FLEXIBLE ELEMENTS

SHAPING:
1. Cut the total length of the flexible element + 50 mm for the shaping.
2. Shaped the element:
   That operation must be done before the final cutting, the stripping and the punching.
3. Stripping:
   The stripping must be done with a knife or a stripper.
4. Punching or drilling:
   Punching or drilling used to create a bump. To guarantee a correct contact between the clamp and
   the flexible element, please make sure that you punch or drill from the surface on contact with the clamp.
5. Assembling:
   Use a washer under the head of bolt to apply a pressure on the width of the flexible element.
   For flexible elements made with more than 4 strips, use ‘BELLEVILLE’ washer plus iron bolt.
   Otherwise, use a bolt coated with zinc.

ADVANTAGES:
The sole electrical connection system which compiles all duties: shaping – connectors – conductor insulation
and insulated support.

CONCEPT and DESIGN:
The FORISSIER flexible elements are manufactured with an
assembly of copper strips (Cu ETP), protected by a PVC extrusion
which offers an electrical insulation as well the flexible element is
twisted or used in different environments (humidity, high
temperature or aggressive ambience).

THE RANGE:
Standard Length: 2000 mm and 3000 mm (other dimensions upon request).
Strip thickness: 0.5 mm up to 1 mm.
Number of strips: 2 up to 12.
Options:
  Tinned copper or aluminium.
  Flexible connections.
  Halogen free.
  High temperature insulation – 125 °C.

SCOPE OF APPLICATION:
- All application linked to power transportation, to replace: Cables, Rigid bars
- Electrical appliances (Switchboard, Circuit breaker and converter).
- Transformer (connections between the transformer and the bars).

TECHNICAL CHARACTERISTICS:
PVC - POLYVINYLCHLORIDE
Density: 1.31
Hardness Shore: 85 A
Maximum tensile strength: 19.6MPa
Maximum elongation: 365 %
Calorimetric conductivity: 3 to 4 10-4 cal/s/cm/°C
Dielectric strength: 20 KV/mm
Fire request: Class FV 0 ep: 2 mm UL 94V0
Recycling: Yes

STRAIPS
Copper classification:
- Compliance with NF A 51-050
- Designation: Cu-ETP state 0
- Mini copper: 99.9 %
- Resistivity maximum at 20°C: 1.7241 µW.cm ( 100% I ACS )

Copper characteristics:
- Compliance with NF A 51-100
- Tensile strength: 200 MPa minimum
- Elongation: 30 % minimum
- Vickers hardness: < 55 HV

FLEXIBLE ELEMENTS
Maximum voltages: 1000 Volts
Operating temperature: -40°C to +105°C
PVC thickness: 2.0mm
Dielectric strength: 20 KV/mm
Fire reaction: Compliance to NFC 32-201-1
Compliance to NFC 32-070 C2

DESIGNATION
<table>
<thead>
<tr>
<th>Flexible element</th>
<th>Width (mm)</th>
<th>Thickness (mm)</th>
<th>Quantity</th>
</tr>
</thead>
</table>
The acceptable rise in temperature is 35°C (fixed) and a maximum temperature of 85°C.

Selection's example:
Our example concerns a current flow capacity of 630 A and a maximum temperature of 85°C.

- Operating cabinet temperature is 35°C (fixed)
- The acceptable rise in temperature is (85°C – 35°C = 50°C).

The possibilities are: (interaction across the orange line and the green scale)
- ES 20 x 1 x 10
- ES 24 x 1 x 8
- ES 32 x 1 x 6
- ES 40 x 1 x 4
- ES 50 x 1 x 3

Depends on the clamp of the circuit breaker, you have to choose the correct width of the flexible element.
**FLEXIBLE ELEMENTS**

**CONCEPT and DESIGN:**
The FORISSIER flexible elements are manufactured with an assembly of copper strips (Cu ETP), protected by a PVC extrusion which offers an electrical insulation as well the flexible element is twisted or used in different environments (humidity, high temperature or aggressive ambience).

**THE RANGE:**
- Standard Length: 2000 mm and 3000 mm (other dimensions upon request).
- Strip thickness: 0.5 mm up to 1 mm.
- Number of strips: 2 up to 12.
- Options: Tinned copper or aluminium.
  - Flexible connections.
  - Halogen free.
  - High temperature insulation – 125 °C.

**SCOPE OF APPLICATION:**
- All application linked to power transportation, to replace: Cables, Rigid bars
- Electrical appliances (Switchboard, Circuit breaker and converter).
- Transformer (connections between the transformer and the bars).

**SHAPING:**
1. Cut the total length of the flexible element + 50 mm for the shaping.
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5. Assembling:
   - Use a washer under the head of bolt to apply a pressure on the width of the flexible element.
   - For flexible elements made with more than 4 strips, use « BELLEVILLE » washer plus iron bolt. Otherwise, use a bolt coated with zinc.

**ADVANTAGES:**
- The sole electrical connection system which compiles all duties: shaping – connectors – conductor insulation and insulated support.
- The manufacturing cost of the connection is reduced by using a sole component compared to the price of cables + supports + connectors.
- With reference to rigid bars:
  - Increasing of electrical performance with improvement of safety (higher current density with insulation for a same section of copper).
  - Gain of volume by closeness implantation of insulated flexible elements.
  - Easy shaping thanks to the flexibility of the strips in comparison with rigid bars.
- With reference to cables:
  - Time saving by the simplicity of connection manufacturing using no added connectors.
  - Suppression of the contact resistance between the cable and the connector.
  - Gain of volume with the folding in comparison with the compulsory curvature of a cable.
  - Suppression of the supports or glands.

**TECHNICAL CHARACTERISTICS:**

**PVC - POLYVINYLCHLORIDE**
- Density: 1.31 NFT 51-063
- Hardness Shore: 85 A NFT 51-109
- Maximum tensile strength: 19.6MPa NFT 51-034
- Maximum elongation: 365 % NFT 51-034
- Calorimetric conductivity:3 to 4 10-4 cal/s/cm/°C
- Dielectric strength:20 KV/mm
- Fire request: Class FV 0 ep: 2 mm UL 94v0
- Recycling: Yes

**STrips**
- Copper classification:
  - Compliance with NF A 51-050 - Designation: Cu-ETP state 0
  - Mini copper: 99.9%
  - Resistivity maximum at 20°C: 1.7241 µW.cm ( 100% I ACS )
- Copper characteristics:
  - Compliance with NF A 51-100 ( exception vickers hardness )
  - Tensile strength: 200 MPa minimum
  - Elongation: 30 % minimum
  - Vickers hardness: < 55 HV

**FLEXIBLE ELEMENTS**
- Maximum voltages: 1000 Volts
- Operating temperature: -40°C to +105°C
- PVC thickness: 2.0mm
- Dielectric strength: Average of 20 KV/mm
- Fire reaction: Compliance to NFC 32-070 C2

**DESIGNATION**
- Flexible element
- Width strip(mm)
- Thickness strip(mm)
- Quantity strip

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