

# High tension cables

## Technical aspects & supply conditions

All conditions regarding the technical requirements of ignition cables are taken from the ISO 3808 and ISO 6856 standards. In addition, the following requirements are accepted for commercial and technical needs unless individual agreements with the customer have been made and are therefore not specified in the said norms. Please be aware that EPDM cables are not subjected to the test described in ISO 3808 4.15.2 and 4.15.4 due to the nature of the raw material.

### Cable diameter

The outer diameter of the wires is in most cases has a tolerance of  $\pm 0.3$  mm. Details are presented below (see ISO 3808 3.3):

5 mm cables –  $5 \pm 0.3$  mm  
7 mm cables –  $7 \pm 0.3$  mm  
8 mm cables –  $8 \pm 0.3$  mm

Measurements should be done with a laser sensor. When using a caliper, do not use excessive force for measuring and process with a flat part of the measuring runners.

### Resistance

Cable resistance tolerance is defined as follows (see ISO 3808 4.3.4):

Cable Type	Resistance
Copper Core	1 $\Omega$ / max
Resistive Core Type A	3000 $\Omega$ /m - 9000 $\Omega$ /m
Resistive Core Type B	9000 $\Omega$ m - 23000 $\Omega$ /m
Reactive Cores	nominal resistance $\pm 20\%$

Matters related to resistance are presented in a separate file. It should be taken into account that for carbon cores, the resistance quite strongly depends on such factors as temperature and its change, mechanical factors including bending the core during the assembly as well as bending the core before and during crimping the terminals. Electrical resistance during and right after processing may go out of the above norms. In this case it is necessary to allow relaxation process to ensure the correct measurements.

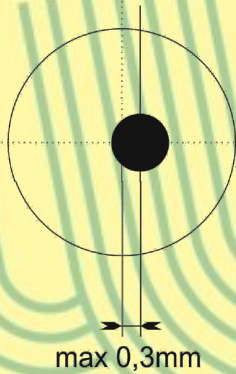
### Cable and core centricity

Cable centricity is defined as the center of all layers or cores and the offset between adjacent layers. What is more, the minimal distance between the core and the outer insulation surfaces is to be checked, too. Allowed movement of the central points of adjacent layers is max. 0.3 mm. The minimal distance between the core and the outer surface of the insulation must be more than 1.2mm.

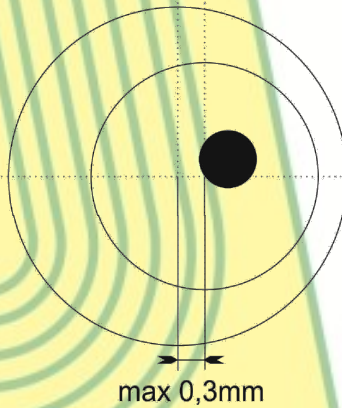
### The proportions of the inner and outer layers of insulation

Due to technological reasons, the proportions and thickness of individual layers of the cable are not precisely defined. Drawing is for information only.

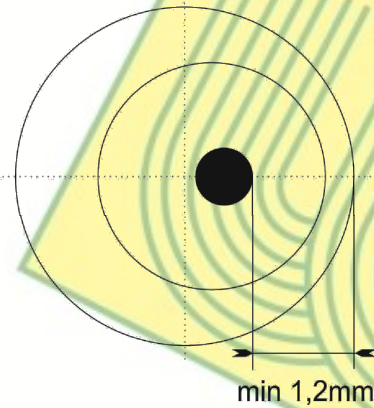
Core displacement relative to the first insulation



Internal insulation shifted relative to the outer layer



Minimal insulation thickness



### Cable insulation hardness

The cable insulation hardness is  $75 \pm 5$  A Shore

### Cable surface

The surface of the cable should be smooth and homogeneous. Discoloration, scratches, indentations, damages etc. are not allowed. If the surface deformations occur over the combined length resulting from the tolerance of the cable length on the spool, this will not be taken as the reason for a claim.

### Cable blooming

Some materials may have natural blooming. This blooming is usually white or gray and may show on the cable after a long storage or if the cable was stored or transported at variable temperatures. Blooming can be removed by the flame treatment (high efficiency) or mechanically using organic solvents (lower efficiency). Cable blooming will not be taken as the reason for a claim.

### Cable on the spool

The cable amount on the spool is specified  $\pm 200$  m but not more than  $\pm 10\%$  of the nominal length on the spool.

### Stripping the insulation

If the cable requires stripping, it should be possible to strip insulation bits of at least 20 mm smoothly and without difficulty. The core should not stick to insulation and should not move itself, e.g. under the influence of gravity. Each spool is inspected. Damage to the core by cutting or stripping tools of the customer's equipment will not be taken as a reason for a claim. See ISO 3808 4.14

### **Cable print**

The direction of the cable print on the spool (print in the unwinding direction) is not defined.

### **Splices**

A maximum of 5 Splices per spool is allowed as standard. The number of splices on the spool is indicated on the reel ticket and can be additionally marked with a yellow sticker with a diameter of 4 cm with the number of splices:



No sticker or information on the reel ticket means there are no splices on the spool. The position of the splices over the length of the cable is not defined or specified.

### **Packing**

As standard, the cable is wound on plywood reels measuring  $\Phi 750$  mm at 385mm wide, with  $\Phi 250$  mm inner core. The drawing of the reels is available on request and is available at [http://madison-wire.com/download -Standard reel](http://madison-wire.com/download-Standard-reel) or directly at <http://madison-wire.com/otherfiles/standardreel.pdf>

The amount of cable on the reel depends on its diameter:

- 4 mm - 5000 m
- 5 mm - 5000 m
- 6 mm - 3000 m
- 7 mm - 2500 m
- 8 mm - 1800 m

The gross weight of the reels, depending on the diameter and material, is about 170-180 kg and does not exceed 200 kg. In the case of other cable diameters, the customer will be individually informed about the details. It is possible to use other reels at the customer's request.