Pexgol

Industrial Piping Solutions

www.pexgol.com

Piping Engineered for Excellence

Pexgol, a product of Golan, leads the industry with its heavy-duty **PE-Xa pipes**, known for their exceptional durability and adaptability in various industrial environments. These pipes are crafted from a specialized high-density polyethylene material, undergoing a unique cross-linking process during manufacturing that enhances their mechanical and chemical resistance.

Superior Mechanical and Abrasion Resistance

The molecular structure of PE-X grants these pipes exceptional resistance to a wide range of chemicals, making them ideal for transporting various abrasive fluids, chemical agents, slurries, and even toxic or radioactive materials encountered in mining operations.

Temperature Resilience

Designed to withstand extreme temperature variations, Pexgol pipes operate efficiently in environments ranging from -50°C (-58°F) to 110°C (230°F), ensuring consistent performance under diverse operational conditions.

Energy-Efficient Fluid Transport

The smooth internal surface of Pexgol pipes reduces frictional losses, leading to more efficient fluid transport and significant energy savings: Up to 4.5% less than HDPE and up to 12% less than Steel.

Longevity and Cost-Effectiveness

The long service life and minimal maintenance requirements of Pexgol pipes result in significant cost savings over time, making them a smart investment for any industrial application.

Scaling Resistance

One of the key advantages of Pexgol pipes is their exceptional scaling resistance, ensuring optimal performance and longevity in various applications. Scaling, often caused by mineral deposits in water, can lead to reduced flow rates and efficiency in conventional piping systems. Pexgol's unique cross-linked polyethylene (PE-Xa) material is engineered to resist scaling, providing a reliable solution for industries where scaling is a common concern.

Allowable Working Pressures

Allowable working pressures [psi] for conveying water in Pexgol pipes, with a design factor DF = 0.8; safety factor C = 1.25

Design Temperature		Class 6	Class 8	Class 10	Class 12	Class 15	Class 19	Class 24	Class 30
		12.5	10	7.6	6.3	5	4	3.2	2.5
°C	°F	26	21	16.2	13.6	11	9	7.4	6
10	50	99	123	162	196	247	310	390	491
21	70	83	105	137	164	207	261	329	414
32	90	72	91	120	144	181	228	287	361
38	100	72	90	119	143	180	227	285	360
49	120	61	77	104	123	155	195	247	311
60	140	55	70	91	109	138	173	218	274
71	160	49	61	80	96	122	153	192	241
82	180	42	54	72	86	106	134	170	214
88	190	40	50	67	80	101	128	162	204
93	200	39	47	61	73	95	120	153	192
99	210	31	40	51	62	81	103	132	164
104,5	220	26	32	41	50	66	81	102	127
110	230	22	28	35	42	55	68	86	108

Allowed Pressures

For closed valve: 1.25 times the nominal pressure.
For water hammer: 2.5 times the nominal pressure.
Vacuum resistance: 100% from class 15 onwards.

Roughness Coefficient

- Absolute roughness: 0.0005 - 0.0007 mm
- C factor in Hazen-Williams formula: C=155

Industrial Applications for Pexgol Pipes

Potassium and Magnesium Processing Plants

In the demanding world of potassium and magnesium processing, the resilience and reliability of piping systems are paramount. Pexgol, a leader in cross-linked polyethylene (PE-X) piping solutions, offers unparalleled durability and efficiency for these critical applications. Drawing from decades of successful implementations, Pexgol pipes have consistently proven their worth in some of the most challenging environments worldwide.

Pexgol's Legacy of Excellence

ICL Group, Israel (1987)

The Challenge:

The Dead Sea's potassium process plant faced a significant challenge with its previous steel piping. The combination of highly concentrated brine and temperatures reaching up to 114°C (237°F) created an extremely corrosive environment, drastically reducing the pipes' lifespan to a mere 8-12 months.

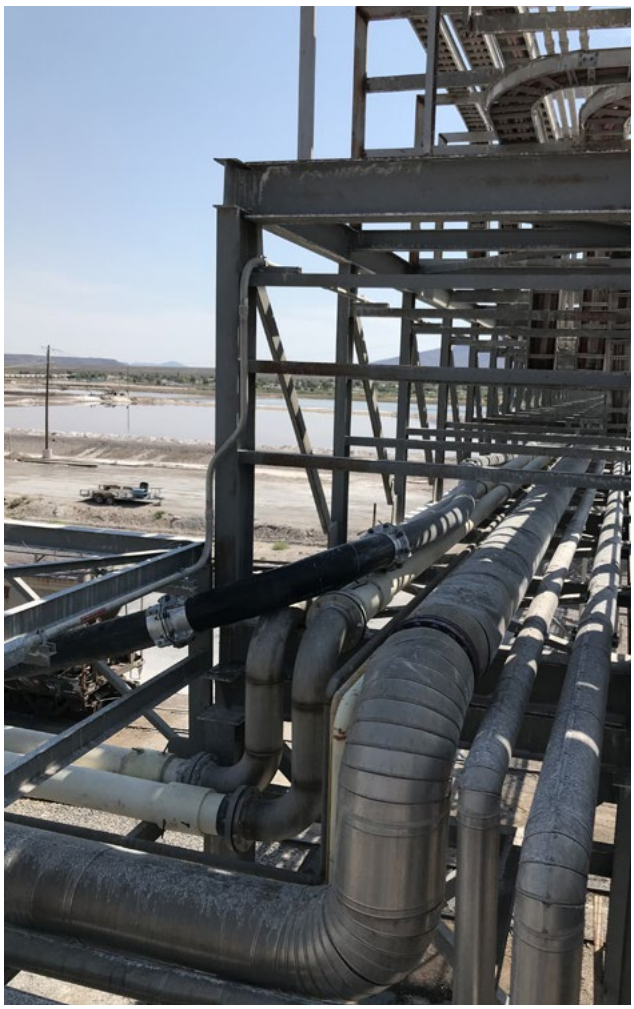
The Pexgol Solution:

Pexgol's introduction of its PE-X piping dramatically transformed the operational landscape for ICL Group. The Pexgol pipes, renowned for their high resistance to abrasion, corrosion, and temperature, have been in use for over two decades without a single failure or need for replacement. This remarkable performance has not only ensured uninterrupted operations but has also significantly cut down maintenance costs and downtime.

Magnelec, Mexico (2018)

The Challenge:

Magnelec's use of Yellomine PVC pressure pipes for transporting sodium sulfide was plagued by frequent dilatation and contraction due to temperature variations. This led to leaks at the joints every 6 meters, causing substantial material losses and operational inefficiencies.



The Pexgol Solution:

Switching to Pexgol pipes addressed Magnelec's challenges head-on. The extended lengths of Pexgol pipes, available in rolls, substantially reduced joint numbers, thereby minimizing leak points. The inherent flexibility of Pexgol material accommodated temperature-induced expansions and contractions, effectively preventing leaks. Moreover, the corrosion resistance and temperature tolerance of Pexgol pipes made them the perfect fit for Magnelec's needs, ensuring a swift and hassle-free installation process.

Why Pexgol?

- **Unmatched Temperature Resistance:** Pexgol pipes are engineered to withstand extreme temperatures, making them ideal for the challenging conditions of potassium and magnesium processing. Their ability to perform consistently at temperatures up to 114°C (237°F) ensures uninterrupted flow and operational efficiency, even in the most demanding environments.

- **Superior Corrosion Resistance:** The chemical composition of Pexgol pipes offers exceptional resistance to corrosion, a common challenge in the processing industry due to the aggressive nature of materials handled. This intrinsic property extends the lifespan of the pipes, significantly reducing the need for frequent replacements and maintenance.

- **Enhanced Fouling Resistance:** Pexgol pipes are designed to resist fouling, ensuring a clean and efficient flow of materials. This reduces downtime for cleaning and maintenance, thus enhancing overall plant productivity. The smooth interior surface of Pexgol pipes minimizes the build-up of deposits, maintaining optimal flow rates and reducing energy consumption.

By focusing on these core advantages, Pexgol stands out as the premier choice for processing plants looking to achieve operational excellence with minimal maintenance and long-term reliability.

Fertilizer Plants and Phosphoric Acid Transportation

Fertilizer plants and phosphoric acid transportation systems operate under conditions that can severely challenge conventional piping materials. The aggressive nature of fertilizers and acids, combined with high temperatures and abrasive materials, demands a piping solution that offers **superior resistance to corrosion, abrasion, and thermal stress**. Pexgol's advanced PE-X pipes are engineered to meet these demanding requirements, providing a durable, efficient, and cost-effective solution for the fertilizer industry and acid transport applications.

Success Stories in the Fertilizer Industry

ICL Rotem Phosphate Mine, Israel (1995)

ICL Rotem, a prominent phosphate mining operation in the arid expanse of the Negev Desert, has long been committed to sustainable mining practices. Initially, the mine utilized HDPE, 316 stainless steel, and rubberized steel pipes for the critical task of transporting fluorosilicic acid, a challenging and corrosive by-product of phosphate mining. Despite their efforts, these materials faced rapid degradation due to corrosion and wear, necessitating replacements every 5 to 9 months and causing significant production halts.

Pexgol's intervention began with a meticulous testing phase, where PE-X sample tubes were immersed in the fluorosilicic acid to assess chemical compatibility. Following positive laboratory results confirming the tubes' resistance to chemical attack, Pexgol initiated the deployment of 12-meter pipe sections, connected with robust electrofusion couplings.

Since the pivotal year of 1995, ICL Rotem has witnessed a remarkable transformation in its operations.

Nutrien, Canada (2017)

Nutrien, a leading global fertilizer company, required a reliable solution for transporting hot ore and brine in their Saskatoon facility. Traditional FRP and rubber-lined steel pipes were failing due to stress cracking and other issues. Pexgol was selected for its ability to handle saturated chloride brine at elevated temperatures and its superior resistance to abrasive slurries. The engineering and design were rigorously tested by Wood Plc (then AMEC-FW) to ensure Pexgol's suitability for the application. The project included non-standard elbows customized by Golan's Application Team, showcasing Pexgol's flexibility and commitment to meeting specific client needs.

Pexgol's Advantages for Fertilizer and Acid Transport

- **Corrosion Resistance:** Pexgol pipes are inherently resistant to the corrosive effects of fertilizers and acids, significantly extending the lifespan of piping systems.
- **Abrasion Resistance:** The durability of Pexgol pipes ensures they can handle abrasive materials without degradation, maintaining optimal flow and efficiency.
- **Thermal Stability:** Pexgol's high resistance to temperature fluctuations makes it ideal for transporting hot fluids, preventing failures due to thermal stress.
- **Flexible Installation:** The availability of long coil lengths and flexible material reduces the number of joints needed, minimizing leak points and simplifying installation.

Pexgol's proven track record in providing solutions for the fertilizer industry and phosphoric acid transportation demonstrates its capability to overcome complex challenges with innovative, reliable, and long-lasting piping solutions.

Advanced Wastewater Management

Pexgol's Cross-Linked Polyethylene (PE-X) piping solutions represent a significant advancement in the **efficiency and reliability of piping systems for Membrane Bioreactor (MBR) plants**. MBR technology, crucial for modern wastewater treatment, demands piping infrastructure that can withstand harsh chemical environments, variable temperatures, and constant operation without compromising system integrity. Pexgol PE-X pipes, with their superior material properties, offer an ideal solution to these challenges.

The unique cross-linking process enhances the thermal, chemical, and mechanical properties of Pexgol pipes, making them **exceptionally resistant to the aggressive conditions often encountered in MBR plants**. This resistance ensures a longer lifespan and reduced maintenance requirements compared to traditional piping materials. Furthermore, the flexibility of Pexgol pipes allows for easier and more **cost-effective installation**, even in complex plant layouts, by reducing the need for additional fittings and expansion loops.

The ability of Pexgol PE-X pipes to maintain performance under high pressures and temperatures, coupled with their resistance to fouling and scaling, ensures **uninterrupted flow and efficiency** in MBR processes. This leads to improved operational reliability and reduced downtime, which is critical for plants aiming to meet stringent wastewater treatment standards.

Overall, Pexgol's PE-X piping solutions offer MBR plants a durable, flexible, and efficient piping option that significantly enhances the operational efficacy and sustainability of wastewater treatment infrastructures.

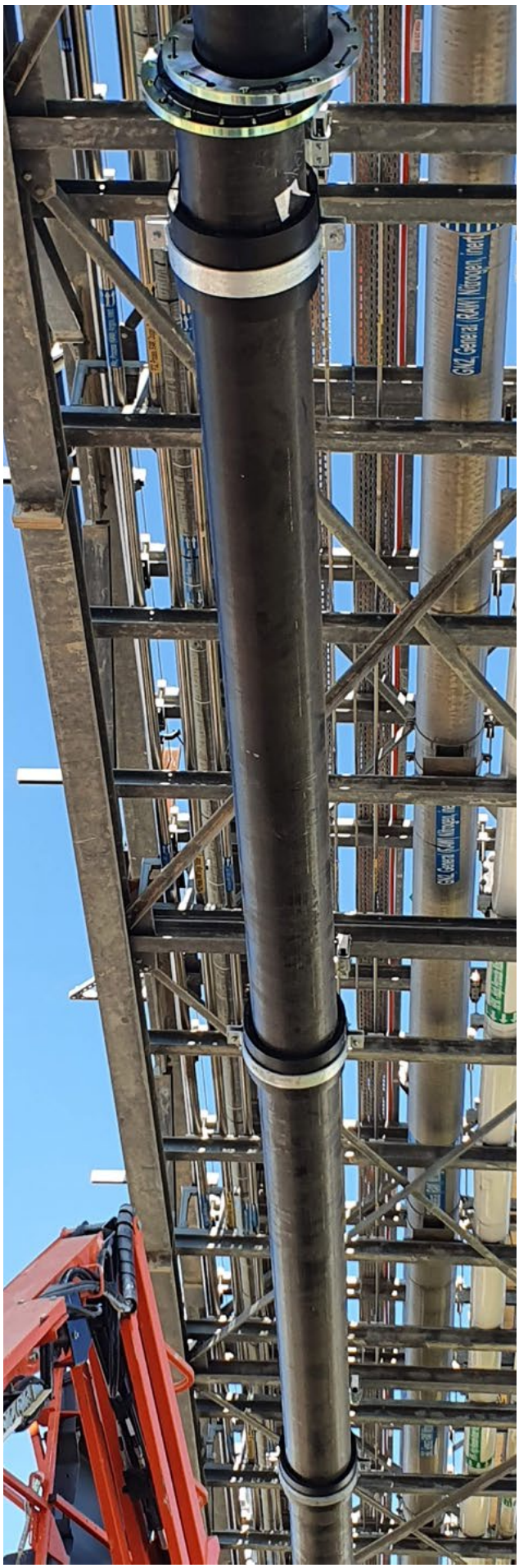
Success Stories

Intel, Israel (2021)

A leading semiconductor chip manufacturer in Israel faced a significant hurdle with its existing 10" HDPE pipeline responsible for transporting industrial wastewater to a Membrane Bioreactor (MBR) treatment facility. The need for a more reliable, durable, and efficient solution was imperative to meet the high standards required in semiconductor manufacturing and waste management.

Tailored Pexgol Piping:

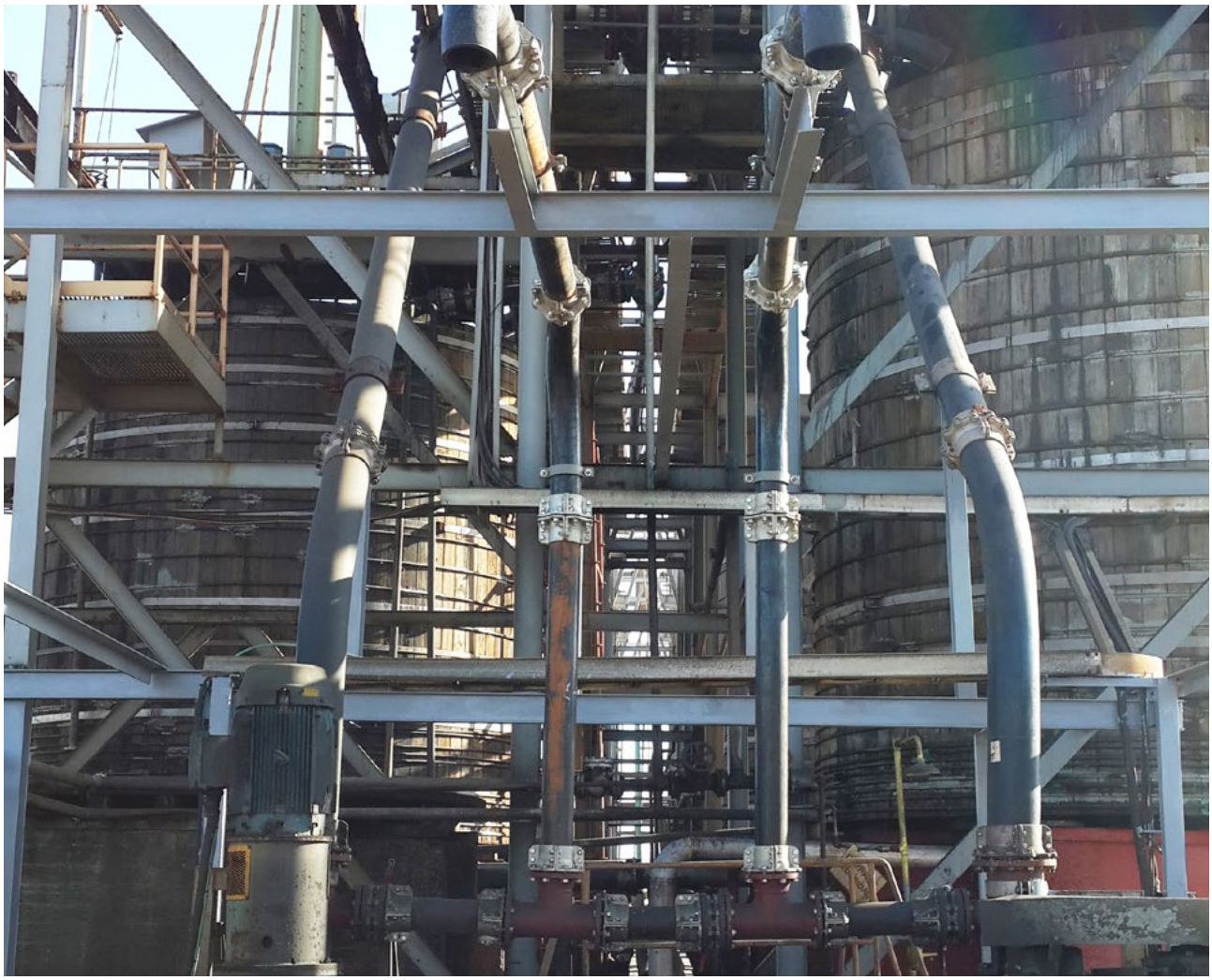
Recognizing Pexgol's reputable track record in Israel and globally, the client opted for a 1000-meter Pexgol 400 mm, class 10 pipe. This choice was influenced by Pexgol's proven resilience in similar industrial applications and its ability to offer long-term reliability and performance.



Pulp & Paper Industry

In the pulp and paper industry, **optimizing operational efficiency while minimizing costs is paramount**. Pexgol pipes present a superior alternative to traditional materials, offering significant savings across the board—from initial piping and installation to maintenance and retrofitting expenses. Key advantages include:

- **Unmatched Corrosion Resistance:** Essential in an environment dominated by harsh chemicals, ensuring longevity and reliability.
- **Enhanced Hydraulic Performance:** Facilitates efficient flow, reducing energy consumption.
- **Superior Abrasion Resistance:** Extends the life of piping systems, even under demanding conditions.
- **Thermal Efficiency:** Low thermal conductivity translates into energy savings and prolonged service life.
- **Lightweight and Easy Installation:** Simplifies handling and reduces installation time and costs.



Stock Preparation and Paper Making:

Pexgol's chemical inertness makes it compatible with common stock additives and papermaking chemicals, such as rosin, starches, titanium dioxide, and waxes. This compatibility, combined with the system's reliability in managing fresh and white water, makes Pexgol a preferred choice over metal pipes.

Water Handling and Distribution:

The industry's heavy reliance on water recycling necessitates durable and efficient piping. Pexgol has proven to reduce lime scale buildup and maintenance time, making it an optimal solution for water recycling processes.

Bleach Plant Operations:

Facing the industry's most corrosive environments, Pexgol stands out by maintaining performance against aggressive chemicals like chlorine dioxide and hydrogen peroxide, ensuring a longer service life compared to traditional steel and stainless steel pipes.

Pulp Chemical Recovery:

Critical to the pulping process, Pexgol's resistance to a wide range of acids, bases, and abrasive materials makes it ideal for chemical recovery operations, effectively handling caustic soda, calcium carbonate, lime, and sodium-based systems.

Pexgol pipes deliver unparalleled performance and cost-efficiency in the pulp and paper industry, addressing the sector's unique challenges with innovative solutions.

Chemical Industry

In the chemical industry, processing plants face some of the most demanding environments for industrial piping systems. The presence of aggressive chemicals combined with high temperatures can compromise the longevity and integrity of many piping materials, leading to corrosion, process leaks, and premature failures, resulting in expensive replacements. Even costlier materials like alloys, lined carbon steel, and non-metallic alternatives such as HDPE and FRP often struggle to provide a cost-effective and reliable solution.

Pexgol piping solutions offer a **robust response** to these challenges, outperforming other piping materials in terms of durability. Pexgol pipes are three times more resistant than HDPE and twice as resistant as steel, making them highly suitable for the harsh conditions of chemical processing plants.

Pexgol's extensive experience over the past 40 years includes handling acid waste plants, corrosive and toxic materials, slurries, industrial waste, high-temperature fluids, and abrasive materials. Pexgol pipe and fittings have been proven to handle aggressive chemicals such as:

- Sodium hypochlorite
- Hydrochloric Acid
- Sulfuric Acid
- Phosphoric Acid
- Sodium Chloride
- Caustic Soda
- Bromine Acid
- Lime Slurry
- Brine
- Sulfates

Textile Industry

In the textile industry, Pexgol pipes offer a smart and efficient solution for the transportation of **compressed air** throughout factories. The selection of piping is crucial in impacting the flow, pressure, and air quality of compressed air systems. Incorrect choices can lead to flow restrictions and significant pressure drops, leading to increased energy consumption and underperformance of tools and equipment.

Pexgol provides an **ideal system for air lines in various textile processes including spinning, weaving, garments, knitting, processing, embroidery, engineering, and commercial buildings**. Additionally, Pexgol pipes have proven highly resistant to acidic conditions and chemical attacks, making them suitable for handling acid fluids such as **water with low pH and caprolactam acid**, which are common challenges in the textile industry. This resistance is backed by over 40 years of tests and lab research, ensuring reliability in demanding industrial environments.

Pexgol Sustainability in Industrial Operations

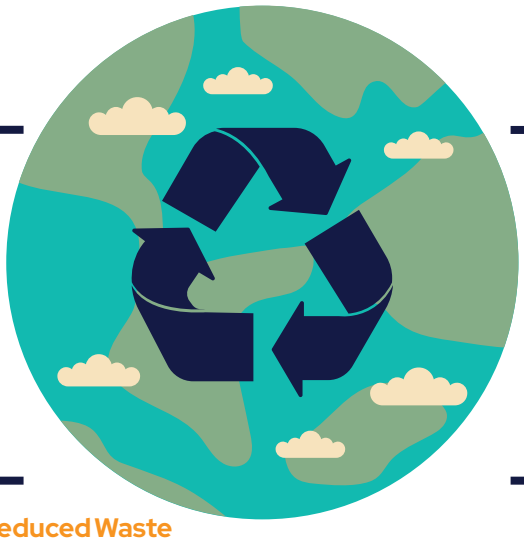
Pexgol's commitment to sustainability is deeply embedded in our innovative pipe solutions, designed to support **eco-friendly and efficient industrial practices**. Our crosslinked polyethylene (PE-X) pipes play a crucial role in minimizing environmental impact while maximizing operational **efficiency**.

Reduced Material and Maintenance Costs

The unique properties of Pexgol pipes, including their resistance to corrosion and abrasion, result in lower material costs over time compared to exotic alloys and RLCS. Additionally, the reduced need for maintenance contributes to a lower overall environmental footprint.

Eco-Friendly Installation and Operation

Pexgol pipes can be installed quickly and efficiently, requiring fewer resources and less energy. This eco-friendly installation process, combined with the pipes' ability to withstand harsh environments, ensures a sustainable operation from start to finish.



Long-Term Durability and Reduced Waste

Pexgol pipes are engineered for a lifespan of over 50 years, significantly reducing the need for frequent replacements and minimizing waste. This longevity is a testament to our commitment to sustainable mining practices.

Energy Efficiency

Our pipes offer up to 20% energy savings compared to traditional pipe materials. This efficiency is crucial in large-scale mining operations, where energy consumption has a direct impact on the environment.

Minimizing Environmental Disruption

The flexibility and resilience of Pexgol pipes allow for installation in diverse and challenging terrains, reducing the need for extensive land alteration and preserving the natural environment.

Resource Conservation

By preventing internal material buildup and offering superior wear resistance, Pexgol pipes ensure the efficient use of resources, reducing wastage and promoting sustainable resource management in industrial operations.

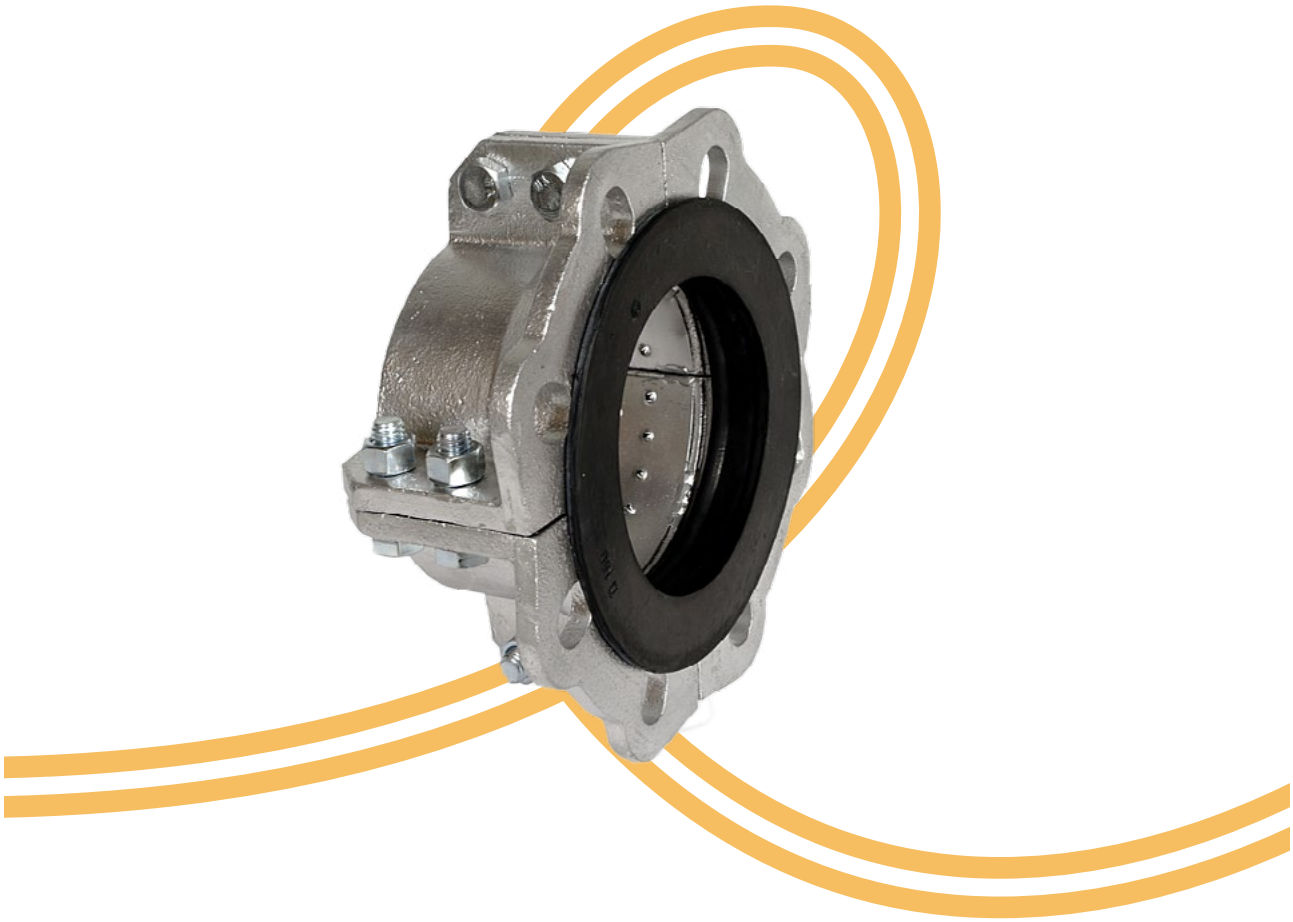
Fittings & Connections

We offer a full piping solution that includes a wide range of fittings and accessories for easy, cost-efficient and quick installations.

GP Flanged Couplers

Available sizes from diameters 63 mm to 710 mm. The flange are ANSI150 compatible and have oval holes designed to fit other international standards. The couplers can be used for the full range of temperatures and pressures, as Pexgol pipes from class 10 to 30.

The GP flanged couplers are supplied as two halves or four quarters, depending on the pipe size and include an EPDM gasket or VITON and NBR by special order.



Electrofusion Fittings

Electrofusion fittings are used to connect Pexgol cross-linked polyethylene pipes. The pipes and fitting are joined by electrofusion welding, creating a leak-proof seal. During the electrofusion process, a current is transported through a heating wire.
The surrounding material (around the wire) is melted, welding the pipe to the fitting.
Service temperature for the PE 100 electrofusion fittings is limited to 40°C. For higher temperatures reinforced electrofusion couplers "series 1" (up to 70°C) and "series 2" (up to 90°C) can be used according to temperature requirement .
Pexgol approves and supplies the following fittings systems and installation tools: Plasson, Friatec, GF/Wavin.

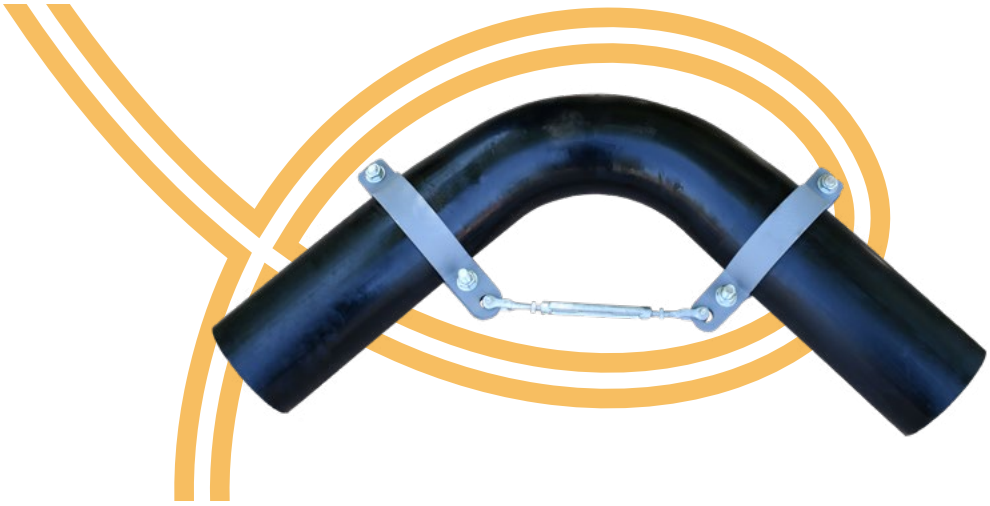
Mechanical Double Connector

Are made of Electro Glavanized Carbon Steel 1117 and are suitable for all pressures and temperature range of Pexgol pipes for class 10 and 24.
It's supplied with EPDM gasket and can connect pipe with pipe.

PE-Xa Elbows

PE-X elbows are produced from Pexgol pipes of class 15 to class 30 in all diameters up to 710 mm according to a proprietary process. PE-X elbows can be supply with flared ends (up to 710 mm) or with plain ends for electrofusion, GP flange coupler, Mechanical double connector, etc.

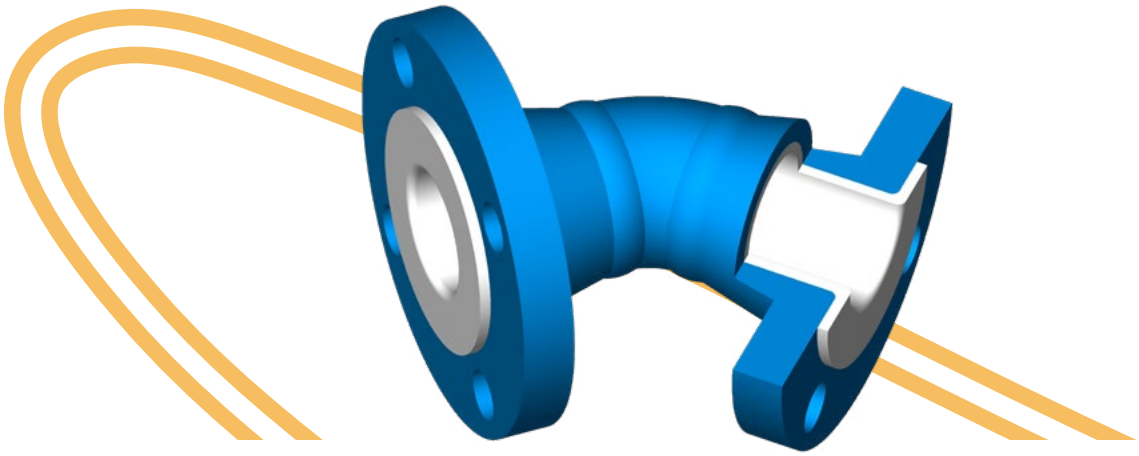
The length of each leg can be different. The elbows are supplied with a fixation device to allow tolerance of +1, -2degrees and +/- 20 mm in length.



PE-X Lined Fittings

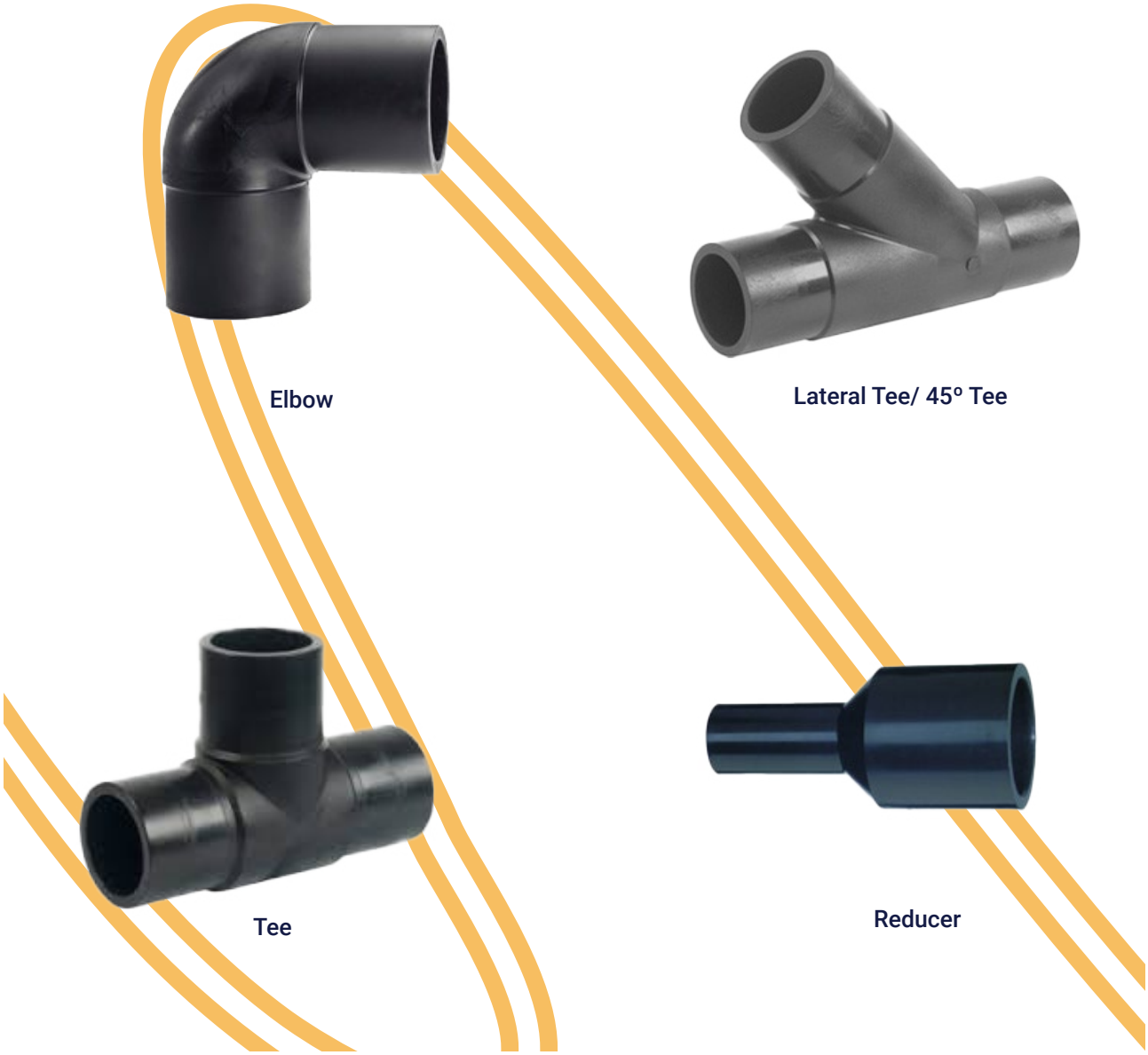
PE-X lined steel fittings consist of a steel flanged fitting lined with thick black PE-X coating which extends over the full face of the flanges.
This type of fitting can be used as a standard fitting such as a Tee, an elbow, or a reducer. The fittings are supplied with an external epoxy coating. Standard fittings are supplied with wall thickness of PE-X layer: 3–5mm for corrosion resistance and up to 10 mm for abrasion resistance.

The fittings are usually supplied with weld-neck flanges. Loose flanges are supplied on request. Shorter fittings (with slip-on flanges instead of weld-neck flanges) are supplied on request.



PE-Xc Fittings

Standard PE-Xc fittings (Tees, Elbows, Reducers) are compatible to Class 15 Pexgol pipes, for temperature conditions up to 90°C.
Standard dimensions can be found in the product page for each fitting.
In special cases, custom-made dimensions can be provided per project requirements.
End connection fittings can be provided with plain ends for electrofusion welding or other mechanical couplers, in addition to stub end possibility for a loose flanged connection.
Notes:
PE-Xc fittings include: Equal Tees, Reducing Tees, Lateral Tee, 45° Elbows, 90° Elbow, Concentric Reducers.
In some cases, higher class PE-Xc fittings can be approved. Please consult with the Pexgol Application Team.
Manufacturing process of PE-Xc fittings may include injected or mitered fittings.



Transportation

An outstanding feature of the Pexgol pipe is its flexibility, due to the cross-linked structure. This structure enables the pipe to return to its original diameter after de-coiling. As a result, Pexgol is able to supply longer lengths of pipe, compared to other suppliers and types of pipes. Pexgol pipes can be shipped in coils, coils with cores and straight sections.

Pexgol pipes for the mining industry are available in diameters **from 63 mm (2") to 355 mm (14") as coils** or as **straight section of 11.8 m** for all diameter **up to 710 mm**.

Pexgol pipes in roll with maximum dimension, external diameter up to = 3.95 meters.

Pipe		Maximum Length per coil (m)	Maximum Length per coil (ft)
Outside diameter (mm + in)	Class		
63 (2")	12	4,500	14,760
63 (2")	15	4,500	14,760
63 (2")	19	4,500	14,760
63 (2")	24	4,500	14,760
63 (2")	30	4,500	14,760
75 (2,5")	10	NA	NA
75 (2,5")	12	3,300	10,824
75 (2,5")	15	3,300	10,824
75 (2,5")	19	3,300	10,824
75 (2,5")	24	3,300	10,824
75 (2,5")	30	3,300	10,824
90 (3")	10	NA	NA
90 (3")	12	2,000	6,560

Pipe		Maximum Length per coil (m)	Maximum Length per coil (ft)
Outside diameter (mm + in)	Class		
90 (3″)	15	2,000	6,560
90 (3″)	19	2,000	6,560
90 (3″)	24	1,300	4,264
90 (3″)	30	1,300	4,264
110 (4″)	12	1,300	4,264
110 (4″)	15	1,300	4,264
110 (4″)	19	1,300	4,264
110 (4″)	24	1,000	3,280
110 (4″)	30	1,000	3,280
125 (4″)	12	1,000	3,280
125 (4″)	15	1,000	3,280
125 (4″)	19	1,000	3,280
125 (4″)	24	760	2,493
125 (4″)	30	900	2,952
140 (6″)	12	900	2,952
140 (6″)	15	900	2,952
140 (6″)	19	900	2,952
140 (6″)	24	450	1,476
140 (6″)	30	620	2,034
160 (6″)	12	620	2,034
160 (6″)	15	620	2,034
160 (6″)	19	620	2,034
160 (6″)	24	400	1,312
160 (6″)	30	450	1,476
180 (6″)	12	500	1,640
180 (6″)	15	500	1,640
180 (6″)	19	500	1,640
180 (6″)	24	500	1,640
180 (6″)	30	500	1,640

Pipe		Maximum Length per coil (m)	Maximum Length per coil (ft)
Outside diameter (mm + in)	Class		
200 (8″)	12	270	886
200 (8″)	15	350	1,148
200 (8″)	24	350	1,148
200 (8″)	30	350	1,148
225 (8″)	12	176	577
225 (8″)	15	245	804
225 (8″)	19	245	804
225 (8″)	24	300	984
225 (8″)	30	300	984
250 (10″)	15	150	492
250 (10″)	19	200	656
250 (10″)	24	250	820
250 (10″)	30	230	754
280 (10″)	15	125	410
280 (10″)	19	170	558
280 (10″)	24	170	558
280 (10″)	30	170	558
315 (12″)	15	65 (with core)	213 (with core)
315 (12″)	19	100	328
315 (12″)	24	150	492
315 (12″)	30	150	492
355 (14″)	19	57 (with core)	187 (with core)
355 (14″)	24	100	328
355 (14″)	30	100	328

Pexgol | Golan Plastic Products Ltd.
Kibbutz Shaar HaGolan, 1514500, Israel
T. +972-77-9021040
F. +972-77-9021010
contact@pexgol.com
www.pexgol.com

ArgPex
Auxiliar Ruta 40, Lote 2
Parque Industrial Las Heras (5543)
Las Heras, Mendoza, Argentina
info@argpex.com
www.argpex.com

Crosspipe Systems
Av. Héctor Gómez Cobo Nº910,
Sector La Negra, Antofagasta
Chile
contacto@crosspipe.cl
www.crosspipe.cl

Golan Pipes Scandinavia
Lollandsvej 16 - DK-5500
Middelfart, Denmark
info@golan.dk
www.golan.dk

Quickpipes Systems
Paseo de los Industriales Poniente 306
Parque Industrial Silao FIPASI
36100, Silao de la Victoria
Guanajuato, México
contacto@quickpipes.com.mx
www.quickpipes.com.mx

Pexgol PE-Xa Pipes

Pexgol PE-Xa cross-linked polyethylene line pipe has many features that make it an excellent, cost-effective alternative to other pipe materials:

- Excellent chemical and corrosion resistance (chemical agents, slurries, toxic materials, radioactive materials).
- Reduced installation costs with long-length coils/spools.
- Improved flow capacity due to smooth interior surface.
- High resistance to abrasion and UV exposure.
- Wide working temperature range.