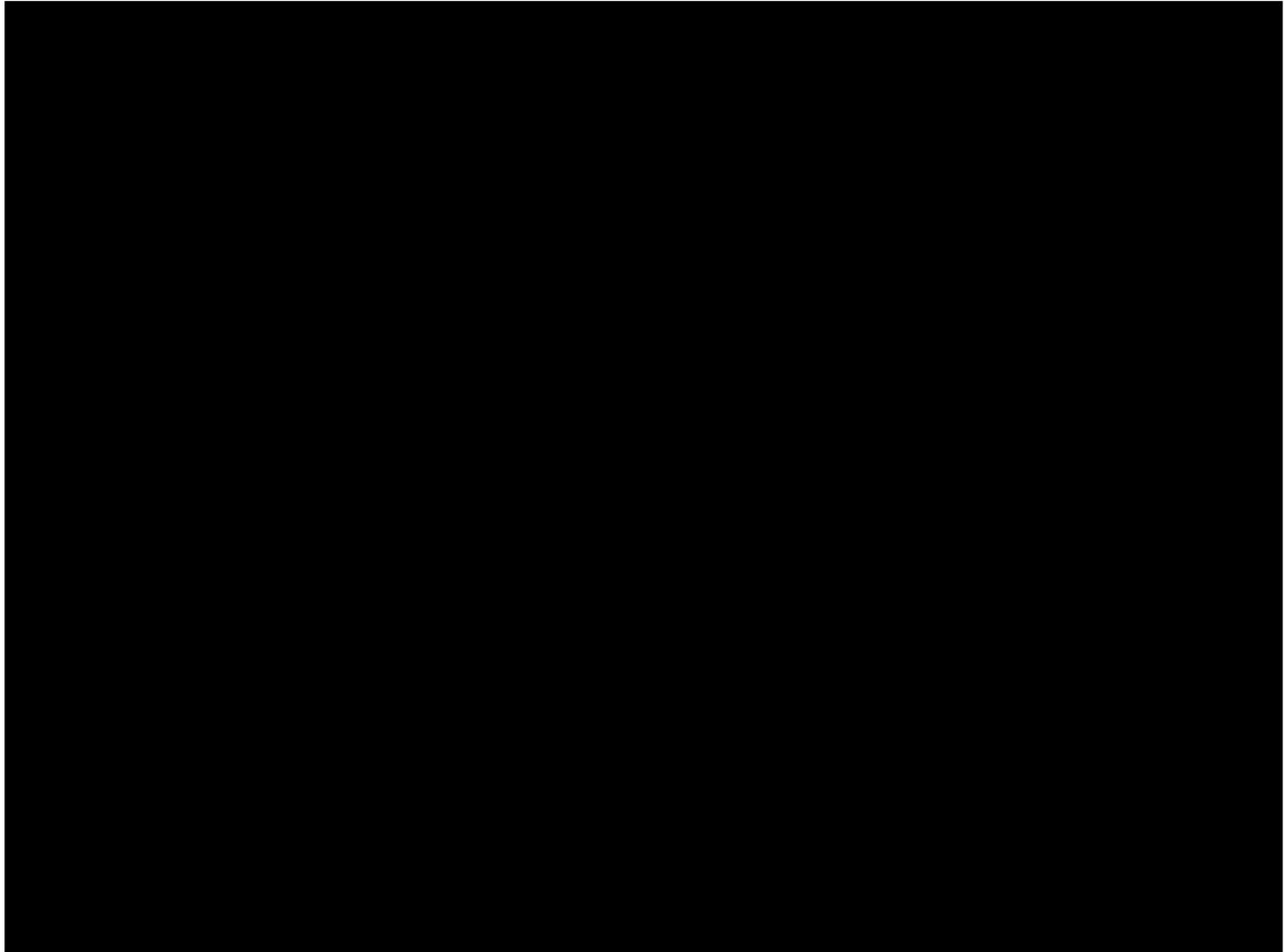


Other helpful UL resources

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Why is Using Listed Products Important?



Using Listed products helps ensure the practical safeguarding of persons and property from the hazards arising from the use of electricity. NEC 90.1



Agenda

- What is the UL White Book?
- 2014 UL White Book Useful Features
- Layout and Navigation of UL White Book
- UL Certification Marks and Policies
- The National Electrical Code (NEC) and the White Book
- How to Use UL's "White Book" to Determine compliance with the NEC
- How to Use UL Product Spec

- "Tell me and I forget.
- Teach me and I remember.
- Involve me and I learn." ~ Benjamin Franklin

What is the UL White Book?

- THE Companion Tool to the NEC

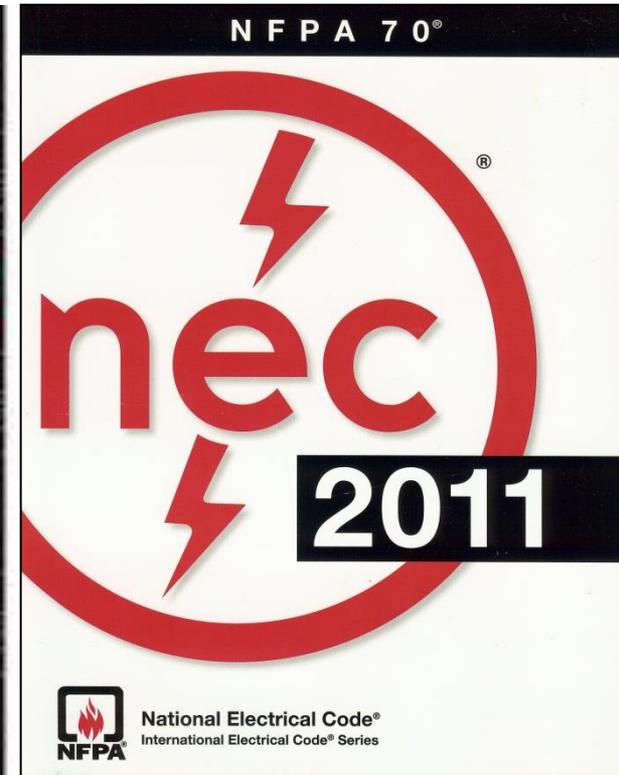


WHITE BOOK 2014

GUIDE INFORMATION FOR ELECTRICAL EQUIPMENT

*UL Product Categories correlated to the 2011 & 2014
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Useful White Book Features

- Index of Product Categories Correlated to the 2014 NEC and the 2011 NEC
- 2014 NEC Starts on Page 607
- 2011 NEC starts on Page 657

Index of UL Product Categories Correlated to the 2014 NEC 607

Index of UL Product Categories Correlated to the 2014 NEC®

The Index of UL Product Categories Correlated to the 2014 NEC is intended to act merely as a tool for the User to identify potential UL Product Category Codes and their location in this publication. Locating the Product Category Code on the pages indicated will provide the User with the UL Guide Information for the applicable Category Code. This Correlation Index may not be a comprehensive list. There may be other UL Product Categories for which Listed products are covered that may be applicable to the Code Section. The User should independently confirm the applicability of the Product Category to the Code Section and verify that no other UL Product Categories apply to the installation. The installation of products for the Categories identified in this index are subject to the approval by the Authority Having Jurisdiction (AHJ).

2014 NEC Section	UL Product Category Code	Page	2014 NEC Section	UL Product Category Code	Page
Article 110 - Requirements for Electrical Installations					
110.11	AALZ	53			
110.12(A)	QCRV	391	200.10(C)	OMTT	341
110.14	AALZ	53	200.10(C)	ONHR	341
110.14	ZMOW	600	200.10(C)	ONUZ	342
110.14	ZMVV	601	200.10(C)	OOIX	342
110.14	ZMNQ	603	Article 210 - Branch Circuits		
110.16	QGVZ	399	210.4(D)	ZODZ	604
110.26(C)	FVSR	197	210.8	DKUY	123
110.28	BGUZ	90	210.8	KCXS	260
110.28	CYV	107	210.8(A)	DKUY	123
110.29	AALZ	53	210.8(A)	KCXS	260
110.31	BGHL	89	210.8(B)	DKUY	123
110.31(A)(1)	BXUV	92	210.8(B)	KCXS	260
110.31(A)(2)	BXUV	92	210.8(C)	DKUY	123
110.31(A)(3)	GSNV	205	210.8(C)	KCXS	260
110.31(A)(4)	FVSR	197	210.8(D)	DKUY	123
110.31(D)	BGHL	89	210.8(D)	KCXS	260
110.31(D)	BGUZ	90	210.12	AWYI	75
110.33(A)(3)	FVSR	197	210.12(A)(1)	AWAH	76
110.36	CVZW	106	210.12(A)(2)	AVZQ	75
110.36	PITY	356	210.12(A)(2)	AWBZ	77
110.36	PVWV	356	210.12(A)(3)	AWBZ	77
110.36	FJAZ	357	210.12(A)(4)	AWBZ	77
110.36	PJPJ	358	210.12(A)(4)	AWCC	77
110.36	PJPP	359	210.12(A)(5)	AWBZ	77
110.36	QPOR	421	210.12(A)(6)	AWBZ	77
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110.53	FJAZ	357	210.12(B)(2)	AWBZ	77
110.53	QPMU	420	210.13	KDAX	262
110.54(A)	KDER	262	210.21(A)	ONHR	341
110.59	AALZ	53	210.21(A)	ONUZ	342
110.59	BGHL	89	210.21(B)	QLIW	414
110.59	BGUZ	90	210.21(B)	RTDV	450
110.59	CYV	107	210.21(B)	RTRT	450
			210.21(B)	RUSZ	453
Article 200 - Use and Identification of Grounded Conductors					
200.3 EXC.	QIKH	410	210.52(C)(5)	KCXS	260
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200.10(B)	AXUT	81	210.52(D)	KCXS	260
200.10(B)	AYR	82	210.52(D)	PVGT	371
200.10(B)	AYVZ	82	Article 216 - Feeders		
200.10(B)	QLHN	413	215.9	DKUY	123
200.10(B)	RTRT	450	215.10	KDAX	262
200.10(C)	OKQR	340	Article 220 - Branch-Circuit, Feeders and Service Calculations		
200.10(C)	OLRX	340	220.12 EXC.	FTRZ	192
200.10(C)	OMFV	341			

INDEX OF PRODUCT CATEGORIES CORRELATED TO THE 2014 NEC®

Useful White Book Features

- P. 33-35 Handy List of product categories for
- Over 600 V Equipment
- Alternative Energy Equipment
 - Gensets, Fuel Cells, PV, Wind Many new categories added for 2014
- LED Lighting

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Over 600 Volts Rated Equipment and Devices Category List		
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Useful White Book Features

- Practical Application of the White Book in the Field-
- Starts on page 42 in the front of the White Book

Practical Application of the White Book in the Field

Using the White Book in the field to help identify the intended use of a Listed product to assist in determining compliance with Section 110.3(B) of ANSI/NFPA 70, "National Electrical Code" (NEC®), can be accomplished by at least two methods.

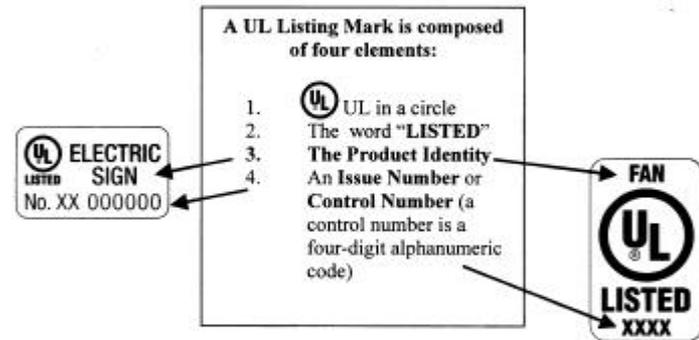
Method 1 —

If you know the Section in the 2011 or 2008 NEC® for which you are seeking to determine compliance, locate the Index of UL Product Categories Correlated to the 2011 or 2008 NEC® in the back of the White Book on page 485 for the 2011 or page 531 for the 2008 and search for the Code Section in question. The index may identify product categories applicable to the NEC® Section referenced if specific product categories exist for that Code Section. This index is a guide only and there may be other product categories for which Listed products are covered that may be applicable to the Code Section.

Method 2 —

This is a three-step process detailed below:

Step 1 - Determine the Product Identity from the UL Listing Mark.



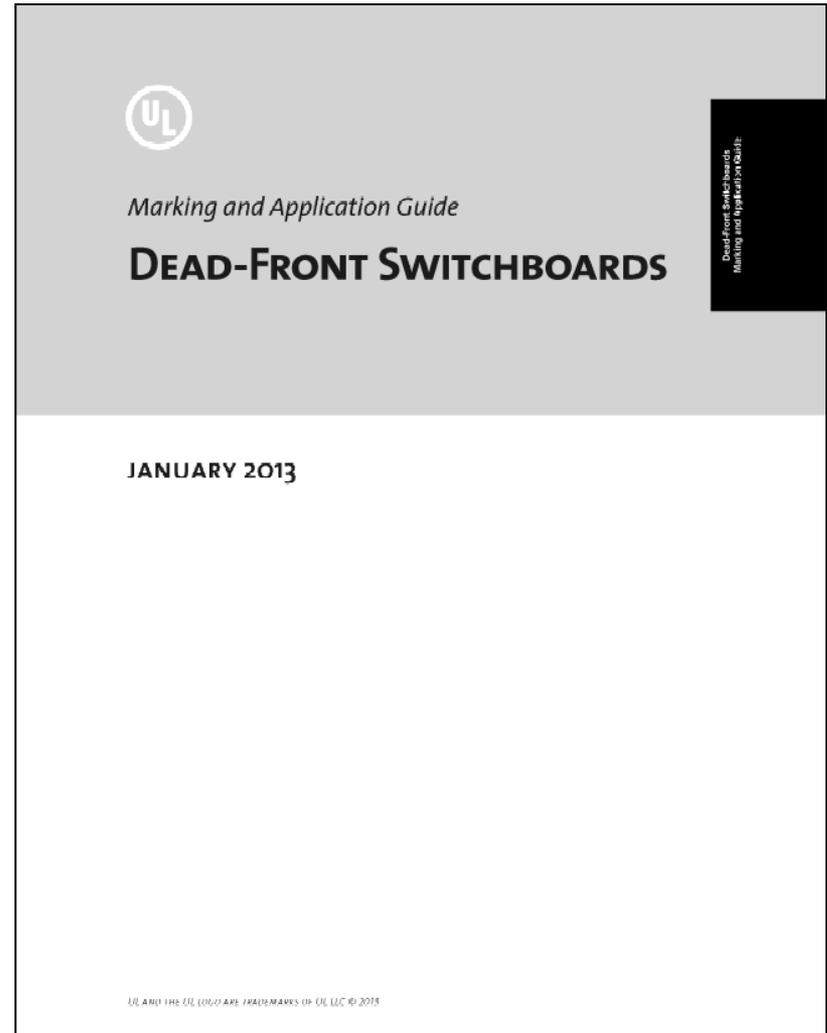
Step 2 - Locate the Product Identity in the Index of UL Product Categories and Industry Terms located in the back of the White Book in Appendix C.

Once you have located the product identity, use the Index of UL Product Categories and Industry Terms in the back of the White Book in Appendix C to find the product category. The index will identify the product category and the page number for the product category Guide Information.

INDEX OF PRODUCT CATEGORIES		275			
Page	Page	Page			
Optical Fiber Cable Verified in Accordance with National or International Specifications (QAZD)	86	Power Outlets and Power-Outlet Fittings (QFYY)	101	Shipboard Cable, Marine Classified in Accordance with International Specifications (LWMS)	104
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Optical Fiber/Communications/Signaling/Corded Cable Raceways (QAZM)	86	Power Supplies, Gas Tube Sign (Q000)	102	Field Installed Non-Outline Lighting Systems (UYAM)	105
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Useful White Book Features

- All 10 Electrical Marking and Application Guides-
- See Appendix A starting on page 711
 - Switchboards
 - Heating and Cooling
 - Luminaires
 - Circuit Breakers
 - Panelboards
 - Swimming Pool Eq and Spas
 - Wire and Cable
 - Alternative Energy
 - Lightning Protection
 - Green Construction



Layout and Navigation

- Inside Front and Back Covers
 - Contact Information for Regulatory Services- 800-595-9844
 - Contact Information for Field Evaluations-877-UL-Helps, Ext. 2
 - UL Knowledge Solutions (formerly UL University)
 - www.ulknowledgeservices.com
 - 888-503-5536

Layout and Navigation cont.

- The Table of Contents
 - Straight Forward
 - Everything an electrician or electrical inspector needs

Layout and Navigation cont.

UL Product Categories by Category Code

Product Category Guide Information organized alphabetically by Category Code

Category Code is four digit alpha code after each product category title

Layout and Navigation cont.

- The side of the pages are provided with tabs to identify the section of the book

2014 GUIDE INFORMATION FOR ELECTRICAL EQUIPMENT — THE WHITE BOOK

BUILDING MATERIALS (AABM)

BUILDING MATERIALS (AABM)

GENERAL

Building materials include adhesives, coatings, acoustical materials and the like, investigated for surface burning characteristics, such as flame spread and smoke developed during fire exposure. Other building materials include precast/concrete buildings, structural building products, gypsum board, fireplaces and chimneys, elevator equipment, and ceiling equipment, such as exit signs, exit appliances, and emergency lighting and power equipment.

INVESTIGATION REQUIREMENTS AND STANDARDS
The scope of product sizes and ratings appearing in the general Guide Information for some product categories is intended to indicate the current range of Listed products, however, it is not necessarily indicative of limitations for those Listed products.

The standards used to investigate products are identified in the general Guide Information for each product category. There may not always be a published standard for investigating a product to determine its acceptability for Listing or Classification. If no applicable standard is available, UL will exercise its judgment in the selection of applicable requirements from related standards and other sources to develop the requirements to cover uses and conditions for which specific requirements did not previously exist.

Products, equipment and construction materials certified by UL in accordance with International or regional standards only (e.g., products Classified to an IEC or ISO Standard) are intended for distribution, installation and use in areas of the world where the specified standards have been adopted and are in effect as national or regional standards.

INSTALLATION REQUIREMENTS
The limitations for the equipment as specified in the general Guide Information for each product category such as voltage and temperature limits, markings, special descriptions and installation provisions need to be noted prior to installation and use.

Equipment has been investigated with reference to risks to life and property and for potential conformity to the installation and use provisions of the applicable installation codes and standards of the National Fire Protection Association (NFPA), and applicable model codes identified in the general Guide Information for each product category.

Some products are certified for uses not within the scope of nationally recognized installation codes and standards. Such products are investigated for the specifications or use conditions indicated in the general Guide Information for each product category.

These products are intended for installation subject to approval by the Authority Having Jurisdiction. Authorities Having Jurisdiction should be consulted before installation.

INSTRUCTIONS AND PRODUCT MARKINGS
These products are intended to be installed in accordance with the installation instructions provided with the product. It is critical that the cautionary statements and installation and operating instructions on the product and in accompanying literature be followed.

FIELD MODIFICATIONS
The UL Mark applies to the product as it is originally manufactured when shipped from the factory. Authorized use of the UL Mark is the manufacturer's declaration that the product was originally manufactured in accordance with the applicable requirements. UL does not know what the effect of a modification may have on the safety of the product or the continued validity of the UL certification mark unless the field modifications have been specifically investigated by UL. Unless UL investigates a modified product, UL cannot indicate that the product continues to meet UL's safety requirements.

The only exception for a field modification authorized by UL is when the product has specific replacement markings. For example, a switchboard may have specific grounding kits added in the field. The switchboard is marked with a list of specific kit numbers that have been investigated for use in that particular switchboard. Only grounding kits that are included on the product have been investigated for use in that product.

UL, in performing its functions in accordance with its objectives, does not assume or undertake to discharge any responsibility of the manufacturer or any other party. UL shall not incur any obligation or liability for any loss, expense or damages, including accidental or consequential damages, arising out of or in connection with the use, interpretation of, or reliance upon this Guide Information.

FIRE PROTECTION EQUIPMENT

(AAFP)

GENERAL

FIRE PROTECTION EQUIPMENT (AAFP)

Fire protection equipment includes fire suppression equipment and systems, fire alarm equipment and fire fighting equipment, such as fire hoses, fire and emergency services protective clothing, and automotive fire apparatus. Also included are furnishings in buildings investigated for combustibility, such as upholstered furniture, mattresses, and warehouse pallets.

This equipment is intended for use only as described in the general Guide Information for each product category and individual Listings. The use of this equipment in conditions other than described in the Listing or Listing and the general Guide Information for the product category has not been investigated by UL.

CERTIFICATE SERVICE
Fire protection equipment requires extensive installation work and maintenance under UL's Certificate Service. Only those installations for which a certificate has been properly issued are covered under UL's Certificate Service.

Under Certificate Service, UL authorizes the issuance of UL's certificates to installations which the Listed installing company represents to be in compliance with requirements established for the product category. The certificate indicates the classification, extent, location of equipment, period covered by the certificate, and name of the installing company.

UL conducts countercheck field examinations of representative installations of the Listed installing company. UL assumes no liability for any loss that may result from failure of the equipment, incorrect certification or nonconformity with requirements. If installations not in compliance with UL's requirements are found as a result of field examinations, they are subject to correction by the Listed installing company or cancellation of the certificate.

All of a company's alarm system installations may not be covered under UL's Certificate Service. Only those installations for which a certificate has been properly issued are covered under UL's Certificate Service.

UL maintains a Certificate Verification Service (ULCVS) that allows Authorities Having Jurisdiction (AHJs) to verify up to date Certificate Information and identify companies eligible to issue Certificates as of the date of the inquiry. Only those alarm or signal system installations for which a Certificate has been issued are covered under UL's Certificate Service. The verification of a Certificate on ULCVS is the only method UL provides to identify the Certified alarm systems actively covered under its Listing and Follow-Up Service.

INVESTIGATION REQUIREMENTS AND STANDARDS
The scope of product sizes and ratings appearing in the general Guide Information for some product categories is intended to indicate the current range of Listed products, however, it is not necessarily indicative of limitations for those Listed products.

The standards used to investigate products are identified in the general Guide Information for each product category. There may not always be a published standard for investigating a product to determine its acceptability for Listing or Classification. If no applicable standard is available, UL will exercise its judgment in the selection of applicable requirements from related standards and other sources to develop the requirements to cover uses and conditions for which specific requirements did not previously exist.

Products, equipment and construction materials certified by UL in accordance with International or regional standards only (e.g., products Classified to an IEC or ISO Standard) are intended for distribution, installation and use in areas of the world where the specified standards have been adopted and are in effect as national or regional standards.

INSTALLATION REQUIREMENTS
The limitations for the equipment as specified in the general Guide Information for each product category such as voltage and temperature limits, markings, special descriptions and installation provisions need to be noted prior to installation and use.

Equipment has been investigated with reference to risks to life and property and for potential conformity to the installation and use provisions of the applicable installation codes and standards of the National Fire Protection Association, and applicable model codes identified in the general Guide Information for each product category.

Some products are certified for uses not within the scope of nationally recognized installation codes and standards. Such products are investigated for the specifications or use conditions indicated in the general Guide Information for each product category.

These products are intended for installation subject to approval by the Authority Having Jurisdiction. Authorities Having Jurisdiction should be consulted before installation.

INSTRUCTIONS AND PRODUCT MARKINGS

What do those UL labels mean?

- See UL Certification Services and Marks
 - Page 38 in White Book



What do those UL labels mean?

- Listing
- Representative Product Samples are Tested and Evaluated to Nationally Recognized Safety Standards Regarding Fire, Electric Shock and Related Safety Hazards



What do those UL labels mean?



What do those UL labels mean?

- Component Recognition
- Products Incomplete in Construction or Restricted in Performance Capabilities
- Not intended for Field Installation.
- **Doesn't Comply With Code Definition of Listed**



What do those UL labels mean?

- Classification Page 39
- Industrial, Commercial, or Other Products are Evaluated for Specific Hazards, Performance Under Specified Conditions, or Regulatory Codes



What do those UL labels mean?

- Enhanced UL Certification Mark
- See page 44
- UL's Enhanced Certification Mark
- New in 2013
- Enhanced Mark Optional for Listed or Classified Products
- Modules identifies attribute of certification, country and may have easily searched identifier
- Complies with definition of Listed in Codes



What do those UL labels mean?

- Field Evaluations
- Evaluation for Products in The Field
- 1-877-UL-HELPS
- (1-877-854-3577)
- Pg. 40



UL Wisconsin Field Evaluation Specialist

- Tyler J. Gitter
- Mobile #: 414-469-7533
- Tyler lives in our area and specializes in UL Field Evaluations

UL Policies

- Is application of the UL Listing Mark permitted by the manufacturer or installer in the field?
- Is it permitted to modify a Listed product in the field without voiding the Listing on the Product?
- Is the CE Mark a safety Certification Mark?



Field Labeling

- Is application of the UL Listing Mark permitted by the manufacturer or installer in the field?

No!

See

Page 46

Field Labeling

- NO!
- The only application of a UL Mark in the Field can take place under a UL Field Inspection Or a UL Field Evaluation in the presence of UL
- The AHJ would be contacted for either service

Field Labeling

- If a manufacturer has applied the Listing Mark in the field, reject the installation
- Then file a Product Incident Report (PIR) formerly called Field Reports with UL online
- www.ul.com/ahjreport

Modifying a Listed Product

- Is it permitted to modify a Listed product in the field without voiding the Listing on the Product?
- UL does not know unless we evaluate modifications under a Field Evaluation
- See “Field Modifications” on page 46

CE Mark

- Is the CE Mark a safety Certification Mark?
- No, See page 46 in the White Book.

A large, bold, black CE mark consisting of the letters 'C' and 'E' joined together. The 'C' is a simple curve, and the 'E' has a horizontal bar extending to the right.

UL, OSHA, the NEC and the White Book

- NEC, SPS 316 and OSHA support Listing
- UL actively participates in Code Making Process. UL has 2 representatives on each of the 19 code making panels for the NEC.
- In order to write standards and certify equipment you must understand the installation code. UL writes the majority of the electrical safety standards in the US.
- The White Book helps determine compliance

NEC 90.7

- 90.7 Examination of Equipment for Safety. This section provides for third-party safety certification of products by UL as a means for basis for approval.



What about the State of Wisconsin Electrical Code SPS316?

SPS 316.012(1) Use of approved materials and construction methods: Approval of materials, equipment, and products shall be based on sufficient data, tests, and other evidence that prove the material, equipment, or product meets the intent of the requirements of SPS 316. Data, Tests, and other evidence shall be provided by a qualified independent third party.

Note: Examples of a qualified independent third party include a nationally recognized testing laboratory (NRTL) & a professional engineer.



SPS 316.110 Lists specific requirements for electrical installations

SPS 316.110 requires: Listed or labeled equipment shall be installed or used in accordance with any instructions included in the listing or labeling.

Note: What if the instructions are missing or not provided on the inspection?

What if the product does not include instructions (EMT or PVC conduit for Example?)

Solution: USE THE UL WHITE BOOK FOR COMPLIANCE

Article 100 Definitions

- Approved, Identified, Labeled, Listed are terms that are found within the NEC and are defined in Article 100.
- These terms are found throughout the NEC document in most Articles.

Article 110

110.2 Approval. Conductors and equipment ...shall be acceptable only if approved.

•110.3 Examination, Identification, Installation, and Use of Equipment

•110.3(A) Examination

•110.3(B) Installation and Use (Substitute with SPS 316.110)

OSHA Requirements

- **29 CFR 1910.303 (a) Approval.**

The conductors and equipment required or permitted by this subpart shall be acceptable only if approved.

- **29 CFR 1910.399**

***Approved.* Acceptable to the authority enforcing this subpart. The authority enforcing this subpart is the Assistant Secretary of Labor for Occupational Safety and Health. The definition of "acceptable" indicates what is acceptable to the Assistant Secretary of Labor, and therefore approved within the meaning of this subpart.**

OSHA Requirements

Acceptable. An installation or equipment is acceptable to the Assistant Secretary of Labor, and approved within the meaning of this Subpart S:

- (1) If it is accepted, or certified, or listed, or labeled, or otherwise determined to be safe by a nationally recognized testing laboratory.....or**
- (2)If no NRTL, certifies, lists, labels, or determines to be safe and AHJ says complies with NEC...or**
- (3) ...Custom made equipment for specific customer, manufacturer provides test data to owner for OSHA**

How to Use the White Book to Determine Compliance with the Code

- Basics
 - **Table of Contents**
 - **Practical Application of the White Book**
 - **Index of UL Product Categories Correlated to the 2014 NEC**
 - **Index of UL Product Categories Correlated to the 2011 NEC**
 - **Index of UL Product Categories and Industry Terms**
 - **List of Product Category Guide Information**
 - **UL Overview of Services**
 - **Contact Information**

Practical Application of the White Book, Page 42

- At Least Two Methods
- Method 1
- What Section of the 2014 or 2011 NEC?
- See page 607, Index of Product Categories Correlated to the 2014 NEC or
- Page 657, Index of Product Categories Correlated to the 2011 NEC
- Pick a Code Section- Find the Product Category

Method #1 Pick a Code Section

- Lets pick NEC 334.40(B)
- Devices of Insulating materials. (What are these??)
- They are permitted to be used without boxes in exposed cable wiring & for rewiring in existing buildings where the NM Romex cable is concealed and fished.

Insulated Device NEC 334.40(B) & 300.15(H)



Practical Application of the White Book, Page 42

- Example- Method 1
- 2011 NEC 334.40(B) Devices of Insulating Material. (What is This?) NM Cable Interconnector
- See 2011 NEC Index on page 664. Located code article 334.40(B). UL product category Code QAAV
- NITW on page 378. (Review Product)

Practical Application of the White Book, Page 42

- Example- Method 1
- Section 411.3, requires Listed Lighting Systems
- See 2011 index on page 657, locate 411.3 on Page 669
- IFDR on page 220 and QOVJ page 417

NEC 411.3, QOVJ, Pg. 417



NEC 411.3, QOVJ, Pg. 417

PORTABLE CABINET LUMINAIRES (QOVJ)

USE AND INSTALLATION

This category covers surface and recess-mounted portable cabinet luminaires intended for installation into open or enclosed portable cabinets such as china hutches, bookcases, bars, consoles, bed headboards, and similar locations.

This category also covers low-voltage lighting systems intended for installation under a shelf, cabinet, or similar structural surface, in accordance with Article 411 of ANSI/NFPA 70, “National Electrical Code” (NEC), where the power supply is of the attachment plug equipped, cord-connected type, or is a direct plug-in type.

A surface-mounted portable cabinet luminaire is also suitable for installation under a shelf or kitchen cabinet when the line voltage power-supply cord is not concealed.

These products are not intended for installation in recessed walls or ceilings, or in permanently installed cabinets where the wiring is concealed or passed through openings in the structure.

NEC 411.3, QOVJ, Pg. 417

Alternate UL Mark UL MARK

The Listing Mark of UL on the product is the only method provided by UL to identify products manufactured under its Listing and Follow-Up Service. The Listing Mark for these products includes the UL symbol (as illustrated in the Introduction of this Directory) together with the word "LISTED," a control number, and the product name "Portable Cabinet Luminaire," "Portable Cabinet Light" or "Portable Cabinet Luminaire Accessory."

* * * * *

PVC Schedule 40 or 80 what's the difference? What do all the makings on the PVC mean?

NEC code article 352.

**Step 1: Go to Page 664 of UL
White Book**

**Step 2: Lets start with Product
Category DZYR on Page 145 of
the UL White Book**

Rigid Polyvinyl Chloride Conduit - Type PVC

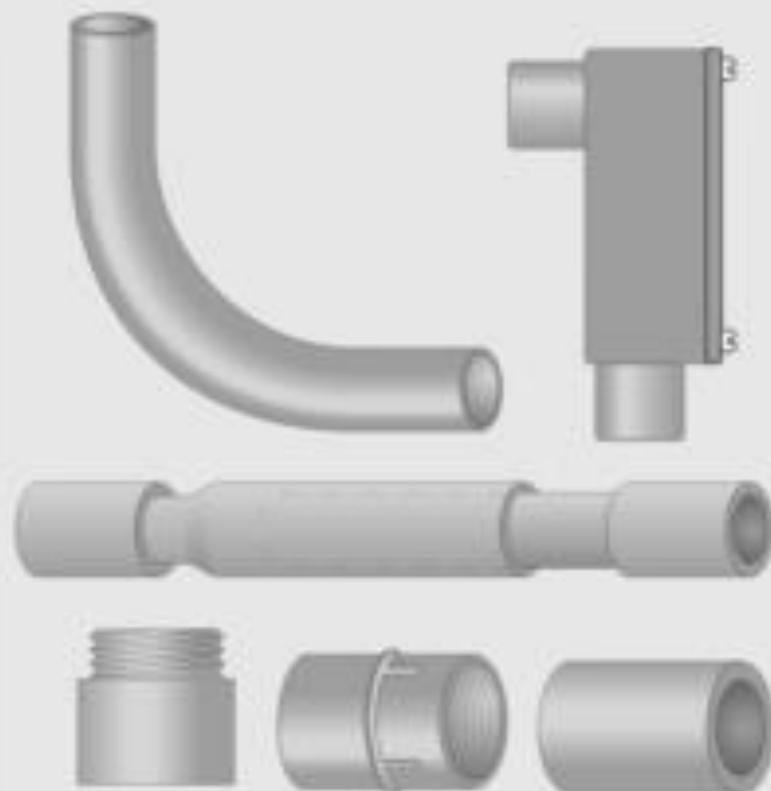
Section 352.2 Definition



Schedule 80 PVC



Schedule 40 PVC
with Integral Coupling



PVC Fittings

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Rigid Polyvinyl Chloride Conduit: PVC is a rigid nonmetallic conduit with a circular cross section with integral or associated couplings.

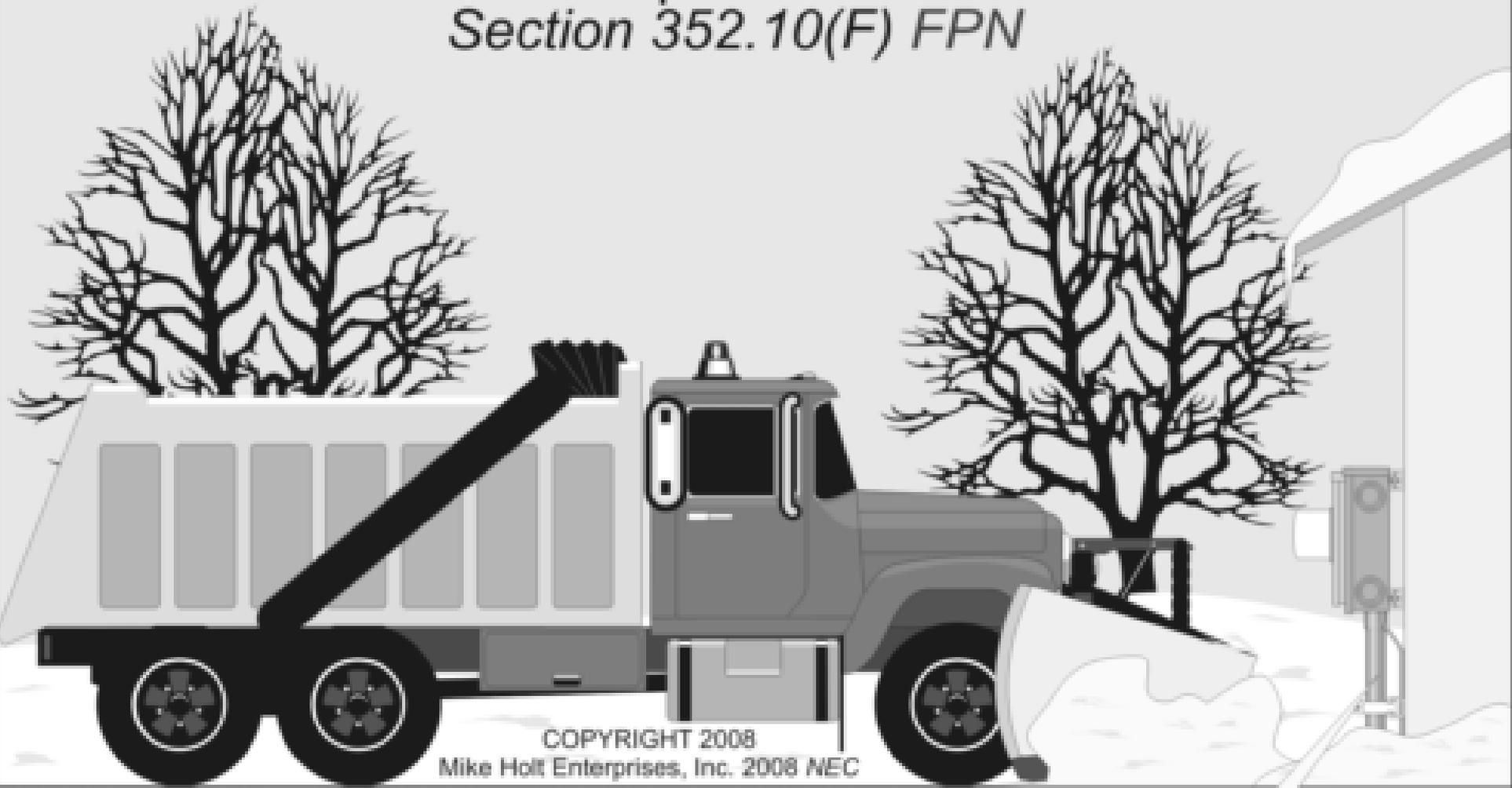
PVC in Exposed Locations *Section 352.10(F)*

Schedule 40 PVC conduit is permitted where not subject to physical damage.

Subjected to
Physical
Damage???

PVC in Exposed Locations

Section 352.10(F) FPN



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Schedule 80 PVC is identified for use
in areas subject to physical damage.

Practical Application of the White Book, Page 42

- Method 2-
- 3 Step Process
 - **1. Locate UL Listing or Certification Mark and determine Product Identity**
 - **2. Locate product identity in Index of UL Product Categories and Industry Terms in Appendix C**
 - **3. Access the Guide Information from the page identified in the Index of UL Product Categories and Industry Terms**

**A UL Listing Mark is composed
of four elements:**

1.  UL in a circle
2. The word "**LISTED**"
3. **The Product Identity**
4. **An Issue Number or Control Number** (a control number is a four-digit alphanumeric code)



Step 2 - Locate the Product Identity in the Index of UL Product Categories located in the back of the White Book.

Once you have located the product identity, use the Index of UL Product Categories and Industry Terms located in Appendix C in the back of the White Book to find the product category.

INDEX OF PRODUCT CATEGORIES				275	
	Page		Page	Page	
Optical Fiber Cable Verified in Accordance with National or International Specifications (QAZI)	86	Power Outlets and Power Outlet Fittings (QPYY)	101	Shipboard Cable, Marine Classified in Accordance with International Specifications (UBWK)	114
Optical Fiber Cable Verified in Accordance with New York City Transit Specification TO (QAZK)	86	Power Supplies (QQAQ)	101	Signs (UXYT)	114
Optical Fiber/Communications/Signaling/Coaxial Cable Raceways (QAZM)	86	Power Supplies, Gas Tube Sign (QQDZ) .	102	Field Installed Neon Outline Lighting Systems (UYAM)	115
Optical Fiber Raceway Assemblies (QAZQ)	87	Power Supplies, General Purpose (QQFU)	102	Signs, Changing Message (UYFS)	115
Optical Fiber/Communications Cable Routing Assemblies for Use in Telecommunication Installations (QBAA) ..	87	Power Supplies, Information Technology Equipment Including Electrical Business Equipment (QQGQ)	102	Sign Accessories (UYMR)	116
		Power Supplies, Specialty (QQII)	102	Sign Components Classified for Use with Specified Equipment (UYTA)	116
		Power Supplies, Telephone (QQJE)	103	Sign Controllers, Message Centers (UYTQ)	116
		Power Supplies, Gas Tube Sign (QQQK)	103		

Step 3 - Access the product category Guide Information page identified in the Index of UL Product Categories and Industry Terms.

Once you locate the page, you will be able to find the Guide Information for the product category, in this case Signs (UXYT). See the Guide Information for Signs (UXYT) below.

Guide Information for Signs (UXYT)

Anatomy of UL Guide Information

- Product Category Title
- Product Category Code
(This four-letter alpha code that appears in parentheses is assigned to each specific product category for cataloging in UL's directories. The product categories in the White Book as well as all UL directories are organized alphabetically by this code. Category Codes are not acronyms; they are created and assigned by mathematic process.)
- General Information relating to intended use and installation, scope of certification, product markings and requirements used for investigating the product.
- UL Mark
The last paragraph of all Guide

SIGNS (UXYT)

USE AND INSTALLATION

This category covers electric signs employing incandescent lamps, LEDs (light emitting diodes), electro-luminescent panels, neon tubing, fluorescent lamps, high intensity discharge lamps or combinations thereof for installation in accordance with Article 600 of NFPA 70, "National Electrical Code."

Cord and plug-connected signs do not have provision for permanent mounting to a building or structure. Due to servicing considerations, specific types of cord and plug-connected signs are intended and have provision for installation on end-use equipment.

Signs or sections of a sign forming a complete enclosure intended for permanent connection to a source of supply are provided with permanent means for attachment to a building, to a support or to a hanging rig. The mounting hardware, poles and other structural components of a sign have not been evaluated with respect to local variable conditions such as local wind and snow loading or soil conditions.

Electric signs, of such size that shipment in one carton or fully assembled is impractical, may be divided into sections. Each major subassembly bears an "Electric Sign Section" Listing Mark. Sign faces, trim and mounting hardware are not considered major subassemblies. Each sign has installation instructions describing or illustrating the proper assembly, mounting and connection of the sign sections. The acceptability of the assembled sections in the field rests with the Authority Having Jurisdiction.

PRODUCT MARKINGS

Signs intended for permanent installation and which have been investigated for indoor use only are so marked. Cord-connected signs investigated for outdoor use are marked "Outdoor." Signs for outline lighting are marked "Outdoor Sign for Outline Lighting."

Signs, sign sections or outline lighting marked "The neon supply(ies) complies(y) with the secondary ground-fault protection requirements of UL 2161" are provided with neon transformers and power supplies that comply with the secondary fault protection requirements specified in UL 2161, "Neon Transformers and Power Supplies."

REBUILT PRODUCTS

This category also covers signs that are rebuilt by the original manufacturer or another party having the necessary facilities, technical knowledge and manufacturing skills. Rebuilt signs are rebuilt to the extent necessary by disassembly and reassembly using new or reconditioned parts. Rebuilt signs are subject to the same requirements as new signs.

RELATED PRODUCTS

Accessories intended for use in Listed signs are covered under Sign Accessories (UYMR).

Retrofit conversions intended to be field installed in Listed electric signs are covered under Sign Conversions, Retrofit (UYWU).

Changing message center signs may contain integral controllers or may be intended for use with externally connected controllers. Externally connected controllers are covered under Sign Controllers, Message Centers (UYTQ).

This category does not cover billboard illumination, exit lights, skeletal neon tubing for show windows, or illuminated clocks rated 600 V or less.

Field-assembled neon systems used in display windows, outline lighting or skeletal neon signs are covered under Skeletal Neon Sign and Outline Lighting Systems, Field Assembled (UZBL).

Field-assembled cold cathode electric discharge lighting systems that provide general illumination are covered under Electric Discharge Lighting Systems, Cold Cathode (IFAY).

Field-installed neon outline lighting systems that outline or call attention

Product Categories

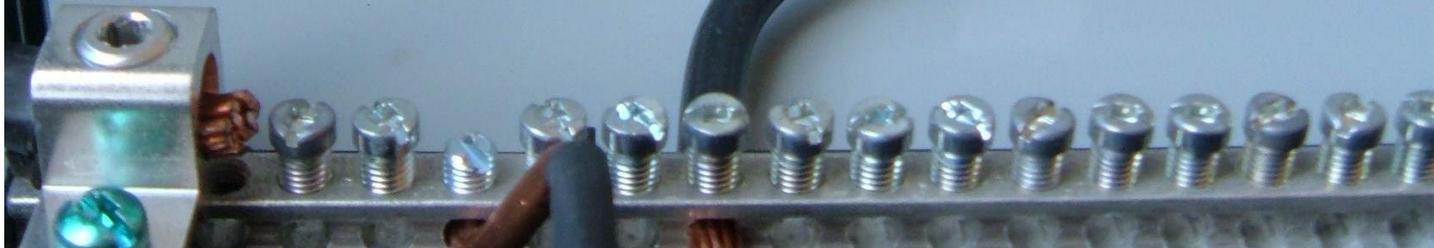
- Product Categories are in alphabetical order organized by the four letter category code in parenthesis Appendix C in Back of the UL White Book
- Guide Information
 - **Scope and limitations of Listings**
 - **Important Installation Markings**
 - **Standard used for Certification**
 - **General descriptions of Listing and Certification Marks authorized for product category**



LISTED

CLASS CTL
ENCLOSED
PANELBOARD

No. HL 565288



Panelboards

- Index of UL Product Categories and Industry Terms (See Appendix C – P. C11) tells us the Guide Information for Class CTL Panelboards - See Panelboards (QEUY) on page 395 in the White Book

Panelboards (QEUY), P. 395

PANELBOARDS (QEUY)

USE, INSTALLATION AND MARKINGS

This category covers lighting and power panelboards rated 600 V or less.

Panelboards are intended for mounting in cabinets, cutout boxes or enclosures designed for the purpose. The enclosure may be provided with the panel or provided separately. Only panelboards marked to indicate that they are for use in specific enclosures (identified by either catalog number or specific dimensional information) and panelboards labeled as "Enclosed Panelboards" have been investigated to determine that wiring space is adequate, or have been investigated for short-circuit-current ratings greater than 10,000 A rms symmetrical.

Enclosed panelboards identified with an Enclosure Type designation are intended for use as indicated in Electrical Equipment for Use in Ordinary Locations (AALZ).

Panelboards (QEUY), P. 395

- Use, Installation and Markings-
- Class CTL Panelboards...
- Additional Information, See Electrical Equipment for Use in Ordinary Locations (AALZ) (p.53)
- UL Mark- How to identify a Listed panelboard

(AALZ) Pg. 53

- General Information common to all electrical equipment in ordinary locations in the White Book.
- Includes Installations requirements for different locations, Damp, Dry, Wet
- Enclosure types
- Equipment Terminations

○/OFF

○/OFF

○/OFF

○/OFF

○/OFF

○/OFF

10 kA
120/240V~

10 kA
120/240V~

10 kA
120V~

10 kA
120/240V~

10 kA
120/240V~

10 kA
120/240V~



 TYPE QO
QO120AFI

 LISTED C.B. 

ALSO LISTED AS
BRANCH/FEEDER
AFCI

ISSUE NO.
M-1,771

HACR Type
SWD 60Hz

Al/Cu
60/75°C 

22

26

20

14

18

AFCI Branch Feeder Type (AVZQ)

- From the Index in Appendix C on page C1 - we see that AFCI's, Branch Feeder Type AVZQ are on page 75 in the 2014 White Book.
- Guide Information details use, also protection provided etc.

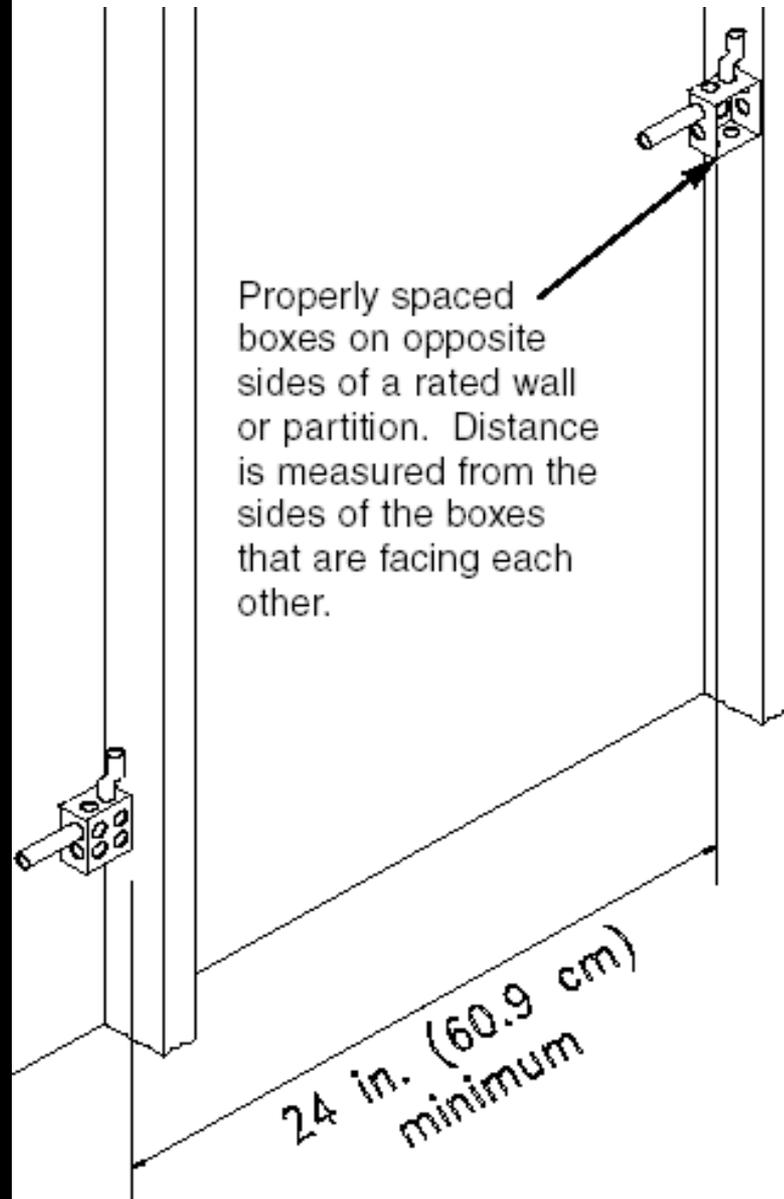
Use With Out a Listing Mark for Reference

- Can a metal 4 inch square outlet box be used on both sides of a fire rated wall?
- NEC 300.21 says must prevent spread of fire...
- How do you know limitations?

Metallic Outlet Boxes

- Index in Appendix C on page C41 indicates Metallic Outlet Boxes (QCIT) are on p. 389
- Metallic Outlet Boxes (QCIT) P. 389
- Use in Fire Rated Assemblies
- 24 in. Separation on opposite sides of fire wall

No Putty Required



NM Cable Clamps

- Can you use more than one Romex in a cable connector?
- Romex connectors are Nonmetallic-sheathed Cable Connectors
- Index in Appendix C on page C44 indicates Nonmetallic-sheathed Cable Connectors (PXJV) are on p. 376

NM Cable Clamps

- Nonmetallic-sheathed Cable Connectors (PXJV) p. 376
- Except for duplex connectors or when otherwise marked on the carton to indicate connecting of more than one cable or cord, the connectors covered under this category have been investigated for connecting one cable or cord only.

Use With Out a Listing Mark for Reference

- Are reducing washers evaluated for grounding?
- Index in Appendix C, Reducing Washers on p. C55 says See Outlet Bushings and Fittings (QCRV), P. 391

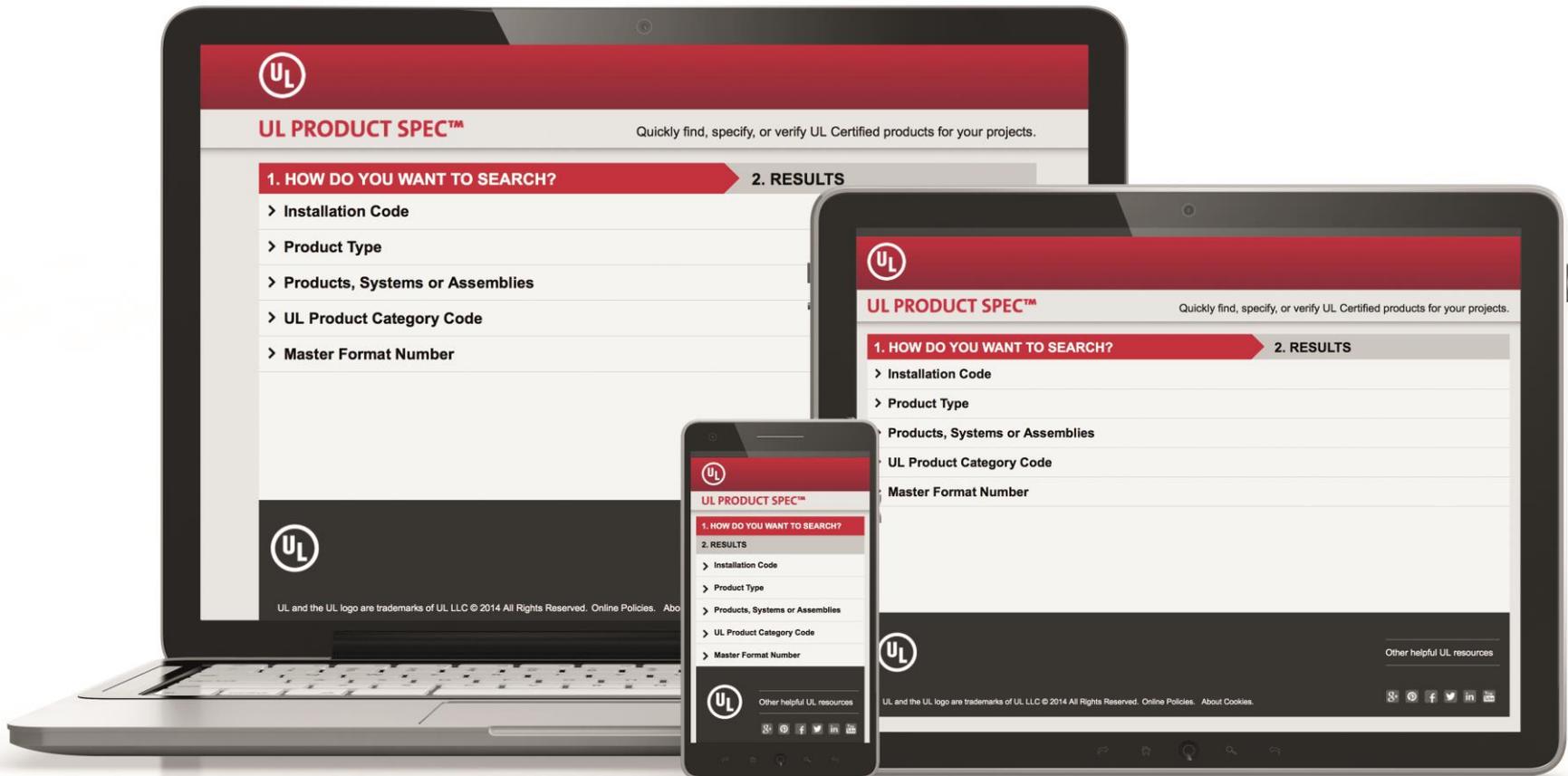
Outlet Bushings and Fittings (QCRV)

P.391

- GROUNDING
- Metal reducing washers are considered suitable for grounding for use in circuits over and under 250 V and where installed in accordance with ANSI/NFPA 70, "National Electrical Code." Reducing washers are intended for use with metal enclosures having a minimum thickness of 0.053 in. for non-service conductors only. Reducing washers may be installed in enclosures provided with concentric or eccentric knockouts, only after all of the concentric and eccentric rings have been removed. However, those enclosures containing concentric and eccentric knockouts that have been Listed for bonding purposes may be used with reducing washers without all knockouts being removed.

What is UL Product Spec?

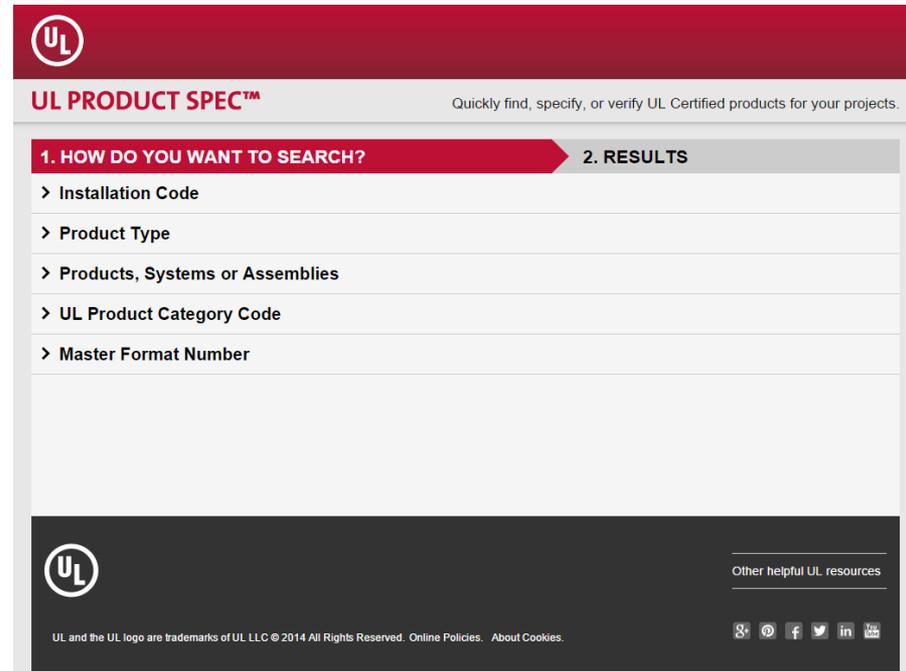
www.ul.com/productspec

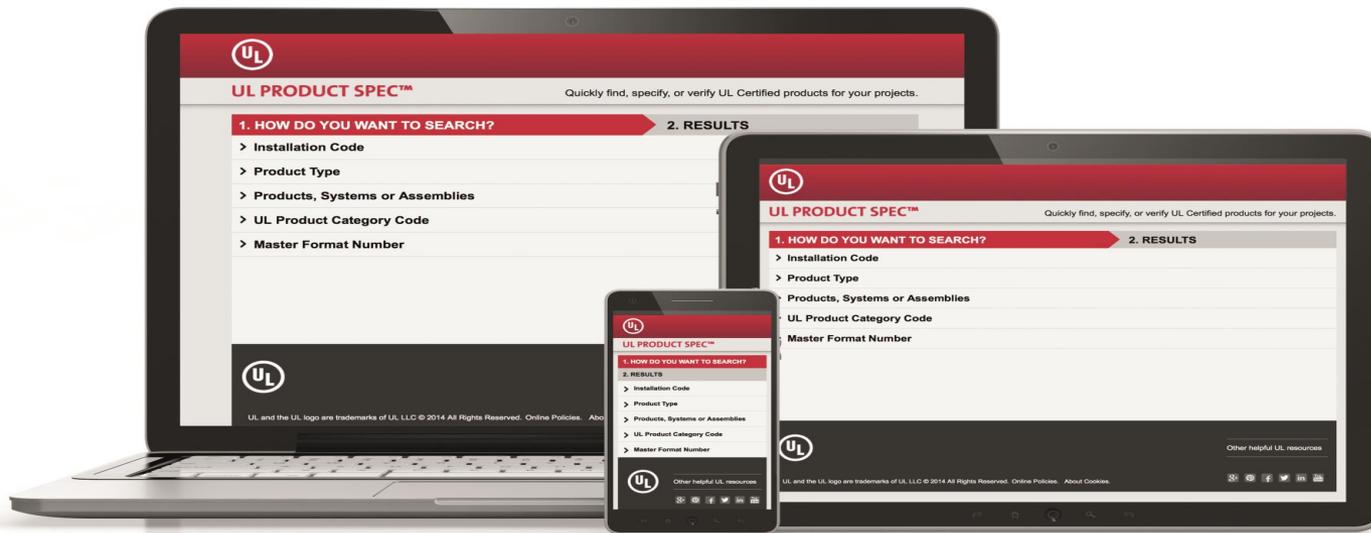


What is UL Product Spec?

www.ul.com/productspec

- Web based compliance tool
- Smartphone, tablet or PC
- Contains UL White Book as well as UL Fire Resistance, Fire Protection, Building Materials and Roofing Directory information
- Web version of White Book
- Comprehensive Results Page





Introducing **UL Product Spec** www.ul.com/productspec

- Responsive Web site- Right sizes to your screen size, smartphone, tablet or PC
- Works on all web connected devices regardless of platform or OS
- Includes Electrical Construction, Fire and Building Materials and Systems
- In your **browser**, (not the Google app) save to the home screen on your phone or tablet
home screen and it acts just like an app

• On Apple IOS



Then save to home screen

Android Menu, then **+**add to, then Home Page



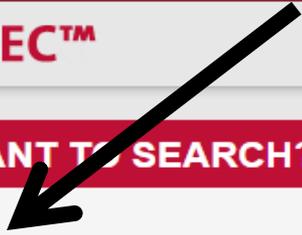
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1. HOW DO YOU WANT TO SEARCH?

2. RESULTS

> Installation Code



> Product Type

> Products, Systems or Assemblies

> UL Product Category Code

> Master Format Number

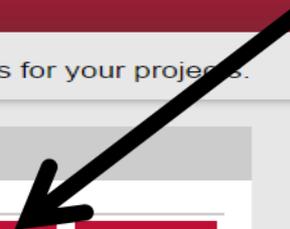


Other helpful UL resources



**1. HOW DO YOU WANT TO SEARCH?****2. RESULTS**

National Electrical Code	2014	2011
International Fire Code	2012	2009
NFPA 1: Fire Code	2012	
International Building Code	2012	2009
International Residential Code	2012	2009
Canadian Electrical Code, Part 1	2012	2009
ASHRAE 189.1	2011	
CAL Green	2013	
ICC 700	2012	
International Fuel Gas Code	2012	2009
International Green Construction Code	2012	
International Mechanical Code	2012	2009
International Plumbing Code	2012	2009
International Swimming Pool & Spa Code	2012	
National Building Code of Canada	2010	





UL PRODUCT SPEC™

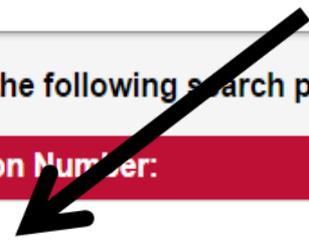
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1. HOW DO YOU WANT TO SEARCH? 2. RESULTS

National Electrical Code 2014 **2011**

Enter one of the following search parameters:

Code Section Number:



UL Product Category Code:

Search

International Fire Code **2012** **2009**

NFPA 1: Fire Code **2012**

International Building Code **2012** **2009**



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1. HOW DO YOU WANT TO SEARCH?

Search Code name: National Electrical Code; Edition: 2014; Section number: 690.11

Results 1-2 of 2

2. RESULTS

INSTALLATION CODE



UL PRODUCT CATEGORY & CODE

NEC 2014: 690.11

Photovoltaic DC Arc-fault Circuit Protection: QIDC

NEC 2014: 690.11

Static Inverters and Converters for Use in Independent Power Systems: QIKH

Results 1-2 of 2

Print

New Search



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2. RESULTS

UL PRODUCT CATEGORY

Photovoltaic DC Arc-fault Circuit Protection, QIDC

GENERAL

This category covers direct-current (dc) photovoltaic (PV) arc-fault circuit-protection devices intended for use in solar photovoltaic electrical energy systems as described in Article 690 of ANSI/NFPA 70, "National Electrical Code." This protection is intended to mitigate the effects of arcing faults that may pose a risk of fire ignition under certain conditions if the arcing persists.

These devices are intended for use in circuits rated 1000 V or less. They are intended for use in dc electrical systems that are supplied by a PV source, such as a module with solar cells designed to generate dc power when exposed to sunlight.

[> Show additional information...](#)

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UL PUBLICATIONS

[Alternative Energy Application Guide](#)

UL STANDARDS

[UL Subject 1699B Scope](#)

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Search results

You may choose to [Refine Your Search](#).

Company Name	Category Name	Link to File
DELTA ELECTRONICS INC	Photovoltaic DC Arc-fault Circuit Protection	QIDC.E255963
SMA SOLAR TECHNOLOGY AG	Photovoltaic DC Arc-fault Circuit Protection	QIDC.E210376
SOLECTRIA RENEWABLES L L C	Photovoltaic DC Arc-fault Circuit Protection	QIDC.E465007
TIGO ENERGY INC	Photovoltaic DC Arc-fault Circuit Protection	QIDC.E348110

Model number information is not published for all product categories. If you require information about a specific model number, please contact [Customer Service](#) for further assistance.

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2. RESULTS

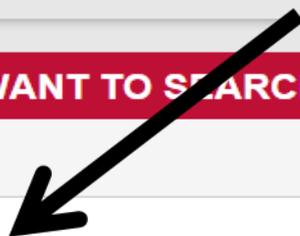
> Installation Code

> **Product Type**

> Products, Systems or Assemblies

> UL Product Category Code

> Master Format Number



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Product Type

Enter product type

Example: "fan"

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Product Type

Enter product type

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1. HOW DO YOU WANT TO SEARCH?

Search Product type: underground connectors

Results viewing 1-1 of 1

2. RESULTS

UL PRODUCT CATEGORY & CODE

[Wire Connectors] Sealed Wire-connector Systems, ZMWQ



Results viewing 1-1 of 1

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1. HOW DO YOU WANT TO SEARCH?

2. RESULTS

UL PRODUCT CATEGORY

Wire Connectors, Insulated for Use with Underground Conductors, ZMWQ

USE AND INSTALLATION

This category covers sealed wire-connector systems intended for wet or damp locations and other installations, such as direct burial, below grade, or above grade where protected from direct exposure to sunlight. These systems may also be used indoors or in dry locations.

Sealed wire-connector systems are intended for use in installations covered by ANSI/NFPA 70, "National Electrical Code."

> [Show additional information...](#)

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UL STANDARDS

[UL 486D Scope](#)

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- > Product Type
- > Products, Systems or Assemblies
- > UL Product Category Code
- > Master Format Number



2. RESULTS



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UL PRODUCT SPEC™

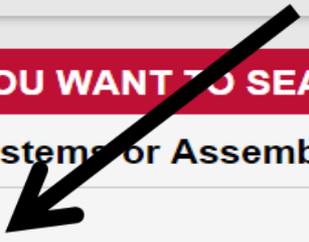
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1. HOW DO YOU WANT TO SEARCH?

2. RESULTS

Products, Systems or Assemblies

Electrical



Building or Fire Systems

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1. HOW DO YOU WANT TO SEARCH?

2. RESULTS

Electrical

Alternative Energy

Power Distribution Equipment

AFCI's and GFCI's

Industrial Control Equipment

Raceways and Conduits

Boxes and Enclosures

Wires, Cables, Connectors, Devices and Tapes

Wiring Devices

Heating and Cooling Equipment

Luminaires and Fittings

Signs

Swimming Pool and Spa Equipment

[Back](#)





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1. HOW DO YOU WANT TO SEARCH? 2. RESULTS

Power Distibution Equipment

- Transformers and Substations
- Meters and Pedestals
- Panelboards and Switchboards
- Switchgear
- Ground Fault Protection of Equipment (GFPE)
- Grounding Equipment and Bonding Equipment
- Arc-mitigation Equipment (AVWP)
- Circuit Breakers and Fuses
- Surge Protective Devices
- Switches

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1. HOW DO YOU WANT TO SEARCH? 2. RESULTS

Electrical

- Alternative Energy
- Power Distribution Equipment
- AFCI's and GFCI's
- Industrial Control Equipment
- Raceways and Conduits
- Boxes and Enclosures
- Wires, Cables, Connectors, Devices and Tapes
- Wiring Devices
- Heating and Cooling Equipment
- Luminaires and Fittings
- Signs
- Swimming Pool and Spa Equipment



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- 1. HOW DO YOU WANT TO SEARCH?**
- 2. RESULTS**

Luminaires and Fittings

Luminaires and Fittings (HYXT)

Luminaire Poles (IEUR)

Fluorescent Type

High Intensity Discharge (HID) Type

Incandescent Type

(LED) Light Emitting Diode Type

Track Lighting

Low Voltage Luminaires

Submersible Luminaires (IFEV)

Special-purpose Luminaires

Luminaire Fittings (IFFX)

Recessed Luminaire Trims (IFGW)

Retrofit and Conversion Kits and Lamps

Portable Luminaires

Flexible Lighting Products (ILGJ)





UL PRODUCT SPEC™

Quickly find, specify or verify UL Certified products for your projects.

1. HOW DO YOU WANT TO SEARCH?

2. RESULTS

Retrofit and Conversion Kits and Lamps

Light-emitting-diode Luminaire Retrofit Kits (IFAR)

Light-emitting-diode Retrofit Luminaire Conversion Kits for Commercial Refrigerators & Freezers (IFAS)

Luminaire Conversions, Retrofit (IEUQ)

Retrofit Low-voltage-luminaire Conversion Kits (IFES)

Lamps, Self-ballasted & Lamp Adapters (OOLR)

Lamps, Self-ballasted, Light-emitting-diode Type (OOLV)

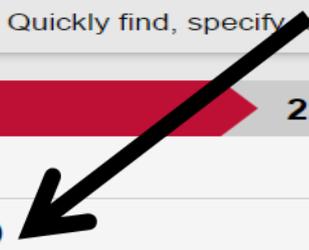
Lamps, Specialty (OONB)

Lamps, Tungsten Halogen (OOOJ)

Organic Light-emitting-diode Panels (OOQS)

Solid-state Light Engines (OORA)

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UL PRODUCT SPEC™

Quickly find, specify, or verify UL Certified products for your projects.

1. HOW DO YOU WANT TO SEARCH?

2. RESULTS

UL PRODUCT CATEGORY

Light-emitting-diode Retrofit Luminaire Conversion Kits, IFAR

GENERAL

This category covers light-emitting-diode (LED) retrofit kits intended for field installation in certified luminaires and office-furnishing lights.

This category does not cover retrofit reflector kits and LED lamps intended for direct replacement of existing non-LED lamps (e.g., incandescent, fluorescent, induction, high-intensity discharge (HID)) without the need for modification, rewiring or component replacement in the luminaire.

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UL PUBLICATIONS

[LED Retrofit Kits](#)

UL STANDARDS

[UL 1598 Scope](#)

[UL Subject 1598C Scope](#)

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Search results

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Company Name	Category Name	Link to File
1 SOURCE LED	Light-emitting-diode Luminaire Retrofit Kits	IFAR.E339590
77 LIGHTING CORP	Light-emitting-diode Luminaire Retrofit Kits	IFAR.E365482
A & L PRODUCTS CO.,LTD	Light-emitting-diode Luminaire Retrofit Kits	IFAR.E470258
A-LED-LIGHTS LLC	Light-emitting-diode Luminaire Retrofit Kits	IFAR.E466699
ABS LIGHTING	Light-emitting-diode Luminaire Retrofit Kits	IFAR.E365265
ACUITY BRANDS LIGHTING-AUSTIN	Light-emitting-diode Luminaire Retrofit Kits	IFAR.E346763
ADVANCE ELECTRONIC CONCEPTS INC	Light-emitting-diode Luminaire Retrofit Kits	IFAR.E364534
ADVANCED ENERGY IDEAS	Light-emitting-diode Luminaire Retrofit Kits	IFAR.E467083
ADVANCED LUMONICS L L C	Light-emitting-diode Luminaire Retrofit Kits	IFAR.E343774
ADVANCED OPTOELECTRONICS TECHNOLOGY CO LTD	Light-emitting-diode Luminaire Retrofit Kits	IFAR.E468707

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[24](#) | [25](#) | [26](#) | [27](#) | [28](#) | [29](#) | [30](#) | [31](#) | [32](#) | [33](#) | [34](#) | [35](#) | [36](#) | [37](#) | [38](#) | [39](#) | [40](#) | [41](#) | [42](#) | [43](#) | [44](#) | [45](#)
[46](#) | [47](#) | [48](#) | [49](#) | [50](#) | [51](#) | [52](#) | [53](#) | [54](#) | [55](#) | [56](#) | [57](#) | [58](#) | [59](#) | [60](#) | [61](#) | [62](#)

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1. HOW DO YOU WANT TO SEARCH?

2. RESULTS

Products, Systems or Assemblies

Electrical

Building or Fire Systems



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Quickly find, specify, or verify UL Certified products for your projects.

1. HOW DO YOU WANT TO SEARCH?

2. RESULTS

Building or Fire Systems

Fire Protection Systems

Commercial Cooking

Elevators

Fire Rated Walls, Floors, Beams and Columns

Firestop Systems

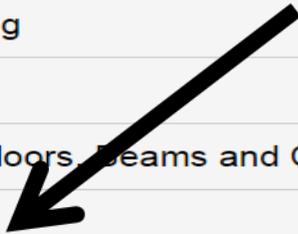
Passive Systems

Roofing

Windstorm Rated Products

Egress Equipment

Green Buildings



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Quickly find, specify, or verify UL Certified products for your projects.

1. HOW DO YOU WANT TO SEARCH? 2. RESULTS

Search with Specific Parameters

Select from the following menus, then click Search.

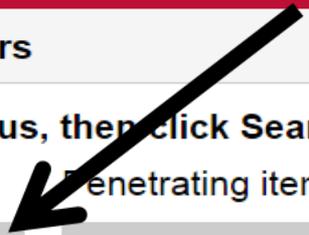
Assembly type:

Penetrating item:

Required rating:

Manufacturer (optional):

Keyword (optional):



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Search with Specific Parameters

Select from the following menus, then click Search.

Assembly type:

Framed walls

Penetrating item:

Metallic pipe, conduit or tubing

Required rating:

F Rating \geq 1 hr and $<$ 2 hr

Manufacturer (optional):

hilti

Keyword (optional):

Example: "plastic"

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Search Assembly type: Framed walls; Penetrating item: Metallic pipe, conduit or tubing; Rating: F Rating ≥ 1 hr and < 2 hr; Manufacturer: hilti
Results viewing 1-25 of 36 1 | 2 | »

DESIGN	UL PRODUCT CATEGORY & CODE	^
System No. W-L-1054	Through-penetration Firestop Systems: XHEZ.W-L-1054	
System No. W-L-1085	Through-penetration Firestop Systems: XHEZ.W-L-1085	
System No. W-L-1092	Through-penetration Firestop Systems: XHEZ.W-L-1092	
System No. W-L-1095	Through-penetration Firestop Systems: XHEZ.W-L-1095	
System No. W-L-1148	Through-penetration Firestop Systems: XHEZ.W-L-1148	
System No. W-L-1164	Through-penetration Firestop Systems: XHEZ.W-L-1164	
System No. W-L-1170	Through-penetration Firestop Systems: XHEZ.W-L-1170	
System No. W-L-1175	Through-penetration Firestop Systems: XHEZ.W-L-1175	
System No. W-L-1176	Through-penetration Firestop Systems: XHEZ.W-L-1176	
System No. W-L-1205	Through-penetration Firestop Systems: XHEZ.W-L-1205	
System No. W-L-1206	Through-penetration Firestop Systems: XHEZ.W-L-1206	
System No. W-L-1214	Through-penetration Firestop Systems: XHEZ.W-L-1214	
System No. W-L-1243	Through-penetration Firestop Systems: XHEZ.W-L-1243	
System No. W-L-1248	Through-penetration Firestop Systems: XHEZ.W-L-1248	

**1. HOW DO YOU WANT TO SEARCH?****2. RESULTS****THROUGH-PENETRATION FIRESTOP SYSTEM**

Assembly Usage Disclaimer

XHEZ - Through-penetration Firestop Systems

[See General Information for Through-penetration Firestop Systems](#)

System No. W-L-1085

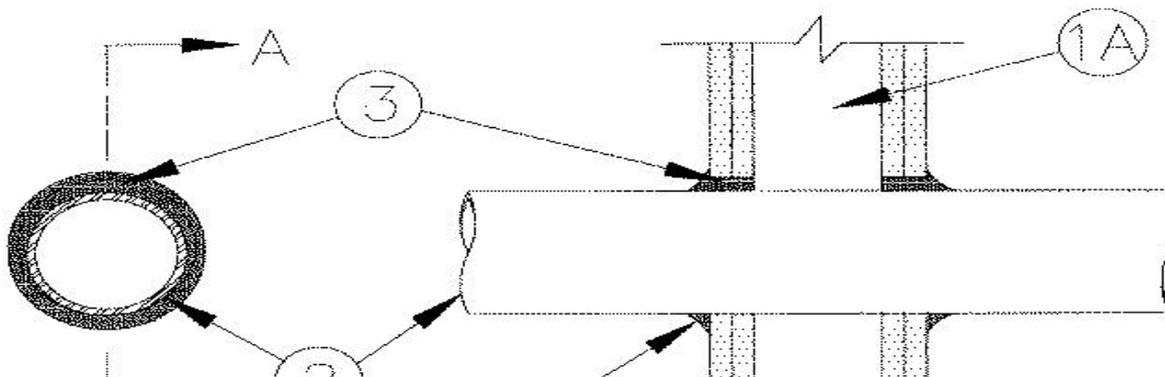
November 24, 1999

F Ratings — 1 and 2 Hr (See Item 1B)

T Rating — 0 Hr

L Rating At Ambient — Less Than 1 CFM/Sq Ft

L Rating At 400 F — 4 CFM/Sq Ft





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- > Installation Code
- > Product Type
- > Products, Systems or Assemblies
- > UL Product Category Code
- > Master Format Number



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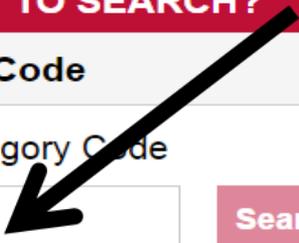
1. HOW DO YOU WANT TO SEARCH?

2. RESULTS

UL Product Category Code

Enter UL Product Category Code

Example: "ZMVV"



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UL Product Category Code

Enter UL Product Category Code



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UL PRODUCT CATEGORY

Switchboards, Dead-front, WEVZ

GENERAL

This category covers dead-front switchboards rated 600 V or less. Switchboards are large single panels, structural frames or assemblies of panels or structural frames on which may be mounted, on the face or back or both: switches, overcurrent, and other protective devices, buses, and instruments. Switchboards may be accessible from the rear as well as from the front and are not intended to be installed in cabinets.

A **switchboard section** is that portion of a switchboard which is prevented by the structural framework from being physically separated into smaller units. Framework that is welded or joined with steel rivets over 1/4 in. in diameter is considered to constitute a single section.

> [Show additional information...](#)

VIEW UL CERTIFIED PRODUCTS

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UL PUBLICATIONS

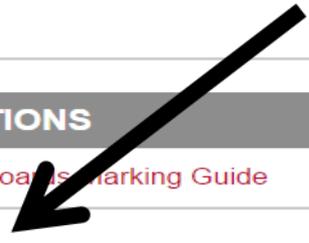
[Deadfront Switchboards Marking Guide](#)

[Tapping Busbars](#)

[Panelboard and Switchboard Short Circuit Current Ratings](#)

UL STANDARDS

[UL 891 Scope](#)





Tapping Busbar Considerations

Many code authorities have encountered situations in which installers wish to tap busbars to accommodate the installation of fire pumps or to connect renewable energy sources such as photovoltaic systems.

This raises several questions, including the following:

- Does this field modification affect the UL Listing of the panelboard or deadfront switchboard?
- Are there any available guidelines for tapping the busbar?
- What are the concerns regarding this practice?

Panelboards and deadfront switchboards are not Listed to have their busbars tapped unless there are existing holes in the busbars marked with the word "Tap" adjacent to the holes. Other holes in the busbar that are not marked with the word "Tap" are intended for the connection of overcurrent devices, other device's as identified by the product markings and in the installation instructions or other uses identified by the manufacturer.

When the electrical equipment Listing does not include product markings or instructions for tapping busbars, code authorities often ask what can be done to approve such modifications. This situation should be treated like any other field modification of Listed equipment.

Evaluating modifications of UL Listed equipment

When a UL Listed product is modified after it leaves the manufacturing facility, UL has no way to determine if it continues to comply with the applicable safety requirements



used initially for its certification without a separate assessment of the modified product. A Field Evaluation can assess general safety issues associated with the product modification such as proper selection of rated components, electrical spacings, mechanical securement, etc., and may address ampacity and short circuit rating concerns, depending on the type of construction and the rating. However, it's important to understand that the extent of the field evaluation can be limited if destructive testing such as overloading or short circuit testing is necessary in order to determine compliance to specific requirements in the applicable standard.

It is the responsibility of the code authority to first determine whether a modification is acceptable or significant enough to require one of UL's Field Engineering Services staff members to evaluate the modified product. In determining if a field evaluation should be conducted, the code official needs to consider the extent and nature of the modification, and make sure the field evaluation can effectively evaluate the impact the modification has on the product's ability to comply with safety requirements.

The field evaluation is conducted to assist the code official in making the determination on approving the installation. The evaluation will only be conducted after UL consults with the code official to determine that UL's investigation addresses all areas of concern while meeting all of a code official's needs.

Concerns to be addressed

Some Listed power equipment may have installation instructions with specific directions on tapping the busbars. If this is the



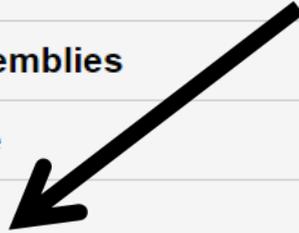
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- > Product Type
- > Products, Systems or Assemblies
- > UL Product Category Code
- > Master Format Number



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Master Format Number

Enter 6-digit Master Format number

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Example: "26 27 26"

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Master Format Number

Enter 6-digit Master Format number

Example: "26 27 26"



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2. RESULTS

Search Master format number: 26 27 26

Results 1-13 of 13

UL PRODUCT CATEGORY & CODE

Arc-fault Circuit Interrupters: AVYI

Arc-fault Circuit Interrupters, Branch/Feeder Type: AVZQ

Arc-fault Circuit Interrupters, Combination Type: AWAH

Arc-fault Circuit Interrupters, Cord Type: AWAY

Arc-fault Circuit Interrupters, Outlet Branch Circuit Type: AWBZ

Arc-fault Circuit Interrupters, Outlet Branch Circuit Type for Use in System Combination Arc-fault Circuit Protection: AWCC

Arc-fault Circuit Interrupters, Outlet Circuit Type: AWCG

Arc-fault Circuit Interrupters, Portable Type: AWDO

Attachment Plugs: AXGV

Attachment Plugs, Fuseless: AXUT

Attachment Plugs with Overload Protection: AYVZ

Attachment Plugs with Switches: AYIR

Power Distribution Centers for Communications Equipment: QPQY

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New Search

Summary

- 2014 UL White Book New Features
- Layout and Navigation of UL White Book
- UL Certification Marks and Policies
- The NEC and the White Book
- How to Use UL's "White Book " to Determine compliance with the NEC
- How to use UL Product Spec

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OR

- Phone 1(800)595-9844
- Email: ulregulatoryservices@ul.com
- Web Address <http://www.ul.com/codeauthorities>
- White Book PDF www.ul.com/whitebook

Questions??

- **Thank You**