



THE CORRECT USE OF SEALING FITTINGS

A conduit system should be provided with sealing fittings, through which run the electrical conductors, outside each enclosure containing equipment that can spark.

Once completed the assembly, the sealing fitting must be completely sealed with a special resin in order to prevent that a possible explosion occurred inside the enclosure can be propagated to the whole system of interconnected pipes, causing a devastating explosion.

Too often in plants, the sealing fittings are open, not sealed or sealed incorrectly. Unfortunately, not all the installers have the sensitivity required, perhaps because they haven't been correctly trained about the risks that can occur if the fittings are not sealed properly.

It is important to highlight that the sealing fittings and the coupling mixture are components of the same electrical construction, hence, they should be certified jointly and it's not allowed to use the fittings of a manufacturer and the coupling mixture of another one.

The sealing compounds may have, in fact, different characteristics: the use information and the number of certificate corresponding to the sealing fittings must be reported on the can as well as on the instructions contained in the technical dossier.

Usually, the sealing compound is a mixture of epoxy resin with two components, that mixed together, react, hardening completely the compound.

It is necessary to take particular care mixing the two components in order to not to waste the product and, especially, to ensure the seal when poured into the sealing fittings.

First of all, you need to mix thoroughly the basic product, so that the charge, normally present and deposited on the bottom, mixes well with resin, then add the catalyst, mixing the compounds for a couple of minutes.

It's good to prepare from time to time the dose that you consider to use not later than the next 20 minutes in order to not to exceed the limits of viscosity.

Since the chemical reaction develops much heat, you should avoid to have an excessive volume of mixture evading the overheating that could damage the cables.

The sealing fittings that have an internal volume greater than $0,3 \text{ dm}^3$ must be filled several times so that heat will dissipate gradually and the temperature of the mixture does not exceed the 135° C . Before pouring the mixture into the fitting, a bit of fiber (mineral or ceramic) should be inserted around the wires in order to help the mixture to drain into the pipe below.

The sealing fittings must be filled slowly, with care, using the time required so that the mixture forms a single body with the fitting wall of the joint, seamless.

It is preferable to pour into the fitting a first layer of mixture, slightly hard, to prevent the passage through the fiber on the bottom.

After a few minutes, pour the mixture filling completely the fittings. Do not screw immediately the cap after the filling, in order to verify if the resin, hardening, doesn't recede. In this case, it is necessary to provide the refilling.

The cap should be screwed completely only after the complete hardening of the resin.

Conclusions

Once CEI-UNEL 95140 standards described the features and the use instructions of a sealing compound. As we know, however, the CEI-UNEL standards have been retired and, currently, there is no technical legislation defining internationally, how to fill sealing fittings.

Following the Anglo-Saxon system, the current regulations leave the assignment to the technical instructions provided by the manufacturer.

Whichever method is used, in any case, the safety of conduit system installed in an area with risk of explosion depends on the correct installation of sealing fittings.