

Standard and multifunctional

# Polyethylene pipe systems

- Pressure pipes
- Gravity pipes
- Pipe fittings
- Pipes for relining
- Insulated pipes
- Cable protection pipes







## **Extena is now the leader in pressure pipes and polyethylene pipe fittings in the Nordic region.**



Since April 2020, Extena is part of the German group egeplast, which for decades has been Europe's leading manufacturer of polyethylene pressure pipe systems. egeplast is also a specialist in multifunctional multilayer pipes with unique properties for safer and better pipe systems. This means that Extena is now a complete supplier of high quality polyethylene pipe systems in the Nordic market. We can offer a wide range of pipes made of polyethylene in both small and large dimensions and an extensive range of pipe fittings, for both small and large projects. Together with our customers, we create optimal conditions for a better environment and clean water for future generations.



# A complete range of pressure pipes and polyethylene pipe fittings from a single manufacturer

Extena has long been Sweden's leading manufacturer of pressure pipe systems in PE100 RC. When Extena became part of egeplast, we also became experts in multilayer pipe systems, with an extensive range of sheathed pipes for different applications and alternative installation methods. egeplast is a specialist in homogeneous polyethylene pipes in general and multilayer pipes in particular – and also offers a wide range of polyethylene pipe fittings, which is now being made available to the Swedish market.

## PE100 RC as standard

We manufacture our standard pipes in PE100 RC, which is the best raw material for a safe and economical pressure pipe system with a long service life. For example, our PE100 RC material, certified by PAS 1075, has 17 times higher requirements than the standard for resistance to slow crack growth (SCG). Starting with PE100 RC as the base material, we add a variety of features depending on the application – such as protective layers (sheathed pipes), colour marking for the location of scratches and damage detection with online monitoring. By choosing PE100 RC, you will achieve faster installation, a longer and safer service life and better overall cost efficiency.

## 40% higher requirements than the standard

At Extena, we specialize in manufacturing the best polyethylene pipe systems on the market.

We therefore place tougher requirements on the pipe systems we manufacture than those specified in European standards. By cooling the pipes for a longer period and stabilizing them during the cooling process, we can set higher requirements and significantly tighter tolerance levels regarding ovality than the standard permits. In fact, we have 40% higher requirements in terms of ovality than specified in the standard.

## A complete package – for safe and secure procurement

Extena takes responsibility for everything. With Extena, you get a complete range of polyethylene pipes and fittings from a single supplier. As a complete supplier, we can also offer complete quotations for safe and secure procurement. We manufacture our products at our own factories in Sweden, Germany and the UK, which means that we have full control of the manufacturing process and can guarantee the highest possible quality.

## Project service

Extena is a safe partner throughout the procurement process as well as the design phase. We offer advice, planning and, if necessary, drawings of project-specific pipe fittings. We can also advise on the choice of pipe and provide recommendations for laying pipes in installations close to traffic, for example.







Together with egeplast, Extena is a leading manufacturer of pipe systems with different functions. With our multilayer pipes, we can offer systems with e.g. an impermeable barrier, online damage control monitoring and resistance to extra high pressures.

### Sheathed pipes Type 3 for optimal protection

Extena's sheathed pipes in PE100 RC are tested and approved according to PAS 1075, a requirement standard developed under the auspices of the German standards institute DIN (Deutsches Institut für Normung).

The standard is divided into three classes as described below:

**Type 1** includes standard pipes made of PE100 RC material.

**Type 2** includes homogeneous 90/10 pipes with an integrated PE100 RC surface layer representing 10% of the material thickness.

**Type 3** includes pipes with a minimum sheath thickness of 0.8 mm. In order to meet the Type 3 requirements, therefore, the protective sheath must be at least 0.8 mm thick. Our sheaths are 1 to 5 mm thick for optimal protection and must not be confused with the thin layer of less than 1 mm that some pipes on the market are fitted with.

All of Extena's sheathed pipes easily exceed the requirements of PAS 1075 Type 3.

### Extena is leading development in Sweden

Extena is the manufacturer in the Nordic region that is most forcibly driving the issue of building pipe systems with better raw materials, which significantly increase resistance to slow crack growth. At an early stage, we saw the benefits of

PE100 RC pipe systems, a material that enables more cost effective pipelaying methods with a longer and safer service life – resulting in better overall cost efficiency. The pipes are a relatively low cost option, in most cases representing only 5-15% of the total cost. It should therefore be an obvious choice to use the highest quality pipes.

egeplast has long recognized the benefits of using the modern PE100 RC material. As both Extena and egeplast have a clear focus on offering the highest quality and use the PE100 RC as the main raw material in production, our respective product ranges fit very well together.

### egeplast – expert in multilayer pipes

For decades, egeplast has led the way in Europe in the development and manufacture of polyethylene pressure pipes and fittings in general and multilayer pipes in particular. Research and development have a long tradition at egeplast and over the years the company has become a recognized innovation hub. This technical leadership includes more than 60 patents for products and manufacturing processes.

egeplast was founded in 1908, and its products can now be found in various technical supply systems across the globe. The head office is located in Greven, Germany, where the company operates Europe's most modern polymer pipe system plant. The Group also has its own factory in the UK and now also includes Extena with its development and manufacturing facility in Norsjö.



## Safe supplier for large projects

We have extensive experience of large projects and know how important the time aspect and reliability of supply are when working with many subcontractors. Since we have our own modern, large capacity production facility and a complete range of polyethylene pressure pipes and pipe fittings, we are now a reliable supplier to large projects all over Sweden. We are a safe partner in marine pipeline projects and the expansion of municipal water supply systems, for example.

### Quality you can trust

Large pipeline projects require careful coordination of all the processes in order to meet the budget and achieve the desired end result. The fact that the pipes are of consistently high quality is therefore particularly important for larger projects. By cooling the pipes for a longer period and sta-

bilizing them during the cooling process, we can set higher demands and significantly tighter tolerance levels regarding ovality than the standard permits. Among other things, this makes the jointing process simpler and more efficient, optimizing operating costs when carrying out large projects. Our pipes are also made of PE100 RC, a modern material that is extra resistant to cracking.

### Complete range and in-house manufacturing

Extena provides a complete range of polyethylene pipes and fittings. As a complete supplier, we can also offer complete quotations for safe and secure procurement. We manufacture our products at our own factories, which means that we have full control of the manufacturing process and can guarantee the highest possible quality.

### Coordination of shipments

We know how important it is for our clients that the right product is delivered to the right place at the right time. We have therefore built up a strong organization with a high level of competence to coordinate shipments. When you work with Extena, you can be sure that your products will be delivered as planned.

### Project support

Extena is a safe partner throughout the procurement process as well as the design phase. We offer advice and, if necessary, drawings of project-specific pipe fittings. We can also advise on the choice of pipe and provide recommendations for laying pipes in installations close to traffic, for example.





### Large dimensions – up to 1600 mm

We extrude pipes in dimensions up to 1,600 mm. The pipes are manufactured from PE100 RC, which gives discharge pipes, pressure sewers and raw water pipelines, etc. a long service life. Over-sizing the pipeline from the outset gives you a future-proof, large capacity pipe system that can easily be supplemented with fittings and connections when needed.

### 4,600 m marine pipelines

Extena and egeplast have supplied pipes for several large marine pipeline projects, such as the renovation of the water treatment plant at Grebbestad in Bohuslän county north of Gothenburg. For this extensive project, where the goal was to improve the efficiency of the municipal water treatment plant, we supplied a total of 4,600 metres of marine pipeline. Each welded and immersed segment is 500 metres long and weighs 250 tonnes, which placed very high requirements on the quality of both pipes and joints.

In order to cope with the harsh demands and the tough conditions, PE pipes with a dimension of 710 mm SDR 17 were used together with polyethylene pipe fittings from egeplast. Logistics and installation went according to plan and Grebbestad now has a very efficient water treatment plant with a long and safe service life.

### Drinking water for future generations

Another large project that we have been involved in is the construction of a new water supply in Skellefteå in northern Sweden. The project included 50 km of pipeline, for which Skellefteå Municipality and the general contractor chose to use PE100 RC pipes from Extena.

The water that is transported from the water treatment plant to Skellefteå's 45,000 inhabitants is distributed in double pipes with a diameter of 560 mm. By adding double pipelines from the start, Skellefteå Municipality has ensured that it will be able to cope with any increased future demands.





# New installation methods, faster pipelaying and maximum service life demand the best pipe design



The development of pressure pipes has gone from the HDPE (high density polyethylene) pipes of the 1950s via PE63 and PE80 to today's PE100 and PE100 RC. The increasing classification of materials meets the market's demand for increased transport efficiency, which requires pipes that can operate under ever higher pressures.

At the same time, new pipelaying techniques are being requested that are more cost effective than traditional open trench excavation. This has resulted in alternative installation methods such as pipe splitting, directional drilling and relining. These pipelaying methods, which pull the pipe through the ground, place high stress on the pipe systems with increased risk of scratches and pressure damage to the pipe walls.

The increased demands for more efficient pipelaying have

also led to an increased use of existing soils as backfill material. This process also increases the risk of the pipes being damaged by sharp stones that push against the pipeline.

Studies and tests conducted by RISE have shown that the impact of a potential scratch or damage on a pipe cannot be assessed solely by its depth and sharpness.

*"In order to assess the impact of the scratch on the performance of the pipe, account must also be taken of the material from which the pipe is made and the safety factor by which it has been dimensioned. Extensive pressure testing shows that pipes made of modern materials can withstand scratches in the pipe surface much better than pipes made of older materials."*

(Acceptance criteria for scratches and indentations in plastic pipes, RISE)

## Alternative installation methods

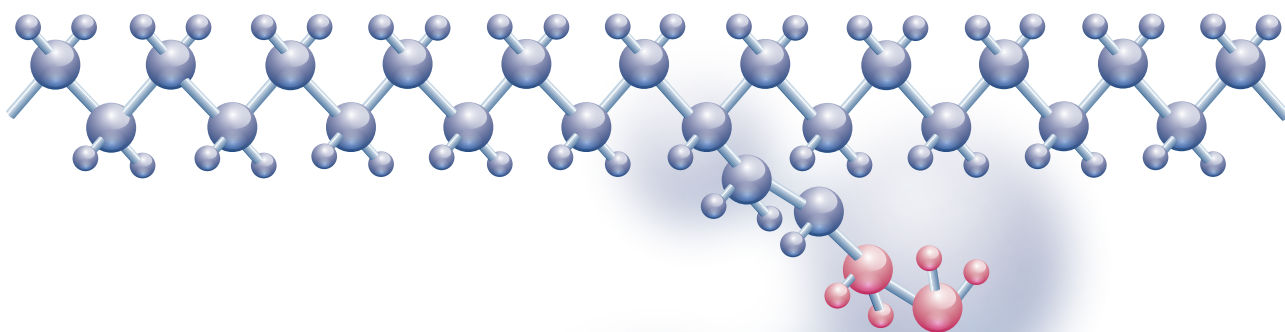
New alternative installation methods and maximum service life requirements require pipes made from the best possible raw material. At Extena we therefore recommend that you always choose pipe systems made of PE100 RC, where RC stands for Resistance to Cracks.

Extena's PE100 RC material, certified according to PAS 1075, has 17 times higher requirements for resistance to slow crack growth (SCG) compared to the materials that the Swedish AMA (General material and work descriptions) bases its recommendations on.

By choosing PE100 RC, you will not only have pipe systems with maximum service life, but also faster and more cost effective pipelaying. This is due to significantly improved installation, since PE100 RC permits the use of backfill material with a higher fraction. And by adding a high strength protective sheath to the pipe, you will create the best conditions for a pipeline to achieve the longest possible service life.

All Extena's sheathed pipes meet the requirements of PAS 1075 Type 3, i.e. the highest grade (pipes with a higher strength sheath).





## This is why we have chosen to manufacture virtually all our pipes in PE100 RC

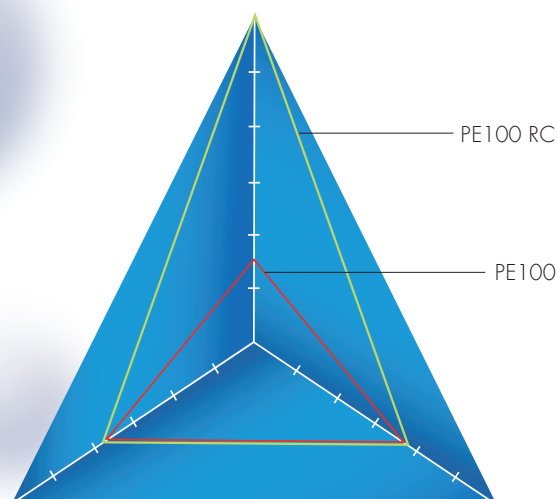
Polyethylene (PE) is lightweight and durable and has been the dominant raw material in pressure pipe systems for decades. The material, which provides reliable systems for the safe transportation of drinking water, waste water and process water, has been developed and launched in a number of versions over the years. As the demands for more cost effective pipe systems are constantly increasing, the material PE100 RC was launched in 2005 with more and stronger bonding between the molecules. The result is a raw material and pressure pipe system with significantly higher resistance to slow crack growth. We therefore recommend that you always choose pipes made of PE100 RC, which provides a safer and more cost effective pipe system.

### More bonding molecules

PE100 RC is polymerized with longer side chains/branches or even more side branches especially in the longer chains. These branches result in stronger entanglement in the amorphous parts and increase the resistance against slow crack growth (SCG). This improvement guarantees an intact lifetime even when using tough modern no-dig technologies.

"Slow Crack Growth"  
Resistance to slow crack formation.

SCG



RCP  
"Rapid Crack Propagation"  
Resistance to rapid crack formation.

MRS  
"Minimum Required Strength"  
Minimum required pipe strength.

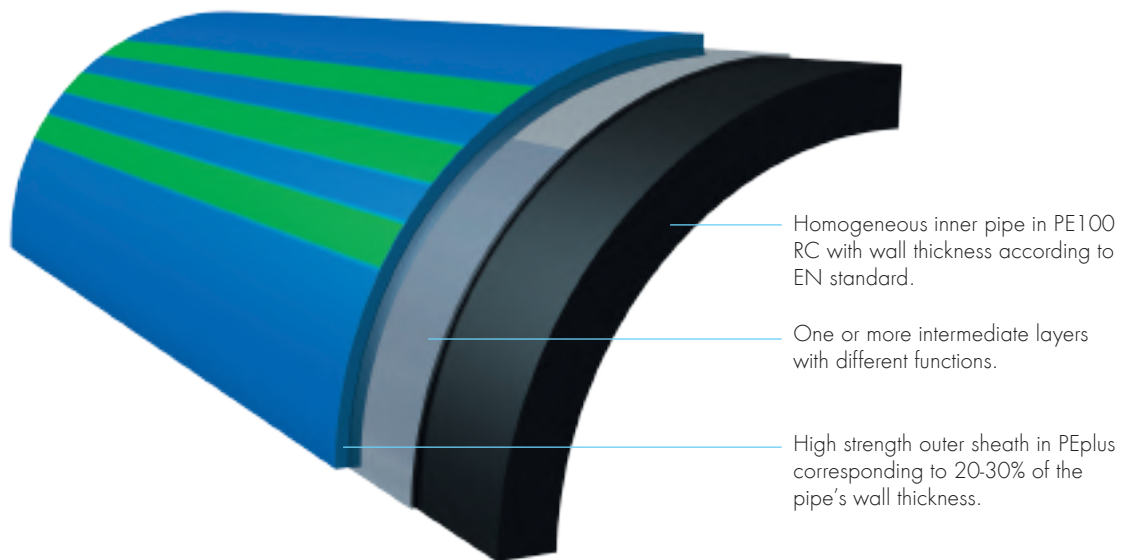
### More facts about polyethylene and PE100 RC

New alternative installation methods and maximum service life requirements require pipes made from the best possible raw material. Extena's PE100 RC material, certified according to PAS 1075, has 17 times higher requirements for resistance to slow crack growth (SCG) compared to the materials that the Swedish AMA (General material and work descriptions) bases its recommendations on. By choosing PE100 RC, you will not only have pipe systems with maximum service life, but also faster and more cost effective pipelaying.

[Read more about polyethylene and PE100 RC in our brochure.](#)







## Pipes with an extra thick sheath in PEplus

### Homogeneous pipes and multilayer pipes – what's the difference?

There is confusion in the market around homogeneous pipes and multilayer pipes and the difference between them. In simple terms, a homogeneous pipe consists of a single layer inside and out, while a multilayer pipe consists of a main pipe and an outer sheath. Between this outer sheath and the main pipe, additional layers can also be added to provide the pipe with various functions, such as an impermeable barrier, online damage control monitoring and the ability to withstand extra high pressures, or a combination of these.

The confusion usually occurs when homogeneous pipes are supplied with colouration on the outermost part of the pipe. This colouration, however, which is intended to facilitate the location of any scratches and cracks that may occur during pipelaying, is not a layer in itself, but a part of the main pipe. Another big difference between these pipe types is how they are handled during jointing. For example, homogeneous pipes must never be stripped during arc welding (a homogeneous pipe simply does not have an outer layer that can be stripped).

### PE sheath corresponding to e.g. 25% of the thickness at dimension 250 mm

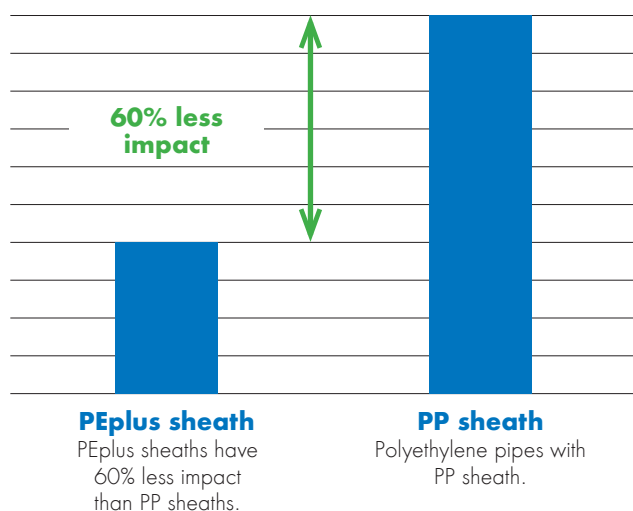
Sheathed pressure pipes, also known as "coated pipes", are equipped with an outer sheath that may be made of various materials, the most common of which are polypropylene (PP) and polyethylene (PE). Extena's sheathed pipes have a PEplus sheath made of high density polyethylene. The thickness of the sheath increases with the dimension of the pipe, from 1 to 5 mm. In dimensions up to 355 mm/SDR17, the sheath thickness corresponds to approximately 20-30% of the pipe's wall thickness. In dimensions over 355 mm, the thickness is a slightly lower percentage, but the thickness of the sheath in mm is in fact larger. Pipes with high strength Extena sheaths must not be confused with the thin coats of less than 1 mm that some pipes on the market are fitted with. Since both pipe and sheath are made of polyethylene, the sheath does not need to be removed during butt welding (SLM® 3.0) but can

be integrated into the joint, reducing the risk of the sheath being ripped off when performing alternative installation methods such as directional drilling, pipe bursting and pipe splitting. Recovery (regranulation) is also simplified as the sheath does not need to be separated from the main pipe. However, when using an arc welding sleeve, the outer sheath must always be removed.

### PE sheath offers 60% less wear than PP

PEplus is a patented HD-PE with a higher molecular weight that makes the coating more scratch resistant compared to conventional grades. We have chosen this durable, scratch resistant material because the sheath is only a protective layer that is not included in the dimension of the pipe. Tough tests have shown that our PEplus sheath offers 60% less wear on the outer layer of the pipe compared to a polypropylene sheath.

*Abrasion tests according to DIN EN ISO 15527 show that a sheath made of patented PEplus with a higher molecular weight has 60% less impact than a sheath made of polypropylene PP.*



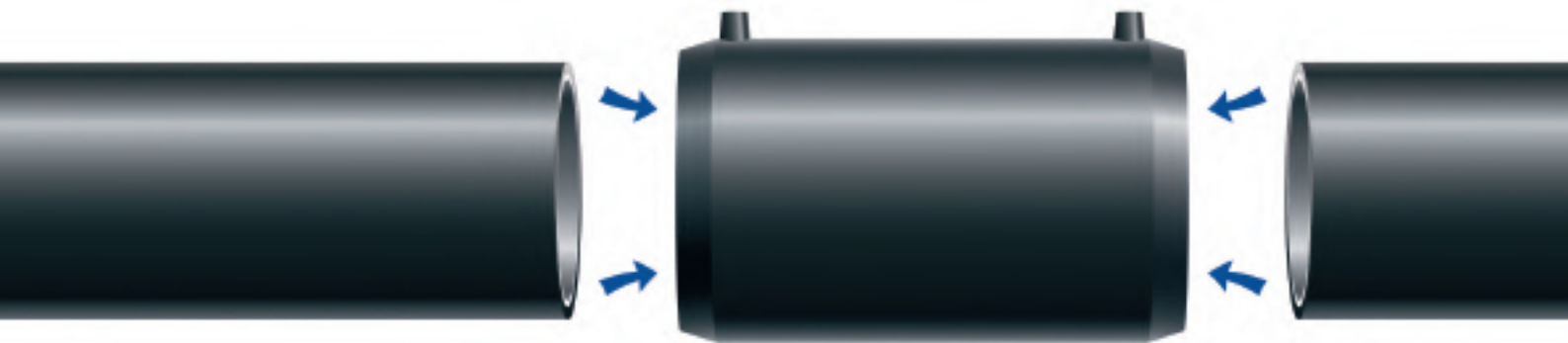




**High strength sheath in PEplus corresponding to 20-25% of the pipe's wall thickness provides optimal protection.**

*(Example in dim 250 mm/SDR 17)*





## Quality at the highest level

With requirements that exceed the standard.

Today, more and more buyers of pressure pipe systems are looking for pipelines with a service life of 150 years. However, this demand is not in harmony with the commonly used standard EN 12201, which tests the product for a service life of 50 years at a temperature of 20 °C.

EN 12201 and EN 1555 have been developed by the European Committee for Standardization (CEN) and are the most widely used standards for polyethylene pressure pipe products in Europe. These European standards also specify external factors affecting the pipe system and its service life – such as root penetration, frost limit, corrosion, load and media temperature – which must be taken into account when laying new pipelines.

### The joints are often the weak point

Even if the material is certified according to EN 12201 and EN 1555, it is important to remember that the joints are usually the weak point in a piping system. These must therefore have at least the same high quality and long service life as the rest of the pipe system to ensure that the pipeline will last and deliver over time according to the specifications.

In terms of joint quality, the roundness of the pipes plays a key role. Thanks to our manufacturing process, Extena has been able to set higher requirements and significantly tighter tolerance levels for ovality than the standard allows.

### Class B with tighter tolerance levels than EN 12201.

According to ISO 11922, the tolerances for the pipe's mean outside diameter are divided into three classes: A, B and C. It is important to know that arc welding parts are manufactured to ISO 11922 class B. Compared to EN 12201, i.e. the standard that applies to pipes, tolerances in many dimensions are tighter (class B) compared to EN 12201. This is particularly true in dimensions over 630 mm. We have therefore chosen to manufacture our pipes with the tighter tolerances specified for class B.

In this way, our pipes are better placed to fit well with arc welding parts, which results in safer joints.

### We are following Germany's lead

The modern PE100 RC material is widely used in Europe and especially in Germany, which is at the forefront of the development of new pipelaying methods for pressurized pipe systems. Today, the majority of the pipes for the German market are manufactured from PE100 RC material. It is important to point out that neither EN 12201/EN 1555 nor the Nordic Poly Mark certification institute (INSTA-CERT) have yet to meet higher requirements for RC pipes in their respective certification documents, despite the fact that PE100 RC offers significantly higher resistance to slow crack growth compared to PE100. However, a change in the EN standard has been announced, which will probably replace PAS 1075.

Germany is also way ahead when it comes to welding PE pipes. The German organization DVS (Die Verbindungs Spezialisten/German Welding Society) produces a comprehensive manual for welding PE pipes that is valued by welders throughout Europe, including Sweden.

All Extena's sheathed pipes meet the requirements of PAS 1075 Type 3 (pipes with a higher strength sheath).

### Quality marks and standards

In addition to EN 12201 and EN 1555 (gas), several quality marks and standards are currently used in the market for pressurized pipe systems. Some common examples, which we use at Extena and egeplast are Nordic Poly Mark, PAS 1075, DK-Vand, FI, Kiwa and TÜV.

### Third party certifications and tests

We regularly conduct quality tests on our pipes and fittings to ensure that they meet the pipe requirements in the Nordic region and Europe, but above all that they fulfil our own even higher expectations. The tests are carried out by ourselves and a third party such as RISE.



## Nordic Poly Mark

### Nordic Poly Mark

Nordic Poly Mark is a Nordic quality mark for plastic pipe products. This quality stamp has been developed jointly by the Nordic countries in order to maintain a high level of quality plastic pipe products for the Nordic market. Extena's PE100 RC pipes meet all the requirements for Nordic Poly Mark by a very good margin. However, we believe that the present requirements of Nordic Poly Mark are too low with regards to RC material and slow crack growth (SCG).

## PAS 1075

### PAS 1075

As EN 12201 and EN 1555 still lack specific higher requirements for pipes and fittings made of PE100 RC, manufacturers have instead tested materials and finished products according to PAS 1075. This is a requirement standard developed under the auspices of the German standards institute DIN (Deutsches Institut für Normung) for polyethylene pressure pipes in PE100 RC. PAS 1075 places significantly higher demands on slow crack growth (SCG) than the current EN 12201 and EN 1555 and has a basic requirement that the raw material must have a service life of at least 100 years. The raw material used for Extena's PE100 RC pipes is tested and approved according to PAS 1075. The current EN standard is currently being updated. This will allegedly contain higher requirements for PE100 RC. All Extena's sheathed pipes meet the requirements of PAS 1075 Type 3 (pipes with a higher strength sheath).



### KIWA

Kiwa is one of the world's 20 largest companies specializing in inspection, testing and certification. Kiwa provides a variety of services such as technical consultation and training. Kiwa was founded in 1948 in the Netherlands but over the years has grown to become a leader in its field. In 2008, Kiwa acquired the Swedish SWEDCERT and thereby expanded into the Swedish market. Kiwa currently employs more than 4,500 people in over 40 countries, mainly in Europe, Asia and South America.



### DK-VAND

DK-VAND is a product certification system, which ensures that certified products meet the strict requirements of the Danish Ministry of Environment and Food's regulations and additional requirements for drinking water pipes. Pipes used for the distribution of drinking water must not contain substances in concentrations which may be harmful.



### FI

The FI certification ensures that the product has been tested and approved by a third party and shows that the pipes meet the requirements of the Finnish Ministry of the Environment for use in drinking water pipe systems.



### TÜV

Founded 150 years ago, the Germany-based TÜV (Technischer Überwachungsverein) is one of the world's leading providers of independent tests, inspections and certifications. TÜV tests and certifies technical systems and products such as pressure pipe systems according to European and international standards. Germany is currently at the forefront in terms of both technical product requirements and hygiene requirements for the protection of people and the environment.



### DVGW

DVGW is a reputable German standardization body active in the gas and water industries. Since the mid 19th century, DVGW has been working to ensure the highest possible quality and safety in the transport and supply of water and gas to the general public.



### Inspection certificate 3.1 according to EN 10204

EN 10204 is a European standard that regulates the design of Inspection certificate 3.1. By issuing an Inspection Certificate 3.1 according to EN 10204, we certify that the product we are supplying meets the customer's requirements.

### Pipes and pipe fittings from the same batch for full traceability

Our pipes and customized pipe fittings are available from the same batch and are supplied with 3.1 certificates.

# Round pipes are essential for secure jointing

We therefore have higher requirements than the standards to ensure minimum ovality.



We regularly perform quality tests on our pipes and fittings to ensure that they meet our high standards.



The joints are most often the weak link in the pipe system. One of the more important requirements from contractors and pipeline owners, therefore, is good conditions for safe jointing. In order to produce safe joints, the pipes must be of high quality in all respects, both in terms of raw materials and the manufacturing process. Round pipes with low ovality are an important part of this.

## Manufacturing process that produces round pipes

Requirements diameter value	Dimension	
	90-250 mm	>250 mm
<b>EN 12201:2</b> Permissible difference between maximum and minimum value	0.02xDy	0.035xDy
<b>Extena’s minimum requirements</b> Permissible difference between maximum and minimum value according to Extena’s minimum requirements	0.02xDy	0.02xDy

During manufacture of a PE pipe, stress is created in the pipe wall when the pipe is cooled down. This built-in stress causes the ends of the pipes to bend into the pipe when they are cut, known as toe-in. This phenomenon, as well as stacking and storage, affects the ovality of the pipe.

To eliminate the effect of bending in, Extena uses a unique method where the pipes are cooled down over a longer

period and stabilized during the cooling process. The pipes are then stored in a cassette where they are allowed to cool before being bundled.

We have therefore been able to set higher requirements and significantly tighter tolerance levels for ovality than the standard allows. We have the same requirements for pipes in dimensions over 250 mm as specified by the standard for pipes in dimensions between 90-250 mm (see table).



Minimal ovality is a condition for safe joints and efficient operation.

We have 40% higher requirements in terms of ovality than specified in the standard!



# Pipelaying regulations do not take into account new raw materials and pipes with protective sheaths

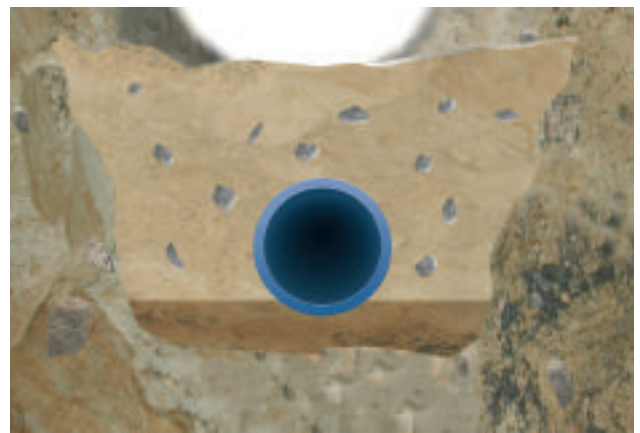
The Swedish AMA (General material and work descriptions) regulates the laying of pressure pipes. However, AMA does not take into account new materials such as PE100 RC and its positive properties with, among other things, significantly higher resistance to slow crack growth (SCG) caused by point loads. AMA has also not taken into account sheathed pipes, which also provide additional protection. According to AMA, the backfill may have a maximum fraction of 31.5 mm, but thanks to the use of PE100 RC, it is possible to use backfill material with a fraction up to 50% of the pipe diameter, but no more than 64 mm. You should also avoid allowing frozen material and sharp stones to come into direct contact with the pipe. Our recommendation is to always use normal backfill under and around the pipe, which according to AMA must be 0-32 mm in the support packing zone.

## **We all have to set higher requirements!**

At Extena, we have higher requirements with significantly tighter tolerance levels regarding ovality than specified by the standard EN 12201. High quality joints require minimal ovality in the pipe. It is important, therefore, that the client also places high demands on the pipes they order. It is also important that the pipes are manufactured from the best possible raw material PE100 RC.

## **The best raw material for the best overall cost efficiency**

When it comes to the production and installation of a pipe system, the pipes themselves represent a relatively low percentage of the cost, in most projects about 5 to 15% of the total cost. We therefore recommend our customers to always choose the best pipe, although initially the pipe cost may be somewhat higher. By choosing PE100 RC, you will achieve faster installation, a longer and safer service life and better overall cost efficiency.



# APPLICATION AREAS

From water and sewage to gas and extremely demanding applications



Extena offers the market's widest range of polyethylene pressure pipe systems, developed for a variety of applications. To make it easier to find the right type of pipe, we have chosen to highlight the most common application areas.

## Water & Sewage

Water and sewage is our largest business area and we have been a major supplier to municipal water supply systems for many years. Since the transport of drinking water is an essential social function, it is particularly important that all parts of water and sewage systems maintain a high level of quality throughout their lifetime. We therefore manufacture our pipes for water and sewage from PE100 RC, which is the best raw material for this type of pipe system. Compared to traditional pipe materials, PE100 RC has 17 times higher requirements for slow crack growth, which is the property that has the greatest impact on the service life of the pipe.

We have a wide range of pipes and pipe fittings for the transportation of water and sewage. Certain conditions may require the use of pipe systems with special functions, such as a permeation barrier for the protection of drinking water when the pipe is laid in contaminated soil, and the protection of sensitive environments where the pipe transports waste water or other contaminated substances close to a

water source. Another common special function is pipes with a high strength sheath for extra protection in alternative pipelaying methods.

The joints are the weak point in a pipe system. A prerequisite for good joints is round pipes with low ovality. By cooling the pipes for a longer period using our "anti-stress" production method, and stabilizing them during the cooling process, we can set higher demands and significantly tighter tolerance levels regarding ovality than the standard permits. In fact, we have 40% higher requirements in terms of ovality and toe-in than specified in the standard.

We have extensive experience of large projects and know how important the time aspect and reliability of supply are when working with many subcontractors. Since we have our own modern, large-capacity production facility and a complete range of polyethylene pressure pipes and pipe fittings, we are now a reliable supplier to large projects in all Nordic countries.

## Gas

Gas transportation can have devastating consequences for both humans and the environment in the event of a leakage or breakdown. The transportation of gas is therefore a highly

controlled area requiring certified pipes of the highest quality and traceability of both product and raw material. Our gas pipes are used for the transportation of e.g. natural gas and biomethane. Extena was quick off the mark to develop systems for maximum control and traceability and today offers



Inspection certificate 3.1 according to EN 10204 for customers who require it. Our traceability makes it easy to trace e.g. suppliers of raw materials, pipes and pipe fittings, including the extrusion line and date of manufacture. The aim is to ensure that our customers are confident in their choice and know that their gas pipelines are of the highest quality.

We offer pipes for gas pipelines installed in trenches (standard pipe 90/10) as well as for alternative installation methods (SLM®). Our range of gas pipes also includes the unique multilayer pipe HexelOne®, which can withstand a gas pressure of 16 bar. We can also offer pipes and pipe fittings from the same batch and with 3.1 certificates.

- Gas can be fatal
- Gas pipelines with maximum control
- High traceability
- EN 10204 Inspection certificate 3.1
- EN 1555
- Option to order pipes and pipe fittings from the same batch

The manufacture of gas pipes is defined in various standards and directives such as EN 1555. SS-EN 10204 is a European standard that regulates the design of Inspection certificate 3.1. We can supply pipes with Inspection certificate 3.1 according to EN 10204 for customers who require it.



Swedish Gas Association and EGN 2020  
Extena is a member of the Swedish Gas Association (Energigas Sverige), an organization for stakeholders in the energy

gas industry. Members of the association include grid operators, gas suppliers, manufacturers and suppliers of gas equipment, installation companies, consulting companies, etc. Grid operators that are members of the Swedish Gas Association have undertaken to comply with these standards.

A central part of the association's activities is to promote the safe use of energy gases (natural gas, biogas, LPG, vehicle gas and hydrogen). This involves drawing up standards and instructions. The regulations up to 4 bar for natural gas, biogas and LPG in the gas phase are coordinated in EGN 2020.

The construction, inspection and operation of distribution systems for gas, natural gas, biogas and LPG in the gas phase as well as associated installations according to EGN ensure compliance with the reasonable precautions clauses of the legislation on flammable and explosive materials.

## Industry

Plastic pipes have many applications in industry, which means that requirements vary significantly. Extena offers probably the widest range of high quality pipes and pipe fittings on the market, including various special pipes adapted for special functions and conditions. We offer pipes for every demand – for high pressures and temperatures as well as large flows, abrasive media and heavy external loads.

Plastic pipe systems have many advantages, including the fact that they are corrosion resistant and that they are highly resistant to a large number of chemicals and aggressive media. Plastic pipe systems also provide high operational reliability because they are both robust and flexible.



Combining polyethylene pipes with another type of plastic or metallic material such as aluminium creates new functions and application options. Permeation tightness, high pressure resistance and extra durability for transporting heavy media are just some of the functions that can be achieved with these material combinations.



## Mines

The working environment in mines is extremely tough, not only for the miners, but also for all the tools and products used in the mining industry. Raw surfaces, blasting dust, coarse media and crushed rock transported and removed by heavy vehicles expose the environment to excessive wear and damage.

### Large level differences

In addition to the external impact on pipes and pipe systems, the mine's level differences also mean that high pressures are required to pump media from low to high points. Mining environments therefore require durable pipes that can withstand high pressure both inside and outside. Extena has two pipe systems specifically designed for high pressure applications: Extena homogeneous high pressure pipes and HexelOne®.

### Drill cuttings and slurry

The transportation of e.g. drill cuttings and slurry (tailings and mine water) requires extra strong pipelines that can withstand both high pressures and excessive wear on the inside. Drill cuttings consisting of crushed rock with a grain size of up to 6 mm place great stress on the inside of pipes. Our durable, homogeneous multilayer pipe egeSlurry® with a protective inner layer is perfect for these types of demanding conditions.

### Static electricity

In mines, static electricity is also generated when pumping dry and flammable media, for example. For these applications, we have developed egeStatic®, a co-extruded homogeneous pipe made of PE-EL that reduces the risk of static electricity generation.

### Prefabricated pipelines

We can also offer prefabricated pipes with pre-assembled flange joints, which facilitates the jointing and installation of pipe systems in the mine. These pipes are joined on site and are available in dimensions up to 1600 mm.

In addition, we offer several other types of pipes and pipe fittings that meet all the requirements of the mining industry.

## High pressures

In mountain environments, mines and structures with large level differences, pipes are required to withstand high pressures. For this type of environment, we offer pipes that can withstand high internal pressures and which also have a high ring stiffness to withstand high external loads.

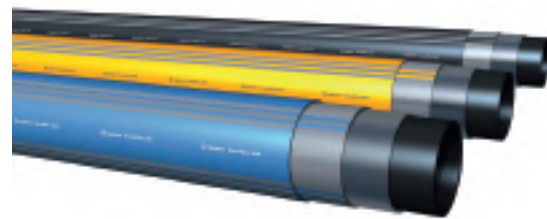
The traditional method of handling high pressures in pipe systems is to increase the thickness of a standard pipe. However, Extena and egeplast can offer the unique and innovative multilayer pipe HexelOne®.

HexelOne® consists of a main pipe made of PE100 RC, two reinforcement layers of PE100 and a protective sheath of 100% high strength PEplus. The result is a pipe system with a normal wall thickness that can withstand up to twice the pressure of traditional pipes (30 bar for water and sewage and 16 bar for gas). HexelOne® is therefore easier to handle and the high strength sheath also protects the pipe from external impact.

Extena offers two high pressure pipe systems:

Homogeneous standard pipes

Pipes with increased thickness for high pressures. Available in dimensions 16–630 mm for 20, 25 or 30 bar.



### HexelOne®

HexelOne® is a multilayer pipe with a main pipe made of PE100 RC, two reinforcement layers of PE100 and a protective sheath of 100% high strength PEplus. The result is a pipe that can withstand up to twice the pressure (30 bar for water and sewage and 16 bar for gas).

*The Boliden mine uses pipes supplied by Extena.*





For this manufacturer of fish farming equipment in Norway, we supplied pipes with a dimension of 500 mm SDR13.6 for the double floating rings and dimension 140 mm SDR11 for the rail.

## Special applications and customized pipes and pipe fittings

Project-specific pipes and fittings from the same batch

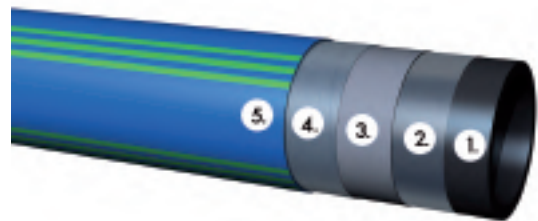
Extena manufactures pipe systems for a wide variety of special applications, such as fish farms, industry, mines and ski resorts.

The requirements of a pipe system vary depending on the application. In some cases, pipes with a high resistance to abrasion, chemicals or static electricity are required, while other systems require permanent monitoring or the ability to handle high pressures. In many cases, a combination of several properties is required.

Extena meets these diverse needs by offering customized pipes and pipe fittings combining five different layers of functionality to create systems with the required properties. For a complete pipe system, we also offer pipe fittings to match the functions of the pipe, as well as customized pipe fittings according to drawing.

As the demands for the safety and service life of pipe systems are constantly increasing, it is becoming more common for pipes and pipe fittings to be ordered from the same supplier. Extena meets these requirements by offering pipes and pipe fittings from the same batch together with Inspection certificate 3.1 according to EN 10204 for maximum traceability.

Our pipes can be built with up to 5 different layers, with each layer designed to meet the customer's needs.



1. The media pipe can be adapted to the current application. For example, it could be a standard pipe, an anti-static pipe, or a pipe that resists high temperatures up to 95°C.
2. Reinforcement layer for high pressure.
3. Intermediate or outer layers which can be used as an indicator layer, an abrasion resistant outer layer or a layer offering protection against UV radiation, etc.
4. Metallic layer for maximum permeation resistance to protect media against soil toxins and the environment when transporting harmful chemicals. This layer can also be given a monitoring function.
5. High strength sheath protects against external impact.



# Contents

Polyethylene pipes PE100 RC for water, sewage and gas.

## Pipe type

# Pipe type

	Pipe properties								Pipe fittings							
	PE100 RC	Homogeneous pipe	Coloured surface approx. 10% of total wall thickness	Sheathed pipe with PEPlus coat	Built-in function test	Withstands extra high pressure	Permeation resistant	"Online" function check	Range of arc welding parts	Range of PE pipe fittings: - Injection moulded parts - Seamless bends - Machined parts - Segment welded	Range of flange joints	Special pipe fittings adapted for this pipe type	Customized pipe fittings according to drawing	Suitable for mechanical couplings		
Standard pipes for installation in trenches																
Standard pipe made of PE100 RC	X	X							X	X X X X X	X	X	X	X		
Standard pipe PE100 RC "90/10" with approx. 10% coloured surface	X	X	X						X	X X X X X	X	X	X	X		
Pipe for installation in trenches, trench-free installation and alternative installation methods																
SLM® - Sheathed pipe	X			X					X	X X X X X	X	X	X	X		
SLM® DCT - With function test + sheath	X			X	X				X	X X X X X	X	X	X	X		
SLM® DCS - With online function check and protective sheath	X			X	X			X	X	X X X X X	X	X	X	X		
Pipes for extra high pressure																
HexelOne® - Pipes for extra high pressure + sheath	X			X		X	*	*				X	X	X		
Permeation resistant pipes																
SLA® - Permeation resistant layer + sheath	X			X	X		X	*	X	X X X X X	X	X	X			
Pipes with permanent function check																
3L® - With online function check + permeation resistant layer + sheath	X			X	X		X	X	X	X X X X X	X	X	X	X		

\* Made to order

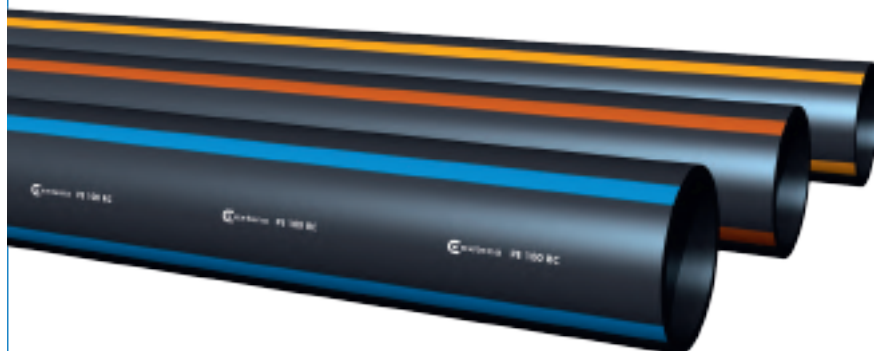
## Standard pipe for installation in trenches

### PE100 RC

Pipe system made of PE100 RC  
Dim 16-1600 mm  
**page 26-29**

### Standard pipes 90/10® PE100 RC

Pipe system with approx. 10% of the pipe thickness in a different colour  
Dim 16-1600 mm  
**page 26-29**



**All media pipes are made of PE100 RC  
with resistance to slow crack growth**



Resistant to point loads and slow crack growth

## Multilayer pipe with high strength sheath

### SLM® 3.0

With protective sheath  
page 30-33



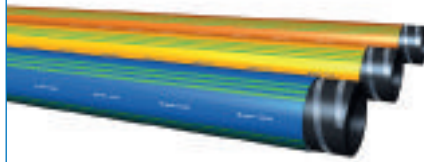
Resistant to point loads and slow crack growth



Resistant to scratching

### SLM® DCT

Built-in function test and protective sheath  
page 30-31, 34-35



Resistant to point loads and slow crack growth



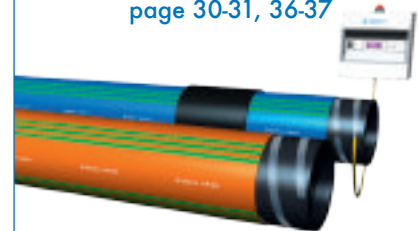
Resistant to scratching



Function test after installation

### SLM® DCS

With online function check and protective sheath  
page 30-31, 36-37



Resistant to point loads and slow crack growth



Resistant to scratching

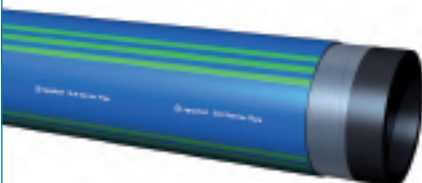


"Online" function check

## Permeation resistant pipe

### SLA® Barrier Pipe

Permeation resistant pipe system and protective sheath  
page 38-41



Resistant to point loads and slow crack growth



Resistant to scratching

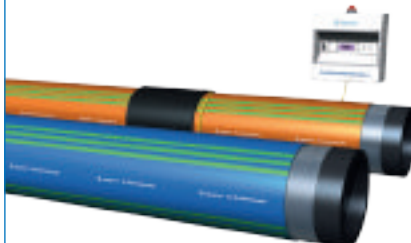


Impermeable layer

## Permanently monitored

### 3L® Leak Control

With online function check and protective sheath  
page 42-45



Resistant to point loads and slow crack growth



Resistant to scratching



Impermeable layer

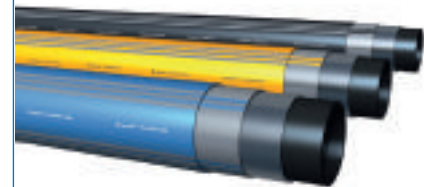


"Online" function check

## For extra high pressure

### HexelOne®

For extra high pressure and with protective sheath  
page 46-49



Resistant to point loads and slow crack growth



Resistant to scratching



Adapted for high pressure






# Contents

## Relining and gravity pipes

For relining		Gravity pipe SN16
<b>egeLiner® PE</b> For relining page 50-53	<b>egeModul PE</b> For relining page 50-51, 54-55	<b>egeFuse 2.0 PE</b> Gravity pipe SN16 with welded sleeves page 56-59
  Precise fit	  Protection against root penetration  Installation well to well.	  Protection against root penetration  For high external loads  For unstable soils

# Contents

## Special pipes

Pipes for high pressure	Pipes with extra durable interior
<b>High pressure pipes PE100 RC homogeneous</b> High pressure pipes for water and sewage page 60-63	<b>egeSlurry® with protective interior</b> For the transport of abrasive media Available with or without a flange page 64-67
  Resistant to point loads and slow crack growth  Adapted for high pressure	  For the transport of abrasive media with particles

## Pipes for high temperatures

### egeTherm® High-T for high temperatures

With PE-RT inner layer  
Available with a UV resistant outer layer  
[page 68-71](#)



Resistant to high temperatures

## Anti-static pipes

### egeStatic® prevents static charging

With internal PE-EL layer  
Also available with PE-EL outer layer  
[page 72-75](#)



For protection against static electricity

## Pipes for blasting/lining

### Blast hole liner pipe

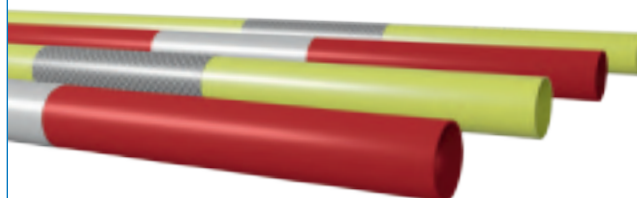
With or without end plugs  
[page 76-77](#)



## For marking

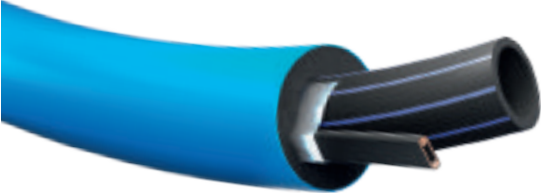


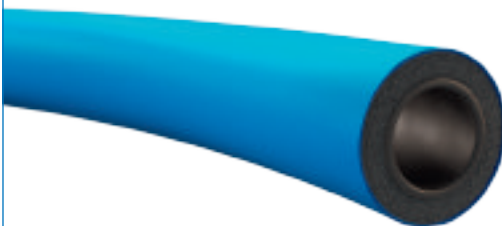


### Marking posts

Marking posts/Snow posts  
[page 78-79](#)



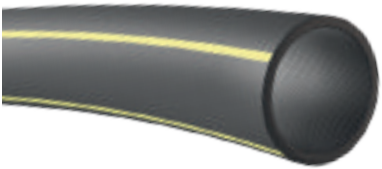

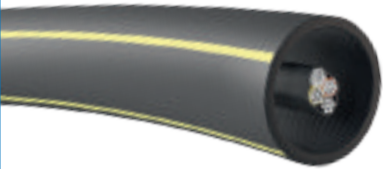



# Contents

## Frost-protected pipes

Frost-protected pipes	
<p><b>Polarpipe with heating cable</b></p> <p>With insulation, heating cable and protective sheath page 80-83</p>  <p> Frost-protected Heating cable</p> <p> Resistant to scratching</p>	<p><b>Insulated pipe without heating cable</b></p> <p>With insulation and protective sheath page 80-83</p>  <p> Frost-protected Insulated</p> <p> Resistant to scratching</p>

# Contents

## Cable protection pipes

Cable protection pipes		
<p><b>SRS, SRE-P</b></p> <p>With grooved interior page 84-87</p>  <p> Resistance to point loads.</p>	<p><b>SRS with power cable</b></p> <p>With grooved interior and predrawn power cable page 84-87</p>  <p> Resistance to point loads.</p>	<p><b>For optical fibre</b></p> <p>Also available with extra high strength wall thickness. page 84-87</p>  <p> Resistance to point loads.</p>



# Contents

Pipe fittings for different purposes.

## Pipe fittings

### PE pipe fittings

Injection moulded pipe fittings  
page 90

Seamless bends  
page 90

Machined  
page 90

Segment welded  
page 90



Arc welding parts  
page 91



Flange joints  
page 91



Customized pipe fittings  
according to drawing and  
project-specific pipe fittings  
page 93



### Pipe fittings adapted to specific pipe types and customized pipe fittings

SLA®, Permeation resistant pipe  
page 92

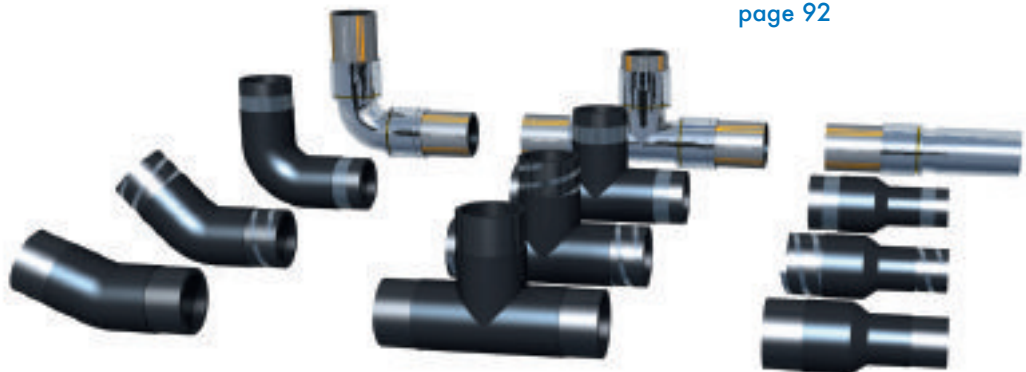
3L Leak Control® with “online” function check  
page 92

SLM® DCT/DCS with function check  
page 92

Polarpipe®  
page 92

HexelOne® for high pressure  
page 92

Custom pipe fittings are also available for  
several of our other pipe systems  
page 92



# Standard pipes

## Pipe system made of PE100 RC

Extena standard pipe systems are manufactured from PE100 RC, which is considered to be the safest raw material with the best conditions for maximum service life. The pipes are suitable for both laying in trenches and alternative installation methods. If you want extra protection for the pipe, we recommend Extena SLM 3.0, a pipe that also has a protective sheath.

### PE100 RC

PE100 RC is polymerized with hexene instead of butene, which is often used for traditional PE. Hexene is an alkene with long molecules, which strengthen the bond in a molecular chain. The bonding molecules make the RC material stronger, but above all it retains the structure of the crystalline regions. The PE polymer is thus designed for maximum mechanical resistance to slow crack growth (SCG) and, in accordance with PAS 1075, the RC material has 17 times higher requirements for resistance to slow crack growth.

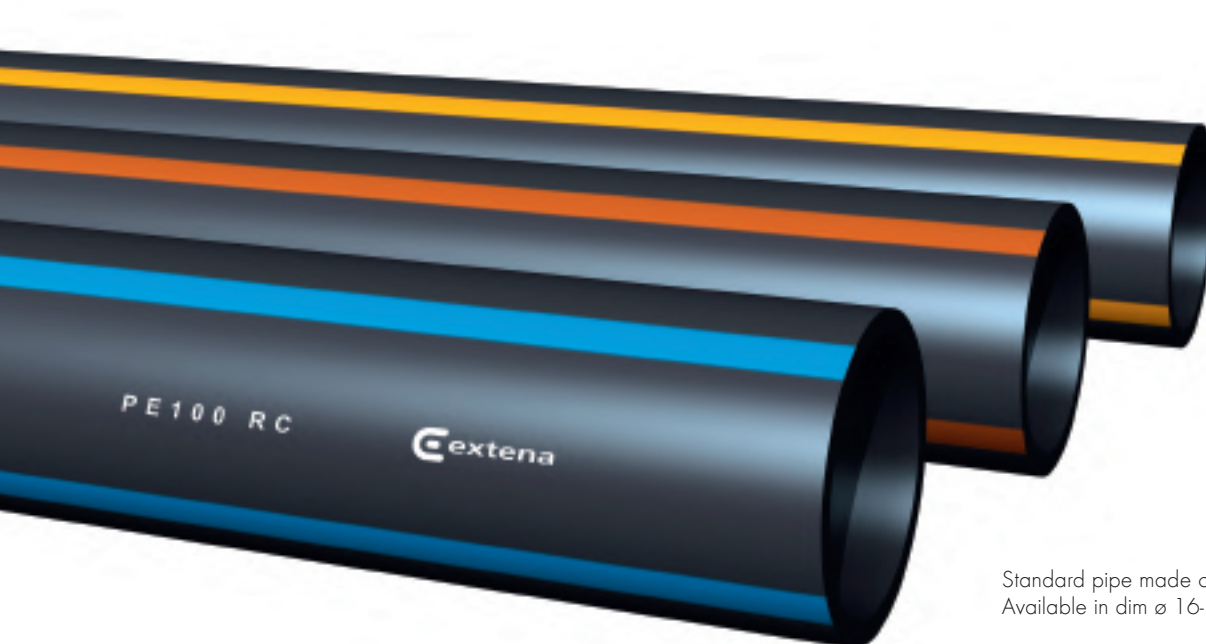
Since slow crack growth is one of the most common causes of pressure pipe fracture, a high resistance to this type of damage is crucial for the service life of the pipe system. Furthermore, a high resistance to crack growth makes alternative installation methods faster, more cost effective and safer, as scratches can easily occur when this method of pipelaying is used.

### Stripes or colouration

The standard pipes are supplied in two designs. Either with stripes or with approx. 10% of the pipe's wall thickness (outer layer) in a different colour to allow you to locate and assess any scratches that have occurred during pipelaying. According to AMA, scratches and external damage to PE pipes may not exceed 10% of the pipe's wall thickness. With our colour layer, which makes up approx. 10% of the pipe's wall thickness, you can easily see if a scratch is deeper than approx. 10%.

### Homogeneous pipes

All our standard pipes are homogeneous, i.e. they do not have a layer that needs to be stripped prior to jointing. The coloured pipe has a different colouration makes up approx. 10% of the pipe's wall thickness and is integrated homogeneously with the main pipe. The RC material combined with the coloured outer layer and our tight tolerances in terms of ovality provide a great pipe that makes pipelaying more efficient and creates safe and secure pipe systems.



Standard pipe made of PE100 RC.  
Available in dim ø 16-1600 mm.







# Polyethylen pipe PE100 RC standard

Standard pipes for water, sewage and gas. Dim ø 16-1600 mm



Standard pipes are available in two versions. Either with stripes or "90/10" pipes, which are the same pipes as standard pipes made of PE100 RC but with approx. 10% of the pipe thickness (outer layer) in a different colour to allow you to locate and assess any scratches that have occurred during installation. "90/10" pipes are homogeneous and must not be stripped prior to jointing.

## Product benefits

- Homogeneous pipe system made of PE100 RC for a safer service life and more efficient pipelaying.
- The pipes are available in two versions, either with coloured stripes or with approx. 10% of the pipe's wall thickness (outer layer) in a different colour to allow you to locate and assess any scratches that occurred during pipelaying.
- Minimal ovality for safe jointing.
- Complete range of pipe fittings.

Pipes with stripes



"90/10" pipes with approx. 10% of the pipe thickness (outer layer) in a different colour.

Approx. 10% of the pipe's wall thickness in a different colour.

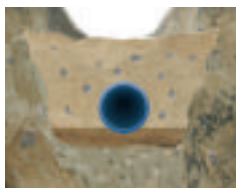


Dimension according to standard.

## Pipelaying method



Traditional pipelaying in trenches.



Suitable for pipelaying adapted for pipes made of PE100 RC.

## Approvals

  
Nordic Poly Mark

·DK - VAND·



\*FI refers to pipes made at our factory in Germany.

## Facts

Applications	Pressure pipe systems for water, sewage and gas   industry   coolants
Target groups	Municipalities   Contractors   Industry
Dimensions	OD 16-1600 mm (from dim 630 mm with stripe mark only)
Media	Water   sewage   gas   industrial media
Material	PE100 RC (Resistance to Cracks)
SDR	SDR 33 - SDR 7.4 (others available to order)
Connection method	Butt welding   arc welding couplings   mechanical couplings
Approvals/Certificates	Nordic Poly Mark   DK-VAND   FI   PAS 1075 (RC pipes)   TÜV
Standards	DIN 8074/75, EN 12201 (water and sewage), EN 1555 (gas)
Product limitations	Currently, wall thicknesses up to 100 mm are available

## Pipe fittings

### PE pipe fittings



- Injection moulded
- Seamless
- Machined
- Segment welded

### Arc welding parts



Complete range of arc welding parts for different purposes.

### Flange joints



Wide range of flange joints such as loose flanges, SF flanges and HP flanges.

### Customized pipe fittings

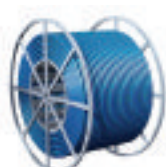


For standard pipes, you can also order customized pipe fittings according to drawing.

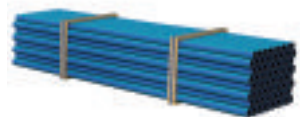
## Delivery options



Coil



Drum



Straight lengths 6, 12, 18, 20 or 22 m

- All pipes are fitted with end caps
- Non-standard lengths can be ordered on request

## Related documents



Brochure  
PE100 RC

# PE sheathed pipe systems for specific applications and alternative installation methods

When Extena became part of egeplast, we also became experts in multilayer pipe systems, with an extensive range of sheathed pipes for different applications and alternative installation methods.

## Two sheathed pipes with different functions

Our multilayer pipes are based on our standard pipes and are made of PE100 RC. We then add different types of layers onto this main pipe to create pipes with unique properties. The basic model in the multilayer range is the SLM® 3.0, which is fitted with a strong and extra thick sheath. Based on this pipe, we have also developed the SLM® DCT with built-in function test and additional reinforcement for extra high pressure.

SLM® 3.0 and SLM DCT® are part of the latest generation of protective multilayer pipe systems. When installed using alternative pipelaying methods, these systems provide a pipeline network with the safest possible installation and long service life. Both SLM® 3.0 and SLM DCT® meet the requirements of PAS 1075 Type 3 (pipes with a higher strength sheath).

## PEplus sheath for maximum resistance

Using a sheath protects the pipe in alternative installation methods such as directional drilling, pipe splitting and relining. Extena's sheathed pipes have an extra thick PEplus sheath that represents 20-30% of the pipe's total wall thickness in dimensions up to 355 mm (SDR17). In dimensions over 355 mm, the thickness is a slightly lower percentage, but the thickness of the sheath in mm is in fact larger. This provides a safe installation and extra protection against scratches. Remember that there is a wealth of pipe systems with thin polypropylene sheaths. These must not be confused with our high strength PEplus sheaths, which offer significantly better protection.

PEplus is a patented HD-PE with a higher molecular weight that makes the coating more scratch resistant compared to conventional grades. We have chosen this durable, scratch resistant and high density material because the sheath is only a protective layer that is not included in the dimension of the pipe. Tough tests have shown that our PEplus sheath offers 60% less wear on the outer layer of the pipe compared to a polypropylene sheath.

## SLM® 3.0

Standard pipe made of PE100 RC fitted with a protective PEplus sheath.

SLM® 3.0 is easier to use, easier to weld and is a safe and more reliable pipe system. SLM® 3.0 is a standard pipe made of PE100 RC fitted with a high strength sheath (coat) on the outside of the pipe, providing extra protection against scratches and damage that may occur during pipelaying.

The pipe's high strength sheath is made of PEplus, with a thickness, in the case of dim 250 mm/SDR17, corresponding to 25% of the pipe's wall thickness.

Since the sheath is made of polyethylene, it does not need to be removed during butt welding (SLM® 3.0) but can be integrated into the joint, reducing the risk of the sheath being ripped off when performing alternative installation methods such as directional drilling and pipe splitting or when extraction hoods are used.

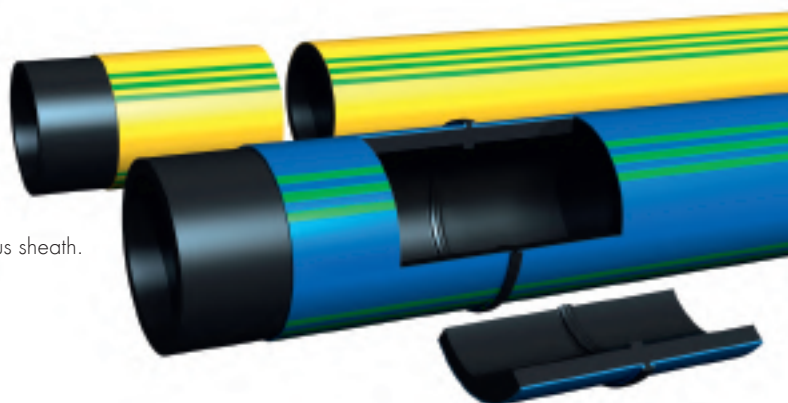
SLM® 3.0 meets the requirements of PAS 1075 Type 3.



## The sheath is welded in the bead – it cannot be ripped off

Since SLM® 3.0 and its sheath are manufactured from the same basic material, i.e. polyethylene, the sheath can be butt welded in the bead. The different layers are then joined together in the weld bead (the sheath merges with the main material), which prevents the sheath from being ripped off during directional drilling or horizontal drawing, etc. when an extraction hood is used. In the case of SLM® DCT, this pipe must be stripped when welding, as it has additional layers of other material.

SLM® 3.0 with a high strength PEplus sheath.



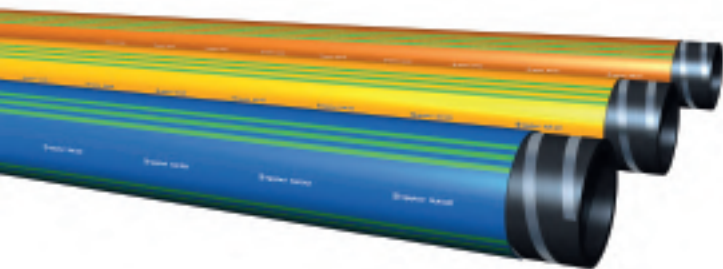


### SLM® DCT

Standard pipe made of PE100 RC fitted with a protective PEplus sheath and built-in function test.

SLM® DCT is basically the same pipe as the SLM® 3.0 with a high strength sheath and made of PE100 RC, but SLM® DCT is also fitted with conductive aluminium strips between the pipe itself and the protective sheath. A pipe can usually be checked via internal filming, but the integrated conductive strips also allow you to check that the pipe has not suffered any external damage in connection with installation. The design also allows permanent monitoring and detection of the installed pipe system.

SLM® DCT is designed to be used primarily in alternative installation methods such as directional drilling or pipe splitting. The pipe must be stripped both when butt welding and when using an arc welding sleeve.



SLM® DCT and DCS with conductive strips and a high strength PEplus sheath.

### SLM® DCS with function check

Damage to water pipes is a problem for most pipeline owners and involves high repair costs. This type of damage also poses problems for individuals or companies who may lose their access to clean water. And there are additional costs caused by the loss of drinking water, which can increase significantly over time.

In order to quickly locate damage to a critical pipeline at an early stage and thereby minimise troubleshooting time, Extena is now launching Pressure Pipe SLM® DCS. This pipe gives you full control and automatically alerts you to any damage to a pipeline, with up to one metre accuracy. You can choose between continuous online damage control or performing a control at predetermined intervals.

### “Online” function monitoring

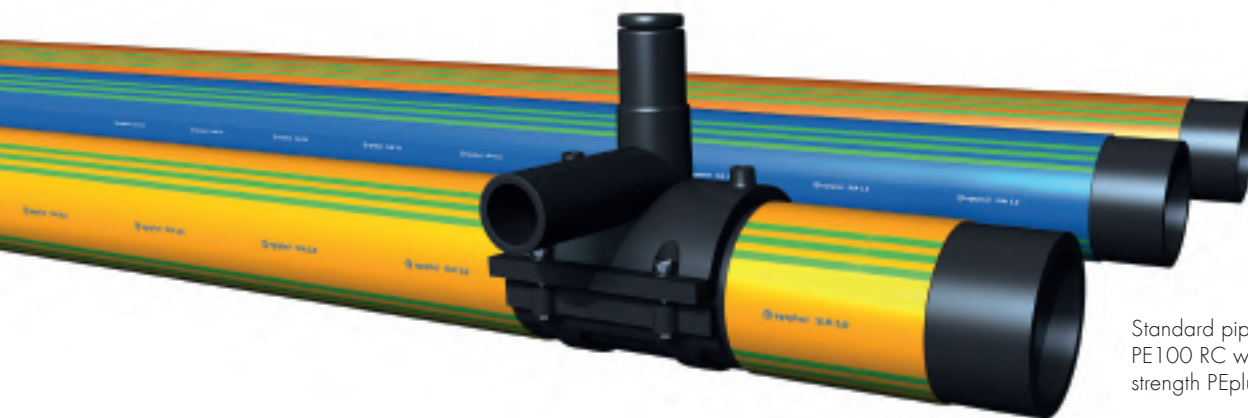
Pressure Pipe SLM® DCS from Extena consists of a standard pipe made of PE100 RC equipped with conductive strips for the rapid detection of possible leaks. The pipe also has a high strength sheath for extra protection. This sheath has a thickness of 1-5 mm depending on pipe dimension. Compared to traditional PE material, the raw material PE 100 RC has about 17 times higher requirements for slow crack growth.

A monitoring device connected to the pipe issues an alarm even in the event of very minor pipe damage. The messages are then sent directly to the control centre or a mobile phone. The system can automatically shut down and reconnect any connected pump systems, thereby preventing water loss at an early stage.



# SLM® 3.0 with a high strength PEplus sheath

Pipe made of PE100 RC with a protective layer of PEplus.  
For water, sewage and gas. Dim ø 25-1600 mm

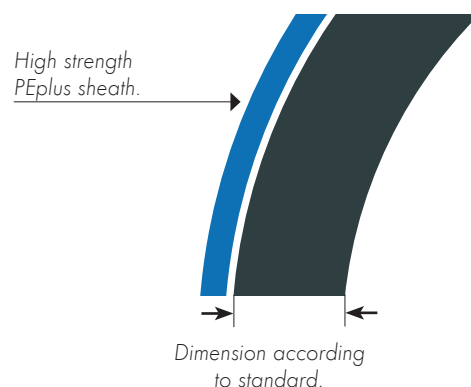


Standard pipe made of PE100 RC with a high strength PEplus sheath.

## Product benefits

- Pipe system made of PE100 RC for a safer service life and more efficient pipelaying.
- High strength PEplus sheath corresponding to e.g. 25% of the pipe's wall thickness at dimension 250 mm/SDR17.
- 60% less wear on a PEplus sheath compared to a PP sheath.
- Butt welding according to DVS standard without having to remove the sheath.
- A pipe system suitable for alternative installation methods where extra pipe protection is required.
- Minimal ovality for safe jointing.
- Complete range of pipe fittings.

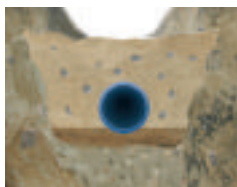
Standard pipe made of PE100 RC fitted with a high strength PE sheath.



## Pipelaying method



Traditional pipelaying in trenches.



Suitable for pipelaying adapted for pipes made of PE100 RC.



Also suitable for alternative installation methods.

## Approvals

  
Nordic Poly Mark

·DK - VAND·



## Facts

Applications	Pressure pipe systems for water, sewage and gas   industry   coolants
Target groups	Municipalities   Contractors   Industry
Dimensions	OD 25-1600 mm (larger dimensions available on request)
Media	Water   sewage   gas   industrial media
Material	PE100 RC (Resistance to Cracks)
SDR	SDR 17.6 - SDR 7.4 (others available to order)
Connection method	Butt welding   arc welding couplings   mechanical couplings
Approvals/Certificates	Nordic Poly Mark   DK-VAND   FI   PAS 1075 Type 3 (RC pipes)   TÜV
Standards	DIN 8074/75, EN 12201 (water and sewage), EN 1555 (gas)
Product limitations	Pressure up to PN 16 for water and PN 10 for gas; For higher working pressures, see HexelOne®

## Pipe fittings

### PE pipe fittings



- Injection moulded
- Seamless
- Machined
- Segment welded

### Arc welding parts



Complete range of arc welding parts for different purposes.

### Flange joints



Wide range of flange joints such as loose flanges, SF flanges and HP flanges.

### Customized pipe fittings

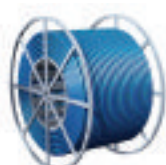


For SLM® 3.0, you can also order customized pipe fittings according to drawing.

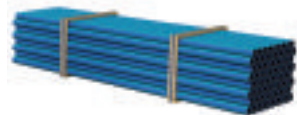
## Delivery options



Coil



Drum



Straight lengths 6, 12, 18, or 20 m

- All pipes are fitted with end caps
- Non-standard lengths can be ordered on request

## Related documents

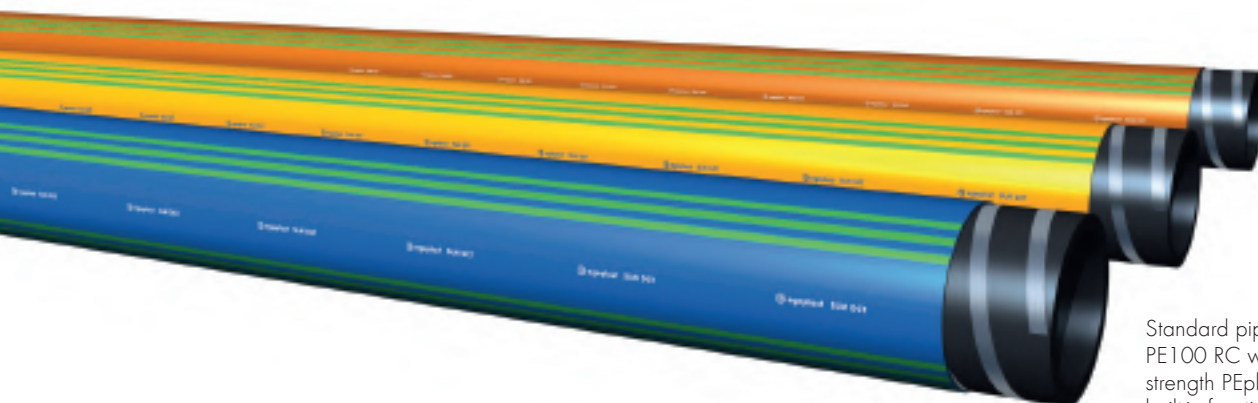


Brochure  
PE100 RC



# SLM® DCT with built-in function test

Pipe made of PE100 RC with a protective PEplus sheath and built-in function test.  
For water, sewage and gas. Dim ø 25-1600 mm

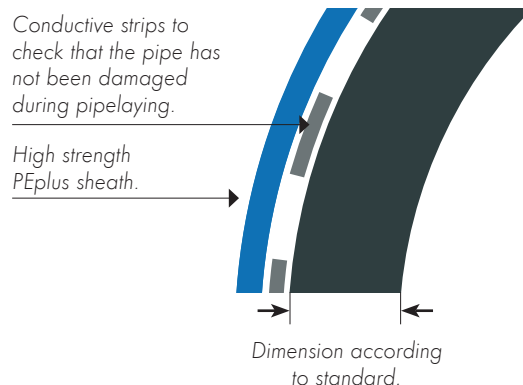


Standard pipe made of PE100 RC with a high strength PEplus sheath and built-in function test.

## Product benefits

- Pipe system made of PE100 RC for a safer service life and more efficient pipelaying.
- Built-in function check via conductive aluminium strips between the pipe itself and the outer sheath allows external pipe damage caused during pipelaying to be detected and localized.
- High strength PEplus sheath corresponding to e.g. 25% of the pipe's wall thickness at dimension 250 mm/SDR17.
- A pipe system suitable for alternative installation methods where extra pipe protection is required.
- Minimal ovality for safe jointing.
- Complete range of pipe fittings.

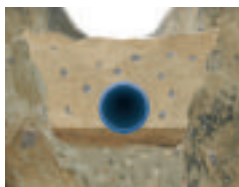
Standard pipe made of PE100 RC fitted with a high strength PE sheath and built-in function test.



## Pipelaying method



Traditional pipelaying in trenches.



Suitable for pipelaying adapted for pipes made of PE100 RC.



Also suitable for alternative installation methods.



Built-in function test.

## Approvals

  
Nordic Poly Mark

·DK - VAND·



## Facts

Applications	Pressure pipe systems for water, sewage and gas   industry   coolants
Target groups	Municipalities   Contractors   Industry
Dimensions	OD 25-1600 mm (larger dimensions available on request)
Media	Water   sewage   gas   industrial media
Material	PE100 RC (Resistance to Cracks)
SDR	SDR 17.6 - SDR 7.4 (others available to order)
Connection method	Butt welding   arc welding couplings   mechanical couplings
Approvals/Certificates	Nordic Poly Mark   DK-VAND   FI   PAS 1075 Type 3 (RC pipes)   TÜV
Standards	DIN 8074/75, EN 12201 (water and sewage), EN 1555 (gas)
Product limitations	Pressure up to PN 16 for water and PN 10 for gas; For higher working pressures, see HexelOne® DCT

## Pipe fittings

### PE pipe fittings



- Injection moulded
- Seamless
- Machined
- Segment welded

### Arc welding parts



Complete range of arc welding parts for different purposes.

### Flange joints



Wide range of flange joints such as loose flanges, SF flanges and HP flanges.

### Custom pipe fittings

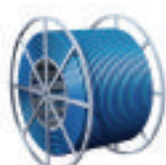


A range of customized pipe fittings is available for SLM® DCT. Also custom manufacture according to drawing.

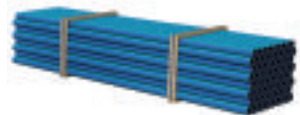
## Delivery options



Coil



Drum



Straight lengths 6, 12, 18, or 20 m

- All pipes are fitted with end caps
- Non-standard lengths can be ordered on request

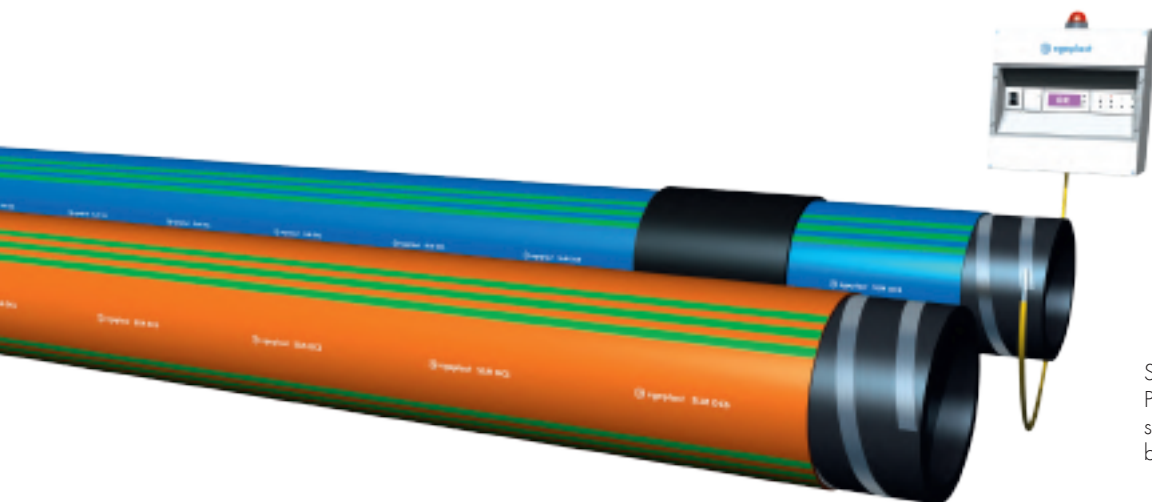
## Related documents



Brochure  
PE100 RC

# SLM® DCS with “online” function check

Pipe made of PE100 RC with a protective PEplus sheath and built-in function check “online”.  
For water, sewage and gas. Dim ø 90-630 mm



Standard pipe made of PE100 RC with a high strength PEplus sheath and built-in function check.

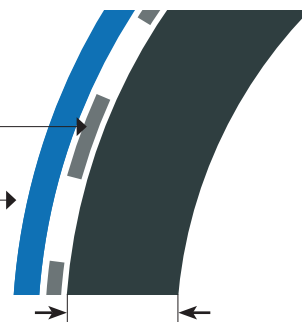
## Product benefits

- Pipe system made of PE100 RC for a safer service life and more efficient pipelaying.
- SLM® DCS is a complete system for monitoring a pipe system “online”.
- High strength PEplus sheath corresponding to e.g. 25% of the pipe’s wall thickness at dimension 250 mm/SDR17.
- A pipe system suitable for alternative installation methods where extra pipe protection is required.
- Minimal ovality for safe jointing.
- Complete range of pipe fittings.

Standard pipe made of PE100 RC fitted with a high strength PE sheath and built-in function check.

Conductive strips to check that the pipe has not been damaged during pipelaying.

High strength PEplus sheath.

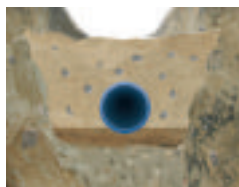


Dimension according to standard.

## Pipelaying method



Traditional pipelaying in trenches.



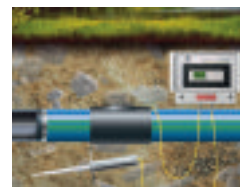
Suitable for pipelaying adapted for pipes made of PE100 RC.



Also suitable for alternative installation methods.



Built-in function test.



Permanent function check that reports possible damage.

## Approvals

  
Nordic Poly Mark

·DK - VAND·





## Facts

Applications	Pressure pipe systems for water, sewage and gas   industry   coolants
Target groups	Municipalities   Contractors   Industry
Dimensions	OD 90 - 630 mm (larger dimensions available on request)
Media	Water   sewage   gas   industrial media
Material	PE100 RC (Resistance to Cracks)
SDR	SDR 17.6 - SDR 7.4 (others available to order)
Connection method	Butt welding   arc welding couplings   mechanical couplings
Approvals/Certificates	Nordic Poly Mark   DK-VAND   FI   PAS 1075 Type 3 (RC pipes)   TÜV
Standards	DIN 8074/75, EN 12201 (water and sewage), EN 1555 (gas)
Product limitations	Pressure up to PN 16 for water and PN 10 for gas; For higher working pressures, see HexelOne® DCT

## Pipe fittings

### PE pipe fittings



- Injection moulded
- Seamless
- Machined
- Segment welded

### Arc welding parts



Complete range of arc welding parts for different purposes.

### Flange joints



Wide range of flange joints such as loose flanges, SF flanges and HP flanges.

### Custom pipe fittings

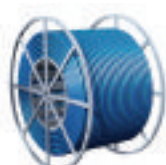


A range of customized pipe fittings is available for SLM® DCS. Also custom manufacture according to drawing.

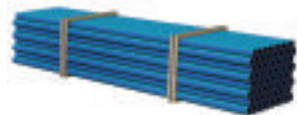
## Delivery options



Coil



Drum



Straight lengths 6, 12, 18, or 20 m

- All pipes are fitted with end caps
- Non-standard lengths can be ordered on request

## Related documents



Brochure  
PE100 RC

## SLA® Barrier Pipe

Permeation resistant pipe system made of PE100 RC for the protection of drinking water and the environment. Fitted with a high strength PEplus sheath.

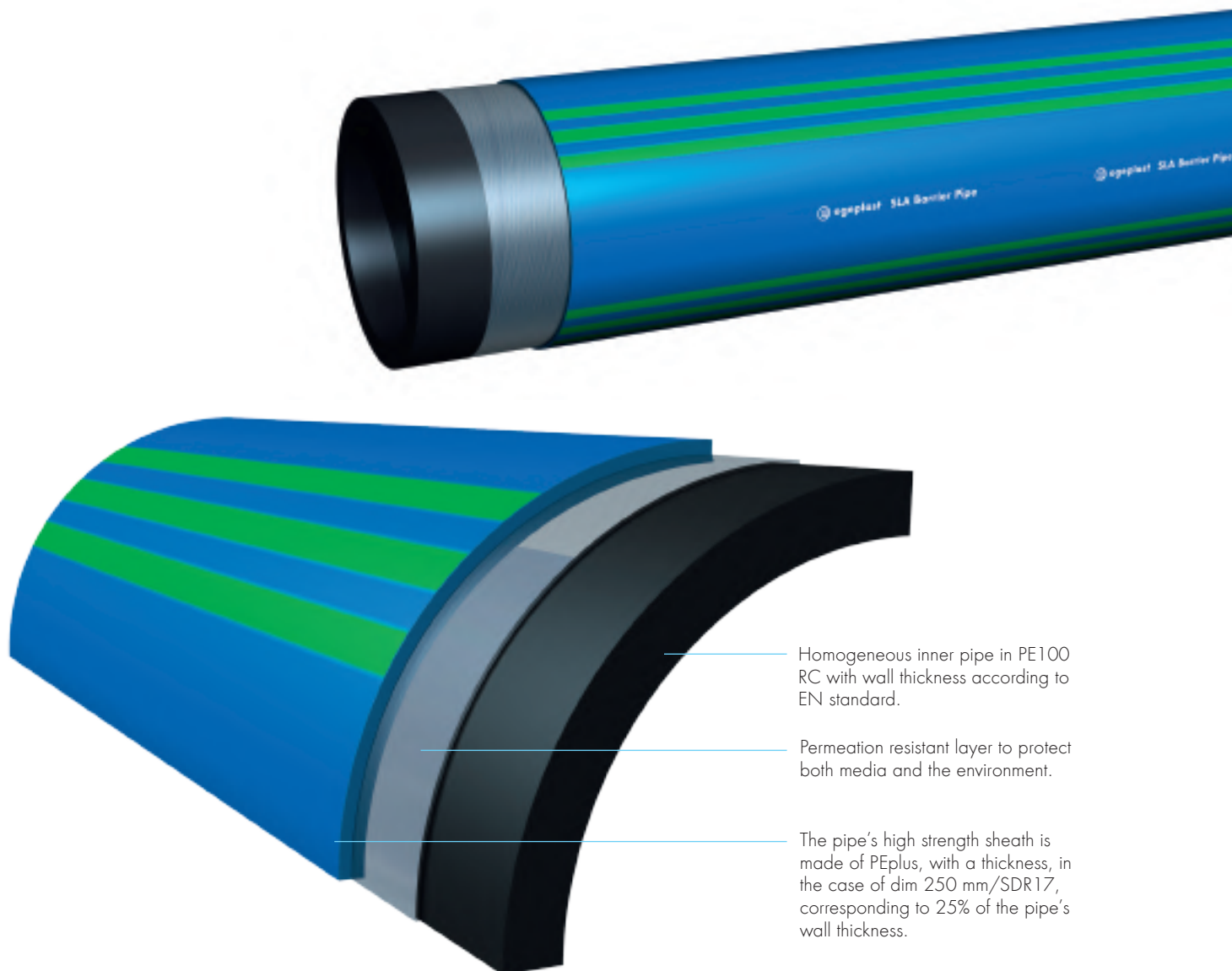
SLA® Barrier Pipe is a permeation resistant pipe system made of PE100 RC fitted with a high strength sheath and an impermeable barrier made of conductive aluminium to prevent the penetration of contaminants. The barrier provides permanent protection of both sensitive media and the environment.

The conductive properties of the impermeable barrier also allow detection and stress measurement after installation to check that no damage has occurred during pipelaying. The design also allows precise location of the pipeline system, which facilitates future planning and excavation.

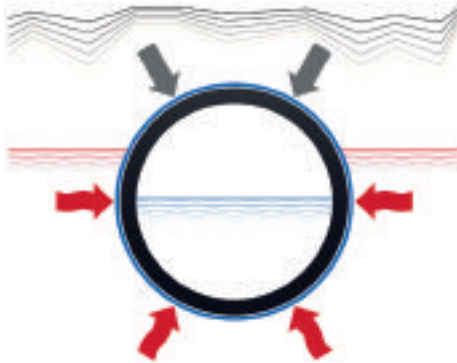
### Impermeable barrier protects in both directions

SLA® Barrier Pipe has the same properties as SLM® 3.0, but is also equipped with an aluminium impermeable barrier. This barrier works in both directions so the pipe protects the transportation of drinking water when laid in contaminated ground, as well as sensitive environments where the pipe transports waste water or other contaminated substances through or near a water source, for example.

The pipe's high strength sheath is made of PEplus, with a thickness, in the case of dim 250 mm/SDR17, corresponding to 25% of the pipe's wall thickness. SLA® Barrier Pipe meets the requirements of PAS 1075 Type 3 (pipes with a higher strength sheath).

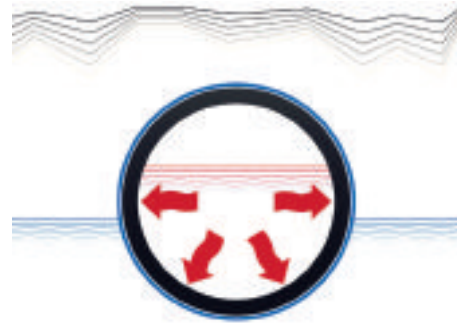


### Protection of drinking water



In some areas, the media, such as drinking water in the pipeline, must be protected against contaminants in the ground.

### Protection of sensitive environments



In some areas, the environment needs to be protected against contaminants in the media.

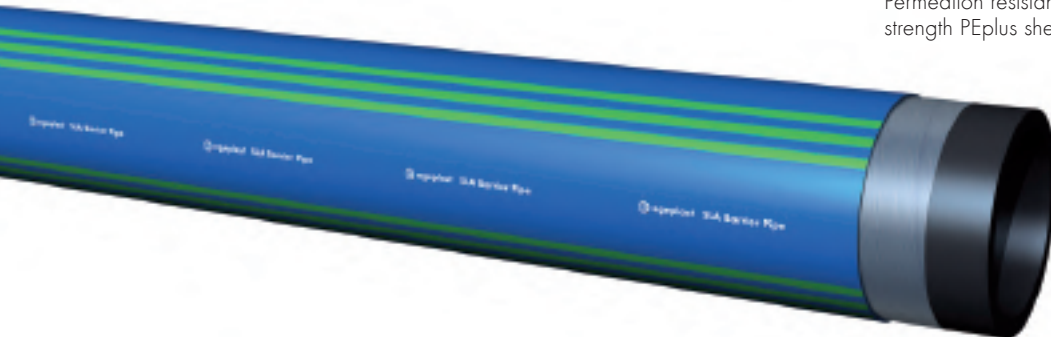




# SLA® Barrier Pipe

Permeation resistant pipe system made of PE100 RC for the protection of drinking water (media) and the environment. Fitted with a high strength PEplus sheath. Dim ø 25-1600 mm

Permeation resistant pipe system with a high strength PEplus sheath and built-in function test.



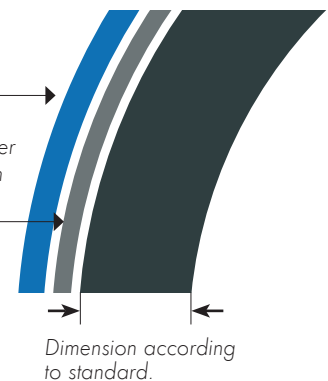
## Product benefits

- Permeation resistant pipe system made of PE100 RC for a safer service life and more efficient pipelaying.
- Impermeable barrier made of conductive aluminium.
- High strength PEplus sheath corresponding to e.g. 25% of the pipe's wall thickness at dimension 250 mm/SDR17.
- Function check possible after pipelaying so that external pipe damage that occurred during pipelaying can be detected.
- Approved (Kiwa certified) for laying in contaminated soil.
- Minimal ovality for safe jointing.
- Complete range of pipe fittings.

Permeation resistant pipe system made of PE100 RC with a high strength PEplus sheath.

High strength PEplus sheath.

Permeation resistant layer of conductive aluminium certified by Kiwa.



## Pipelaying method



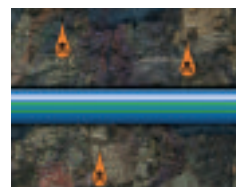
Traditional pipelaying in trenches and adapted for pipes made of PE100 RC.



Function check after installation.



Also suitable for alternative installation methods.



Permeation resistant pipe system to protect both media and the environment.

## Approvals/Certificates

 Nordic Poly Mark

·DK-VAND·



**kiwa**  
Partner for progress

## Facts

Applications	Pressure pipe systems for water, sewage and gas   industry   coolants
Target groups	Municipalities   Contractors   Industry
Dimensions	OD 25-1600 mm
Media	Water   sewage   gas   industrial media
Material	PE100 RC (Resistance to Cracks)
SDR	SDR 17.6 - SDR 7.4 (others available to order)
Connection method	Butt welding   arc welding couplings
Approvals/Certificates	Nordic Poly Mark   DK-VAND   FI   PAS 1075 Type 3 (RC pipes)   TÜV   KIWA Type 3
Standards	DIN 8074/75, EN 12201 (water and sewage), EN 1555 (gas)
Product limitations	Pressure up to PN 16 for water; For higher working pressures, see HexelOne®

## Pipe fittings

### PE pipe fittings



- Injection moulded
- Seamless
- Machined
- Segment welded

### Arc welding parts



Complete range of arc welding parts for different purposes.

### Flange joints



Wide range of flange joints such as loose flanges, SF flanges and HP flanges.

### Custom pipe fittings

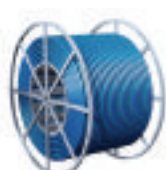


A range of customized pipe fittings is available for SLA®. Also custom manufacture according to drawing.

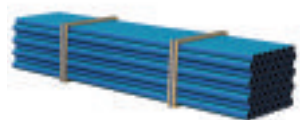
## Delivery options



Coil



Drum



Straight lengths 6, 12, 18, or 20 m

- All pipes are fitted with end caps
- Non-standard lengths can be ordered on request

## Related documents



Brochure  
PE100 RC

# 3L® Leak Control

Permeation resistant and permanently monitored pipe system that detects and reports damage and leaks.

As the earth's population continues to grow, the need to safely transport water and contaminants is increasing. Any leaks can have catastrophic consequences – if not detected in time.

3L® Leak Control is a pipe made of PE100 RC equipped with a high strength PEplus sheath and a permeation resistant conductive layer of aluminium that provides full control of possible leaks for optimal soil and water protection.

A monitoring device connected to the pipe issues an alarm even in the event of very minor pipe damage. The messages are then sent directly to the control centre or a mobile phone. The system can automatically shut down any connected pump systems, thereby preventing further impact caused by leakage at an early stage.

## Permeation resistant and monitoring

In addition, the pipe's intermediate layer, consisting of a conductive layer of aluminium, acts as an impermeable barrier that works in both directions. The pipe thus protects the transportation of drinking water when laid in contaminated ground, as well as sensitive environments where the pipe transports waste water or other contaminants through or near a water source, for example.

## Extra protection against scratches and point loads

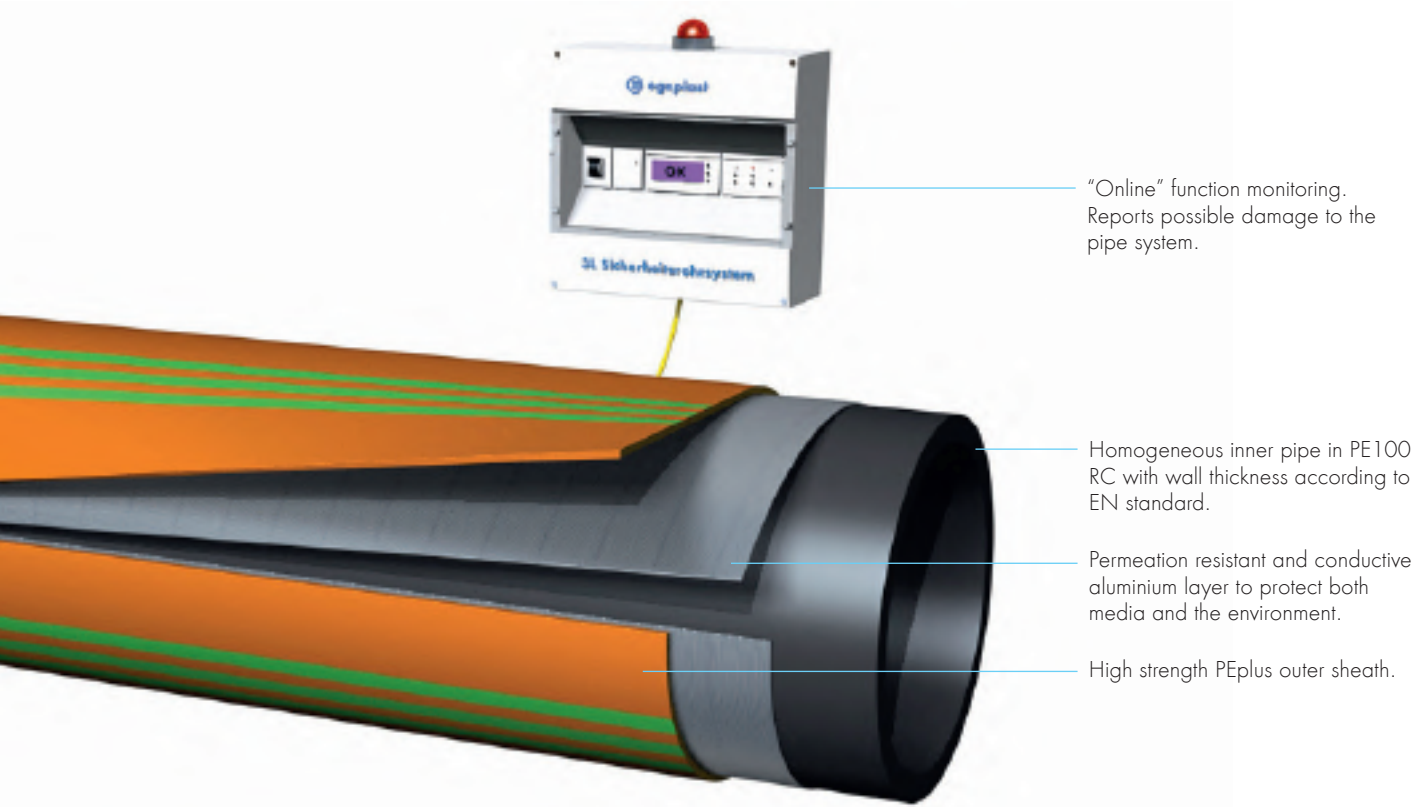
The pipe's high strength sheath is made of PEplus, with a thickness, in the case of dim 250 mm/SDR17, corresponding to 25% of the pipe's wall thickness.

In addition to protecting against scratches and pipe damage caused during pipelaying, the high strength sheath also helps to distribute the pressure from any point loads over a larger surface, thereby reducing impact on the main pipe. If necessary, the sheath material can be adapted to a specific application. 3L® Leak Control meets the requirements of PAS 1075 Type 3 (pipes with a higher strength sheath).

## Complete system with pipes, pipe fittings and wells

3L® Leak Control includes a wide range of pipe dimensions, from 25 mm to 1200 mm in diameter. The complete system also includes customized pipe fittings and wells, as well as modern measuring technology for the rapid detection of possible pipeline damage.

In Germany, the 3L® Leak Control pipe system meets the requirements for continuous leak monitoring according to ATV-DVWK-A 142 for use in connection with water source (drinking water) protection zone II with a high risk potential. However, similar standards do not yet exist in the Nordic market.





**3L® Leak Control is resistant to aggressive media and can also withstand high pressures and temperatures for optimal ground and water protection.**

**Media**

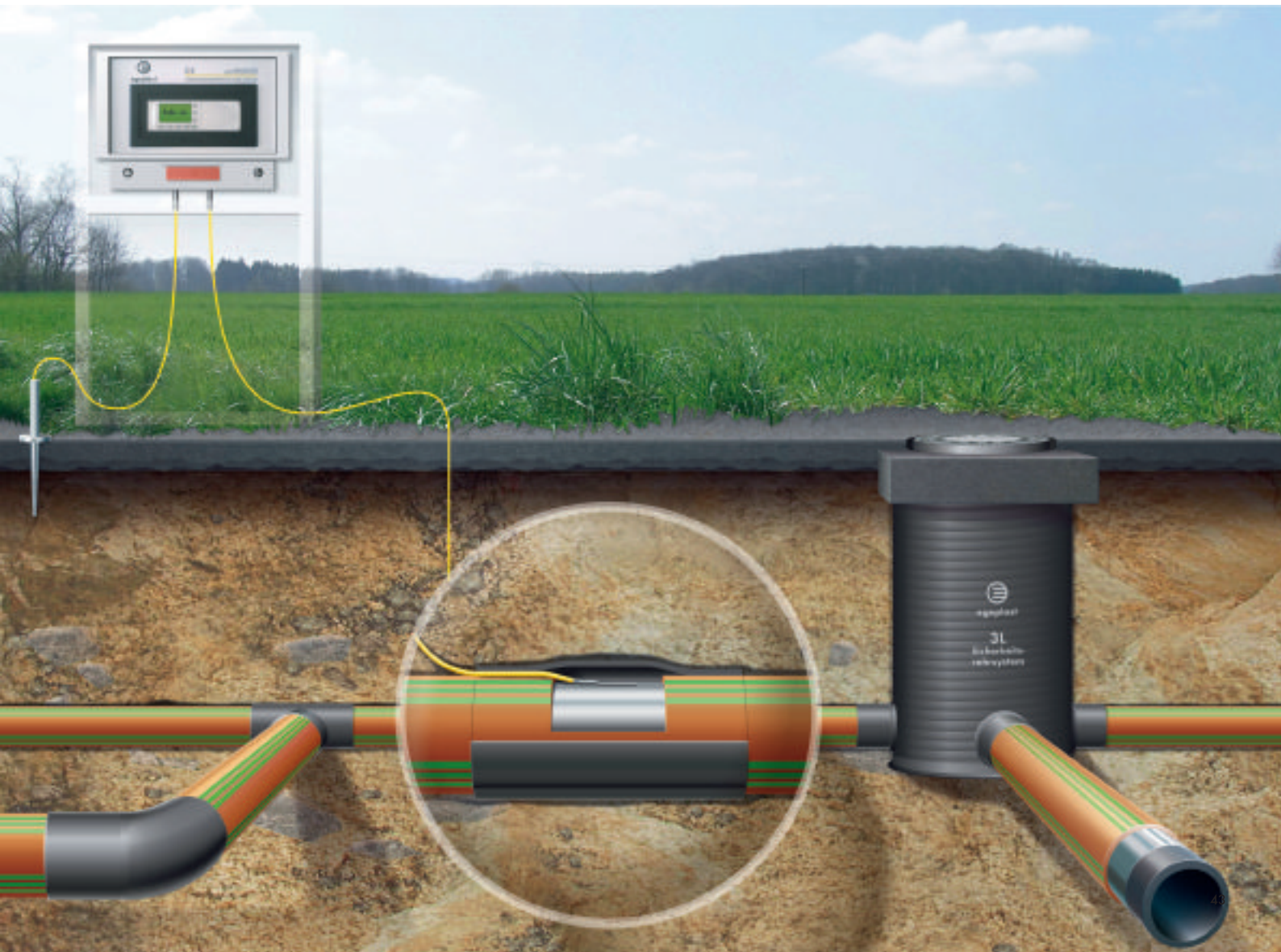
Resistant to aggressive media.

**Working pressure**

Up to max. 32 bar working pressure.

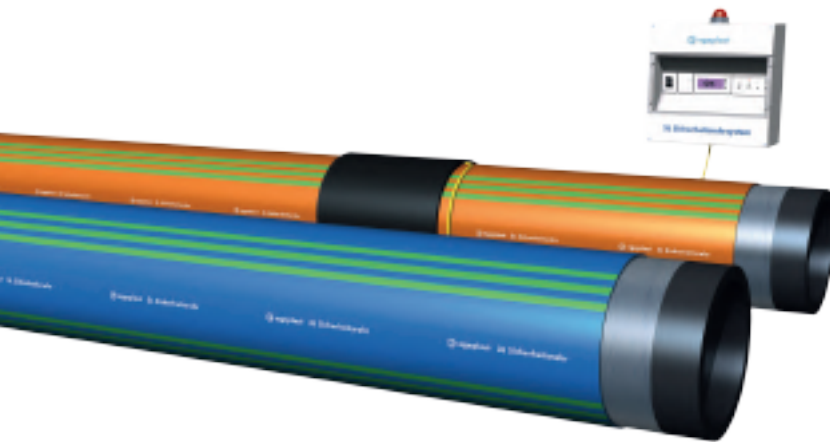
**Temperature**

Up to max. 70°C media temperature.



# 3L® Leak Control with “online” function check

Permeation resistant pipe system made of PE100 RC for the protection of e.g. drinking water (media) or the environment. Fitted with a high strength PEplus sheath. A permanently monitored pipe system that detects and reports possible damage in real time.



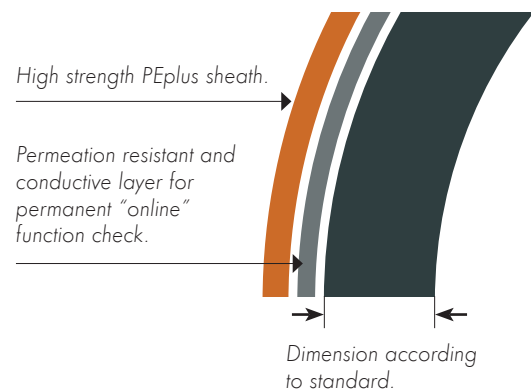
A complete system for permanent “online” function check. Permeation resistant pipe with a high strength PEplus sheath corresponding to e.g. 25% of the pipe’s wall thickness at dimension 250 mm/SDR17. Detects and reports damage directly to the control centre or a mobile phone.



## Product benefits

- Pipe system made of PE100 RC for a safer service life and more efficient pipelaying.
- The pipe is equipped with a conductive layer of aluminium for permanent “online” pipeline monitoring and accurate leak detection.
- 3L Leak Control is a complete system for monitoring a pipe system “online”.
- High strength PEplus sheath corresponding to e.g. 25% of the pipe’s wall thickness at dimension 250 mm/SDR17.
- A pipe system suitable for use in environments where full “online” control of possible pipe damage is required.
- Safe welding connections according to DVS 2207.
- Minimal ovality for safe jointing.
- Complete range of pipe fittings.

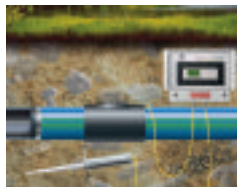
Permeation resistant pipe made of PE100 RC with a high strength PEplus sheath and permanent function check.



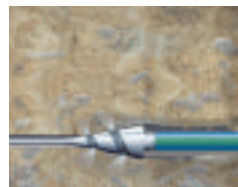
## Pipelaying method



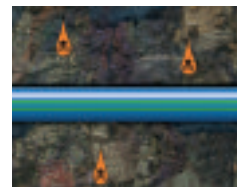
Traditional pipelaying in trenches and adapted for pipes made of PE100 RC.



Permanent function check that reports possible damage.



Also suitable for alternative installation methods.



Permeation resistant pipe system to protect both media and the environment.



Function check after installation.

## Approvals/Certificates

 Nordic Poly Mark

·DK - VAND·



 kiwa  
Partner for progress

## Facts

Applications	Pressure pipe systems for water, sewage and gas   industry   coolants
Target groups	Municipalities   Contractors   Industry   Pipeline owners
Dimensions	OD 25-1600 mm
Media	Water   sewage   gas   industrial media
Material	PE100 RC (Resistance to Cracks)
SDR	SDR 17.6 - SDR 7.4 (others available to order)
Connection method	Butt welding   arc welding couplings
Approvals/Certificates	Nordic Poly Mark   DK-VAND   FI   PAS 1075 (RC pipes)   TÜV   KIWA Type 3
Standards	DIN 8074/75, EN 12201 (water and sewage), EN 1555 (gas)
Product limitations	Pressure up to PN 16 for water; For higher working pressures, see HexelOne® 3L

## Pipe fittings

### PE pipe fittings



- Injection moulded
- Seamless
- Machined
- Segment welded

### Arc welding parts



Complete range of arc welding parts for different purposes.

### Flange joints



Wide range of flange joints such as loose flanges, SF flanges and HP flanges.

### Custom pipe fittings

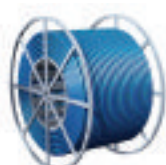


A range of customized pipe fittings is available for 3L®. Also custom manufacture according to drawing.

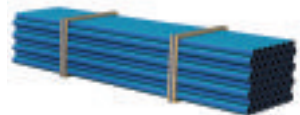
## Delivery options



Coil



Drum



Straight lengths 6, 12, 18, or 20 m

- All pipes are fitted with end caps
- Non-standard lengths can be ordered on request

## Related documents



Brochure  
PE100 RC



# HexelOne® for high pressure

With extra reinforcement and protective PEplus sheath.

## HexelOne®

PE100 RC main pipe with extra reinforcement to withstand double pressure. Fitted with a protective PEplus sheath.

HexelOne® main pipes are made of PE100 RC and reinforced with two additional layers of PE100 and a protective sheath of 100% high strength PEplus to withstand up to twice the pressure (30 bar for water and sewage and 16 bar for gas). This reinforcement thus allows pipes to be used where operating pressure is up to 100% higher than normal.

HexelOne® has twice the strength of a regular PE100 RC pipe and is designed to be used in high pressure applications such as mining, connecting snow guns and high pressure gas pipes.

## Four layers for high pressure and extra protection

The high strength construction of the pipe consists of four layers: The main pipe, two reinforcement layers and a protective sheath. The intermediate layer is made of stretched polyethylene (PE100) and is wound around the main pipe. On the

outside of the winding, an additional PE100 reinforcement layer and a thick PEplus sheath are extruded according to common standards. The result is a smooth and easy-to-work pipe that can withstand very high pressures and is suitable for all types of alternative installation methods.

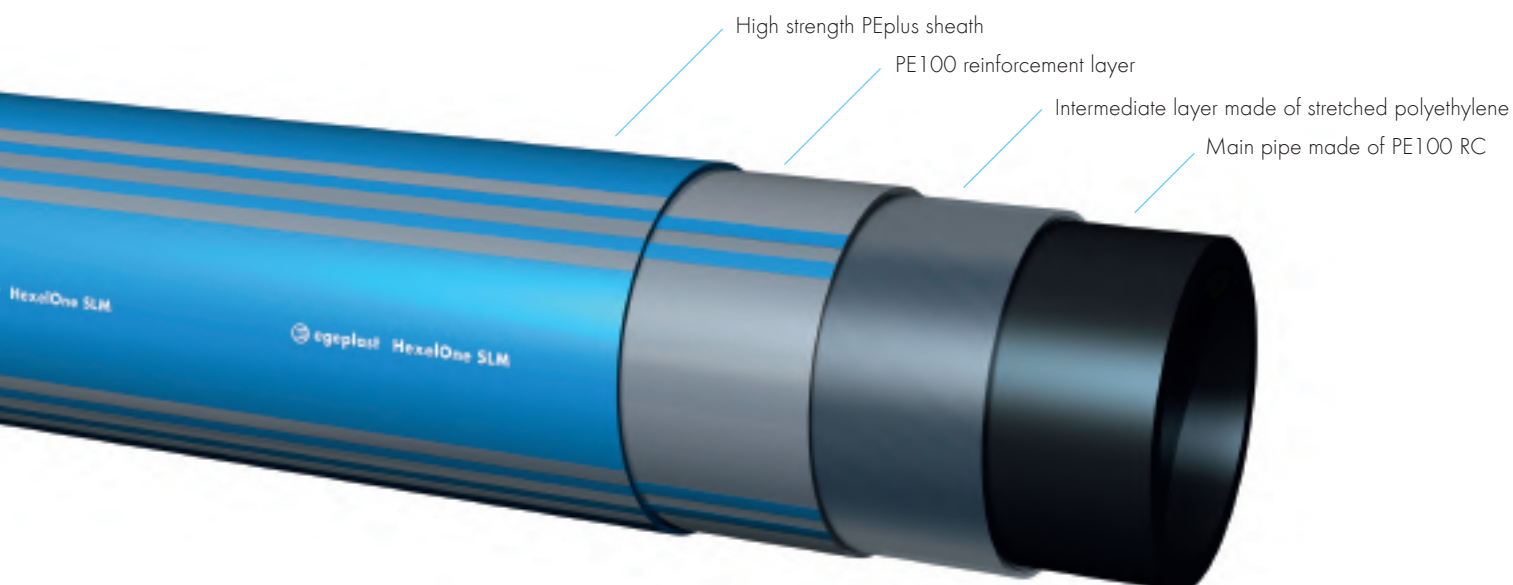
When butt welding and when using an arc welding sleeve, only the sheath has to be stripped off the HexelOne® pipe. The other layers must be retained.

## Extra protection against scratches and point loads

In addition to protecting against scratches and pipe damage caused during pipelaying, the high strength sheath also helps to distribute the pressure from any point loads over a larger surface, thereby reducing impact on the main pipe.

## HexelOne® in several versions

HexelOne® is also available as HexelOne® DCT with aluminium conductive strips for function checks, HexelOne® SLA for a permeation resistant pipe system and HexelOne® 3L, which is both impermeable and features the "online" function check.





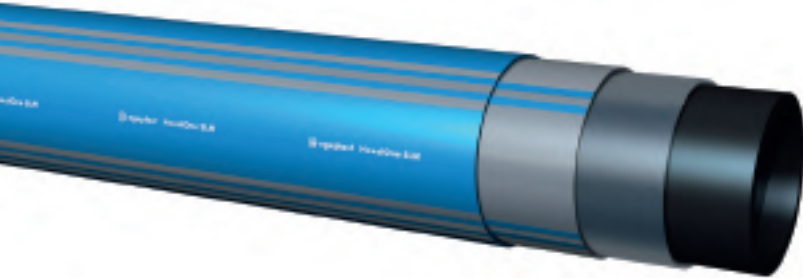
The working environment in mines is extremely tough, not only for the miners, but also for all the tools and products used in the mining industry. High pressure is required to transport the slurry, for example, which in turn requires extra strong pipelines. HexelOne® is perfect for this type of demanding conditions.

*The Boliden mine uses pipes supplied by Extena.*

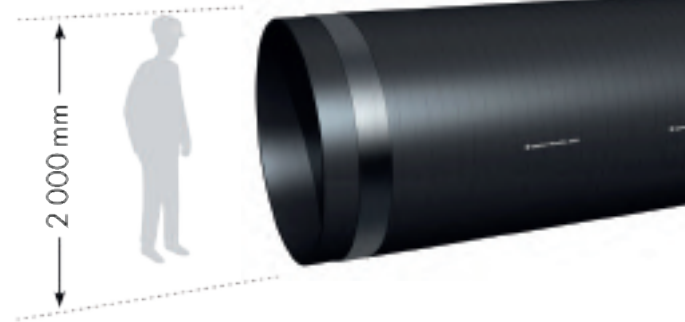


# HexelOne® for high pressure

Extra reinforced pipe to withstand double pressure. With or without a protective PEplus sheath. For water, sewage and gas. Dim ø 90-160 mm (200-2000 mm HexelOne® XXL).



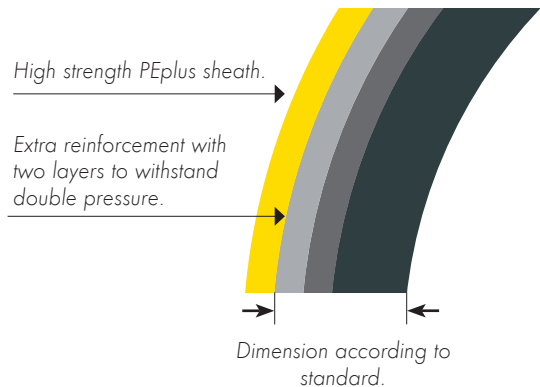
Extra reinforced pipe to withstand double pressure. HexelOne® is supplied as standard in dim 90-160 mm but can be ordered (HexelOne® XXL) in dim up to 2000 mm.



## Product benefits

- Pipe system designed for use where high pressure is present, for example in the mining industry.
- Main pipe made of PE100 RC.
- Reinforced with two additional layers of high strength PE100 and sheath.
- High strength PEplus sheath corresponding to e.g. 25% of the pipe's wall thickness at dimension 250 mm/SDR17.
- Allowable operating pressures of 30 bar for water and sewage and 16 bar for gas.
- Fewer joints thanks to delivery lengths up to 145 m.
- For larger dimensions 200-2000 mm, HexelOne® XXL is available on demand.
- Minimal ovality for safe jointing.
- Complete range of pipe fittings.

Extra reinforced pipe made of PE100 RC with or without high strength PE sheath.

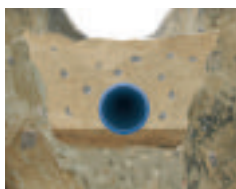


HexelOne® is also available as DCT (with conductive strips), SLA (impermeable) and 3L (impermeable with "online" monitoring).

## Pipelaying method



Traditional pipelaying in trenches.



Suitable for pipelaying adapted for pipes made of PE100 RC.



Also suitable for alternative installation methods.

## Approvals





## Facts

Applications	Pressure pipe systems for water, sewage and gas   industry   coolants
Target groups	Municipalities   Contractors   Industry   Mining
Dimensions	OD 90-160 mm (HexelOne® XXL: OD 200-2000 mm)
Media	Water   sewage   gas   industrial media
Material	PE100 and PE100 RC
SDR	SDR 11
Connection method	Butt welding   arc welding couplings   mechanical couplings
Approvals/Certificates	TÜV   DVGW
Standards	DIN 8074/75, EN 12201 (water and sewage), EN 1555 (gas)
Product limitations	OD 160 mm (for water) only up to 25 bar

## Pipe fittings

### PE pipe fittings



- Injection moulded
- Seamless
- Machined
- Segment welded

### Arc welding parts



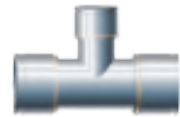
Complete range of arc welding parts for different purposes.

### Flange joints



Wide range of flange joints such as loose flanges, SF flanges and HP flanges. Also customized for HexelOne®

### Custom pipe fittings

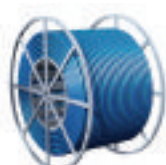


A range of customized pipe fittings HexelPress® is available for HexelOne®. Also custom manufacture according to drawing.

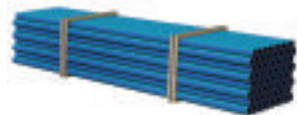
## Delivery options



Coil



Drum



Straight lengths can be ordered on request

- All pipes are fitted with end caps
- Non-standard lengths can be ordered on request

## Related documents

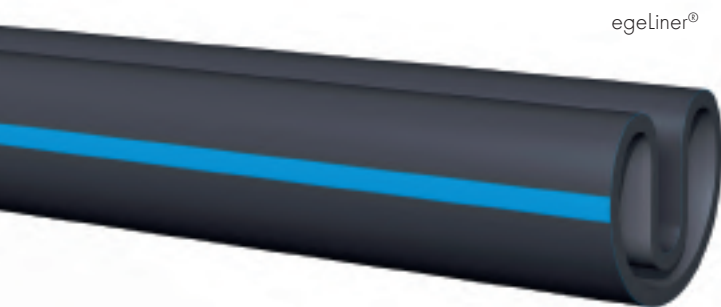


Brochure  
PE100 RC

# Relining and renovation

Safe and cost effective solutions for repairing and renovating older pipe systems.

Exenda's extensive range of pressure pipes and pipe fittings also includes innovative, safe and cost effective solutions for repairing and renovating older pipe systems. Relining has developed significantly since the process was introduced in the 1990s. With egeLiner and egeModul PE, we can offer the latest generation of systems – with a clear focus on quality and safety.



egeLiner®

## egeLiner®

Factory-folded PE pipes for relining in tight spaces.

egeLiner® is intended for the relining of existing pressure pipe systems in standard dimensions. The pipe systems are manufactured from PE100 RC, which is considered to be the safest raw material with the best conditions for maximum service life. The pipe is "folded" during manufacturing and, following installation, hot steam and air pressure is used to return the pipe to its original shape with full stability and ring stiffness. The outside diameter of the pipe matches the internal standard dimensions used with PE pressure pipes.

egeLiner® can be supplied in long lengths even in larger dimensions, minimizing the number of joints required. The pipe can also be supplied wound on drums.

## egeLiner® High-T

We offer egeLiner® High-T for higher media temperatures, pipes especially suitable for industrial applications or in protective pipe systems for high and extra high voltage cables, for example at oil refineries. Specially developed PE materials allow permanent operation at temperatures up to 70°C.

## egeModul PE

Pipe system for renovating older gravity pipes by relining.

egeModul PE is a PE100 system consisting of short pipe lengths (0.5-1.95 metres) used for the replacement of damaged pipelines and the efficient renovation of older gravity pipes, both in plastic and concrete. The sleeve and tip end of the pipes are fitted with a sealing ring and are designed with a click-on lock for safe jointing. The system is ideal for cost effective well-to-well relining. Available with light interior for filming.

## egeModul PE SLM® with sheath

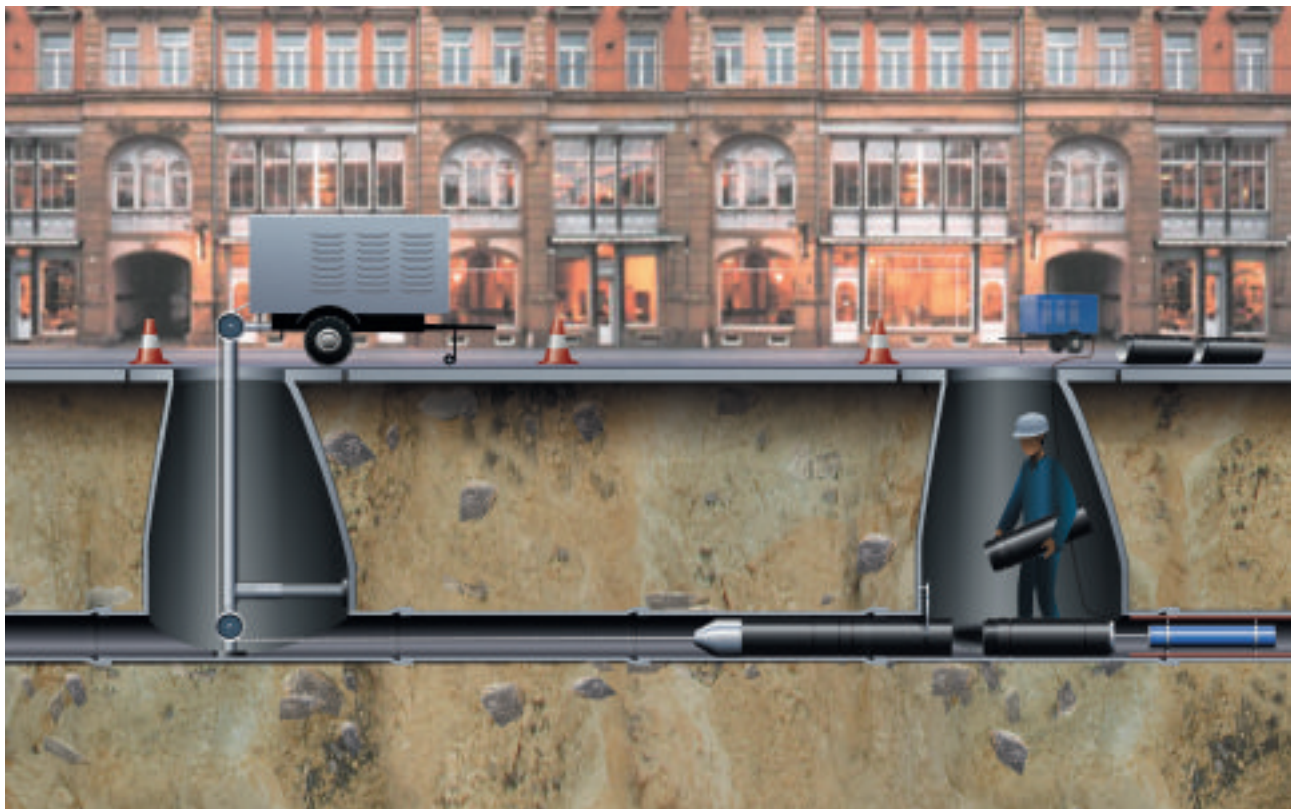
egeModul PE with or without a light inner layer can also be manufactured with a protective layer (sheath) depending on the project type.



egeModul PE



egeLiner® is intended for the relining of pressure pipe systems. The outside diameter of egeLiner® fits the inside diameter of standard polyethylene pressure pipes.



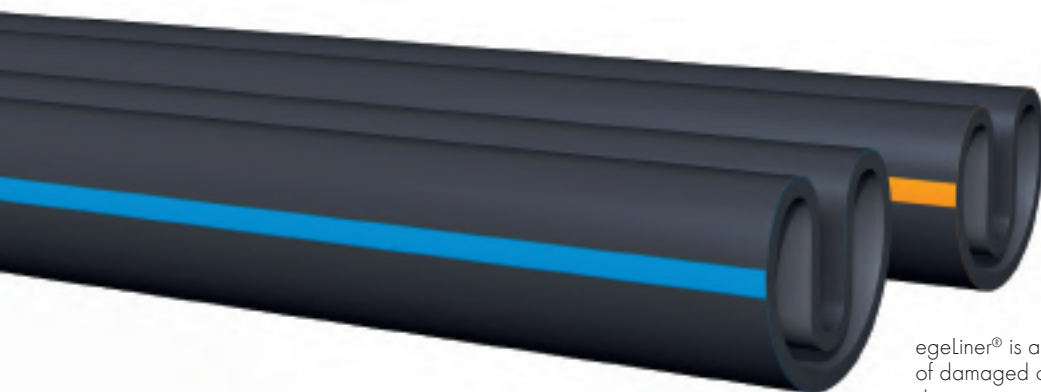
egeModul PE is intended for the renovation of gravity pipes in plastic and concrete from well to well and can also be ordered with a light interior for TV inspection and with an extra protective PE sheath.



# egeLiner® for relining pressure pipe systems

egeLiner is intended for the relining of existing pressure pipe systems.

Dim ø 150-500 mm suitable for inside diameters of standard polyethylene pressure pipes.



egeLiner® is a pipe system intended for the relining of damaged or older pressure pipelines. The outside diameter is suitable for standard inside diameters of polyethylene pressure pipes.

## Product benefits

- Pipe system made of PE100 as well as PE100 RC for a safer service life and more efficient pipelaying.
- egeLiner® is intended for the relining of pressure pipe systems.
- After installation, egeLiner® has the same ring stiffness and pressure class as PE pressure pipes.
- Installation with the relining method has little impact on traffic, etc.
- Low trenching costs when relining using pits or existing trenches.
- Complete range of pipe fittings.

The pipe is “folded” during manufacturing and, following installation, hot steam and air pressure is used to return the pipe to its original shape with full stability and ring stiffness.



egeLiner® before steam process.



egeLiner® after steam process.

## Pipelaying method



Intended for the relining of damaged or older pipe systems.

## Approvals/Certificates

  
Nordic Poly Mark



## Facts

Applications	Repair and renovation of pressure pipes
Target groups	Municipalities   Contractors   Industry
Dimensions	OD 150-500 mm
Media	Water   sewage   gas   industrial media
Material	PE100, PE100 RC (Resistance to Cracks)
SDR	SDR 26   SDR 21   SDR 17.6   SDR 17
Connection method	Butt welding   arc welding couplings   mechanical couplings
Approvals/Certificates	Nordic Poly Mark   DVGW
Standards	EN ISO 11297   EN ISO 11298   EN ISO 11299
Product limitations	Pressure up to PN 10 for water

## Pipe fittings

### PE pipe fittings



- Injection moulded
- Seamless
- Machined
- Segment welded

### Arc welding parts



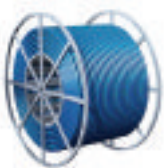
Complete range of arc welding parts for different purposes.

### Flange joints



Wide range of flange joints such as loose flanges, SF flanges and HP flanges.

## Delivery options



Drum

## Related documents



Brochure  
PE100 RC

# egeModule for the relining of gravity pipelines in plastic or concrete

Pipe system for renovation of gravity pipelines in plastic or concrete through relining.

Dim ø 160-630 mm



Pipe system made of PE100 according to DIN 8074/75 with solid walls. High level of safety thanks to triple lip seal and click-on coupling. egeModul can also be ordered with a high strength PE sheath (egeModul SLM).

## Product benefits

- Pipe system made of PE100.
- egeModul is intended for the replacement or renovation of gravity pipelines in plastic or concrete.
- Short lengths (0.5-1.95 metres) for flexible relining.
- Cost effective relining well to well.
- Safe jointing with a click-on lock for safe installation.
- Triple lip sealing ring.
- Verified tightness according to DIN EN 1277 with increased test requirements of up to 2.5 bar and angulation of max. 3°.
- Installation with the relining method has little impact on traffic, etc.
- Complete range of pipe fittings.

*Click-on technology for optimal locking of the joints.*

*Extra counter nut for installation in any direction.*



*Triple lip seal - completely sealed up to 3° angulation.*

*System made of PE100.*

## Pipelaying method



Relining well to well.



## Facts

Applications	Renovation/replacement of gravity pipelines
Target groups	Municipalities   Contractors   Industry
Dimensions	OD 160-630 mm
Media	Surface water   sewage
Material	PE100
SDR	SDR 17.6 (others available to order)
Connection method	Click-on connection; SBR or oil resistant NBR seal
Standards	MPA DIN ISO 12295 DWA 143-12
Product limitations	For relining of gravity pipelines only

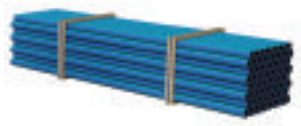
## Pipe fittings

### Custom pipe fittings



A range of customized pipe fittings is available for egeModul.

## Delivery options



Supplied on a pallet

- Standard lengths 0.5-1.95 metres.
- Longer lengths > 1.95 metres on request

# egeFuse 2.0 gravity pipeline SN16 for surface and waste water

Stiffness class SN16 for use in areas with heavy loads or unstable ground.  
Built-in arc welding sleeves for safe jointing.

## The safest gravity pipeline

egeFuse 2.0 made of PE100 is probably the safest gravity pipeline on the market. Its high strength ring stiffness (SN16) combined with welded joints provides a pipeline with unique properties.

egeFuse 2.0 has a stiffness class of SN16, which is twice the ring stiffness of traditional SN8 ground sewers in class SN8. The pipe is also fitted with arc welding sleeves. Welded joints avoid the risk of root penetration, which can cause leaks. It also provides safer joints when laying in unstable ground and a completely sealed pipeline.

## Safe joints

The egeFuse 2.0 is equipped with an arc welding sleeve. Since the pipe has the same outside diameter as a traditional pressure pipe, traditional arc welding sleeves can also be used in cases where the pipes need to be cut.

## Resistance to external impact

Gravity pipes are affected by external loads throughout the service life of the pipeline. This may be soil and traffic loads, but also groundwater pressure. At greater laying depths, the pressure from soil load has a big impact, while traffic load has the biggest impact on pipelines laid closer to the surface. Settlement in the pipe trench also affects the service life and function of the pipeline. Unstable soils such as loose clay can cause settlement quite easily, which in turn can affect the function of the pipeline.

## Stiffness class SN16

Gravity pipes are divided into different SN classes (nominal stiffness) depending on the short-term stiffness of the pipe according to EN ISO 9969 and these are given in kN/m<sup>2</sup>. Standardized stiffness classes are SN2, SN4, SN8 and SN16. Ring stiffness describes the deformation characteristics of a pipe. A pipe with a high ring stiffness has less impact in terms of ovality than a pipe with a low ring stiffness.

High ring stiffness combined with high compression during pipelaying gives minimal deformation. Stiffness class SN8 is normally used for gravity pipes. Since the actual cost of the pipe normally represents only 5-15% of the total pipelaying cost, it is better to choose a pipe with the highest possible stiffness class if this is justified.

Under normal pipelaying conditions, it is possible to use pipes with stiffness class SN8, but when laying in unstable soils, in areas with large traffic loads, in deep trenches with a high soil load or in ground with external high water pressure, we recommend eFuse.





Areas with heavy truck traffic and the mining industry are two suitable applications for egeFuse 2.0. The high strength ring stiffness of the pipes SN16 instead of the normal SN8 (which applies to traditional ground sewers), combined with built-in arc welding sleeves, provides a safe pipeline network that can withstand very high loads.





# egeFuse 2.0 gravity pipeline SN16 for surface and waste water

Gravity pipes made of PE100. Pipe system with extra high ring stiffness (SN16 instead of SN8) and welded joints using pre-assembled arc welding sleeves. Dim ø 280-630 mm



Since egeFuse 2.0 is equipped with arc welding sleeves, it provides a pipe system with extra safe joints. Ring stiffness SN16.

The pipe has the same outside diameter as pressure pipes made of polyethylene, which means that traditional arc welding parts can also be used.

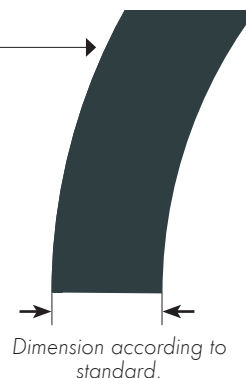
Easy connection to ground sewers via adapter couplings.

## Product benefits

- Surface and waste water pipes for gravity pipes made of PE100.
- Intended for high water pressure or pipelaying where heavy loads are present, such as timber lorries and heavy trucks.
- Welded joints with arc welding sleeves.
- No risk of root penetration which can cause leaks.
- Same outside diameter as traditional pressure pipes.
- egeFuse 2.0 offers safer gravity pipelines for surface and waste water.
- White interior facilitates inspection such as filming.

### Gravity pipe SN16 made of PE100

Stiffness class SN16



## Pipelaying method



Traditional pipelaying in trenches.



Suitable for pipelaying where there is a risk of root penetration.



Suitable for pipelaying under heavy traffic or soil loads.



Suitable for pipelaying where there is a risk of high water pressure or unstable soils.

## Facts

Applications	Designed for gravity pipes exposed to heavy loads
Target groups	Municipalities   Contractors   Industry
Dimensions	OD 280-630 mm
Media	Surface water   waste water
Material	PE100
SDR	SDR 17.6
Connection method	Built-in arc welding sleeve
Standards	DIN 8074/75, DIN EN 12666, DIN EN 1610
Product limitations	Only intended for pipelaying in sand bed trenches

## Pipe fittings

### PE pipe fittings



- Injection moulded
- Seamless
- Machined
- Segment welded

### Arc welding parts



Complete range of arc welding parts for different purposes.

### Flange joints



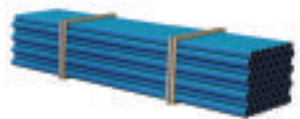
Wide range of flange joints such as loose flanges, SF flanges and HP flanges.

### Custom pipe fittings



A range of customized pipe fittings is available for egeFuse 2.0.

## Delivery options



Straight lengths (3 or 6 m)

- Standard lengths 3 and 6 metres.
- Longer lengths on request

# High pressure pipes PE100 RC homogeneous

High pressure pipes for water and sewage. Dim ø 16–630 mm.

Extena develops and manufactures PE pipes for applications that require higher pressure ratings. In environments where large level differences are a critical factor, Extena high pressure pipes can be the solution. These pipes have a greater thickness and a higher ring stiffness than traditional pipes, which means they can withstand high internal pressures as well as high external loads. We offer both homogeneous high pressure pipes and multiple layer high pressure pipes (HexelOne®) for extra resistance to high pressures.

## Homogeneous high pressure pipes

Extena homogeneous high pressure pipes enable high pressure pumping. Common applications include the mining industry and ski resorts, i.e. environments with large level differences.

## High pressure multilayer pipes

HexelOne® is a high pressure pipe made of several layers, providing a strong, yet flexible pipe. HexelOne® has a main pipe made of PE100 RC, two reinforcement layers of PE100

and a protective sheath of 100% high strength PEplus. The result is a pipe that can withstand up to twice the pressure (30 bar for water and sewage and 16 bar for gas), while maintaining its flexible handling.

## Material specification

Our PE high pressure pipes are produced in PE100 or PE100 RC as required.

## Environment

Polyethylene is 100% recyclable. The material can be regranulated and reused in pipe production. Only carbon dioxide and water are formed during combustion.

## Quality

Extena PE high pressure pipes are produced according to EN 12201.







In mountain environments, mines and installations with large level differences, pipes are required to withstand high pressures. For this type of environment, we offer pipes that can withstand high internal pressures and pipes which also have a high ring stiffness to withstand high external loads. In our range you will find both traditional high pressure pipes and the new generation of pipes that are made with multiple reinforcement layers to withstand extra high pressures up to 30 bar.



# High pressure pipes PE100 RC homogeneous

High pressure pipes for water and sewage. Dim  $\varnothing$  16–630 mm.



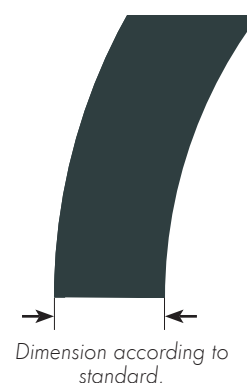
## Product benefits

- Homogeneous pipe system made of PE100 RC for a safer service life and more efficient pipelaying.
- Available in pressure classes PN 20, PN 25 and PN 30\*
- Minimal ovality for safe jointing.
- Complete range of pipe fittings.

	SDR 6	SDR 7.4	SDR 9
PE100 RC	PN 30*	PN 25	PN 20

\* Not included in standard

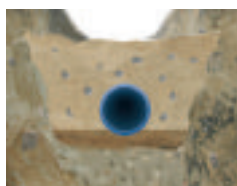
Homogeneous high pressure pipe



## Pipelaying methods



Traditional pipelaying in trenches.



Suitable for pipelaying adapted for PE100 RC pipes.



Suitable for alternative installations.

## Facts

Applications	Pressure pipe systems for water, sewage and gas   industry   coolants
Target groups	Municipalities   Contractors   Industry
Dimensions	OD 16–630 mm
Media	Water   sewage   gas   industrial media
Material	PE100 RC (Resistance to Cracks)
SDR	SDR 6 – SDR 9 (others available to order)
Connection method	Butt welding   arc welding couplings   mechanical couplings
Standards	EN 12201 (water and sewage)

## Pipe fittings

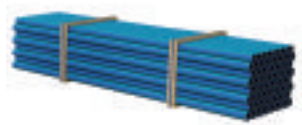
### Customized pipe fittings



## Delivery options



Coil



Straight lengths  
6, 12, 18, 20 or 22 m

- All pipes are fitted with end caps
- Non-standard lengths can be ordered on request

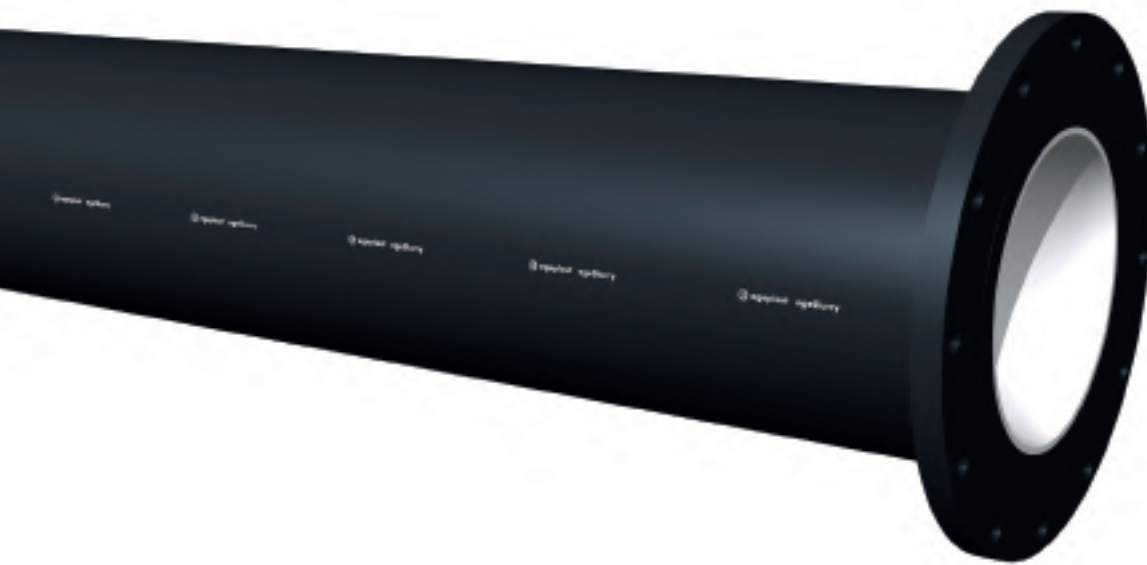
## Related documents



Brochure  
PE100 RC

# egeSlurry® with protective interior

For the transportation of abrasive slurry type media. Dim ø 160–630 mm.



egeSlurry® can be ordered with or without a flange.

Some specific industries require the transportation of coarse and abrasive media, for example in the mining industry and the transportation of slurry, which consists of tailings and mine water. Due to the abrasive characteristics of these media, special requirements are placed on the pipe systems that are used. This type of pipe system is used not only in the mining industry, but also in maritime land recovery (transportation of sand water mixture), the transportation of granules and pellets and animal feed. For these applications, Extena offers the durable egeSlurry® system.

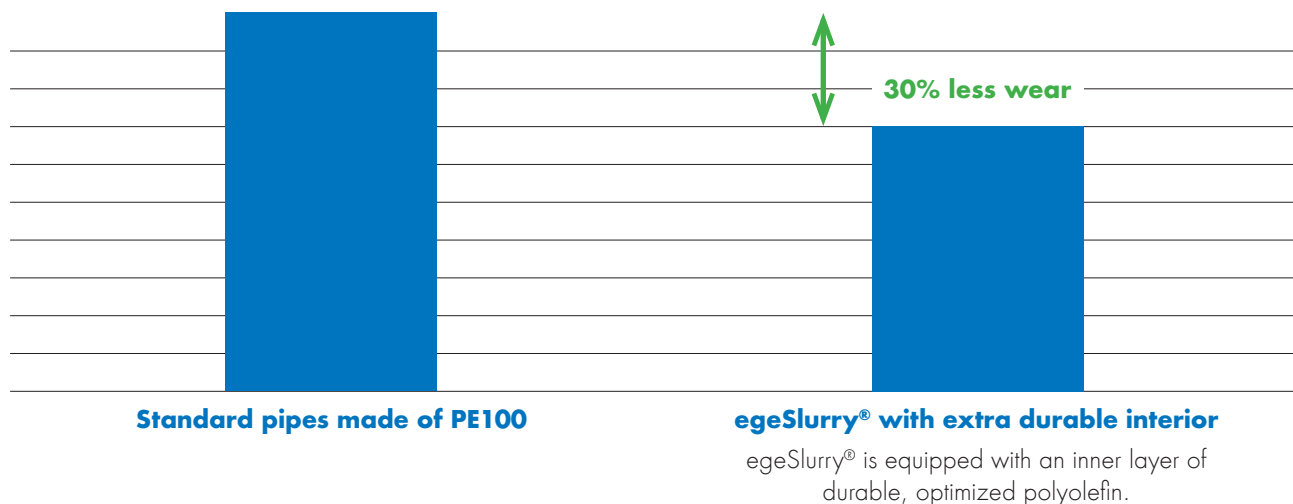
## egeSlurry®

egeSlurry® is a pressure pipe system designed specifically for the hydraulic and pneumatic transportation of abrasive media. These pipes and pipe fittings have high wear resistance for maximum service life and provide efficient transportation thanks to their multilayer design with a patented internal polyolefin coating.

## Homogeneous pipes

Multilayer pipes can have strippable or homogeneous layers. The strippable layers can be stripped from the main pipe while homogeneous layers are an integral part of the pipe. egeSlurry® is a homogeneous pipe with an integrated reinforcement layer on the inside.

egeSlurry® has significantly reduced wear (30%) compared to traditional PE 100 interiors according to ISO 15527 sand/slurry test.

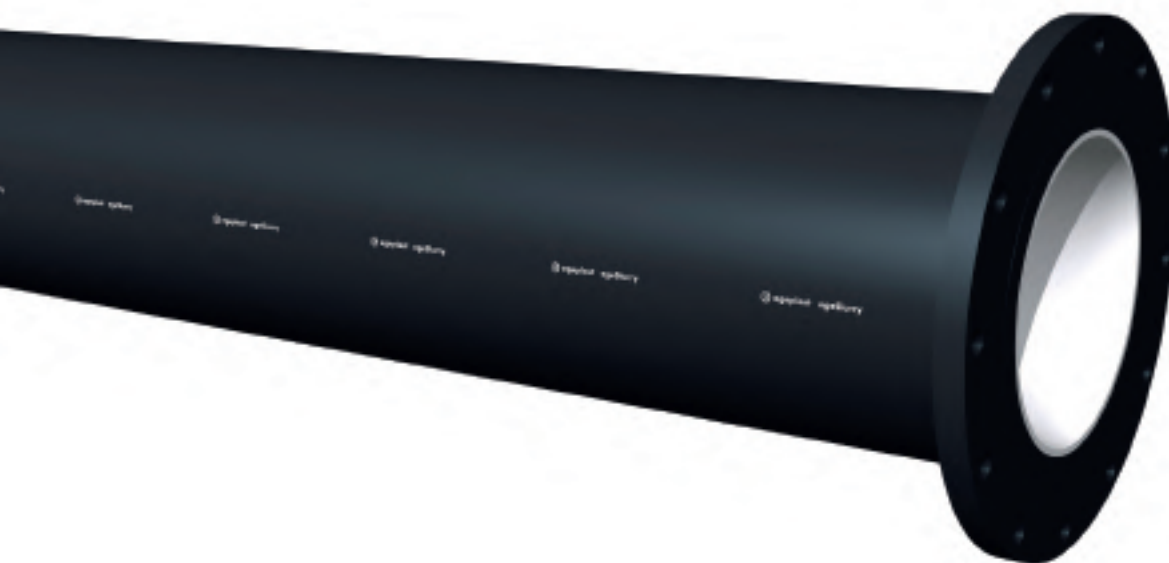






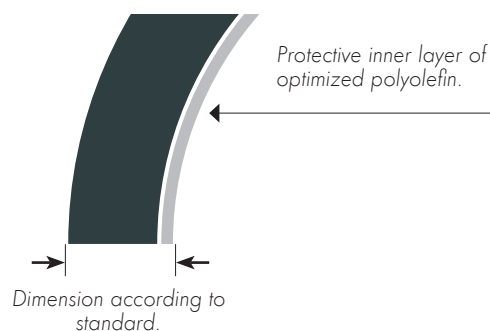
# egeSlurry® with protective interior

For the transportation of abrasive slurry type media. Dim ø 160–630 mm.



egeSlurry® can be ordered with or without a flange.

- Increased durability and service life thanks to integrated wear protection
- Longer maintenance intervals, reduced costs and prevention of downtimes
- Installation with established jointing methods, such as welding or the use of flange connections
- Fully integrated system with moulded parts, which are also protected against wear
- Pre-fabricated pipe system solution that facilitates jointing and installation
- Significantly reduced wear on egeSlurry® compared to traditional PE pipes (results from ISO 15527 sand/slurry test)



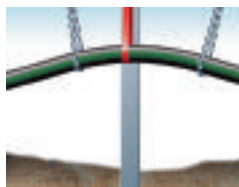
## Pipelaying methods



Traditional pipelaying in trenches.



Suitable for alternative installations.



Suitable for alternative installations.

## Facts

Applications	Pressure pipe system for the transportation of abrasive media
Target groups	Municipalities   Contractors   Industry
Dimensions	OD 160 - 630 mm
Media	Water   sewage   industrial media
Material	PE100 RC (Resistance to Cracks) / optimized polyolefin
SDR	SDR 17 - SDR 7.4 (others available to order)
Connection method	Butt welding   arc welding couplings   mechanical couplings
Standards	EN 12201

## Pipe fittings

### PE pipe fittings



- Injection moulded
- Seamless
- Machined
- Segment welded

### Arc welding parts



Complete range of arc welding parts for different applications.

### Flange joints



Wide range of flange joints such as loose flanges, SF flanges and HP flanges.

### Customized pipe fittings

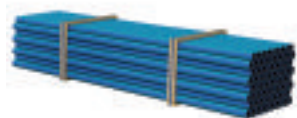


For standard pipes, you can also order customized pipe fittings according to drawing.

## Delivery options



Coil



Straight lengths  
6, 12, 18, 20 or 22 m

- All pipes are fitted with end caps
- Non-standard lengths can be ordered on request

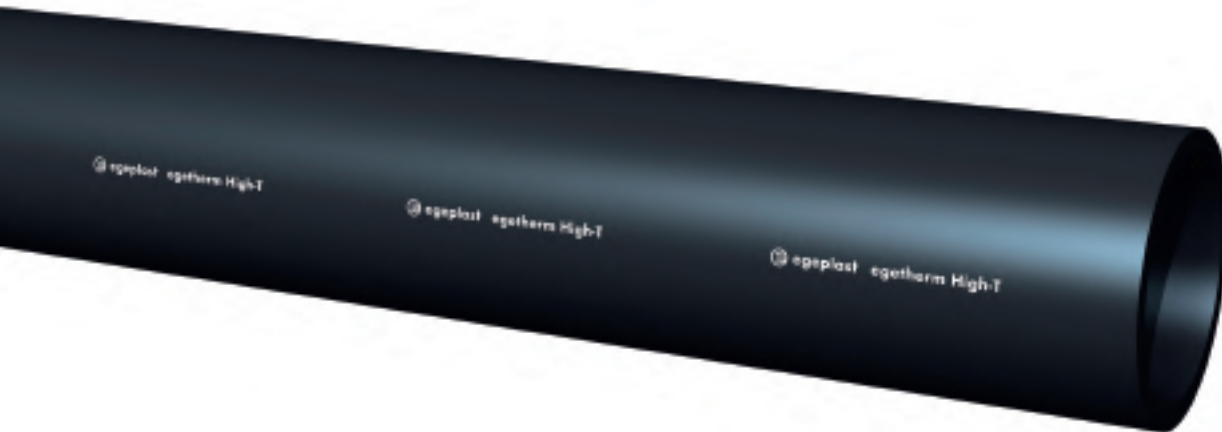
## Related documents



Brochure  
PE100 RC

# egeTherm® High-T for high temperatures

For the transportation of e.g. process/cooling/discharge water. Dim ø 20–630 mm.  
Larger dimensions available on request.



The transportation of hot process water or disinfection of pipes at high temperatures requires pipe systems made of temperature resistant PE materials. For this type of application, Extena offers the innovative egeTherm® High-T system.

## egeTherm® High-T

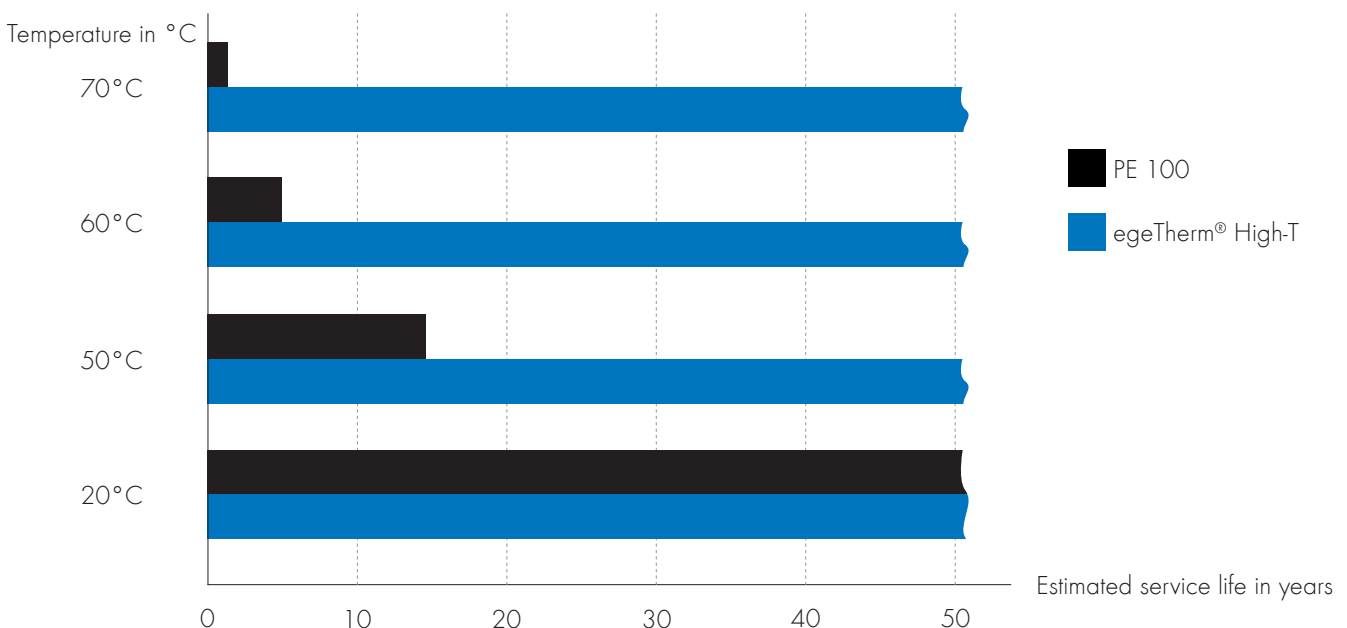
The egeTherm® High-T pipe system is equipped with an integrated temperature resistant layer, providing safe media transportation with permanent temperatures up to 70°C. PE-RT (polyethylene of raised temperature resistance) is a high temperature resistant polyethylene material. The system can also handle temporary temperature increases up to 95°C, for example when flushing a pipe with extra hot media.

We also offer this type of pipe with a white outer coating and/or UV resistant outer layer to minimize solar heating. egeTherm® High-T is a flexible and deformable pipe that can be welded according to DVS 2207-1.

## Homogeneous pipes

egeTherm® High-T is a homogeneous pipe made of PE-RT (polyethylene of raised temperature resistance).

*Estimated service life in relation to media temperature according to DIN 8074 / ISO 24033.*

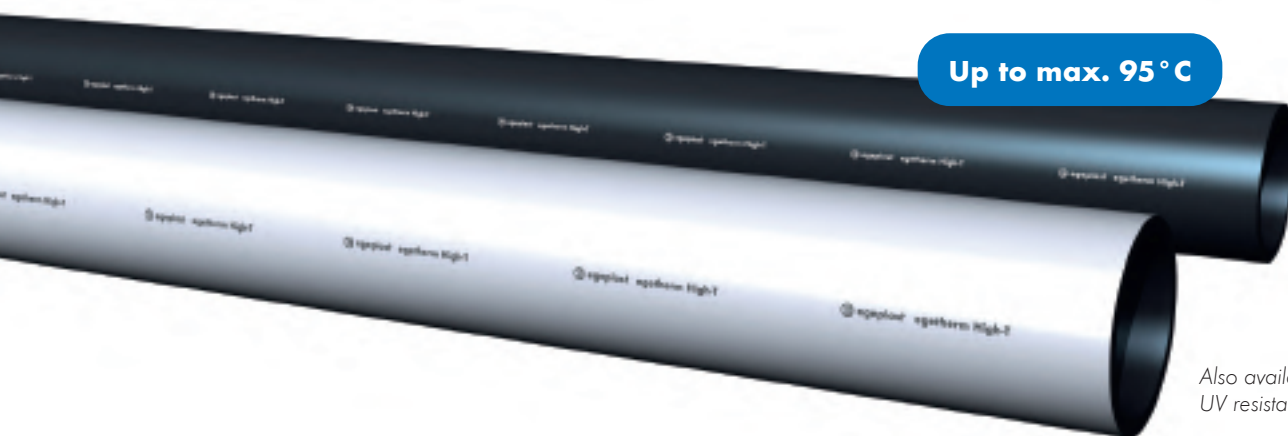






# egeTherm® High-T for high temperatures

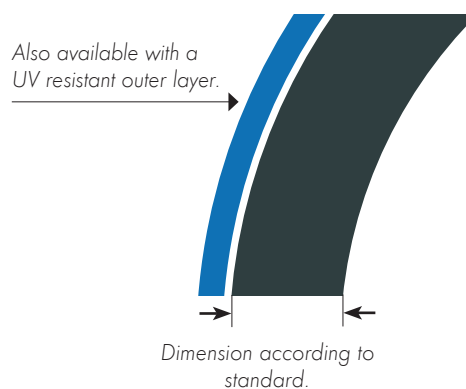
For the transportation of e.g. process/cooling/discharge water. Dim ø 20–630 mm.



## Product benefits

- Withstands a permanent temperature of 70°C
- Can also handle temporary temperature increases up to 95°C
- Also available with a white UV resistant outer layer to prevent heating and the effects of the sun
- High flexibility and deformability
- Can be welded according to DVS 22071
- Service life greater than 50 years

Pipe made of temperature resistant PE-RT



## Pipelaying methods



Traditional pipelaying in trenches.



For pipelaying above ground.

## Approvals



## Facts

Applications	Pressure pipe systems for water, sewage   industry   coolants
Target groups	Municipalities   Contractors   Industry
Dimensions	OD 20 - 630 mm
Media	Water   sewage   industrial media
Material	PE-RT (polyethylene of raised temperature resistance)
SDR	SDR 33 - SDR 7.4 (others available to order)
Connection method	Butt welding   arc welding couplings   mechanical couplings
Approvals/Certificates	TÜV
Standards	DIN 8074, EN 12201, ISO 24033, DIN EN ISO 22391-2

## Pipe fittings

### PE pipe fittings



- Injection moulded
- Seamless
- Machined
- Segment welded

### Arc welding parts



Complete range of arc welding parts for different applications.

### Flange joints



Wide range of flange joints such as loose flanges, SF flanges and HP flanges.

### Customized pipe fittings

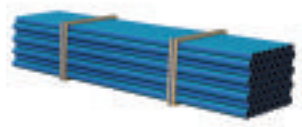


For standard pipes, you can also order customized pipe fittings according to drawing.

## Delivery options



Coil



Straight lengths  
6, 12, 18, 20 or 22 m

- All pipes are fitted with end caps
- Non-standard lengths can be ordered on request

## Related documents



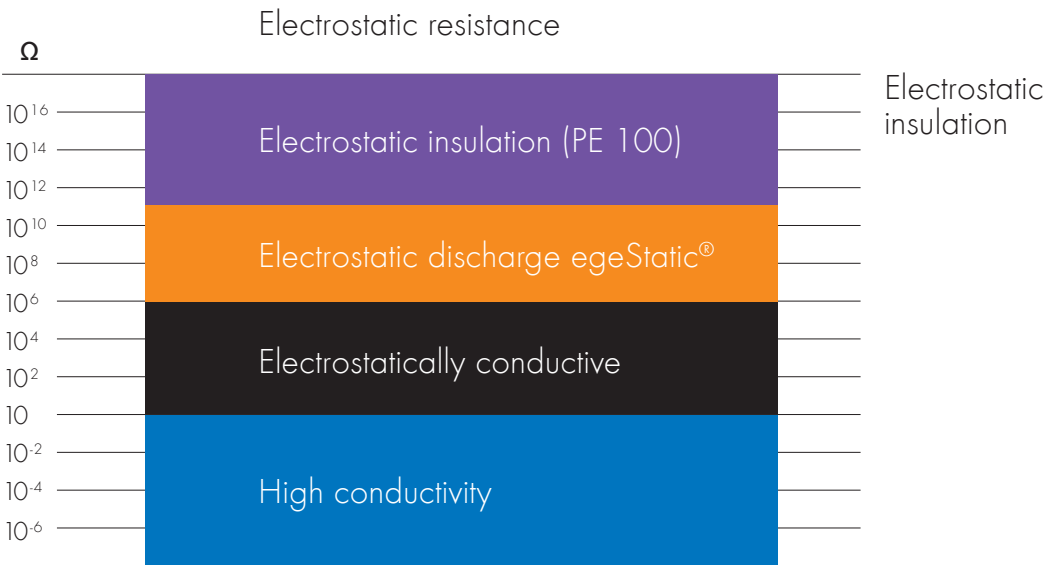
Brochure  
PE100 RC



Many industrial applications include the transportation of dry gases, powders and flammable media. When transporting these substances in potentially explosive environments, all electrostatic charging of pipes and structures must be prevented by taking appropriate protective measures. To protect both humans and the environment, we offer egeStatic®, a pipe system with a conductive integrated layer. The pipe is used for e.g. the pneumatic transportation of dust, transportation of animal feed, pellets (fish farms) and explosive media, and for transportation in potentially explosive environments.

**egeStatic®**  
Static charging environments require pipe systems that ensure the safe discharge of any static charge. For this applications, we have developed egeStatic®, a co-extruded homogeneous pipe made of PE 100-RC with a dimensionally integrated PE-EL (electrically conductive polyethylene) layer. Depending on the application and requirements, these layers can be placed on the inside and/or outside of the pipe.

**Homogeneous pipes**  
Multilayer pipes can have strippable or homogeneous layers. The strippable layers can be stripped from the main pipe while homogeneous layers are an integral part of the pipe. egeStatic® is a homogeneous pipe with an integrated conductive layer on the inside and/or outside.



The table shows the difference in value for the electrical resistance of each surface. For egeStatic, the pipe surface is resistant to electrostatic charges. This is crucial when transporting dry particles such as animal feed and pellets (fish farms) and reduces the risk of employees suffering unpleasant and harmful electrical shocks.



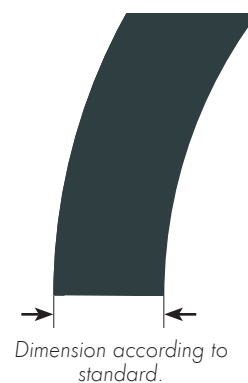




## Product benefits

- Pressure tight up to 10 bar
- Corrosion resistant
- Low net weight
- Prefabrication, for example fixed lengths with pre-assembled flanges for easy installation, can be delivered as required
- Lengths can be adapted to meet your requirements

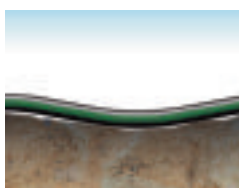
egeTherm® High-T  
Inner layer of PE-EL



## Pipelaying methods



Traditional pipelaying in trenches.



For pipelaying above ground.



Suitable for alternative installations. Including indoors.



Suitable for alternative installations.

## Facts

Applications	Pressure pipe systems for water, sewage and gas   industry   coolants   dry matter
Target groups	Municipalities   Contractors   Industry
Dimensions	OD 160–630 mm
Media	Water   sewage   industrial media   dry matter
Material	PE100 RC (Resistance to Cracks) / PE-EL
SDR	SDR 17 – SDR 7.4 (others available to order)
Connection method	Butt welding   arc welding couplings   mechanical couplings
Standards	EN 12201
Product limitations	Wall thicknesses up to 100 mm are currently available

## Pipe fittings

### PE pipe fittings



- Injection moulded
- Seamless
- Machined
- Segment welded

### Arc welding parts



Complete range of arc welding parts for different applications.

### Flange joints



Wide range of flange joints such as loose flanges, SF flanges and HP flanges.

### Customized pipe fittings

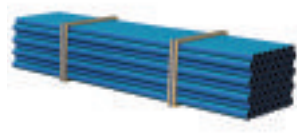


For standard pipes, you can also order customized pipe fittings according to drawing.

## Delivery options



Coil



Straight lengths  
6, 12, 18, 20 or 22 m

- All pipes are fitted with end caps
- Non-standard lengths can be ordered on request

## Related documents



Brochure  
PE100 RC



## Blast hole liner pipe PE100 RC

Blast hole liner pipe with or without end plugs. Dim  $\varnothing$  37–46 mm.



*Supplied with or without end plugs.*

Extensa blast hole liner pipe are used for blasting mountains. The pipes are prepared with the blast charge, inserted into the drilled charge holes and ensure that the charge is in the correct position. One end is fitted with a plug to prevent the explosive from leaking out. The blast pipes are made of polypropylene, an impact resistant and rigid material, which means that we can offer thin pipes with high ring stiffness. Our blast hole liner pipe are available in dimensions between  $\varnothing$  37–46.

### Material specification

The liner pipes are made of polypropylene (PP).

### Environment

Polypropylene is a 100% recyclable material. The material can be regranulated and reused for the manufacture of a variety of products.

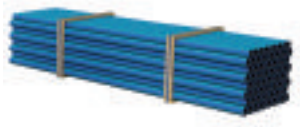




## Facts

Applications	For lining drill holes during blasting
Target groups	Municipalities   Contractors   Industry
Dimensions	OD 37–46 mm
Lengths	1.0 m, 2.0 m, 4.5 m, 5.0 m, 5.3 m and 5.5 m
Material	Polypropylene (PP)

## Delivery options

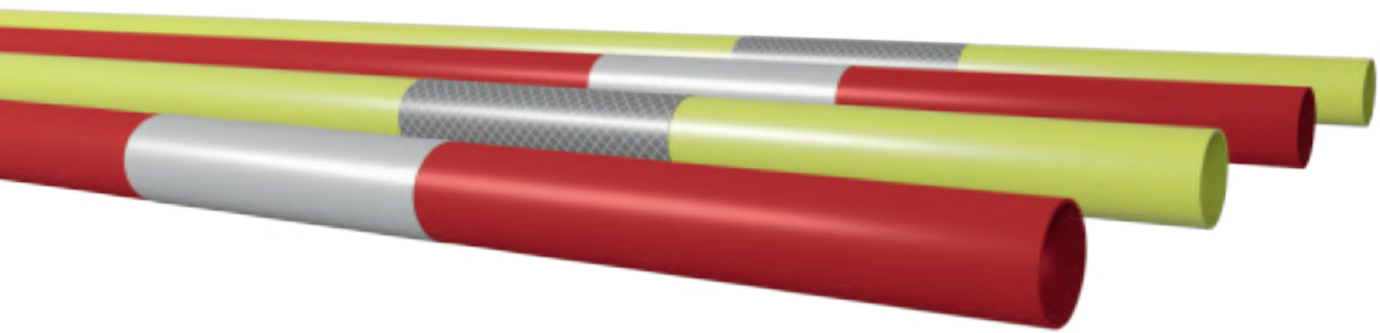


Supplied in bundles of 50–288 pieces  
depending on dimension



# Marking posts

Marking/Snow posts. Dim ø 26 and 37 mm.



Extena produces and supplies high quality marking posts for road marking, marking out shifts, site demarcation, etc. The posts are available in dimensions 26 mm and 37 mm and can be supplied with or without reflective labels as required.

## Material specification

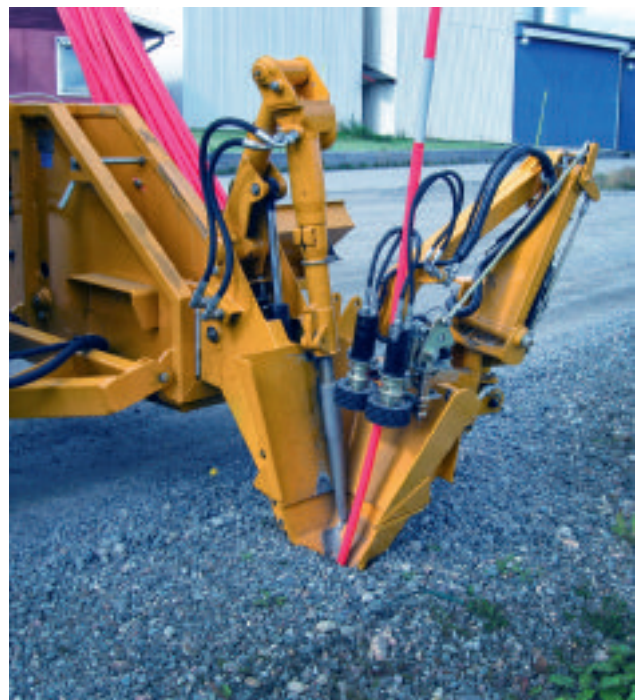
The marking posts are made of UV stabilized PP (polypropylene), with both high stiffness and impact resistance even at low temperatures. Fluorescent posts are made of PC (polycarbonate).

## Complies with Swedish Transport Administration requirements

Extena marking posts meet Swedish Transport Administration requirements for impact bending testing according to method proposal 870831. We use a glass bead material for standard reflectors, but prismatic or other reflectors can be supplied on request. The reflectors are inspected by RISE.

## Environment

Polypropylene and polycarbonate are 100% recyclable materials. The materials can be regranulated and reused for the manufacture of a variety of products.



## Facts

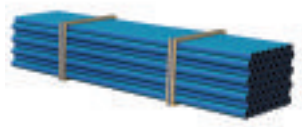
Applications	For road marking and demarcation
Target groups	Municipalities   Contractors   Industry
Dimensions	OD 26–37 mm
Material	Polypropylene and polycarbonate

## Product range

Dimension	Length	Material	Colour
Ø 26 x 2.0	200 cm	Polypropylene (PP)	Red with reflector
Ø 26 x 2.0	220 cm	Polypropylene (PP)	Red with reflector
Ø 26 x 2.0	230 cm	Polypropylene (PP)	Red with reflector
Ø 26 x 2.5	230 cm	Polycarbonate (PC)	Fluorescent yellow with reflector
Ø 37 x 2.5	230 cm	Polycarbonate (PC)	Fluorescent yellow with reflector

Colours green, black and blue are made to order.

## Delivery options



Straight lengths  
200, 220 and 230 cm

Supplied in bundles/crates of 1500 pcs.

# Polarpipe® - insulated and frost-protected pipe system

Intended for installations where you cannot dig in frost-free ground.

Extena offers two types of insulated pipes. One is Polarpipe®, which is a complete frost-protected pipe system consisting of one or two standard pipes made of PE100 RC (one for water and one for sewage), a self-limiting heating cable, a layer of heat reflective aluminium, closed cell heat insulating foam and a durable polyethylene outer sheath. This design eliminates the need to dig or blast down to a frost-free depth – the pipe can be laid on the ground or on snow and ice if desired, with minimal covering. The result is frost-proof water and sewage with no or very little interference with nature.

Our other insulated pipe system has a similar design to Polarpipe®, but without the heating cable and heat reflective aluminium. The system consists of a standard pipe made of PE100 RC fitted with closed cell heat insulating foam and a durable polyethylene outer sheath. This pipe is very suitable for heat pump installations, for example.

## Polarpipe®

Frost-proof water and sewage for coastal areas, mountain regions and temporary modules. As more houses and cabins are built on the coast and in mountain regions, the need for energy efficient and environmentally friendly water and sewage systems is increasing. In these areas, where it is often difficult to lay pipes at a frost-proof depth without seriously harming the sensitive local environment, innovative solutions are required.

Developed for this type of environment, Extena Polarpipe® provide a fast, frost-free water supply whatever the season and ground conditions. The system consists of a water pipe (media pipe) with a self-limiting heating cable to prevent the water from freezing.

This innovative design eliminates the need to go down to a frost-free depth – the pipe can be laid on the ground or on snow and ice if desired.

## Examples of applications for Polarpipe®:

### Mountain regions and coastal areas

Are you going to build a new house in the mountains or do you already have a cabin on the coast? Polarpipe® pipes allow you to easily transfer water and sewage in mountainous environments without having to carry out costly blasting and excavation that impacts nature. Lay the pipe at a shallow depth or directly on the ground.

### Construction sites and temporary modules

Polarpipe® pipes are a very good alternative for temporary water and sewage solutions, such as on construction sites or portakabin accommodation. The piping system is easy to lay and connect, and thanks to the heating cable and the system's high quality insulation, water supply can be guaranteed at temperatures down to minus 30 degrees.

### Marine applications

Large ships and boats that call in to large ports often need to connect to a water and sewage system. Polarpipe® pipes are particularly suitable for this purpose. The flexible and durable design of the piping system means that it can easily be routed to ships and can withstand the harsh marine environment.





### Smart and durable construction

Polapipe® consist of a media pipe made of polyethylene (PE) approved for food use and a heating cable to prevent the water from freezing. Around the heating cable and a section of the polyethylene pipe there is also an aluminium foil that reflects and spreads the heat for efficient and economical heating.

The PE pipe is insulated with high grade, flexible PE-based closed cell foam insulation. The lambda value of the insulation is 0.043 and since the cells are closed, the insulation maintains its high insulation value without the risk of water absorption. Outside the insulation is an outer sheath that is also made of durable PE, but with a lower density, which makes the sheath more flexible, allowing it to follow the terrain and ground conditions more easily.

Standard pipe made of PE100 RC.

Closed cell polyethylene insulation foam.

Protective sheath made of polyethylene.

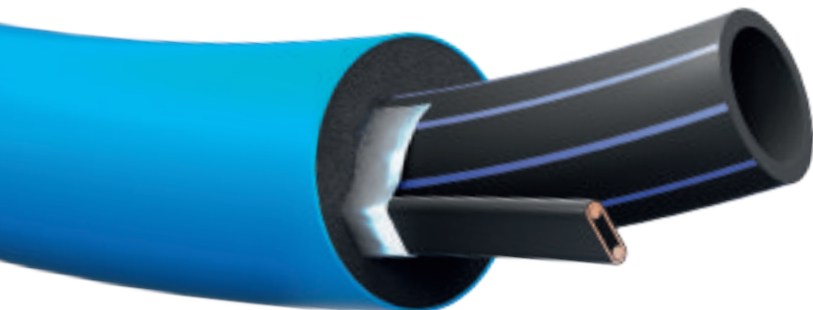
Self-limiting heating cable.

Heat reflective aluminium.

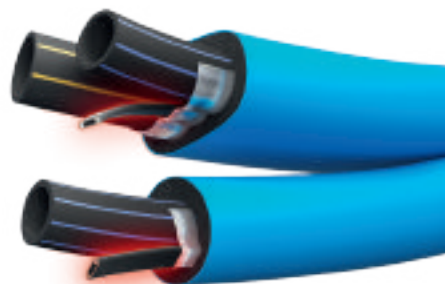


# Polarpipe®

Polarpipe® is a PE100 RC frost-protected pipe system with insulation, heating cable and sheath. Insulated pipe is also available as standard with insulation and sheath only. Dim ø 20-75 mm

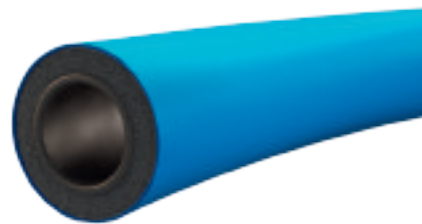


Pipe system made of PE100 RC with one or two pipes (for water and sewage) fitted with a heating cable, heat reflective aluminium, insulation and a high strength PE outer sheath. Also available as standard with insulation and sheath only.



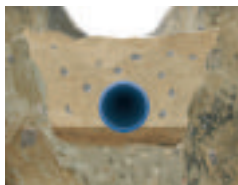
## Product benefits

- Complete frost-protected pipe system.
- Standard pipe made of PE100 RC.
- Self-limiting heating cable.
- Heat reflective aluminium.
- Closed cell heat insulating foam.
- Durable sheath made of polyethylene.
- Frost-protected system where you cannot dig in frost-free ground.
- Also suitable for connection to work sheds or for ships in port.
- Complete range of pipe fittings.



Insulated pipe is available as standard without a heating cable but with insulation and sheath only. Suitable for heat pump installations, for example.

## Pipelaying method



For installation directly on the ground or in trenches.

## Approvals/Certificates/Media pipes

  
Nordic Poly Mark

·DK - VAND·

## Facts

Applications	Frost-protected pipe designed for water and sewage where you cannot dig in frost-free ground
Target groups	Contractors   Property owners   HVAC companies
Dimensions	OD 20-75 mm
Media	Water   sewage
Material	PE100 RC (Resistance to Cracks)
SDR	SDR 11 - SDR 17 (others available to order)
Connection method	Butt welding   arc welding couplings   mechanical couplings
Approvals/Certificates	Nordic Poly Mark   DK-VAND   PAS 1075 (RC pipes)
Standards	DIN 8074/75, EN 12201 (water and sewage)
Product limitations	Max. 150 m per coil/phase

## Pipe fittings

### PE pipe fittings



- Injection moulded
- Seamless
- Machined
- Segment welded

### Arc welding parts



Complete range of arc welding parts for different purposes.

### Custom pipe fittings

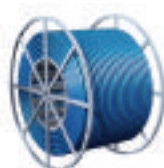


A range of customized pipe fittings is available for Polarrör® pipes.

## Delivery options



Coil (standard)



Drum

- Specify the required length when ordering

## Related documents



Product brochure



Brochure  
PE100 RC

# Cable protection SRS, SRE-P and SRS with power cable and for optical fibre

Extena is a leader in the development and manufacture of cable protection pipes within its product category in the Nordic region. Our products have a significantly higher quality and ring stiffness than standard requirements and offer both more efficient laying, lower total costs and a safer service life compared to traditional laying of power cables in a sand bed. As more and more grid companies realize the benefits of cable protection, our business in this area has grown dramatically. Today we supply cable protection for both large and small projects.

We offer cable protection pipes for class SRS and SRE-P. SRS (protection, pipes, difficult conditions) is our standard pipe that complies with SPF work standard 5200 and SP Technical Research Institute of Sweden's inspection guidelines SPKB 1992:06, while SRE-P (protection, pipes, extra difficult conditions – plastic) is used for surface laying in difficult terrain. Our SRE-P pipes are manufactured according to SS 424 14 37. Both pipes are manufactured from high density polyethylene (PEHD).

Extena's SRS and SRE-P cable protection pipes have a grooved interior to reduce friction when pushing through power cables. We see this as a big advantage. The use of cable protection pipes instead of a sand bed also provides more efficient propulsion, safer pipelaying and lower total costs.

Cable protection pipe SRS is also available with predrawn power cable NIXE-AR 4G25. We also offer cable protection pipes for optical fibre in standard dimensions and in the special dimension 40/29 with extra high ring stiffness.

## Higher ring stiffness than standard

This is a big difference in the quality and ring stiffness of the cable protection pipes available on the market. The standard for the ring stiffness of cable protection pipe SRS is 8 kN, which in our opinion is far too low for pipelaying without a sand/rock flour bed. To ensure a long and safe service life, we manufacture our pipes with a ring stiffness of over 16 kN, in other words significantly higher than the standard.

Be aware that low price pipes are imported into the market that just meet the requirements for ring stiffness. There is a risk that these pipes will not withstand stress over time. However, with Extena cable protection pipes you can be sure that you will get a secure system with a long service life.

## Quality at every stage

Our products undergo very thorough quality control, both in our own testing laboratory and at external inspection institutes. In this important task, we collaborate closely with the research institute RISE. Another aspect of our quality assurance is that we have full traceability of the materials that we use.

## Pipes for rough terrain

Our cable protection pipes are specially designed for tougher terrain where high strength is a requirement. They are manufactured from high density polyethylene (PEHD) and have a ring stiffness (over 16 kN) that is significantly higher than standard requirements (8 kN). The pipes have a high resistance to external pressure and stress and are also resistant to most chemicals. They are also sealed to prevent the penetration of ground water and soil or sand. Quite simply, Extena's cable protection pipes provide highly reliable protection for electrical cables – and thus offer optimal weather protection.

## Cable protection pipes SRS and SRE-P for power cables.

Extena offers cable protection pipes for both SRS and SRE-P. SRS (protection, pipes, difficult conditions) is our standard pipe that complies with SPF work standard 5200 and RISE's guidelines SPKB 1992:06, while SRE-P (protection, pipes, extra difficult conditions – plastic) is used for surface laying in difficult terrain. Our SRE-P pipes are manufactured according to SS 424 14 37. Both pipes are manufactured from high density polyethylene (PEHD).

## Extena Prefab Kraft. SRS-rated cable protection pipe with predrawn power cable.

Extena Prefab Kraft is an SRS-rated cable protection pipe with a predrawn power cable designed primarily for utility services in buildings, but is also used as a problem solver for other applications such as repairs and temporary installations. Extena Prefab Kraft make installation easier as the power cable is already installed in the cable protection pipe. The result is fast, efficient and easy pipelaying. Prefab Kraft is manufactured at our factory in Norsjö and is supplied with a dimension of 50 mm in lengths of 250 metres on a K16 drum. The SRS pipe is also approved for temporary open pipelaying.

## Optical fibre

For over 20 years, Extena has manufactured and supplied optical fibre ducting for the expansion of infrastructure throughout Sweden. Extena Cable Protection Opto is a low friction pipe with a smooth interior that can also be ordered with a silicone coating, allowing the installation of several kilometres of optical fibre cable, either by injecting air or by flushing with water.

In addition to the standard pipe, Cable Protection Opto is also available in dimension 40/29, a special dimension with extra high ring stiffness for a safe service life in demanding environments. This product is designed primarily for wind farms and for joint pipelaying projects in rough terrain along with SRS. Demand for dimension 40/29 has increased sharply in recent years.





Unique grooved interior significantly reduces friction and facilitates cable pushing.



Cable protection pipes SRS and SRE-P for power cables.



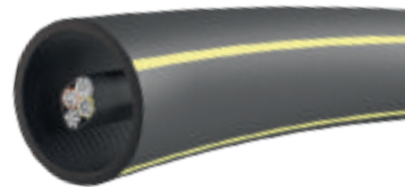
# Cable protection SRS, SRE-P and SRS with power cable and for optical fibre

Cable protection pipe made of polyethylene PEHD. Available in three versions: SRS and SRE-P, SRS with predrawn power cable and cable protection for optical fibre. Dim ø 50-315 mm

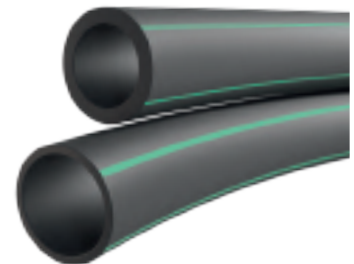


## Product benefits

- Cable protection pipe SRS, SRE-P made of PEHD.
- Extena cable protection pipes have a higher ring stiffness than specified in the standard. Over 16 kN instead of 8 kN.
- The pipes have a grooved interior for reduced friction and easier pushing through.
- The use of cable protection pipes instead of a sand bed provides more efficient propulsion, safer pipelaying and lower total costs.
- Cable protection pipe SRS is also available with a predrawn power cable for more efficient installation.
- Cable Protection Opto can also be ordered with a silicone-blended internal coating, which reduces friction between the fibre cable and pipe wall.
- Extena also offers Cable Protection Opto in special dimension 40/29 with higher ring stiffness for demanding environments.



Extena Prefab Kraft. SRS-rated cable protection pipe with predrawn power cable (4G25 AL).

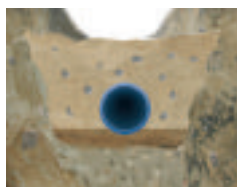


Cable protection pipes for optical fibre are also available in dim 40/29 with an extra high strength wall thickness (5.5 mm) for demanding environments with higher stress.

## Pipelaying method



Traditional pipelaying in trenches.



Suitable for trench-free pipelaying.

## Approvals/Certificates

SPF work standard 5200 issue 1 - EBR standard KJ41:15 - SPKB 1992:06

## Facts

Applications	Cable protection pipes for power cables and optical fibre
Target groups	Municipalities   Contractors   Industry   Electricity companies and pipeline owners
Dimensions	SRS and SRE-P OD 50-315 mm SRS with power cable (4G25 AL) OD 50 mm Pipes for optical fibre OD 16-50 mm
Media	Power cable and optical fibre
Material	PEHD
SDR	SDR 7.4, SDR 11, SDR 17 (others available to order)
Connection method	Arc welding couplings   mechanical couplings
Approvals/Certificates	Our cable protection pipes comply with the requirements and conditions of SP Technical Research Institute of Sweden's "SPKB 1992:06 Inspection guidelines for plastic cable protection pipes for power cables".
Standards	SPF work standard 5200 issue 1, EBR KJ41:15 and SPKB 1992:06
Product limitations	There are currently no product restrictions

## Pipe fittings

### PE pipe fittings



- Injection moulded
- Seamless
- Machined
- Segment welded

### Arc welding parts

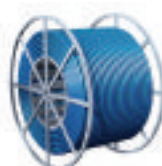


Complete range of arc welding parts for different purposes.

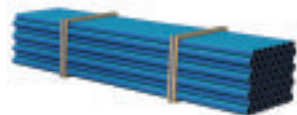
## Delivery options



Coil



Drum



Straight lengths 6, 12, 18, or 20 m

- All pipes are fitted with end caps
- Non-standard lengths can be ordered on request

## Related documents



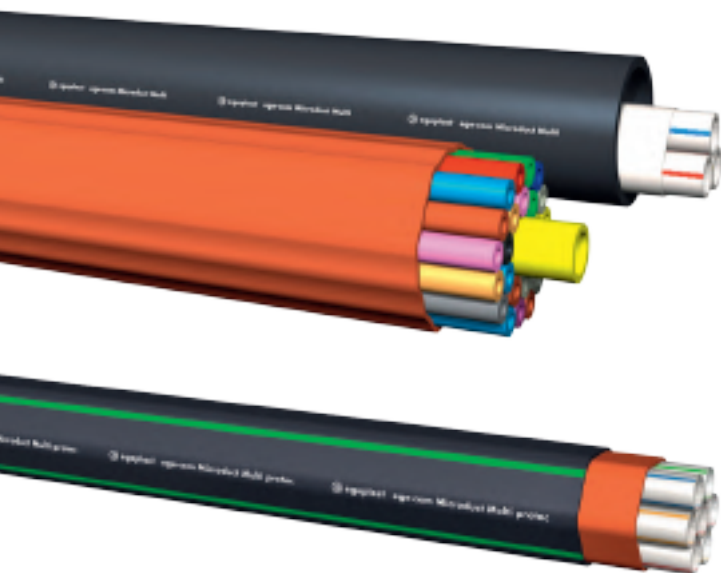
Product brochure



Brochure  
PE100 RC

## Other products for electrical and telecommunication cable ducting

Thanks to the merger with egeplast, Extena can now offer a wider range of cable protection in the electrical and telecommunications fields. The range includes pipe systems for different types of network applications, for high and extra high stress and for both traditional and alternative pipelaying methods.

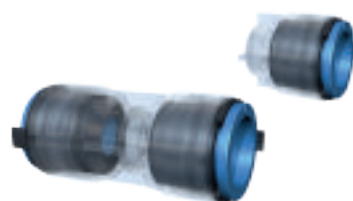
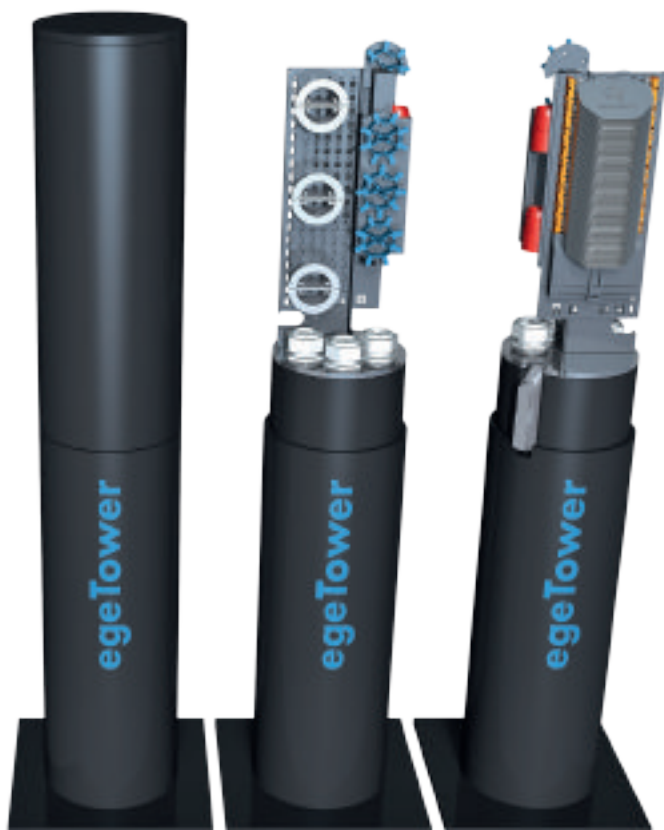


### ege-com® Microducts

ege-com® Microduct Multi-pipe is a pipe system consisting of multiple ege-com® Microduct Mono pipes. The pipes are suitable for both pipelaying in open trenches and for pushing or pulling through cable ducts, in ege-com® Macroduct Mono pipes or other types of pipe systems.

### Protective sheath pipe system for ege-com® Microduct in alternative installations

ege-com® Microduct Multi-protac is a pipe system consisting of multiple ege-com® Microduct Mono pipes. The system has a flexible double sheath with a modified outer layer. The protective sheath makes the system suitable for alternative pipelaying methods such as directional drilling.



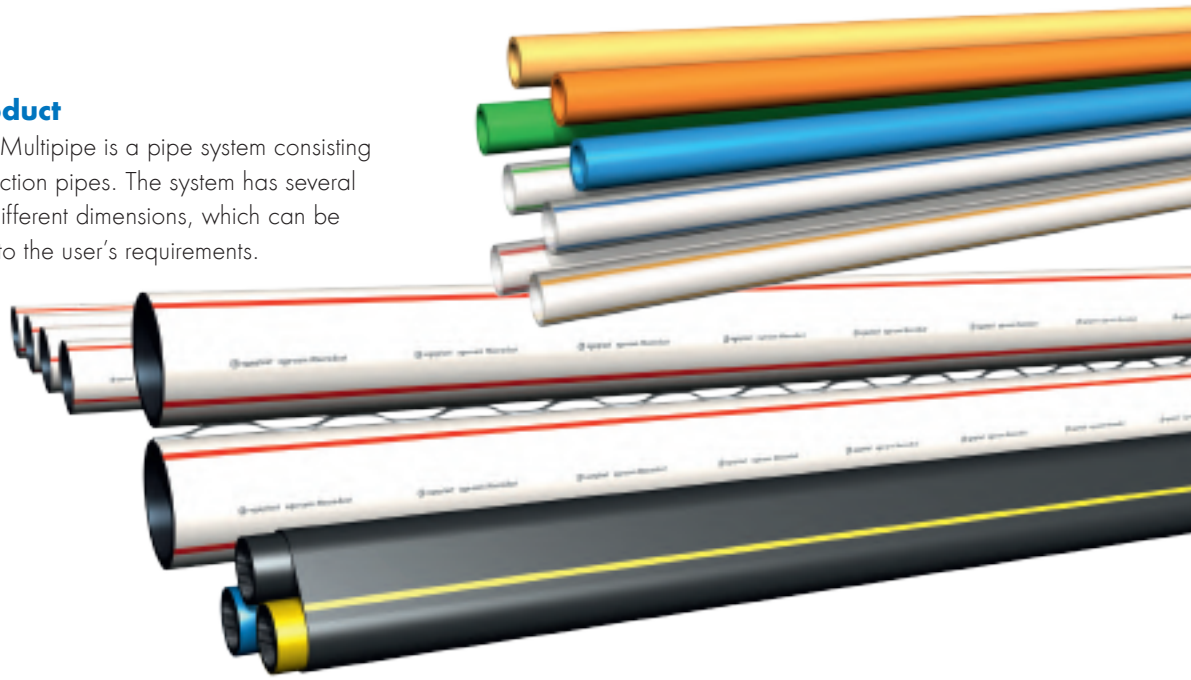
### Fibre cable distributor made of PEHD

The fibre network requires the end customer to be connected to the main pipeline. egeTower® allows us to offer a space saving and cost effective alternative. egeTower® is a PE pipe with space to connect up to 48 end customers.



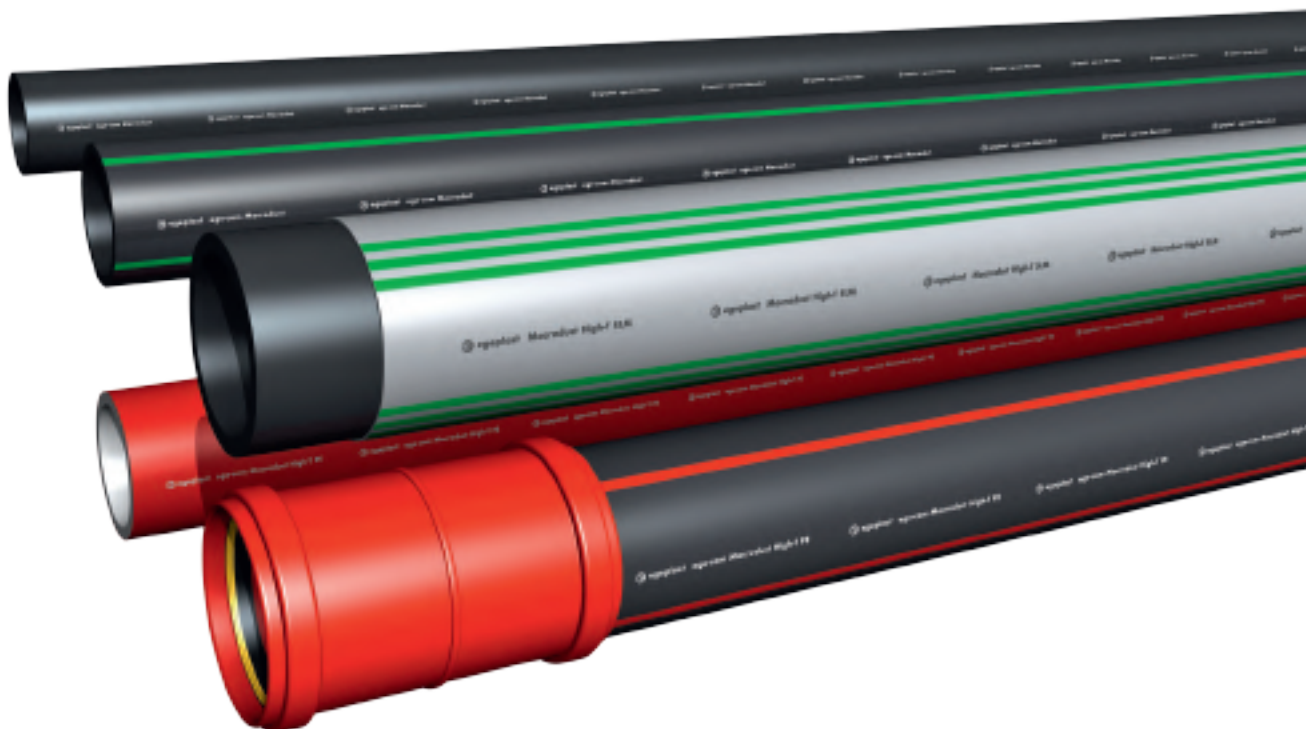
### **ege-com® Macroduct**

ege-com® Macroduct Multipipe is a pipe system consisting of multiple cable protection pipes. The system has several pipes of the same or different dimensions, which can be assembled according to the user's requirements.



### **Protective pipes for high and extra high voltage cables**

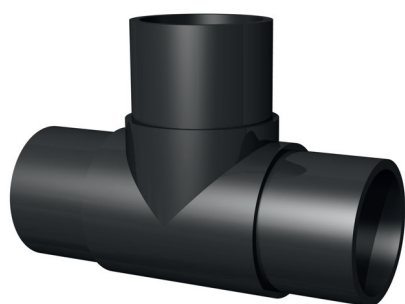
ege-com® Macroduct High-T PE is a polyethylene protective pipe used for high and extra high voltage cables up to 380 kV. The protective pipe is made of a PE-HD material with high thermal stability, allowing the pipe to withstand high thermal loads over a long period of time.



# Complete range of pipe fittings

The requirements of a pipe system vary depending on the application. We therefore provide a wide range of polyethylene pipe fittings with various functions that meet the requirements of EN 12201 and EN 1555 and which can be manufactured according to the client's specifications. With our pipe fittings and extensive range of PE100 RC pipes, we can offer complete pipe systems that provide secure, safe and cost effective operation.

## Polyethylene pipe fittings



### Injection moulded pipe fittings

Our injection moulded PE pipe fittings are made of PE100 material that complies with standards SS-EN 1555 and SS-EN 12201. All injection moulded pipe fittings are made with extended tip ends, allowing the pipe fittings to be used for both arc welding and butt welding. Available in dimensions up to 500 mm.



### Machined pipe fittings

Our machined PE100 RC pipe fittings are based on a homogeneous pipe material that is machined in one piece. We can thus increase the wall thickness at critical points, resulting in a very stable and pressure class compatible design. Our homogeneous and seamless pipe fittings mean that your pipe system is not only pressure resistant but also reliable in the long term. We supply machined pipe fittings such as bends, branches and transition pipes in dimensions 400 to 1200 mm.



### Segment welded pipe fittings

Our segment welded pipe fittings offer a cost effective solution and are a good choice for gravity pipes and low pressure pipelines. The pipe fittings are usually manufactured from PE parts made of PE100 RC and PN classified according to SDR class and design. The bends can be manufactured in the same SDR class as the pipes as long as the angle between the segments does not exceed 15 degrees. Segment welded T-pipes usually need to be manufactured from parts with a larger wall thickness than the rest of the pipeline to achieve the same PN classification. However, this means that the T-pipe will have a smaller inside diameter than the main pipe. All segment welded T-pipes have pressure load reduction. Our segment welded bends and branches are available in dimensions 400 to 1200 mm.



### Seamless bends

A seamless bend eliminates the reduction factor, which means that the pipeline pressure level is maintained even at the bend. All our seamless bends are manufactured from PE100 RC and are available in dimensions up to 900 mm and angles of 11°, 22°, 30°, 45° and 90° degrees. Dimensions 110 to 355 mm are always in stock.

- Long straight ends
- Pressure class: 16 bar water (10 bar gas)
- Made of bead-free pipe

## Arc welding parts



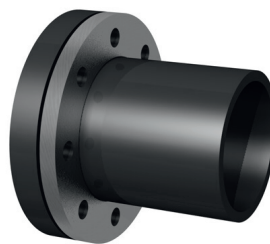
### Arc welding parts made of PE100 RC

Extena supplies a wide range of arc welding pipe fittings for joining PE pipes. Our arc welding components represent high quality and reliability aimed at providing our clients with safe and efficient operation.

Remember that for optimal welding results you will require tight tolerances between the pipe and pipe fitting, and problems often arise in larger dimensions when using pipes with a high degree of ovality. Thanks to our manufacturing process, Extena has been able to set higher requirements and significantly tighter tolerance levels for ovality than the standard allows.

Extena arc welding parts are made of PE100 and PE100 RC according to ISO 11922. First class production ensures safe and efficient installations.

## Flange joints



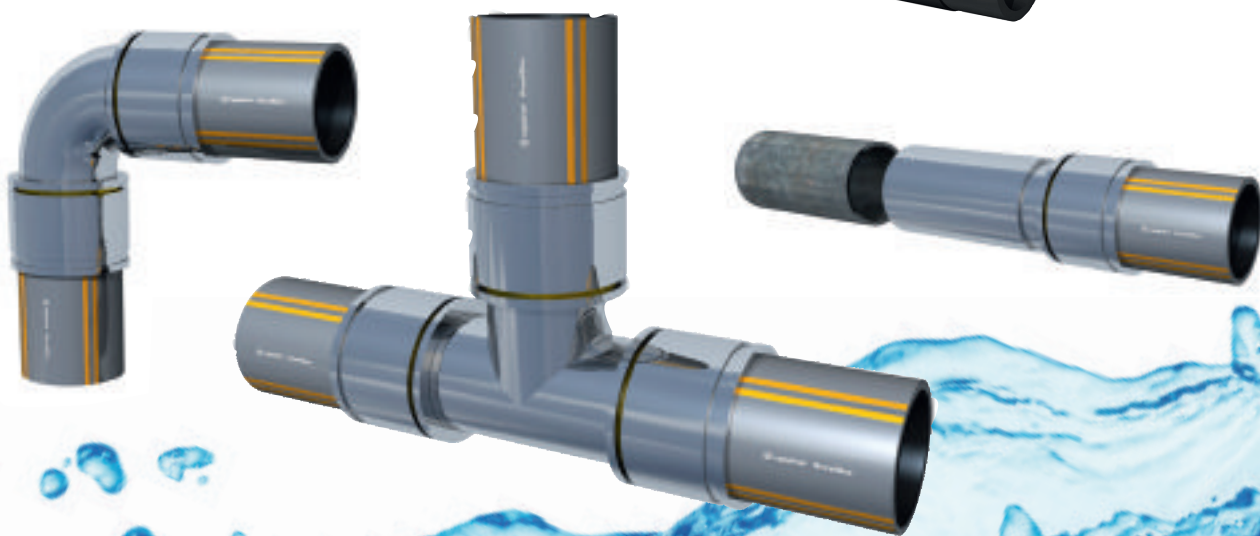
### Loose flanges, SF flanges, HP flanges

Flange joints are typically used to connect the pipe system to valves, pumps and other pipes. Extena supplies a wide range of flange joints such as loose flanges, SF flanges and HP flanges with different pressure classes and drill holes. The collars are made of polyethylene and are extended for optimal welding conditions. Products are available in dimensions from 63 mm up to 1200 mm.



## Pipe fittings with specific pipe system functions

We offer pipe fittings specifically adapted to our SLM® DCT, SLA® Barrier Pipe, 3L Leak Control, HexelOne® and Polarpipes® pipe systems. These pipe fittings are supplied with additional built-in functionality to suit the pipe system's functions. Made to order.



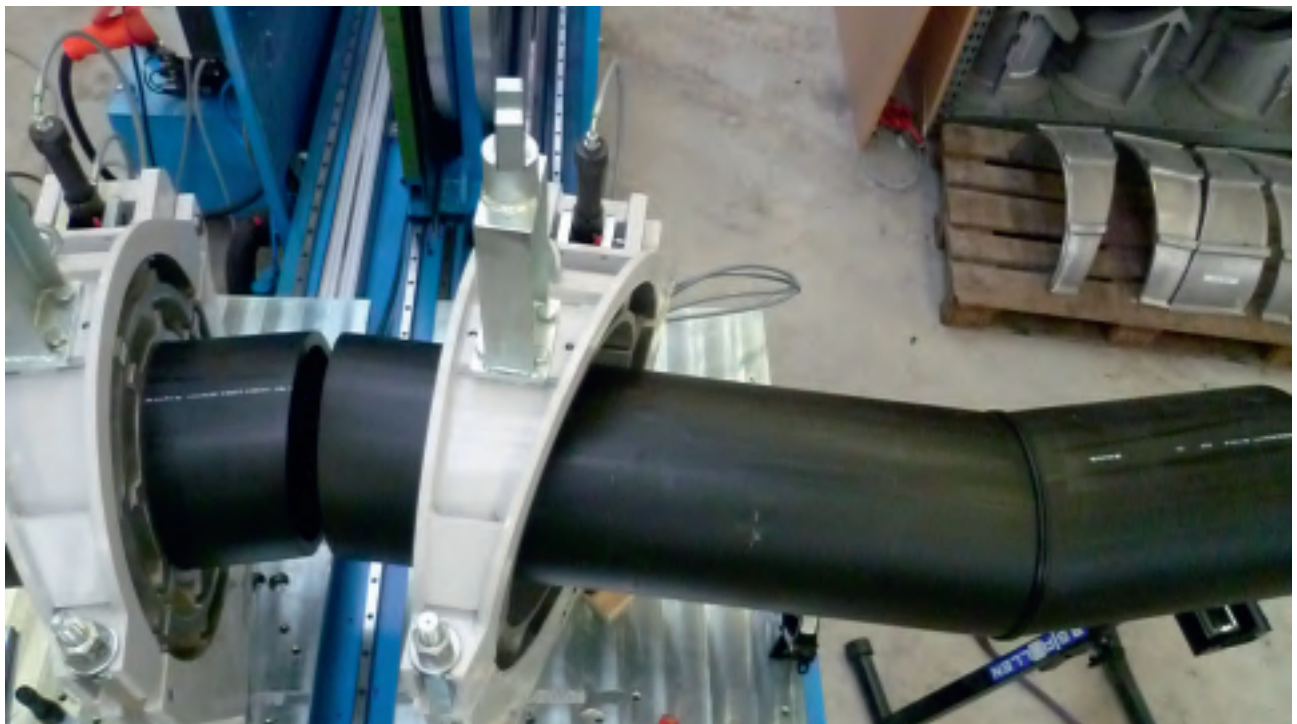
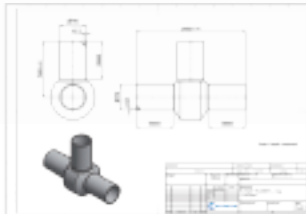
### Special pipe fittings for:

- SLM® DCT and DCS
- SLA® Barrier Pipe
- 3L Leak Control
- HexelOne®
- Polarpipes®
- Other pipe systems



# Customized pipe fittings according to drawing

We also offer customized pipe fittings according to drawing. Complete units, consisting of pipes and pipe fittings, can also be designed, manufactured and assembled according to customer specifications. We also manufacture pipes and pipe fittings from the same batch with Inspection certificate 3.1 according to EN 10204.











Head office

**Extena Sweden**

Tel +46 (0)918 333 70  
Storlidenvägen 5, SE-935 91 Norsjö  
SWEDEN  
info@extena.se | www.extena.se

**Extena Finland**

Tel +358 2 7249353  
info@extena.fi | www.extena.fi

**Extena Norway**

Tel +47 483 42 558  
info@extena.no | www.extena.no