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June 6, 2018

Hello,

With recent concerns surrounding the performance requirements for CSA AC90 cables, Northern Cables Inc. requests a few minutes of your time to explain several details of CSA's requirements that apply to all AC90 cables.

The following pages define and explain three of the most common concerns that Northern Cables receives regarding AC90 performance (by the end users/installers).

Northern Cables Inc. manufactures its AC90 to CSA standard 22.2 No. 51 and we do our best to ensure 100% of production complies to the standard. One of the more controversial requirements of the standard is *Armour Tightness*. We are required to meet the performance standards that are mandated by CSA, even if it generates customer complaints.

Please visit www.Northerncables.com and look under the RESOURCES tab to see actual AC90 performance testing being performed.

Northern Cables Inc. is fully licensed by CSA and are audited by a CSA field inspector every quarter. During audits random samples are selected (by auditor) which are then sent for full testing at a CSA testing facility.

If you have any concerns regarding any of our products please contact us @ 1-888-524-5050 or www.northerncables.com/contact

If you would like more information on CSA standards or you feel that changes are required to a particular products construction/performance requirement please contact Evangeline Cometa at CSA @ 1-416-747-2671 to express your concerns.

Thank you for your time,
Dennis Armstrong

The below (in blue) are requirements for CSA Armoured Cable AC90. These have been taken directly from the CSA 22.2 NO.51 - 14 standard.

6.5 Performance tests on completed cable

6.5.1 Mechanical

Tightness of armour

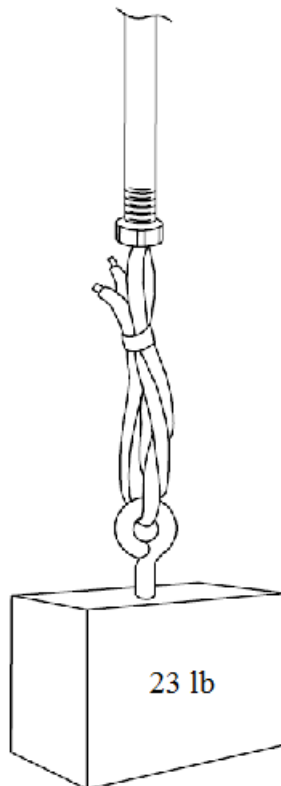
6.5.1.4.1

The armour shall grip the cable sufficiently to prevent the withdrawal of the conductor assembly from a 3.0 m specimen of finished cable by the application of a minimum force of 100 N for a period of 1 min. A specimen shall be considered a failure if the end of the conductor assembly withdraws more than 13 mm from the armour at the lower end of the specimen.

6.5.1.4.2

Compliance with the requirement of Clause 6.5.1.4.1 shall be determined in accordance with the method specified in Clause 5.15 (tightness of armour) of CSA C22.2 No. 0.3.

- A 10-foot length of AC90, being only supported by the armour will then have a 23 lb. weight attached to the cables wire assembly. It then must hold the 23 lb. weight for one minute without pulling the wires out of the armour more than ½”.



The below (in blue) are requirements for CSA Armoured Cable AC90. These have been taken directly from the CSA 22.2 NO.51 - 14 standard.

6.5.1.5 Flexibility of armour

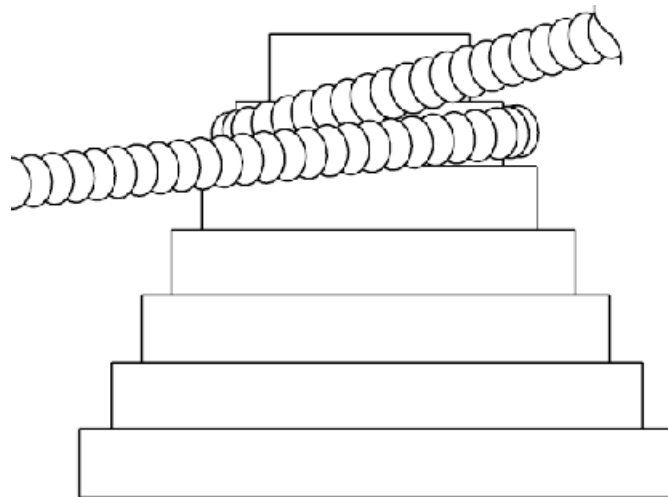
6.5.1.5.1

The flexibility of 600 V Types AC90, ACWU90, ACG90, and ACGWU90 armoured cables shall be such that finished cables can be bent, without their jackets, around a mandrel of a diameter as specified in Table 19 without opening up the armour convolutions so as to expose the conductor assembly. For voltages greater than 600 V, the flexibility of the armour, with the outer jacket removed (if one is provided) shall be such that the cable can be bent around a mandrel having a diameter eight times the outside diameter of the armour without opening up at any point to expose the conductor assembly.

6.5.1.5.2

Compliance with the requirement of Clause 6.5.1.5.1 shall be determined in accordance with the method specified in Clause 5.16.1 of CSA C22.2 No. 0.3.

- **A length of AC90 is to be wound around a specified diameter mandrel without the armour failing or breaking open.**



The below (in blue) are requirements for CSA Armoured Cable AC90. These have been taken directly from the CSA 22.2 NO.51 - 14 standard.

6.5.1.8 Armour tension

6.5.1.8.1

A length of armour of Type AC90 and ACG90 cable and a similar length of armour and jacket of Type ACWU90 and ACGWU90 cable shall withstand for 1 min a tension produced by a 136 kg weight without opening up the armour convolutions or damaging the jacket.

- A 47” length of AC90 (with conductors removed) has mechanical clamps attached to each end of the armour. The armour is then used to lift a 300-pound weight, which it must support for one minute without the armour breaking.

