

FLEXIBLE ELEMENTS



CONCEPT and DESIGN :

The FORISSIER flexible elements are manufactured with an assembly of copper strips (Cu ETP), protected by a PVC extrusion (9 mm up to 50 mm)* wich offers an electrical insulation as well the flexible element is twisted or used in different environments

(humidity, high temperature or aggressive ambience).

* Widht 63-80 and 100 mm : heat-shrinkable sleeve.

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 température 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).

ADVANTAGES :

The sole electrical connection system wich 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	Calorimetrique conductivity :3 to 4 10-4 cal/s/cm/°C
Hardness Shore :	85 A	NFT 51-109	Dielectric strength :20 KV/mm
Maximum tensile strength :	19.6MPa	NFT 51-034	Fire request : Class FV 0 ep : 2 mm UL 94v0
Maximum elongation :	365 %	NFT 51-034	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	

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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 32-201-1	
		Compliance to NFC 32-070 C2	

DESIGNATION

ES	24	X	1	X	8
Flexible element	Width strip(mm)		thickness strip(mm)		quantity strip

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Allowable current in relation to the flexible elements overheating for an ambient temperature of 35°C

Selection :

The bar chart enables the selection of flexible elements according to the different parameters :

- Operating cabinet temperature of 35°C.
- Current (amps) requested.
- Acceptable rise in temperature.

Selection's example :

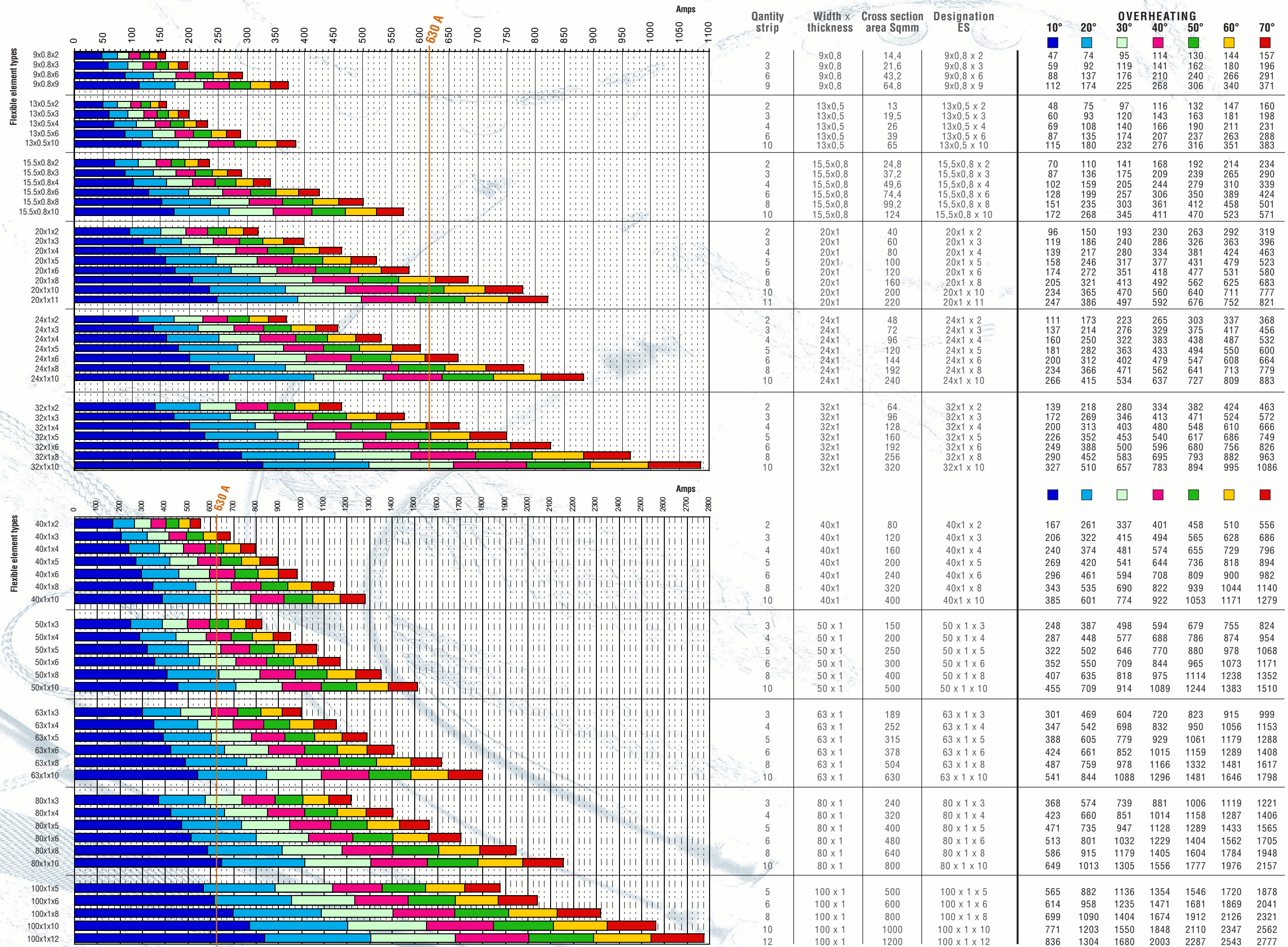
Our example concerns a current flow capacity of 630 A, and a maximum temperature of 85°C :

- Operating cabinet temperature is 35°C (fixed)
- The acceptable rise in temperature is (85°C - 35°C = 50°C). (See the orange line)

The possibilities are :
(Intersection 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.





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.



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