

Electrical – Wires and Cables (0-1000 V)
Section 26 05 21

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 26 05 00 – Electrical – Common Work Results for Electrical.
- .2 Section 26 05 20 – Wire and Box Connectors.
- .3 Section 26 05 22 – Connectors and Termination.

1.2 REFERENCE STANDARDS

- .1 CSA International
 - .1 CSA C22.2 N° 0.3 - Test Method for Electrical Wires and Cables.
 - .2 CAN/CSA-C22.2 N° 131 – Type Teck 90 Cable.
 - .3 CSA C22.2 N° 239 – Control and instrumentation Cables

1.3 ACTION AND INFORMATION SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Product Data.
 - .1 Submit manufacturer's instructions, printed product literature and data sheets; the data sheets shall include product characteristics, performance criteria, physical size, operation limits and finishing.

PART 2 PRODUCTS

2.1 TECK 90 CABLE

- .1 Cable: in accordance with Section 26 05 00 - Common Work Results for Electrical.
- .2 Conductors.
 - .1 Grounding conductor: copper.
 - .2 Circuit conductors: copper, size as indicated.
- .3 Insulation.
 - .1 Cross-linked polyethylene (XLPE).
 - .2 Ratings: 1000 V for power cables, 600 V for control cables and 300 V for instrumentation cables.
- .4 Inner jacket: polyvinyl chloride material.
- .5 Metallic armour.
- .6 Overall covering: thermoplastic polyvinyl chloride, FT4 fire-resistance rating.
- .7 Connectors.

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- .1 Watertight, approved for TECK cable.

2.2 RW90 CABLES (WIRES)

- .1 Cable: in accordance with Section 26 05 00 - Common Work Results for Electrical.
- .2 Conductors shall be copper, minimum temperature -40 °C.
- .3 Size, as indicated on drawings.
- .4 Insulation.
 - .1 Cross-linked polyethylene (XLPE).
 - .2 Rating: 1000 V

2.3 CONTROL CABLES

- .1 Cable: in accordance with Section 26 05 00 - Common Work Results for Electrical.
- .2 Cables type ACIC, conform to CSA C22.2 no 239.
- .3 Conductors shall be copper, minimum temperature -40 °C.
- .4 Metallic armor, FT4 fire-resistance rating.
- .5 Insulation.
 - .1 Cross-linked polyethylene (XLPE).
 - .2 Rating: 600 V
- .6 Cables type Teck are allowed.

2.4 INSTRUMENTATION CABLES

- .1 Cable: in accordance with Section 26 05 00 - Common Work Results for Electrical.
- .2 Cables type ACIC, conform to CSA C22.2 no 239.
- .3 Minimum temperature -40 °C
- .4 Conductors shall be soft, stranded and tinned copper;
- .5 Each pair of triad shall have its own copper shield or a Mylar tape (aluminium) with a drain stranded and tinned conductor
- .6 Cables for analog shall be 18 AWG minimum size. All other instrumentation cables shall be 14 AWG minimum size.
- .7 Metallic armor, FT4 fire-resistance rating.
- .8 Insulation.
 - .1 Cross-linked polyethylene (XLPE).
 - .2 Rating: 300 V

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PART 3 EXECUTION

3.1 FIELD QUALITY CONTROL

- .1 Perform tests in accordance with Section 26 05 00 - Common Work Results for Electrical.
- .2 Perform tests before energizing electrical system.

3.2 GENERAL CABLE INSTALLATION

- .1 Terminate cables in accordance with Section 26 05 20 - Wire and Box Connectors - (0-1000 V).
- .2 Cable color coding shall be according to electrical code and standards.

3.3 INSTALLATION OF TECK90 (0 - 600 V) AND CONTROL CABLES

- .1 Majority of Teck90 and control cables are installed in trenches up to the pits.
- .2 Group cables wherever possible on U-Shape supports.
- .3 Install cable, securely supported by straps.
- .4 Unless otherwise indicated, cables splices are prohibited.

3.4 INSTALLATION OF RW90 CABLE (1000 V)

- .1 If used, RW90 cables shall be installed in conduits.

3.5 INSTALLATION OF CABLES IN CONDUITS

- .1 Install cables in conduits according the manufacturer recommendations.
- .2 It is not permitted to pull spliced cables in conduits
- .3 Install simultaneously all cables in the same conduit.
- .4 To reduce the pull stress, use lubricants CSA approved and compatible with the exterior cable covering.
- .5 After cable installation, seal all conduits openings with approved cable sealing product.

3.6 SPLICES

- .1 Splices shall be cold shrink type.
- .2 Splice kits shall be usable for armoured and non-armoured, three conductor, 1 kV cables.
- .3 Splice kits shall be CSA approved.
- .4 Each kit shall contain all material necessary for Teck90 cables, as tape splice system, water stop system, armour continuity system, re-jacking system and copper compression.
- .5 The kit shall include the instructions for installation.
- .6 Acceptable products : 3M or equivalent approved.



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- .7 The Contractor shall carry out the work while respecting the manufacturer instructions.

3.7 QUALITY CONTROL

- .1 Tests as part of Quality Control shall be performed by qualified personnel.
- .1 Provide the required test equipment
- .2 Check the phase sequence; identify each phase conductor of each circuit.
- .3 Check the continuity of each phase of each circuit; check that there is no short-circuit between cables of the same circuit.
- .4 Tests during the reception of cables.
- .1 After completed the installation of cables and before the cable termination, measure the resistance of insulation of each phase conductor of each circuit; use a Megho-meter of adequate voltage.
- .2 After completed the cable terminations, measure the resistance of insulation to ensure readiness of cables for commissioning.
- .5 Type-approval tests
- .1 Ensure that all cable terminations are not connected, and auxiliary circuits disconnected.
- .2 Ground cable shielding, grounding wires, shielding wires, armor grounding, etc..
- .6 Dielectric Withstand Test
- .1 Perform dielectric withstand test in accordance with applicable standards.
- .7 Provide the Park Canada Agency the test results, identifying each cable tested, indicating the test circuit used and the results of the tests.
- .8 Remove and replace cables that did not pass the tests.

END OF SECTION