# ELCOR 450 N
# double-walled HDPE corrugated pipe

## Description

Double-walled corrugated high density polyethylene pipe for the protection of buried electrical and telecommunication cables.

## Regulations

SR EN 61386-1, SR EN 61386-24, ENEL DS 4247 RO, European low and medium voltage Directive 2014 / 35 / UE.

## Integrated quality management system

Certified for Quality Management System according to ISO 9001, ISO 14001, ISO 45001, system that guarantees the quality of products and services offered.

## Manufacturing

It is a high-density polyethylene pipe made of 2 distinct walls welded together by co-extrusion. The outer wall is corrugated and gives high mechanical strength and the inner wall is smooth and facilitates the passage of cables.

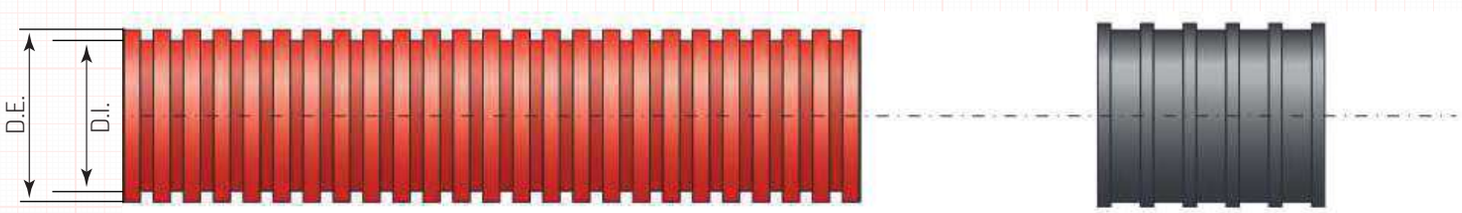
In series production the outer wall is red/black, the inner wall black. Other colours for both walls are available on request.

Marking elements: manufacturer and brand name, outside diameter, type of use N, reference standard, compressive strength class 450N/m¿.

The pipes packed in a bundle are fitted with P.E.T. or P.P. guide wire.

ELCOR 450 N corrugated pipe is supplied with a HDPE socket for joining.

| D.E. mm | D.I. mm | Length of the bundle | Code | Transport (m/truck) |
|---|---|---|---|---|
| **40** | 31 | 50 | TR_PE_PROT_DE040_C-TW-C50 | 22000 |
| **50** | 40 | 50 | TR_PE_PROT_DE050_C-TW-C50 | 18000 |
| **63** | 50 | 50 | TR_PE_PROT_DE063_R-C50 | 11000 |
| **75** | 62 | 50 | TR_PE_PROT_DE075_R-C50 | 7800 |
| **90** | 76 | 50 | TR_PE_PROT_DE090_R-C50 | 6400 |
| **110** | 92 | 50 | TR_PE_PROT_DE110_C-TW | 4000 |
| **125** | 107 | 50 | TR_PE_PROT_DE125_C-TW-C50 | 3750 |
| **140** | 122 | 50 | TR_PE_PROT_DE140_C-TW-C50 | 2400 |
| **160** | 138 | 50 | TR_PE_PROT_DE160_R-C50 | 2000 |
| **200** | 170 | 25 | TR_PE_PROT_DE200_R-C25 | 1100 |




D.E. = Outer diameter;
D.I. = Inside diameter.

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General features:

| | |
|---|---|
| Structure | double-wall corrugated exterior and smooth interior |
| Use | buried electrical cable networks |
| Operating temperatures | - 50 / + 60 °C |
| Minimum radius of curvature | 5 x Nominal Diameter |
| Compressive strength | 450 N according to EN 61386 - 24 (with 5% diameter deformation) |
| Impact strength | normal type - N |
| Electrical insulation strength | > 100 Megaohm (MΩ) |
| Dielectric strength | > 800 Kv / cm |
| Resistance to chemical agents | excellent chemical resistance to most chemicals |
| UV resistance | 12 months from date of production |
| Guarantee | 24 months |
| Lifespan | 50 years |

**Connecting socket**
The click-on socket is made of HDPE and is equipped with a locking system that prevents pulling out.

| D.E. mm | H mm | Code Mufă |
|---|---|---|
| **40** | 31 | MUFAR_DE0040EL |
| **50** | 40 | MUFAR_DE0050EL |
| **63** | 50 | MUFAR_DE0063EL |
| **75** | 62 | MUFAR_DE0075EL |
| **90** | 76 | MUFAR_DE0090EL |
| **110** | 92 | MUFAR_DE0110EL |
| **125** | 107 | MUFAR_DE0125 |
| **140** | 122 | MUFAR_DE0140_PROT |
| **160** | 138 | MUFAR_DE0160_PROT |
| **200** | 170 | MUFAR_DE0200_PROT |

**Optionally, an elastomeric gasket can also be chosen to ensure sealing.**

## ASSEMBLY INSTRUCTIONS

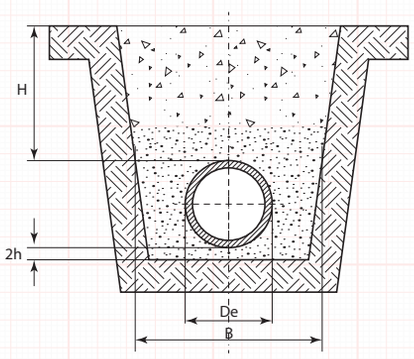
The installation of buried protection pipes requires a series of steps to be taken in accordance with the project in order to ensure the safety of both the work and the networks concerned.

The laying works are similar to those for laying buried pipes for sewerage networks, following best practice as well as the provisions of SR EN 1610:2000.

### The trench and its backfill

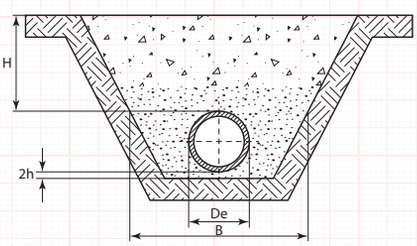
As with any underground pipe laying it is necessary to determine the most suitable trench type according to the soil and static load determinations of the project.

### Classification of trenches




**Narrow trench**
The trench width is less than or equal to 3 x the Nominal Pipe Diameter and the fill height from the top of the pipe is less than half the trench height.

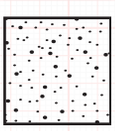
This is the optimal choice in the vast majority of cases, as it allows a large part of the weight to rest on the trench walls. When digging the trench, it has to ensure that the bedding is as smooth and even as possible. It is best to excavate as close as possible to the time of laying the pipes and to fill them immediately after installation.

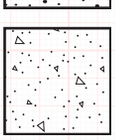



**Wide trench**
The trench width is between 3 x Nominal Diameter and 10 x Nominal Diameter of the pipe and the filling height from the top of the pipe is less than half of the trench height. The need for a wide trench arises when the soil is composed of gravel and sand, and the pipe is subject to higher static loads.

H = distance to pipe
2h = double the pipe wall thickness
De = outside diameter
B = trench thickness


soil


sand

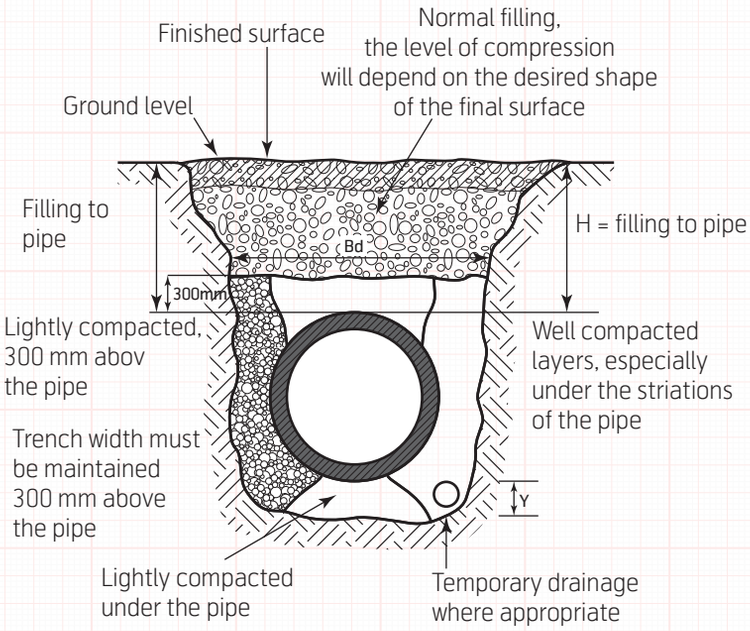

filler

The width of the trench will be determined according to the size of the pipe, the laying ground and the need for space to fit the pipe fittings or other accessories.

In the case of laying several pipes in the trench, the minimum distances between pipes shall be respected.

**Bottom of the trench:**

It is generally made of sand to give the pipe a flat and continuous base. It is not necessary to make the bottom of the trench out of concrete or similar materials due to the mechanical characteristics of the pipes.




## Backfill

Trench backfilling is one of the most important steps in pipe installation, and a proper execution allows for perfect interaction between pipe and trench/bedding. Making the backfill in layers will allow the pipe to react correctly to ground movements or unexpected external loads.

The first layer is the bedding of the trench. The bedding material can include sand and gravel with a diameter of 10-15 mm. The thickness of the bed should be approx. 10 cm + 1/10 of the pipe diameter. Proper compaction of the bed is very important for the correct distribution of static and dynamic loads.

After laying the pipe, the side filling is carried out until the top of the pipe is covered. Side filling involves compaction on the side only and the material used can be the same as for the bedding, side compaction is intended to avoid transferring the dynamic loads generated by compaction directly to the pipe.

Side filling is carried out until a 10-15 cm layer of compacted backfill is obtained above the pipe generator.

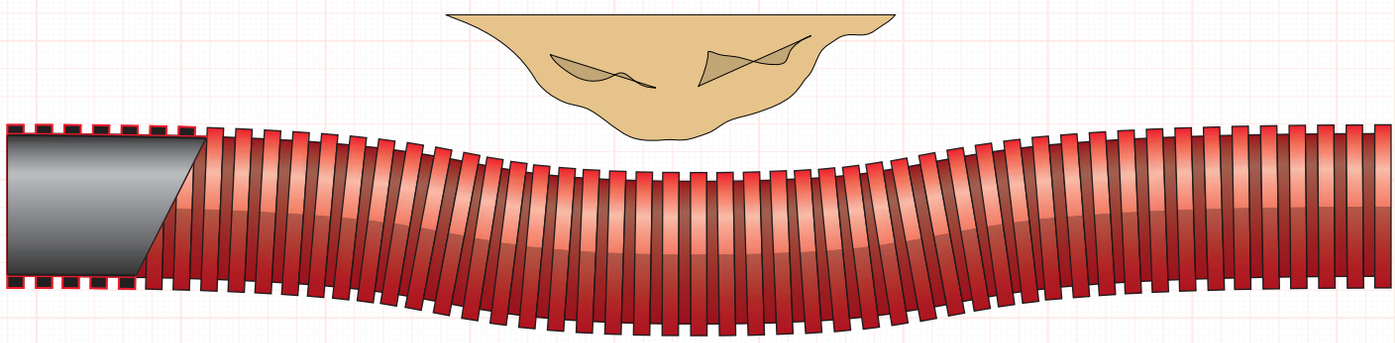
The rest of the backfill can be made with the excavated material, in successive layers of 30 cm, respecting the degree of compaction specified in the project. Only by applying the proper trench backfill methods can the maximum effect of the flexibility of HDPE corrugated pipes be achieved.

For the lower bedding, clean sand with a grain size of less than 20 mm should be used, very well compacted. It is recommended to use compacted sand with a grain size of 15 mm for the upper bedding of the side fill.

It is advisable not to use ground or recycled material for either the bedding or the side infill. Also, concrete props or concrete pipe fencing are not allowed. If for structural reasons it is necessary to use concrete, a well-compacted sand interlayer of at least 10 cm thickness plus 1/10 of the pipe diameter must be placed between the concrete and the pipe.

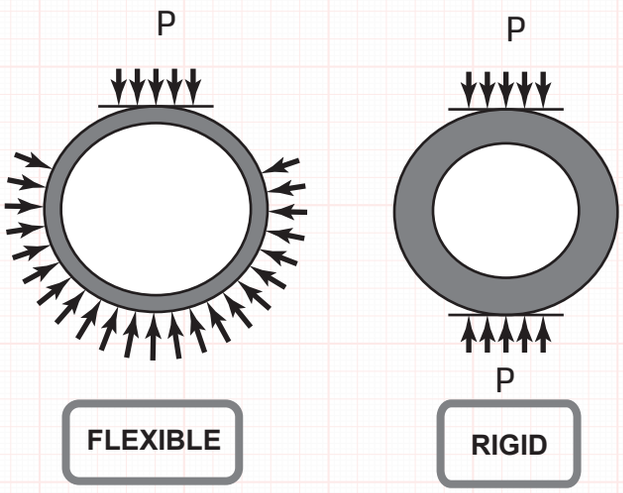
Before laying the cover layer, it must be ensured that all parts of the pipe are well supported; the sand layer must be carefully compacted to a height of at least half the pipe diameter. After this the normal covering of the trench can continue.

Thanks to their high flexibility, ELCOR protection pipes can be easily laid by adapting to the shape of the trench with ease.



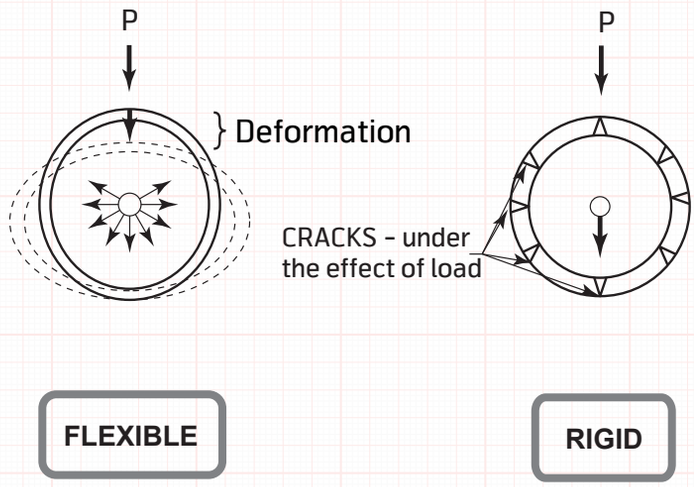
## SOIL REACTION

Stress distribution in deformation stress under external load.




Soil reactions - load distribution for flexible and rigid structures: pipe-soil interaction.

No-failure deformation in flexible pipes and cracking in rigid pipes




Schematic representation of flexible and rigid pipe deformation

## JOINING

The joining of corrugated pipes with each other and with pulling pipes or other special fittings is done by means of jointing sockets.

No welding or special adhesives are required due to the simple design of the socket. The fitting of the socket is done manually by push-ing on the pipe up to the level of the stops.

Joints between 2 sections of pipe are made manually, using the jointing sockets together with the respective bundles or bars, without the need for other equipment or preparation operations.

Due to the properties of polyethylene, ELCOR pipes are very flexible with the ability to adapt very well to the conditions of the laying ground, avoiding obstacles and eliminating bends and other special parts; the minimum bending radius of the pipes being 5 x diameter unlike rigid protection systems which need special parts and operations.