

## CALCULATION OF PERMISSIBLE CURRENT IN NICKEL CORE OF A SINGLE CONDUCTOR CABLE

The values of the maximal permissible current at 20°C which may run through nickel core are defined in chart 1 below (independently of the type of insulation used). These values have been calculated following the methodology described in the IEC 60287 standard while not taking into consideration an excessive heating of nickel core (less than 30°C). The primary function of nickel core is indeed to withstand high temperatures and oxidation and not to allow the passing for strong currents which would lead to excessive heating of nickel core.

The permissible current values hereafter are given for a single cable in open air with nickel core placed on a ladder support or cleats, protected from the solar radiation and installed in an environment with a reasonable dispersion and ventilation.

The current that will run through nickel core obviously depends on many factors such as the cable length, the radius of curvature, the moisture present in the environment and especially the temperature.

The current that will run through nickel core obviously depends on the ambient temperature, consequently, correction factors (K) need to be applied to the maximal permissible current at 20°C (chart 2).

The value of the maximal permissible current ( $I_{max}$ ) at a given ambient temperature is defined by the following formula:

$$I_{max} = I_{20^{\circ}C} * K$$

### REMARKS:

- The values defined in the charts, curves of obtained through calculation are indicative and theoretical. They should only be used as an indicative value, or as a starting point for a more complete study.
- The Caviterm Company could not be hold responsible in any case for possible incidents, notably in case of cablings without any respect of rules and current standards.
- For an optimal use of cables produced by our company, we strongly recommend to test in actual situation. Our technical teams remain at your disposal for any further analysis.

CHART 1

NOMINAL SECTION mm <sup>2</sup>	MAXIMAL PERMISSIBLE CURRENT AT 20°C A
0.25	3
0.50	4
0.75	5
1.00	6
1.50	8
2.50	11
4.00	14
6.00	18
10.00	26
16.00	35
25.00	46

CHART 2

AMBIENT TEMPERATURE °C	CORRECTION FACTOR (K)
20	1.00
50	0.94
100	0.86
150	0.79
200	0.74
250	0.70
300	0.66
350	0.63
400	0.61
450	0.58
500	0.56
550	0.54
600	0.52



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