

CONNECTION TERMINALS FOR EARTHING AND SAFETY

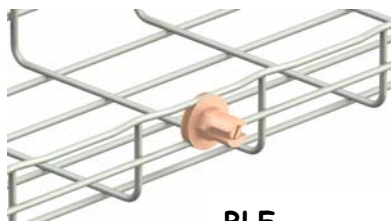
The importance of a good earthing in an electrical installation

The connection of an electrical installation to the earth is of prime importance for 2 main reasons:

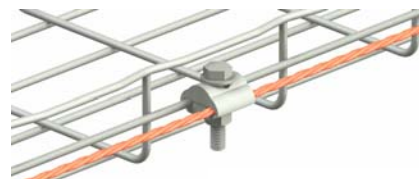
- Realize earthing of all interference currents or leak that could be circulating through the metallic cable paths.
- Guarantee the equipotentiality of conducting parties of the system.

This connection prevents any electrical shock risks. In fact, the differences of potential are dangerous for any persons in contact with the 2 parties of the installation.

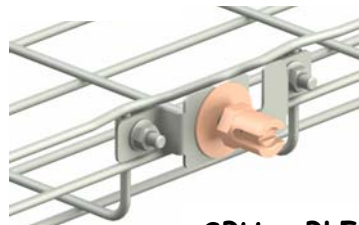
In addition to the protection of persons, the earth connection to the cable paths facilitate good electromagnetic compatibility of the installation and can prevent waves generated by the current interferences (created by high tension cables or by any other nearby electrical equipment). These current interferences are then redirected to the earth.



BLF



GRIFEQUIP



SBU + BLF

The lesser the distance between each connection, the higher the equipotentiality of the system is reached. This distance in practice should be between 6 and 15 meters, taking into consideration that the electrical continuity of the cables and wedges paths should be adjusted to the specifications of the UNE-EN 61537 standard.

So as not to connect the earth network cable on each cable path, this could lead to a bad electrical continuity, it is advisable to use CABLOFIL wedges whose excellent electrical continuity has been tested. The range of CABLOFIL rapid wedges as well as the screw type, matches the requirements of the standard linked to UNE-EN 61537 cables.



CABLOFIL recommends its KITINOX solution (CE25/CE30 in stainless steel) for all stainless steel installations necessitating an earth connection.



AUTOCLIC

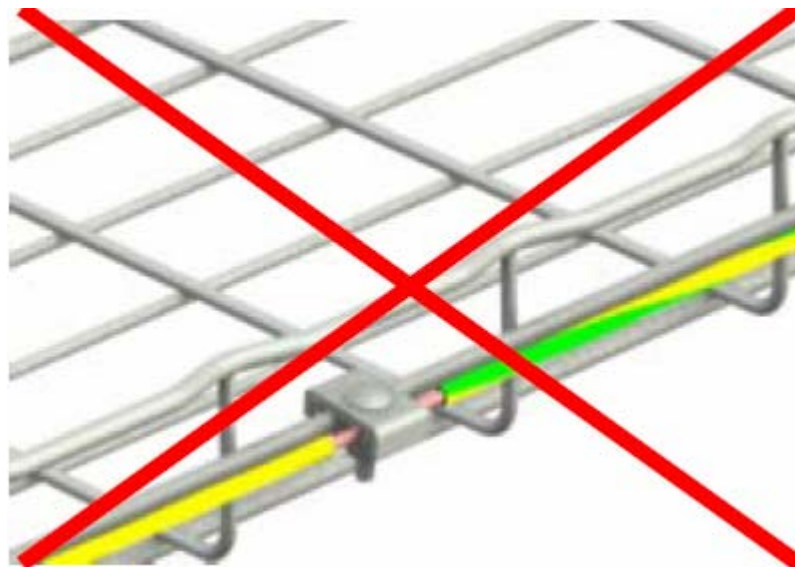


EDRN

Connection terminals as protection system against corrosion.

Zinc is the metal that is more commonly use for the surface coating of steel cable paths. This galvanic protection is a sacrificial procedure that protects steel until the moment where the oxidation process of zinc is so advanced that steel comes into contact with air.

In bad installations, the connection of the earth cable to the cable paths is made from the screws coated with zinc. This type of installation can quickly cause problems at installation level.



Reasons for which it is necessary to prevent this type of screw connection.

Metallic elements react to degrees more or less strong at the level of differences of potential. When this degree is high, the contact of the 2 metals rapidly creates a type of 'galvanic battery' reaction, which as consequence, the more redactor of the metals (that which has a high tendency to give up its electrons) shall act as an anode and oxidizes while the other metal shall act as a cathode. Corrosion shall then be abnormally accelerated.

This phenomenon is being known, as "galvanic corrosion". The contact points between the metallic elements (for example, the copper of the cable and the zinc of the cables path) end up by corroding.

The function of the connection terminals is to prevent direct contact between these two metals, which are likely to create a short-term galvanic battery, guaranteeing at the same time the connection to the earthing network of the cables paths.

The following graph (that you can find in the CABLOFIL Technical Guide, Page 6) presents the difference of potential between the different metallic elements that are regularly used in electrical wirings. Zinc and stainless steel or zinc and copper are combinations that very rapidly provoke corrosion problems if they stay in contact.

		Coupled metal →								
		Steel 304 L								
	↓	Considered metal								
Steel 304L	0	Nickel								
Nickel	180	0	Copper							
Copper	320	140	0	Brass						
Brass	400	220	80	0	Steel					
Steel	750	570	430	350	0	Aluminum				
Aluminum	840	660	520	440	90	0	Chromium			
Chromium	950	770	630	550	200	110	0	Zinc		
Zinc	1150	970	830	750	400	310	200	0		

Consequently, galvanic corrosion can easily be prevented if the earthing installation is made with connection terminals of bimetallic alloy (copper or aluminum). CABLOFIL recommends 2 types of connection terminals, either for cables paths in wire or for connections terminals in metal sheet (BLF or BLT terminals). One appropriate usage can prevent the shelf life of the installation from diminishing considerably.

Conclusions

Obtaining an equipotentiality of the earthing system is fundamental, not only for the protection of life but also that of assets and to obtain good electromagnetic compatibility. For these reasons, it is important to match all current normative requirements regarding electrical installations and use appropriate products:

- Metallic cable paths should be connected to earth in an appropriate manner (like all electrical system component). **The use of the connection terminals of bimetallic alloy (copper or aluminum) is necessary to prevent galvanic corrosion in most cases.**
- **The manufacturer of cable paths should offer wedges having an excellent electrical continuity (matching the UNE-EN 61537 standard specifications).**

For more information, please consult our technical department or visit our website: www.cablofil.org.

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