



Pexgol Piping Solutions

Mining & Mineral Processing

—
2021

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pexGOL
X-LINKED PIPING SOLUTIONS



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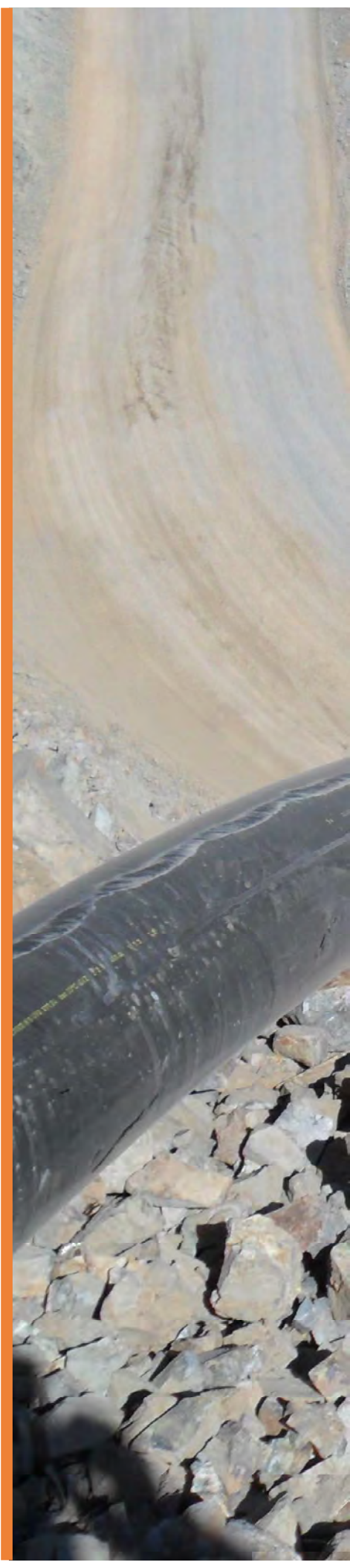
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Pipes and **Pexgol solutions**

Pexgol, a division of **Golan Plastic Products**, is a global leader of heavy duty PE-Xa pipe material. Produced under high pressures and temperatures, Pexgol products results in a chemically unbreakable cross-connection between polyethylene chains.

Pexgol cross-linked polyethylene pipe system is the result of a high stability molecular network formation, with a unique and adaptable design that offers an excellent solution for the transport of liquids and other substances that require great chemical and mechanical resistance.

Pexgol presents a wide range of products that respond to different needs and applications of the industry.





Products

PEXGOL TECHNICA:



PEXGOL OPTIMUS:



PEXGOL TERRA:





Applications

1.

SLURRIES

Whether transporting tailings or mineral concentrates from a mineral processing plant or simply transporting coarse slurry and chemicals over long distances – **Pexgol**

is efficient, reliable and strong.

Pexgol durability, reliability and low maintenance makes it ideal for transporting coarse slurry, concentrates and chemicals.



Main Characteristics & Advantages of Pexgol for Slurries:

- Pexgol is reliable, with more than **30 years of experience** with installations all over the world.
- High Resistant to Abrasion: Typically **three times more resistant than HDPE**, and twice more than steel.
- **Excellent Chemical and Corrosion Resistance:** Pexgol pipes are resistant to a wide range of chemical agents, slurries, toxic and radioactive materials.
- **High Temperature Resistance:** -50°C/-58°F to 110°C/230°F
- Low Energy Losses.
- Impervious to Slow Crack Growth.
- Creep and impact resistance.
- Thicknesses can be measured easily in order to control abrasion

How Pexgol can help you reducing OPEX & CAPEX for Slurries:

- Pexgol's pipes can be **supplied in long length coils**, reducing the number of joints, installation time and risk.
- Compared to steel or rubber, Pexgol's solution results in **reduced transportation, storage and labor costs** due to lower weight per meter.
- Pexgol is approximately **3 times more wear resistant than the HDPE** under the same conditions, reducing maintenance and therefore costs.





2.

BRINE PROCESSING (Non Metallic Mining)

Maintaining **brine processing** requires careful selection of pipe material in order to prolong the integrity of pipelines and increase the productivity by reducing maintenance downtime.

Pexgol unique properties include a very smooth internal surface, **higher range of working temperatures** and enhanced wear resistance, making it the best solution for most of the challenges faced by field and plant pipeline operators.

We offer a complete solution for processing brine as **lithium, magnesium, potash and table salt**. We have **more than 30 years of experience** in this kind of mining processes.

Advantages of Pexgol for Brine Processing:

- Working temperature ranges **from -50°C up to 110°C**.
- **Extra smooth internal surface:** brine sticks less to the pipe than other materials, meaning less maintenance & lower costs (less time between washes and less washing time).
- **UV resistant.**
- **Long length pipe sections:** Continuous sections implies lower risk of leakage and uncoupling.
- **High Abrasion Resistance:** Greater abrasion resistance means less risk of fissures and leaks.



How Pexgol can help you reducing OPEX & CAPEX for Brine Processing:

PLANT APPLICATIONS

- Reduction or complete elimination of internal material buildup.
- Typically lower material cost compared to exotic alloys and RLCS.
- Long term corrosion resistant to acidic conditions.
- **Solid wall pipe** (not a liner) means that even in a case of failure, repair doesn't require special preparation equipment as in the case of a rubber lined pipe.

FIELD APPLICATIONS

- Energy savings can reach 20% compared to some pipe materials, increasing the system overall productivity.
- **Faster and easier washing work.**
- **High UV resistance** implies higher lifespan.
- Lightweight pipe material means **easier handling.**
- When long lines are required, the optional coiling (up to 315 mm OD) allows a faster installation rate and lowers risks due to fewer fittings.

3.

BOREHOLES

Pexgol pressure pipes for boreholes were developed more than 30 years ago. Pexgol rising main pipes are flexible and are provided in **diameters of up to 315 mm**, designed and manufactured for a **minimum lifespan of 50 years**.

How Pexgol can help you reducing OPEX & CAPEX for:

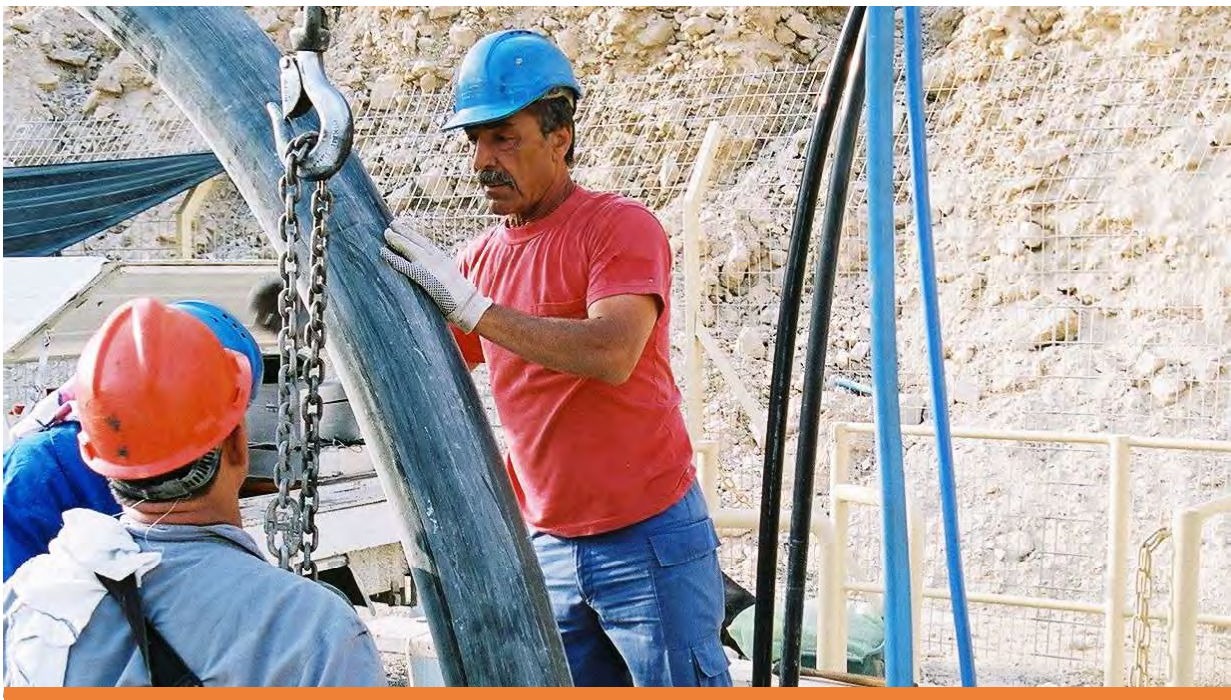
- Using Pexgol pipes **results in a dramatic reduction of pumping costs**. Special plastic discharge heads guarantee no corrosion and scale build-up.
- Pipes in the system can be pulled out and retrieved for preventive maintenance (pump plus motor) as many times as required, without damage.
- Pexgol long sections facilitate a faster installation and reduce fitting costs.





Advantages & Characteristics:

- **Installation is simple and quick-it takes only a few hours**, reducing the use of manpower and heavy equipment.
- **Supports total system weight:** heavy pump, motor, water column, cables and its own weight.
- Available in a single piece up to 300 m with electrofusion and mechanical connectors ensuring leakage-free use.
- Pexgol doesn't require threaded connections.
- **50 years operational lifetime.**



The advantage of the Pexgol one pipe Borehole System

Comparison between Pexgol and other pipe materials

	Pexgol	Steel	PE	Fast Hose
Pipe easy to install and retrieve	8	1	6	10
End fittings easily installed	9	3	6	1
Low friction losses	10	2	9	6
Easy to transport	7	8	4	10
High flexibility	8	0	6	10
Does not require support cables	10	10	5	10
Power cable attachment system	8	0	5	8
Easy attachment of accessories	8	2	5	2
One continuous length	10	0	4	10
Totally corrosion resistant	10	0	10	10
Retrieval with water inside	10	0	0	0
Easy preventive maintenance	10	0	4	2
Reinstallation without refurbishing	10	0	4	3
Negligible elongation problems	8	10	0	0
Foolproof system	10	4	5	3
High working pressure	8	10	3	8
High service temperature over 40°C	8	10	0	0
Low surge wave velocity (water hammer)	10	0	8	8
Potable water approved	10	0	10	10
Long operational life	10	1	4	5
Resistance to twisting due to multiple pump restarts	10	10	6	0
Fatigue resistance	10	6	3	2
Scratch resistance	10	7	2	0
Installation depth - over 50 meters	8	10	0	8
No ballooning near the pump	10	10	4	0

Pexgol boreholes versatile system is compatible with all the leading pump manufacturers:

- Grundfos, K.S.B., Pleuger, Wilo-Salmson, DAB, EMU, EMS and others.

4.

DEWATERING

Pexgol is naturally **suited for dewatering projects where field conditions are less than ideal**. Using Pexgol pipes in a dewatering application lowers transportation and disposal costs, reduces offensive odors

and its light weight and flexibility allows for **installation in difficult conditions** where heavy equipment may not have access. Pexgol excellent mechanical properties offer mine operators a best in class solutions.

Benefits of Pexgol for Dewatering:

- **High pressure tolerance** in a lightweight pipe.
- Pexgol inherit flexibility and high strain resistance, makes it **resistant to failure due to water hammer**.
- Doesn't required supports or wall protection.
- No long term elongation.
- No twisting problems.
- **Excellent Corrosion Resistance**.
- **Can be supplied in one pipe section**.

- Retrieval with water inside.
- Resistance to Slow Crack Growth.

How Pexgol can help you reducing OPEX & CAPEX for Dewatering:

- Allows a **safe, quick and efficient installation** reducing manpower and equipment costs.
- **Can be used multiple times**.
- **Doesn't require supports**.





5.

HYDROMETALLURGY

Pexgol pipe system is suitable for all hydrometallurgy processes:

- Leaching (Lixiviate, Heap Leaching, Dump Leaching, Tank Leaching, In situ Leaching, Gold Chlorination, Gold Cyanidation and Bayer Process).

- Solutions concentration purification.
- Metal recovery.

Pexgol lower both operational and capital costs by offering a plastic pipe suitable to most of the conditions in the plant pipe lines.

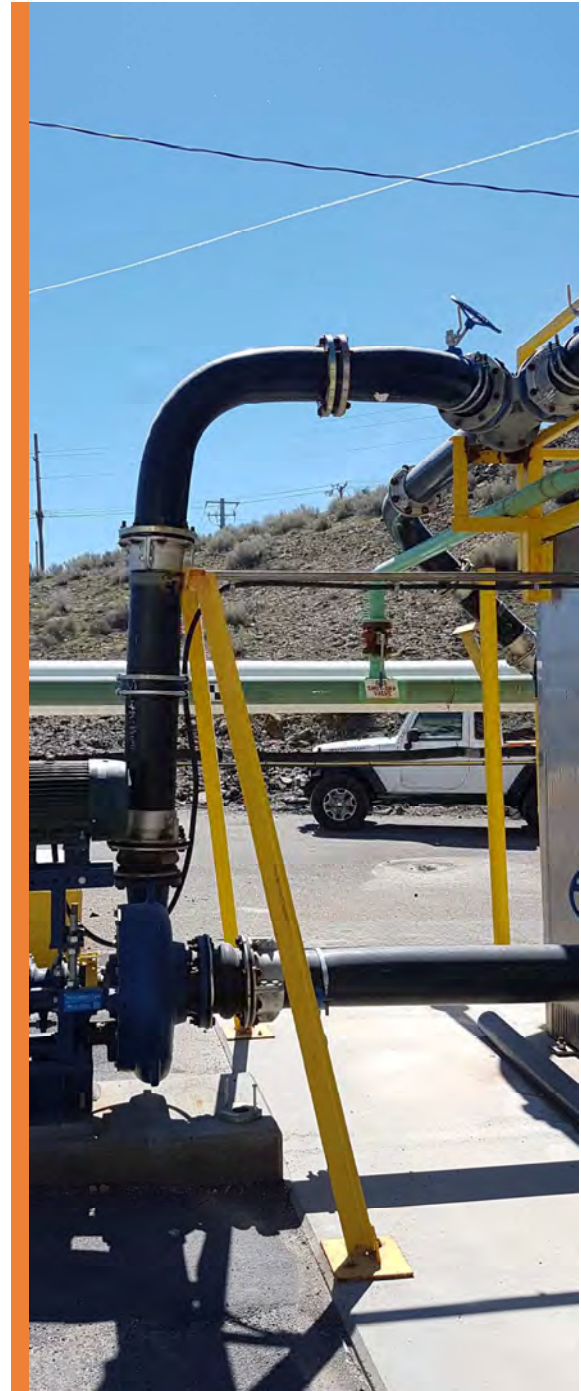
Characteristics & Advantages:

- **Excellent corrosion resistance.** Resistant to H_2SO_4 and H_2Si in a variety of concentrations and to other corrosives.
- Good behavior on **temperatures up to 130°C.**
- Good wearing resistance.
- **Low adherence** due to low superficial roughness (ideal for scale forming solutions).
- Good **flexibility and mechanical resistance** (impact, scratching).
- Can be **supplied in lengths longer than any other competitor.**
- **Erosion can be monitored** by standard ultrasonic devices.
- **Simple fittings and easy to install.**
- It allows to measure thicknesses in case of abrasion.



How Pexgol reduces OPEX & CAPEX for HPAL processes:

- Typically **lower material cost** compared to exotic alloys and RLCS.
- **Long term corrosion resistant** to acidic conditions found in the process eliminate the need for repairs and breakdown.
- Pexgol is a solid wall pipe (not a liner), so even in a case of failure, **repair doesn't require special preparation equipment** as in the case of rubber lined pipe.
- Pexgol **does not require special treatment** such as levelling, preparation or special care as some rigid plastic pipes may require.
- The **energy savings can reach 20%** compared to some pipe materials, increasing the system's overall productivity.
- The **quick install connection** removes the need of welders and welding equipment - lowering skilled labor costs and risks associated with welding.
- When long lines are required, the **optional coiling (up to 315 mm O.D.) allows a faster installation rate** and lowers risks due to fewer fittings.
- The **material flexibility provides installation tolerance** in the field.



6.

COMPRESSED AIR

Working deep underground, mining for the precious natural resources of the Earth can present fierce challenges for workers even with the advancements of modern technology. As mining grew and the demand for more consumable natural resources continued, improving ventilation to mining tunnels that ex-

panded further into the earth became increasingly common. Large volumes of air became essential for working in spaces that stretched miles beneath the surface.

Pexgol provides an excellent solution for this application in underground mines.

Characteristics & Advantages:

- Long length coils.
- **Resistant to high temperatures.**
- **Impact resistant.**
- **Fast & easy installation** without supports.
- Simple and easy to install mechanical connections.
- Pexgol inherit flexibility and high strain resistance, makes it **resistant to failure due to water hammer** (x2.5 times the nominal pressure).

How Pexgol reduces OPEX & CAPEX for Compressed Air Transportation:

- Less connections means less air leaks issues which lower costs.
- **More security when installing.**



7.

SERVICE LINES FOR MINES

Pexgol systems provides an excellent solution to create service pipelines throughout underground mines to transport cement, diesel fuel, water and more.

How Pexgol reduces OPEX & CAPEX for Service Lines:

Pexgol's pipes can be **supplied in long length coils**, reducing the number of joints, installation time and risk.

Allows a **safe, quick and efficient installation** reducing manpower and equipment costs.

Can be used multiple times.

Characteristics & Advantages:

- High Resistant to Abrasion: Typically **three times more resistant than HDPE**, and twice more than steel.
- Creep and impact resistant.
- **High pressure tolerance** in a lightweight pipe.





Fittings & Connections

We offer a full piping solution that includes all kinds of fittings and accessories to provide an easy, cost-efficient and quick installation.



FLANGED COUPLERS

Available sizes from diameters 63 mm to 710 mm. **The flange has oval holes designed to fit most international standards.** The couplers can be used for the full range of temperatures and pressures, the same as Pexgol.

Pexgol flanged couplers consist of either two halves or four quarters, depending on the pipe size.



PREFABRICATED ELBOWS

Prefabricated elbows are produced from Pexgol pipes of all classes according to a proprietary process. **Prefabricated elbows with flared-ends are available in any length between 50 mm and 710 mm.** Each leg can be ordered with plain ends or with flared ends with or without flanges.

The length of each leg can be different. The elbows are produced with a tolerance of up to +5 degrees and +/- 10 mm in length.



FLARED END CONNECTORS

The ends of the **Pexgol** pipe are heated and flared by a proprietary process. The final pipe end is similar to a stub end. The loose flange is usually mounted over the pipe during the flaring process.

Alternatively, split flanges can be supplied to be mounted later.

Pexgol prepares flanges conforming to different standards.



ELECTROFUSION FITTINGS

Electrofusion fittings are used to connect Pexgol cross-linked polyethylene pipes (for example, ISO 14531). 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 Pex2Pex electrofusion couplers can be used.

Pexgol approves and supplies the following fittings systems and installation tools: Plasson, Friatec, GF/Wavin.



Available Diameters

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 40 mm (1.5") to 450 mm (18")**.

Pipe		Maximum Length per coil (m)
Outside diameter (mm)	Class	
63 (2")	12	4500
63 (2")	15	4500
63 (2")	19	4500
63 (2")	24	4500
63 (2")	30	4500
75 (2,5")	10	N/A
75 (2,5")	12	3300
75 (2,5")	15	3300
75 (2,5")	19	3300
75 (2,5")	24	3300
75 (2,5")	30	3300
90 (3")	10	N/A
90 (3")	12	2000

Pipe		Maximum Length per coil (m)
Outside diameter (mm)	Class	
90 (3")	15	2000
90 (3")	19	2000
90 (3")	24	2000
90 (3")	30	2000
110 (4")	12	1300
110 (4")	15	1300
110 (4")	19	1300
110 (4")	24	1300
110 (4")	30	1300
125 (4")	12	1000
125 (4")	15	1150
125 (4")	19	1150
125 (4")	24	1150
125 (4")	30	1150
140 (6")	12	760
140 (6")	15	800
140 (6")	19	870
140 (6")	24	870
140 (6")	30	870
160 (6")	12	500
160 (6")	15	600
160 (6")	19	600
160 (6")	24	600
160 (6")	30	600
180 (6")	12	380
180 (6")	15	450
180 (6")	19	500
180 (6")	24	500

Pipe		Maximum Length per coil (m)
Outside diameter (mm)	Class	
200 (8")	12	v
200 (8")	15	300
200 (8")	24	300
200 (8")	30	300
225 (8")	12	142
225 (8")	15	230
225 (8")	19	280
225 (8")	24	280
225 (8")	30	280
250 (10")	15	135
250 (10")	19	230
250 (10")	24	230
250 (10")	30	230
280 (10")	15	108
280 (10")	19	150
280 (10")	24	160
280 (10")	30	185
315 (12")	15	55
315 (12")	19	90
315 (12")	24	90
315 (12")	30	90
355 (14")	19	50
355 (14")	24	50
355 (14")	30	50
400 (16")	19	40
400 (16")	24	40
400 (16")	30	40
450 (18")	24	34
450 (18")	30	34





About Pexgol:

Pexgol, a division of Golan Plastic Products, is the only worldwide manufacturer that specializes in large diameter, cross-linked polyethylene pipe systems, providing them to industrial, infrastructure, aquaculture and mining sectors throughout the world.

Pexgol Material: PE-Xa

Is a chemically unbreakable cross-connection between polyethylene chains. The result of this chemical reaction is the creation of a material which has extremely high structural integrity, combined with resistance to a wide variety of corrosive and weather conditions.



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