

New Technologies

Flexible copper conductors



CONNECT YOUR ENERGY

Flexible copper conductors

Design / Research and Develop Department

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ABSTRACT

De Angeli Prodotti added copper flexible cables to its product portfolio. A brand new dedicated department allows us to meet customers' satisfaction by providing them performing conductors easy to handle.

INTRODUCTION

Doing connections inside transformers can be difficult because the conductor must be bent with constantly varying radius of curvature.

Flexible and extra-flexible copper cables are designed to provide electrical performances equal to those of standard stranded copper wires, with the additional benefit of high flexibility. They are obtained from a large number of thin copper wires, twisted together in a wide variety of formations.

ENGINEERING

De Angeli Prodotti developed a process allowing to strand together an almost unlimited number of thin wires. The process is similar to the one used for conductors for overhead-lines, just carried out on special designed machines, capable to manage wires with diameters down to 0.10 mm.

Conductors produced can be bare or insulated with external tapes, among which crepe paper is the most common.

Since flexible and extra-flexible cables are obtained from many wires of circular cross section, the nominal diameter for an equal copper section would obviously increase with respect to the solid conductor. But if the size actually matters, flexible cables can be shaped, obtaining a rectangular cross section and thus maximizing the fill factor.

Our know-how allowed us to develop also aluminum flexible conductors, available with dedicated bi-metallic fittings: a competitive alternative to copper!

ADVANTAGES

Flexible cables are the best choice whenever flexibility and high performances are needed. Originally thought to be used inside transformers, they are suitable for every application that requires severe bending of the conductor.

By decreasing the size of the elementary wires, twisting of the final product is made possible without the need of additional machines.



Our flexible ropes are available in a wide number of configurations and also in aluminum



CONTACTS

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Reference specification IEC 60228

Flexible conductors		Type 5 conductors		
Nominal cross-section [mm ²]	Wire diameter [mm]	Number of wires	Calculated cross-section [mm ²]	Bundle formation
10	0,40	84	10,56	7x12
16		125	15,71	29+6x16
25		203	25,51	7x29
35		280	35,19	7x40
50		406	51,02	14x29
70		551	69,24	19x29
95		760	95,50	19x40
120		976	128,68	40+18x52
125		988	124,16	19x52
150		1216	152,81	19x64
185		1480	185,98	37x40
240		1924	241,78	37x52
300		2368	297,57	37x64
400		3219	404,51	37x87
500	0,50	2584	507,37	19x136
630		3230	634,21	19x170

Extra-flexible conductors		Type 6 conductors	
Nominal cross-section [mm ²]	Wire diameter [mm]	Bundle formation	
10 up to 35	0,20	On request	
50 up to 150	0,30	On request	
> 150	0,40	Same as type 5	

Reels	Flange diameter [mm]	Barrel diameter [mm]	Barrel width [mm]	Max content [kg]
DIN 800	800	400	470	600
DIN 1000	1000	500	580	1300
D 75	1000	730	528	600

Paper insulation	Properties
Crepe paper	For standard products. Highest flexibility. Available also thermally upgraded.
Micro crepe paper 22HCC-80HDC	Thermally upgraded, for high flexibility and high number of layers
Kraft type D/W/F/Z	Less flexibility, for high numbers of layers. Available also thermally upgraded.
Nomex T410 - T926	Very high thermal class and mechanical strength.



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