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April 4, 2014

Industrial Wire & Cable Corp.
66 North Buesching Road
Lake Zurich, IL 60047
Attn: Carl Calabrese

RESEARCH REPORT NO.: 930516

Approval Date: April 4, 2014
Expires: April 4, 2015

GENERAL APPROVAL - NEW - #10AWG and #12AWG - Photovoltaic (PV) Wire - Part Number PVX1219 -2KV and PVX1019 -2KV, Manufactured by Industrial Wire & Cable Corp.

This approval is not a product endorsement, a certification of accuracy or function of the approved item.

CONDITIONS OF APPROVAL

The installation of the above Photovoltaic (PV) Wire is approved when the following conditions are met:

1. The PV Wire shall be plainly and permanently marked at intervals not exceeding every 24 inches with the following:
 - a. "(UL) E332768",
 - b. "PVX1219 -2KV" or "PVX1019 -2KV",
 - c. "12 AWG" or "10 AWG",
 - d. "Photovoltaic Wire",
 - e. "Type PV",
 - f. "1,000V",
 - g. "Sun-Res",
 - h. "VW-1",
 - i. "-40 °C To 90 °C",
 - j. "Wet or Dry",
 - k. "RHW-2 or USE-2".

2. Upon installation, the following marking shall be permanently printed on a tag and placed on each end of PV circuit run(s):

"The installation of this PV Wire shall comply with City of Los Angeles Research Report (RR) number 930516. Not valid if the RR is expired. For a copy of RR visit www.LADBS.org or call 323-224-2168."

3. If the listing of this PV wire under UL file number E332768 is no longer current or modified, the approval of this Research Report may be suspended or cancelled based on Electrical Testing Lab’s re-evaluation.
4. These PV wires shall only be installed as a “*source circuit*” as defined in the 2014 Los Angeles Electrical Code.
5. This PV wire shall only be installed in direct current (DC) circuits limited to a maximum of 1,000 Volts.
6. This PV wire shall not be installed in the following conditions:
 - a. In Hazardous / Classified Areas,
 - b. Where subject to physical damage,
 - c. Where may pose a trip hazard,
 - d. Where the open circuit voltage exceeds 1,000 Volts,
 - e. In alternating current (AC) circuits.
7. The approval of these PV wires are limited to size #12AWG, Part Number PVX1219-2KV and #10AWG, Part Number PVX1019-2KV, stranded conductors.
8. The physical characteristics of the approved PV wires shall be:

Wire Part #	AWG	No. of Strands	Size of each Strands	Wire Outside Diameter	DC Resistance Per 1,000FT		
					20 °C	60 °C	75 °C
PVX1219-2KV	12	19	0.0185 in	0.239 in	1.65 Ω	1.91 Ω	2.0 Ω
PVX1019-2KV	10	19	0.0234 in	0.264 in	1.039 Ω	1.20 Ω	1.26 Ω

9. The minimum bending radius of the PV wires shall comply to the following:

Wire Part #	AWG	Minimum Bending Radius
PVX1219-2KV	12	1.91
PVX1019-2KV	10	2.11

10. When this wire is installed in a conduit, it’s allowable ampacity shall be based on Table 310.15(B)(16) of the 2014 Los Angeles Electrical Code.

11. When this wire is installed exposed, it's allowable ampacity is permitted to be based on Table 310.15(B)(17) of the 2014 Los Angeles Electrical Code.
12. If more than three PV wires are bundled together for more than 24 inches in length, the bundled wire current carrying ampacity shall be adjusted according to the Los Angeles Electrical Code.
13. No joints shall be used in any strand during the manufacturing of the PV wire conductor.
14. Soldering of PV conductor is not permitted.
15. The average diameter of the compressed PV wire conductor shall not exceed -3% of nominal diameter of that conductor .
16. The PV wire conductor shall be terminated to terminals, lugs, devices or connectors that are identified as listed for 19 stranded, Class C configured conductors.
17. The PV wire shall be installed and maintained by "*Qualified Person*" as defined in the Los Angeles Electrical Code in strict compliance with manufacturer's instructions.
18. An electrical permit shall be obtained prior to installation or relocation of this PV wire in a photovoltaic system in the City of Los Angeles.
19. The installation of the PV wire shall comply with applicable provisions of the Los Angeles City Electrical Codes.
20. If the PV wire is no longer in service, it shall be disconnected and removed.
21. This approval shall be void if the product is modified without prior authorization from the Los Angeles City Electrical Testing Laboratory.

DISCUSSION

The products covered under this Research Report are #12AWG, Part Number PVX1219-2KV and #10AWG, Part Number PVX1019-2KV, Photovoltaic (PV) Wires, manufactured by Industrial Wire & Cable Corp. The PV wires are single soft flexible un-coated copper conductor with black or red color cross-linked polyethylene insulation. The conductors are made of left hand twisted unilay compressed 19 strands in the class C configuration. Each strand of #12AWG conductor has an average diameter of 18.5 mils and each strand of #10AWG conductor has an average diameter of 23.4 mils.

The PV wire is limited for use as a photovoltaic source circuit wire as defined in the 2014 Los Angeles Electrical Code. The PV wire conductor shall terminate to terminals, lugs, devices or connectors that are identified as listed for 19 stranded, Class C configuration conductors with rating of not less than 1,000Volts DC. The installation of this PV wire is limited to a maximum of 1,000 Volts DC under any operating condition.

When the PV wires are installed in accordance with the provisions of this General Approval, they should meet the minimum safety standards of the Los Angeles City Electrical Code.

For this General Approval to be valid on any installation in the City of Los Angeles, an engineer or inspector of the Department of Building and Safety must make a determination that all the required conditions of this General Approval have been met.

This General Approval is in accordance with Section 93.0303 of the Electrical Code pertaining to "New Materials and Methods of Construction" and does not waive the requirements of the City of Los Angeles Building Code.

This General Approval is neither a product endorsement nor a certification of accuracy or function of the approved item.

Markings:



E332768 (UL) 10 AWG (5.26 mm²)



PHOTOVOLTAIC WIRE TYPE PV 2000V



SUN-RES VW-1 -40°C To 90°C



WET OR DRY RHW-2 OR USE-2

APPROVED BY:

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