

Edoburg®



PVC-O Piping System

Robust, Efficient, Technological
Triumph.

PRODUCT CATALOGUE



Edoburg[®]
PIPING SYSTEMS



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About Edoburg

Edoburg, an ISO 9001 certified company, specialises in supplying high-quality piping systems that consistently meet stringent international standards, ensuring unparalleled performance of the piping systems. Our experienced team, equipped with extensive technical knowledge, coupled with our efficient operations and fast turnaround time, enables us to provide top-tier supply of piping products tailored to your needs.

Our Mission

Edoburg's mission is to supply high-quality piping systems worldwide, offering a complete solution that meets international standards to ensure superior performance in every project.

Product Range

Our stellar lineup of pipes, ready for every project:

- PEX Pipe: PEX-A, PEX-B, PEX-A EVOH, PEX-B EVOH
- PPR Pipe
- PERT Pipe
- HDPE Pipe
- MDPE Pipe
- PVC-C Pipe: Portable water, Reclaim water, Industrial
- PVC-U Pipe: Drainage, Portable water, Reclaim water, Industrial
- PVC-O
- Composite Pipe: PEX-AL-PEX, HDPE-AL-HDPE
- PVC Electrical Conduit
- PVC Hose

Complete Solution Concept

Our wide range of products represent our complete solution concept.

With our products intended for diverse sectors, we offer individual and comprehensive system solutions. Focusing on the needs of projects and entire system.

We provide high standards of products in the market at all times. We always stand by our piping systems and reliable service network.

As a global pipe supplying company that stands out with successful operations ever since our incorporation, we act as a solution point to meet all your needs based on our technical knowledge, specialization and reliability.

Quality Assurance

We are committed to excellence in every aspect of our operations. The products we supply comply with the international standards and certifications, ensuring reliability, durability, and safety in every application. With Edoburg, you can trust that you're receiving top-notch piping solutions that meet your specifications and exceed your expectations.

Our Presence in the World

Our warehousing are strategically located in various places in **India**, **Vietnam** and **China**, to ensure efficient distribution of the products. We ensure fast deliveries with our modern logistics partners deployed at our local distribution hubs which are strategically located near the ports to ease the export of products. Edoburg Piping Systems exports its products all over the world.

Our Market Segments

Based on our experience and high-quality standard of products in the sector, Edoburg Piping Systems supports its clients with a complete piping solutions for every project requirement.

- Chemical and Petrochemical
- Water and Wastewater
- Mining and Mineral Processing
- Power Generation
- Marine and Offshore
- Building and Construction
- Manufacturing Industries
- Agriculture
- Pharmaceuticals
- Infrastructure

About Plastics

Plastics are polymers created by the chemical conversion of natural products or synthesized from organic materials. The primary components that make up the building blocks of plastics are long chains of carbon (C) and hydrogen (H) known as monomers.

The raw materials used for the production of plastics are natural compounds such as cellulose, coal, oil and natural gas. In the plastics industry, around 6 % of the petroleum products that come out from refineries is used.

Plastics fall into three main categories on the basis of their internal structure and the resulting mechanical characteristics: thermoplastics, thermosetting plastics and elastomers.

Advantages of Plastics

Thermoplastics obviously demonstrate different characteristics than those of the metals traditionally used for piping.

Metal	Plastic
High density <ul style="list-style-type: none"> Crane is needed for transport. Requires wide spacing for fixings. High anchoring forces, fixing required. 	Low density <ul style="list-style-type: none"> Can be carried by hand up to d110. Requires minimal spacing for fixings. Simple and economical.
Thermal conductivity <ul style="list-style-type: none"> Insulation is needed to limit heat loss. Formation may result in corrosion. 	Low thermal conductivity <ul style="list-style-type: none"> Limited heat loss. Low levels of condensation and resistance to corrosion.
Corrosion Behaviors <ul style="list-style-type: none"> Galvanic corrosion can occur. Corrosion reduces internal diameter. Reduced diameter causes pressure losses. 	High Corrosion Resistance <ul style="list-style-type: none"> Galvanic Corrosion Free. Prevents corrosion and diameter reduction. No pressure losses.
Chemical resistance <ul style="list-style-type: none"> Low Resistance to Acids. Damage from Incrustation. 	High chemical resistance <ul style="list-style-type: none"> A minimum of 25-years of life with correct jointing methods. Incrustation free.

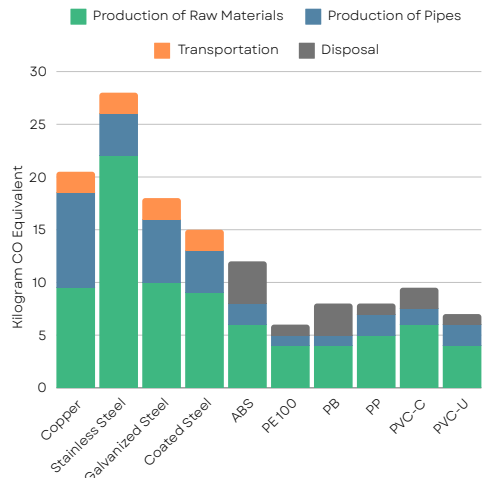
Thermoplastics in turn can be split into two main categories as partially-regulated (semi-crystalline) and irregular (amorphous) molecular structures.

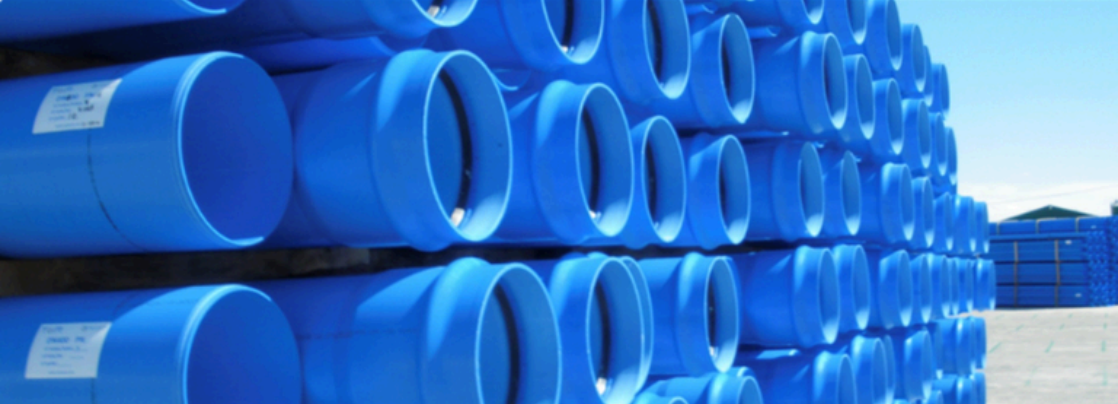
- Semicrystalline thermoplastics, which have a partially ordered molecular structure: this category includes the polyolefins (polypropylene, polyethylene, polybutylene) and fluoropolymers (PP, PE, etc.)
- Amorphous thermoplastics, which have no crystalline regions and no packed molecular structure: this category includes the vinyl chlorides (PVC-U, PVC-C, etc.) and styrenes (ABS, polystyrene, etc.)

Semicrystalline materials are more suitable for hot welding, while amorphous thermoplastics are ideal for cementing or cold welding (solvent cementing).

Carbon Footprint of Plastics Vs Metal

It is the total of all greenhouse gases emitted to the atmosphere during the entire lifetime including the processes for extracting a product having carbon footprint from under the ground, refining, producing, using and disposing of that product.

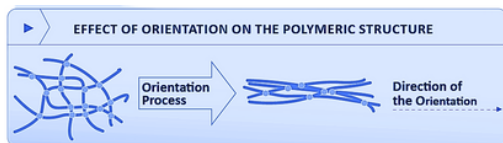




What is PVC - O?

PVC is essentially an amorphous polymer in which the molecules are located randomly. However, under certain conditions of pressure, temperature and speed, by stretching the material, it is possible to orient the polymer molecules in the same direction as which the material has been stretched.

Depending on the process parameters used and mostly stretch ratio, a higher or lower orientation degree will be obtained. The result is a plastic with a layered structure which layers can be seen at a glance.



The orientation process modifies the PVC's structure by giving the polymer's molecules a linear orientation.

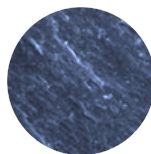
The process of orientation greatly enhances PVC's physical and mechanical properties and gives it a number of exceptional features, without altering the advantages and properties of the original polymer. Thereby it is obtained a plastic with unbeatable qualities in terms of resistance to traction and fatigue, flexibility and impact resistance.

When used in high-pressure water pipelines this type of piping has a high resistance and an extremely long lifetime. Moreover, the pipe is highly energy-efficient and eco-friendly not only for the way it is made but also because of its subsequent use. Other advantages include reductions in costs and installation times.

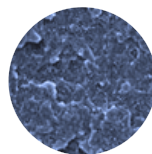
PVC-O pipes are the best solution for medium and high pressure water networks for irrigation systems, potable water supply, fire extinguishing networks and pumping systems, among other applications.



When PVC with its amorphous structure (lower section) is subjected to the orientation process, a laminate structure is obtained (upper section).



PVC-O



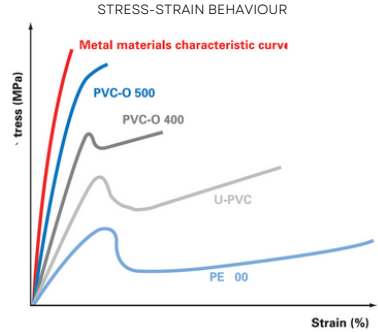
PVC-U

Mechanical Properties

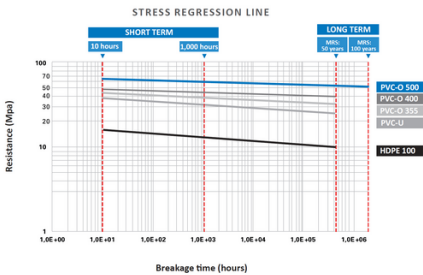
Tensile Resistance

The PVC-O stress strain curve changes significantly compared to conventional plastics behaviour, coming very close to the metal ones.

Mechanical properties complete transformation of PVC-O compared to conventional PVC can only be achieved in the higher class PVC-O Class 500 pipe.



Long-term Hydrostatic Resistance



Materials lose their mechanical properties when subjected to strain for a long period of time. This characteristic, known as creep, appears to a far lesser extent in PVC-O 500 than in conventional plastics, which means better properties over the long term. Bearing in mind that PVC-O is exceptionally resistant to fatigue and has a very good chemical resistance, in common with conventional PVC.

Material Mechanical Properties Comparison

The following table summarises the technical characteristics of PVC-O pipes in comparison with other plastic pipes.

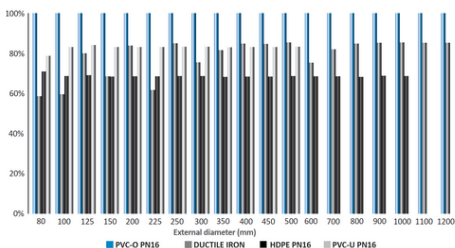
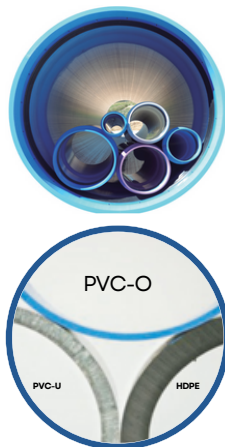
		PVC-O 500	PVC	HDPE-100	HDPE-80
Product Standard	Units	ISO 16422	ISO 1452	ISO 4427	ISO 4427
Minimum required strength (MRS)	MPa	50.0	25.0	10.0	8.0
Overall service coefficient (C)	-	1.4	2.0 (1)	1.25	1.25
Design stress (σ)	MPa	36.0	12.5	8.0	6.3
Short term elasticity modulus (E)	MPa	4000	>3,000	1100	900
Resistance to uniaxial traction	MPa	≥48	≥45	19	19
Resistance to hoop traction	MPa	>85	≥45	19	19
Shore hardness D at 20 °C	-	81 - 85	70 - 85	60	65

(1) For pipes with a DN ≤110.

Hydraulic Design

Whether designing a pressurized or a gravity pipe system, the selection of the dimensions of the fit-for-purpose pipes involves calculating losses in terms of pressure, flow volume and flow speed. There are several methodologies for calculating these values. The most commonly used are the Hazen-Williams and Prandtl-Colebrook-White formulae.

Another factor to be taken into account is the load loss produced by accessories (elbows, reducers, tees etc) and valves. When determining the flow speed, economic factors must be taken into account (optimization of the investment in terms of water pumping) as well as the admissible values for water hammers. Generally, the minimum values used for avoiding sediment deposition is 0.5 m/s and the maximum values are between 2.0 to 2.5 m/s depending on the diameter of the pipe.



Hydraulic Capacity

Water pipes requirements are not only related to pressure resistance; they also have to transport the highest amount of water while consuming the least energy. PVC-O pipes walls are thinner than conventional plastic ones and are on their inside smoother than metals, which means that a greater hydraulic capacity is attained.

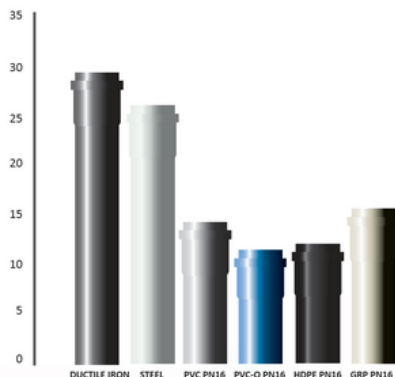
Water Hammer

Water hammer can introduce sudden surge in pressure on the pipe working pressure and may lead to breakage, particularly when the pipe has already been damaged by impact or corrosion.

Air locks in the pipes during filling can be highly damaging when water hammer is present and can cause an excess of pressure far beyond the rated pressure ratings. PVC-O can withstand this surge in pressure better than the metallic materials. However, as a precautionary measure, it is important to observe the following recommendations:

Filling the pipe should only be carried out at low speed and at the lowest point in the pipe system. Installing purging mechanisms at the highest points on each section of pipe. During fitting it is important to leave open the elements capable of evacuating air and close them from bottom to top in the pipe as the pipe fills up with water.

Water Hammer (P) in bar



Advantages of PVC-O

Unbeatable Impact Resistance

PVC-O pipes have a high resistance to shock. This means that are minimized breakages during installation or during on-site trials caused by dropping or by impacts from stones.

Furthermore, the orientation prevents the propagation of cracks and scratches and eliminates the risk of rapid crack behaviour. The result is a spectacular increase in the product's useful life.

Excellent Response to Water Hammers

PVC-O pipes offer lower celerity than other piping systems (four times less than ductile iron pipes), which means less water hammers caused by sudden variations in water volume and pressure. This reduces and almost eliminates the possibility of breakage during opening and closing in the water network and when pumping gets under way, protecting every component of the network.

Maximum Flexibility

It can bear big deformations of their internal diameter. When crushed, or in the event of a mechanical accident, pipes immediately go back to its original shape, thus minimising the risk of potential breakage by soil subsidence or sharp edges on rocks or machinery, for example.

Lower Cost and Easier Installation

PVC-O pipes are lighter and easier to handle than other pipes made from other materials: in most cases, handling does not require machinery. Beside this, due to the easiness of their union, flexibility and impact resistance these pipes allow higher cost effectiveness, performance and installation speed in comparison with pipes of other materials.



High short- and Long-term Hydrostatic Resistance

PVC-O pipes offer a resistance to internal pressure of up to two times the nominal pressure, which means that they can bear sporadic excessive pressure such as water hammers and other malfunctions in the network.

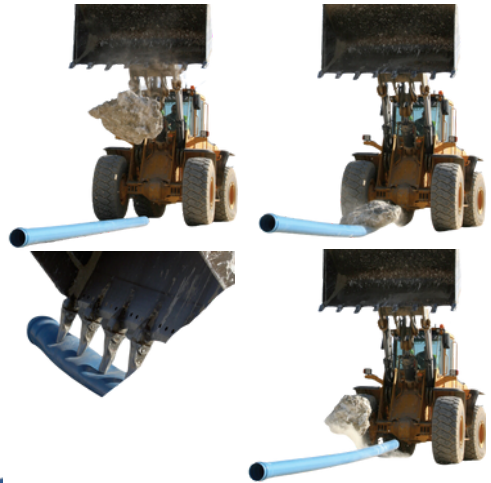
Moreover, the material creep behavior is very low, ensuring the durability of the pipe working at nominal pressure for over a hundred years.

Increased Hydraulic Capacity

PVC-O has a wider inner section of the pipe, giving pipes a higher internal diameter and greater flow section. Also, the internal surface is extremely smooth, reducing load loss and making it more difficult for deposits to be formed on the inner walls.

Completely Corrosion-Resistant

PVC-O is immune to corrosion and to natural chemical substances, as well as to aggression from micro- and macro- organisms. The pipes, therefore, are not degradable. Moreover, they do not require any type of special protection or coating, which means cost-savings.



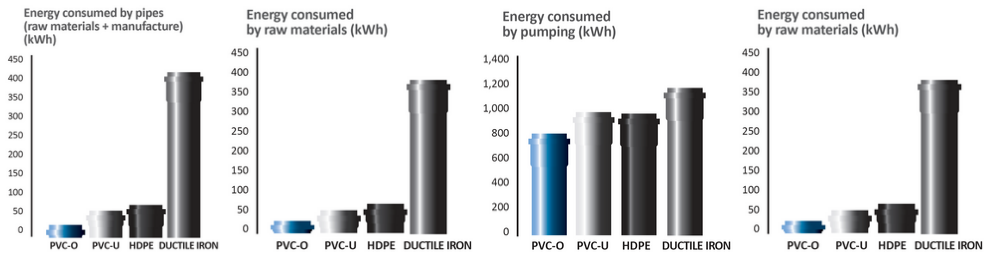
The impact of a 500 kg rock dropped from a height of 3 metres leaves a pipe completely unscathed. The pipes will take any kind of deformation without suffering structural damage.

PVC-O is an Environmentally Friendly Pipe

PVC-O is the most environmentally friendly solution existing on the market, due to its best contribution to the correct sustainable development of the planet, as it has been demonstrated by different studies worldwide, since they present environmental benefits at all stages of their life cycle; thus resulting in the most efficient from the energy point of view.

Resources Efficiency

- The exceptional mechanical properties of these pipes allow considerable savings in raw materials. For the same external nominal diameter, requires less PVC.
- Only 43% of the PVC composition depends on oil. Therefore, the required consumption of this resource is lower than in other plastic solutions.
- Energy consumption is lower in all phases of the life cycle: raw material extraction, pipe manufacturing and use. Throughout its lifetime it prevents unnecessary consumption of energy resources and reduces CO2 emissions into the atmosphere.



Estimated energy consumption by PVC-O, PVC-U, HDPE and Ductile Iron piping production and use.

Optimal Use of Water Resources

Water supply networks installed with traditional materials are currently registering a leakage rate of up to 25% of channeled water and, the latter's chemical deterioration means that some water conduits are currently being replaced despite having been laid only a few years ago.

Water pipes must not only be resistant to pressure, must also carry the maximum amount of water consuming the least quantity of energy. The extreme smoothness of the inner wall of the pipe minimizes pressure loss, so the energy required for transport is lower.

Waste Efficient & Sustainable

PVC is a 100% recyclable material. PVC-O as part of the value chain of the plastics industry, shows its commitment to the environment by lower environmental impact, and incorporating the principles of the circular economy into their manufacturing.

It is a sustainable pipe, in which design it has been taken into account the preservation of the environment considering aspects such as energy saving, sustainable use of natural resources, durability of the works and environmental friendliness of the materials used.

PVC-O Pipe Dimensions

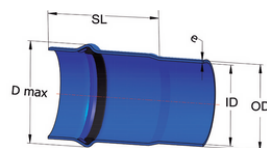
PVC-O 500 Pipe

HSN Code: 39172390

Nominal Pressure (bar)		PN 12.5*			PN 16*		PN 20*		PN 25*	
Nominal Diameter (DN)	Outside Diameter (OD)		Inside Diameter (ID)	Wall Thickness C 1.4 e	Inside Diameter (ID)	Wall Thickness C 1.4 e	Inside Diameter (ID)	Wall Thickness C 1.4 e	Inside Diameter (ID)	Wall Thickness C 1.4 e
	Min	Max	Average	Min	Average	Min	Average	Min	Average	Min
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
90	90	90.3	84.8	1.6	84.3	2.0	84.3	2.5	83.0	3.1
110	110	110.4	103.6	2.0	103.1	2.4	103.0	3.1	100.8	3.8
125	140	125.4	117.8	2.2	117.8	2.8	117.1	3.5	114.5	4.3
140	160	140.5	132.3	2.5	132.3	3.1	131.1	3.9	128.3	4.8
160	200	160.5	152.1	2.8	151.2	3.5	149.8	4.4	146.6	5.5
200	225	200.6	190.1	3.5	189.0	4.4	187.3	5.5	183.3	6.9
225	250	225.7	213.9	4.0	212.6	5.0	210.7	6.2	206.2	7.7
250	315	250.8	237.6	4.4	236.3	5.5	234.1	6.9	229.1	8.6
315	355	316.0	299.4	5.5	297.7	6.9	295.0	8.7	288.6	10.8
355	400	356.1	337.4	6.2	335.5	7.8	332.5	9.8	325.3	12.2
400	450	401.2	380.2	7.0	378.0	8.8	374.6	11.0	366.5	13.7
450	500	451.4	427.7	7.9	425.3	9.9	421.4	12.4	412.3	15.4
500	630	501.5	475.2	8.8	472.5	11.0	468.2	13.7	458.1	17.1
630	710	631.9	598.8	11.0	595.4	13.8	590.0	17.3	577.2	21.6
710	800	712.0	674.8	12.4	671.0	15.4	664.9	19.2	654.7	24.4
800	900	802.0	760.4	14.0	756.1	17.4	749.2	21.6	733.0	27.4
900	900	902.7	855.4	15.7	850.6	19.6	839.5	24.3	824.1	30.9
1000	1000	1003	950.5	17.5	945.1	21.7	932.8	27.0	915.6	34.3

Note:

- PVC-O pipes are contemplated in ISO 16422 and follows **ISO 16422** standard.
- PVC-O pipes are supplied in total length of 6 metres



PVC-O Pipe Fittings

PVC-O PIPES are compatible to:

Tapping Saddles

Allow connecting the pipe in the perpendicular direction to all kinds of fittings (house connections, valves, purges, vents, etc). They are available with screw and flange ends.



Flange with Resistant System

Allows connecting the spigot ends to all kinds of fittings with connection to a flange (valves, elbows, T's, DN reductions, caps, etc).



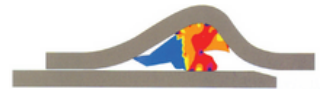
Fittings with Socket Type

Connected directly to the pipe allowing for deviations, reductions and connections on the piping network (elbows, T's, reducer, etc).

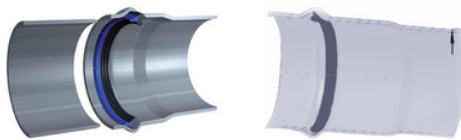


Joints and Watertight Seals

PVC-O use the seal for high pressure water pipe. The seal comprises of PP (Polypropylene) ring and a synthetic rubber lip that is an integrated part of the pipe avoiding displacements of its setting or movement when installation is taking place



Seal Design



Water Tight Rubber Seal

Applications of PVC-O Pipes

1. Water Distribution

PVC-O pipes are ideal for water distribution systems due to their high strength and corrosion resistance. They can withstand high pressure, making them suitable for residential, commercial, and industrial water supply networks.

2. Irrigation

These pipes are commonly used in agricultural irrigation systems for their durability and ability to withstand harsh environmental conditions. The smooth internal surface ensures efficient water flow, making them ideal for irrigation purposes.

3. Sewage and Drainage Systems

PVC-O pipes are a reliable choice for sewage and drainage systems due to their chemical resistance and ability to handle varying temperatures. They provide a long-lasting solution for transporting wastewater efficiently.

4. Industrial Applications

In industries where corrosive substances are transported, such as chemical processing plants, PVC-O pipes offer excellent resistance to chemical degradation and abrasion, making them suitable for various industrial applications.

5. Infrastructure Projects

PVC-O pipes are commonly used in infrastructure projects like road crossings, underpasses, and bridges due to their strength and reliability. They provide a cost-effective alternative to traditional materials like steel or concrete.

6. Mining

Suitable for mining applications, PVC-O pipes offer corrosion resistance and durability, making them ideal for transporting slurries, mine drainage, and ventilation systems in harsh mining environments.

7. Telecommunication Conduits

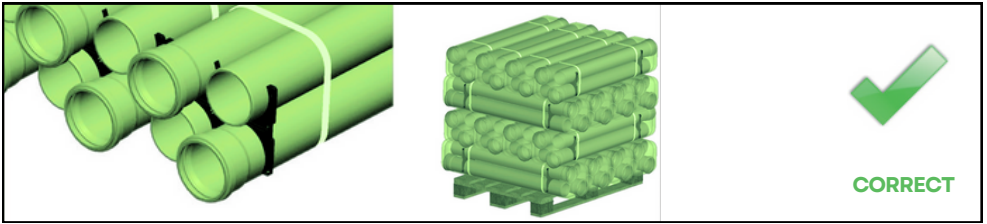
PVC-O pipes can be used as conduits for telecommunication cables, providing protection for the cables while offering durability and ease of installation. They are an excellent choice for telecommunication infrastructure projects.



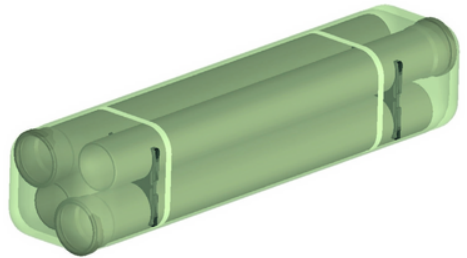
Packaging, Storage and Transportation

Packaging

Our pipes and fittings are packed as ready for transport in a customer-friendly way. Packing ensures safety, efficient storage and easy transport.

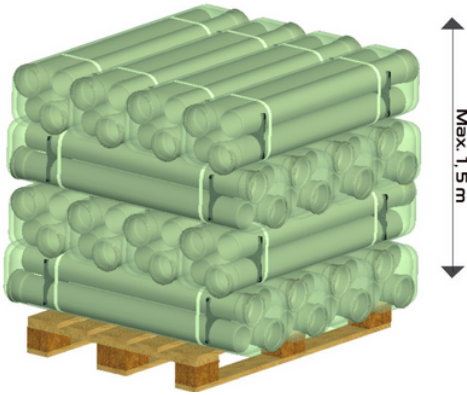


Short parts with the length of 150, 250 and 500 mm are packed in carton boxes like connection parts.



Pipes are packed by plastic clamps to hold them together. Stretch film is applied to protect pipes from pipes dust and stains.

Storage

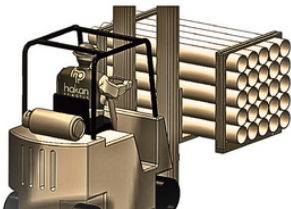
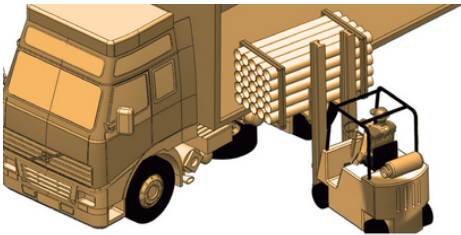


Method of storage should not cause any outflow and should not damage the pipes. As long as they are stored properly, no permanent deformations or damages will occur on the pipes and fittings. Pipes should not be stacked above 1,5 m. Pipes should be safe against sliding.



Pipes and fittings packed in carton boxes should be protected against moisture. Carton boxes should be sealed and stored in a dry area.

Transportation



Pipes should be carefully transported to prevent any damages. Avoid sudden and hard pressures on pipes and fittings that might cause freezing in cold weather conditions. Ensure that pipes are not slid and dropped on the floor. Loading and unloading and packing of pipes in a block should be carried out by means of forklifts having flat threads and extensions.

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