

# TKP-TR

High temperature resistant HDPE pipe





CONDUCTING OUR  
CLIENTS NEEDS



TKP Inc. is the international commercial Technical and Marketing division of Fluidos Industriales Mexicanos – FIMEX.

FIMEX - TKP is an ISO 9001-2015 QMS certified manufacture with corporate offices and manufacturing facility in Monterrey, Mexico. FIMEX has been in the Plastics and Geomembrane industries for over 25 years serving the Mexican and US markets.

Our Polyethylene Pipe facility is equipped with some of the most modern and up to date extrusion lines in North America with multi-layer and striping capabilities to meet various industry's needs. Our fabricated fittings facility utilizes some of the world's highest precision fabrication equipment for miter and saddle fusion to supply standard fittings and custom fusion of manifolds.

TKP's Engineering and Technical staff has over 100 years of experience in the thermal plastics industries serving North America.

TKP is committed to continued development of new products to solve industry needs such at the new TKP-TR temperature resistant pipe for various applications and the TKP-AR abrasion resistant pipe to help in those difficult applications to extent the life of the pipe and reduce cost of shut downs.



COMPANY WITH  
QUALITY SYSTEM  
CERTIFIED BY DNV GL  
ISO 9001

# QUALITY CERTIFICATIONS & LABORATORY

TKP Inc. commitment is to approach our clients to know your needs and satisfy them with products that comply with the requirements of functionality and quality, seeking to improve continually our performance, achieving the growth of our organization.

We offer our PE-4710 pipe, included in the **TR4 of the PPI (Plastic Pipe Institute)**, supported by our excellent allies and suppliers of the best resins available on the market. TKP piping and fittings meet applicable standards for operation in the United States.

Our Quality system complies with the **ISO-9001: 2015** standard.

The pipe is manufactured according to the general use standards for different applications:

We are using a resin that complies with **ASTM D3350**.

We manufacture pipe under these standards:

- **ASTM F714**
- **ASTM D 3035**
- **ASTM F 2619**
- **AWWA C 906**
- **NSF 14/61**



In addition, our manufacturing plant in Monterrey Mexico, has a laboratory equipped to verify the qualities of our products:

- **Density**
- **Flow index**
- **Tensile strength**
- **Content of Carbon Black**
- **Hydrostatic pressure resistance**





# ADVANTAGES

- ◆ PERT is Polyethylene pipe that can be subject to temperatures above 140°F to 180°F.
- ◆ The heat fusion parameters defined for PE-4710 or PE-100 applies.
- ◆ The same standard HDPE pipe burial design parameters apply.
- ◆ The bend radius is 25 times the pipe OD.
- ◆ The standard thermal rating parameters until 140°F applies.
- ◆ From 140°F to 180°F PERT re-rating are incorporated into the Pressure Table 1.
- ◆ The chemical resistance for the HDPE applies in whole and in some cases offer a better resistance than the normal PE-4710 ( example: against chlorine).
- ◆ TKP offers diameters from 3" to 48" and of course, TKP-FIT offers the fittings.



# VALUABLE PROPERTIES

Higher standards in properties:

- Chlorine resistance.
- High quality water supply.
- Chemical resistance.
- Resistance to crack propagation.

- ◆ When the application is related with the transport of hot water:

### **Chlorine resistance:**

TKP-TR is qualified in the highest ranking for chlorine resistance (CLASS 5) ,resisting towards oxidizing conditions tested with the chlorine resistance test (ASTM F2769 & ASTM F2023)

### **High quality water supply:**

TKP-TR preserves the water purity and quality ( taste and odor):

Value of 2 of the pipe tested with standard EN1622 @ 140°F with a maximum of 4 in the industry standard.

- ◆ When the application is related with the transport of industrial and chemical fluids:

### **Very good resistance against aggressive chemicals:**

The high temperature resistance of TKP-TR , does not interfere with its chemical resistance, what means the pipe has the same resistance of the normal HDPE pipe.

- ◆ For all the applications:

### **Resistance of crack propagation:**

TKP-TR pipe has more resistance to the crack propagation that normal PE-4710 or PE-100 pipe.



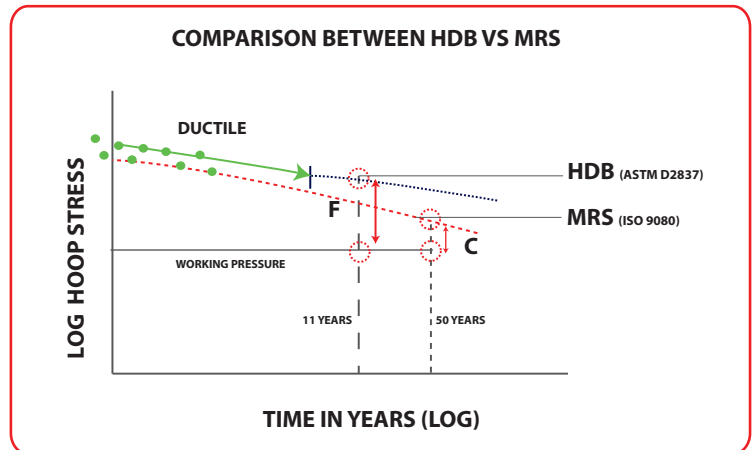
# APPLICATIONS

- ◆ Pipe for the conduction of fluids during the leaching process in mining.
- ◆ Tube for the conduction of fluids during bioleaching (bacterial process) in copper mines.
- ◆ Transport of hot water in geothermal wells.
- ◆ Oils and Gass Gathered Applications.



# Graphic 1.- Hoop Stress VS Time

This strength versus time graph shows the relation between the European definition of the work pressure, based in the MRS ( ISO) against the use the HDB in the American mode (ASTM) the European method is based in longer observation of the behavior against pressure, and uses a low safety factor for the definition of the work pressure. The definition of the work pressure is the same comparing the TKP-TR –PE100 pipe against PE4710 pert pipes, especially in the critical range above the 140°F when the real work for those pipes really starts.



## Table 1: Pressure Table For TKP-TR Single Layer Pipe

WORK PRESSURE FC FOR PE-4710 @73°F	DR 6 (400 psi)	DR 7 ( 335 psi)	DR 9 ( 250 psi)	DR 11 ( 200 psi)	DR 13.5 ( 160 psi)	DR 17 ( 125 psi)
WORK PRESSURE TKP-TR @90°F	376	313	235	188	150	118
WORK PRESSURE TKP-TR @110°F	341	284	213	171	137	113
WORK PRESSURE TKP-TR @130°F	299	249	187	150	120	94
WORK PRESSURE TKP-TR @140°F	278	232	174	139	111	87
WORK PRESSURE TKP-TR @150°F	257	214	161	128	103	80
WORK PRESSURE TKP-TR @160°F	236	197	148	118	94	74
WORK PRESSURE TKP-TR @170°F	231	192	144	115	92	72
WORK PRESSURE TKP-TR @180°F	200	167	125	100	80	62

All pressure data in IPS.

Because of the European origin of the resin, the material is rated PE-100 and is included in the PPI's TR4 with an MRS=10 MPA according with ISO-9080.

According with the ISO-10508 standard, the design temperature profile is for:

- ◆ 50 years @ 20°C (68°F)
- ◆ 40 years @60°C (140°F)
- ◆ 10 years @ 80°C, (180°F)
- ◆ 1 year @ 90°C (194°F)
- ◆ 100 hrs for 100 °C (212°F)

## TKP-TR Reference Standards

- ◆ **ISO 10508:** Plastics piping systems for hot and cold water installations.
  - Guidance for classification and design.
  - Defines Characteristics and Test Requirements for PERT Type II , Class V.
- ◆ **ISO 22391:** "Plastics piping systems for hot and cold water installations -Polyethylene of raised temperature resistance (PE-RT).
  - Part 1: General ; Part 2: pipes.
- ◆ **ISO 9080:** Plastic piping and ducting systems.
  - Determination of the long term hydrostatic strength of thermoplastics materials in pipe form by extrapolation.
  - Defines the MSR and, therefore the classification of the HDPE materials.
  - PE-100 is for materials with MRS= 10 MPa.



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Contact us,  
we will be ready to help you

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