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# STANDATA variance 21-ECV-002-024-HVTS kits

Electrical

## 2021 Canadian Electrical Code, Part 1, Rule 2-024 Use of approved equipment – High voltage termination and splice kits

Date Issued: August 2024

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### Purpose

To address issues with approval requirements for High Voltage Termination and Splice kits (HVTS).

### Discussion

Electrical contractors and electrical safety codes officers have requested a provincial variance to accept HVTS kits that meet industry recognized testing requirements outlined in various standards from both manufacturers and other global recognized certification bodies and standard development organizations. Canadian certification organizations have yet to identify a demand for developing a product certification program for HVTS more than 750V as per the Canadian Electrical Code (CE Code) Part 1, Section 36, consequently Canadian certified HVTS kits are not available.

Splices and terminations utilizing HVTS kits are installed as per manufacturer specifications which includes specialized training offered by each manufacturer specific to the kit being installed. It has been identified that many of the cases of failure are related to assembly and installation errors. As a result, this variance puts emphasis on the required training by each manufacturer to ensure persons are properly qualified when installing HVTS.

### Code References

#### C22.1:21 – Canadian Electrical Code, Part 1

##### Rule 2-024 Use of approved equipment

- 1) Electrical equipment used in electrical installations within the jurisdiction of the inspection department shall be approved and shall be of a kind or type and rating approved for the specific purpose for which it is to be employed.

### Electrical Code Regulation – Electrical systems equipment

- 2(1)** If a code, standard or body of rules declared in force under the Act with respect to electrical systems requires approved equipment, that equipment must meet the requirements of this section.
- (2)** No person shall manufacture, install, sell or offer for sale any equipment related to electrical systems for use in Alberta unless the equipment has been
  - a) certified by a certification body in accordance with the certification body's terms of accreditation with the Standards Council of Canada, or
  - b) inspected by an inspection body in accordance with the inspection body's terms of accreditation with the Standards Council of Canada.

[alberta.ca/electrical-standata.aspx](http://alberta.ca/electrical-standata.aspx)

**(3)** Subsection (2) does not apply to electrical equipment of an electric distribution system or a transmission line as defined in the *Hydro and Electric Energy Act*.

(Note: “certification body” is defined as ‘an organization accredited by the Standards Council of Canada as a certification body;’ and “inspection body” is defined as ‘an organization accredited by the Standards Council of Canada as an inspection body.’)

## Application

This variance applies to high voltage terminations and splice kits for installations in the CE Code Part 1.

## Variance

Installers required to use high voltage termination and splice kits are permitted to deviate from Rule 2-024 of the CE Code Part 1 provided they adhere to the following conditions.

## Conditions

### 1) a) Manufactured to North American Standards

HVTS and or associated kits are acceptable when the manufacture declares they have manufactured, inspected, and tested to the HVTS requirements of the appropriate and current standards. These standards include but are not limited to:

- IEEE 48 - 2020 – Standard for Test Procedures and Requirements for Alternating-Current Cable Terminations Used on Shielded Cables Having Laminated Insulation Rated 2.5 kV through 765 kV or Extruded Insulation Rated 2.5 kV through 500 kV. Test procedures and requirements.
- IEEE 404-2022 – Standard for Extruded and Laminated Dielectric Shielded Cable Joints Rated 2.5 kV to 500 kV.

### b) Manufactured to Other than North American Standards

Where HVTS and or associated kits are manufactured to other than North American standards, the manufacturer must declare the product has equivalent safety performance as one manufactured to North American standards. Alternatively, a registered engineering professional may evaluate and accept the product standard to which the HVTS and or associated kit were manufactured to, if it compares favourably with the appropriate North American standards concerning safety performance. These standards include but are not limited to:

- CENELEC HD 629.1-S3 - Test requirements for accessories for use on power cables of rated voltage from 3,6/6(7,2) kV up to 20,8/36(42) kV - Part 1: Accessories for cables with extruded insulation which specifies performance requirements for type tests for cable accessories for use on extruded insulation power cable.
- IEC 60502-4 2023 – Standard Power cables with extruded insulation and their accessories for rated voltages from 1 kV (Um = 1,2 kV) up to 30 kV (Um = 36 kV) - Part 4: Test requirements on accessories for cables with rated voltages from 6 kV (Um = 7,2 kV) up to 30 kV (Um = 36 kV) which specifies test requirements for type of testing of accessories for power cables with rated voltages from 7.2kV up to 36kV.

### 2) The termination and splice kits used shall be acceptable to the authority having jurisdiction (AHJ) and meet one or all of the above mentioned conditions in 1) and be:

- a) installed, repaired, maintained, and assembled by qualified persons as per the manufacturer's installation Instructions and in accordance with CE Code Part 1.

- i. Each HVTS kit may require training specific to the brand and manufacturer. It is the owner and contractors' responsibility to ensure that qualified persons performing an undertaking outlined in this variance are trained by the manufacturer training professional to do so.
  - ii. Training includes testing to the applicable standards outlined in this variance such as: fault finding, repairing, tagging, and reporting. Significant documentation for the use, testing, and maintenance of these products must also be adhered to.
- 3) The AHJ may require supporting documentation to be provided which includes:
- a) a registered engineering professional authentication and testing report;
  - b) a witness test signed off by a registered engineering professional and is properly documented;
  - c) information identifying the installation instructions and training required specific to the make and model of HVTS kit; and
  - d) use of applicable standards verified by a registered engineering professional.

This VARIANCE is applicable throughout the Province of Alberta and provides approximately equivalent or greater safety performance with respect to persons and property as that provided for by the *Safety Codes Act*.

Unless stated otherwise, all Code references in this STANDATA are to the 2021 Canadian Electrical Code, Part 1

Issued by the Provincial Electrical Administrator

*[Original Signed]*

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