



PACKAGING, HANDLING AND STORAGE PROCEDURES

A photograph of two large spools of wire. The spool in the foreground is light blue with a black top flange and a white center. The spool in the background is grey with a black top flange. Both spools have a black bottom flange. The wires are coiled around the spools. The background is a green gradient with a large green circle on the right and several overlapping green circles on the left. The text "WIRES AND CABLES" is overlaid on the bottom left of the image.

**WIRES AND
CABLES**

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1 - SCOPE

This document describes the rules to be respected for the handling, packaging, transportation and for the storage of electrical wires and cables.

2 - APPLICABLE DOCUMENTS

2.1 Axon' document

REFERENCE	TITLE
Packaging procedures	
GC 0002	Axon internal packaging procedure for wires and cables for space application.

2.2 Standard document

STANDARD REFERENCE	TITLE
IPC 620	Requirements and acceptance for cable and wiring assemblies
ESCC 20600	Preservation, packaging and dispatch of ESCC Components

3 - PACKAGING OF WIRES AND CABLES ON SPOOL OR DRUM

3.1 Protection of the ends of wire and cable spool

When the ends of wire and cable are protected by caps, it is better to leave them until using the wire or cable.

If the spool is not fully used, make a new protection at the end by capping or putting similar protection.

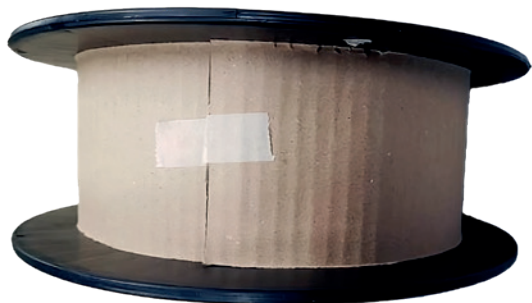


End protected by heat shrinkable caps.

3.2 Spool protection

The wire or cable on the spool should be protected against dust by a plastic bag, a tape of cardboard or plastic tape.

Cardboard is not acceptable for medical and space application.



Protected by cardboard tape



Protected by a plastic film

3 - PACKAGING OF WIRES AND CABLES ON SPOOL OR DRUM

3.3 Storage conditions of the spool

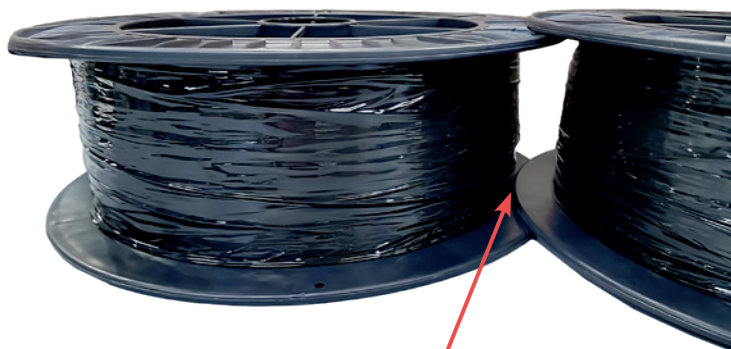
All spools should be protected & stored in vertical position. If not there are several risks:

- damaging the wire with the edge of other spools (see picture hereafter),
- the customer may have difficulties to unwind the wire,
- deformation of large section cables

The spools have to be stored and kept out of the rain. It is strongly recommended to leave the cables inside their initial packaging.



Compliant (vertical position).



Not acceptable (risk to damage the wire).

3 - PACKAGING OF WIRES AND CABLES ON SPOOL OR DRUM



Compliant.



The insulation can be damaged.



Spool "stopped" by a lath.



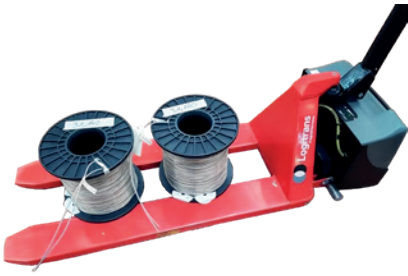
Spool not "stopped" by a lath. ①
The insulation can be damaged. ②



Compliant
(acceptable).



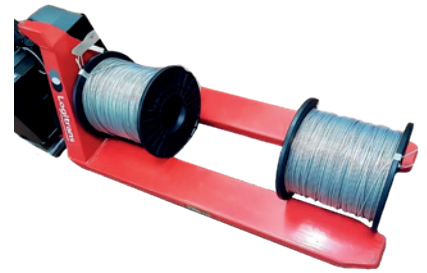
4 - TRANSPORT



Acceptable but spools are too close to the ends of the forks (risk to slide and damage the wire).



Compliant (spools are well positioned).



Not acceptable, the insulation can be damaged in case where the spool slide to the ends of the forks.



Other possibility of carrying.



Compliant (to go up the spool at the good level).



Transportation with pallet truck, electrical pallet or self-propelled trolley which takes the box with correct position of the "fork" truck.



5 - UNPACKING



Example of delivered box.

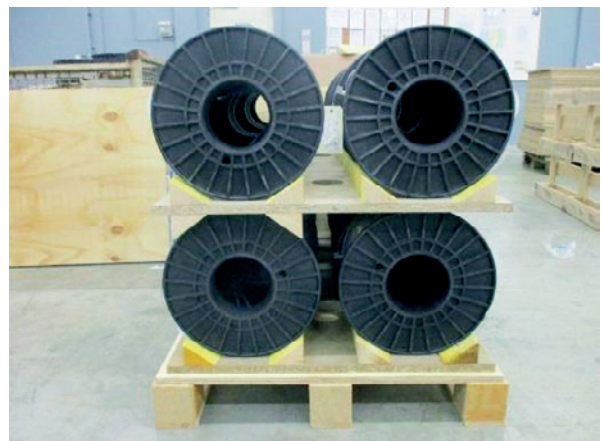


In case of plastic bag, open it with scissors in the blue area to avoid damage of the wire. The opening must be done on one edge (blue area for example).

Using a cutter is not recommended.



Take off the plates on every sides to have access to the spools.



After removing the plates, the spools can be taken with devices as given in part 4 (transport).

6 - HANDLING, WIRING AND INSTALLATION

1 - Do not bend the cable on a radius less than 5 times the outer diameter of the wire or cable in static application.

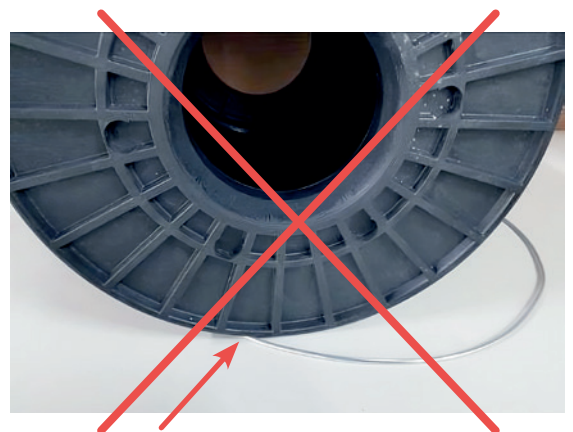
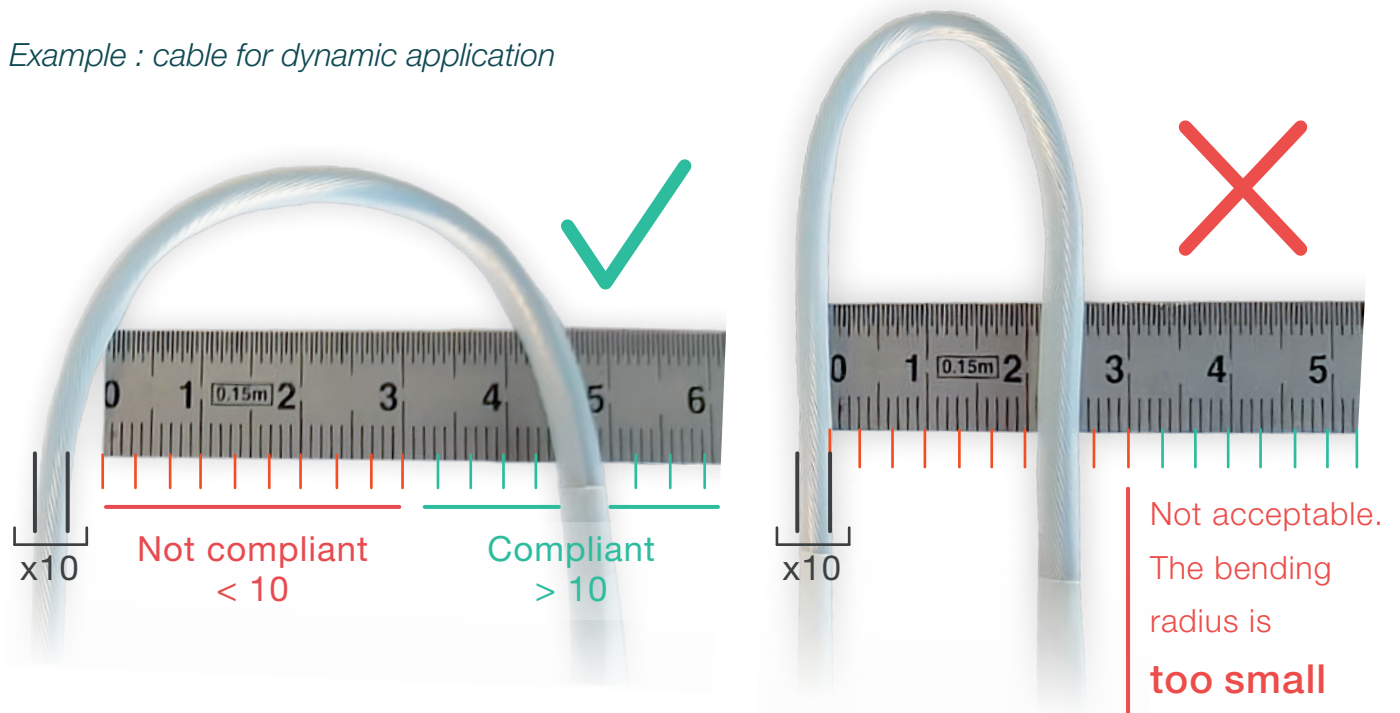
2 - Do not bend the cable on a radius less than 10 times the outer diameter of the wire or cable in dynamic application.

For point 1 and 2 this rule is applicable for standard wires and cables but please refer to the example hereafter for dedicated applications.

3 - Do not walk on the cable.

4 - Do not roll the spool or drum on the wire.

Example : cable for dynamic application



6 - HANDLING, WIRING AND INSTALLATION (SUITE)

Acceptable bending radius for wires and cables:

TYPE OF WIRE OR CABLE	BENDING RADIUS FOR STATIC APPLICATION	BENDING RADIUS FOR DYNAMIC APPLICATION
Wiring wire	5 times the overall diameter	10 times the overall diameter
Complete cable wire several wires	5 times the overall diameter	10 times the overall diameter
High voltage wire	10 times the overall diameter (recommended)	15 times the overall diameter (recommended)
Bus transmissions cable with cellular insulation	10 times the overall diameter (recommended)	15 times the overall diameter (recommended)
High frequency coaxial cable	10 times the overall diameter (recommended)	15 times the overall diameter (recommended)

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