

Thermopex[®]

Cross Linked Polyethylene



APE[®]
ITALY FITTINGS



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World Plastics
for Construction Industries
Advanced Piping Systems

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Thermopex[®]

Clean, Safe, Reliable



The First Manufacturer Of Advanced Plastic Piping Systems In Middle East Region

Solar Photovoltaic System



As one of the leading companies in the Jordanian industrial sector, we believe in being part of the solution for its most irritating challenges , the prices of energy have been rapidly increasing in the past few years . We, **at World plastics**, have taken a major step towards facing this challenge and turning it into an opportunity; we have recently operated a 712 kW on grid solar photovoltaic system that covers 60% of our energy needs, the system consists of 2262 photovoltaic panels distributed on our warehouses rooftops, and will provide the factory with 1145 MWh of electricity annually, thus reducing our factory's environmental impact with up to 550 tons of CO₂ emissions per year.

Thermopex[®]
Cross Linked Polyethylene



World Plastics for Construction Industries

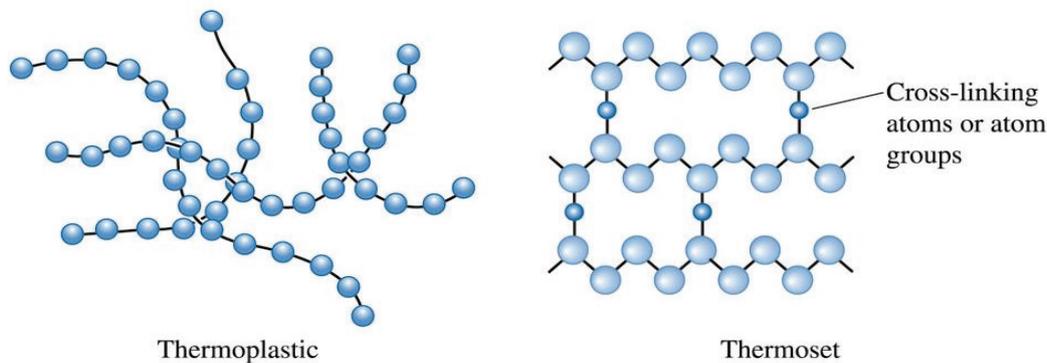


Introduction

World Plastics is a leading company in the development and manufacture of advanced plastic piping systems. Our uniquely extensive range of large and small bore piping systems are capable of handling a wide variety of materials in industrial and domestic applications including water, fluid waste, gas and chemicals. World Plastics also produces piping systems for electrical installations. Pipes are made from high quality raw materials and are manufactured by some of the most advanced machinery in the world to the most exacting standards. Our commitment to quality also extends to customer service. You will find us more than willing to help with the design of installations and can advise on the development of piping systems to meet particular needs.

What is Thermopex ?

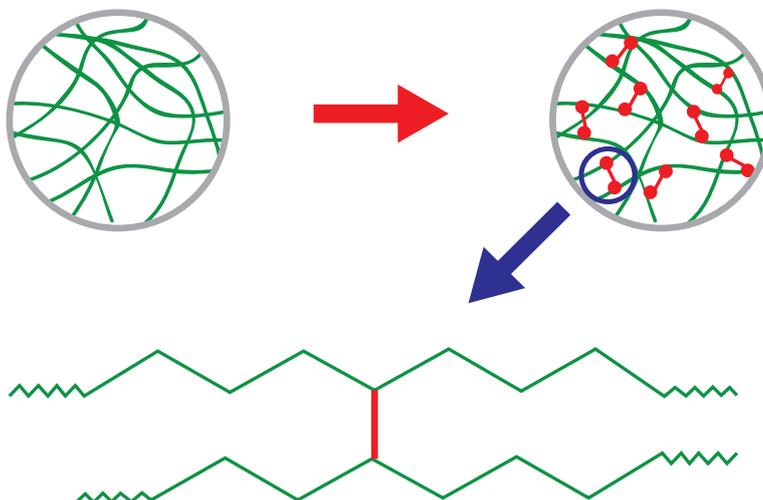
Thermopex is a cross linked Polyethylene. PE is modified with bonds that are introduced chemically or physically between the long polymer chains to create a three dimensional network. Through reactions, manufacturers structurally modify the polyethylene chains, significantly improving performance of properties like high-temperature strength (The primary reason for crosslinking polyethylene (PE) is to raise the thermal stability of the material under load), and chemical resistance, abrasion and stress-crack resistance. The resulting flexible pipe has greater impact and tensile strengths, improved creep resistance, and performs extremely well at high temperatures and pressures.



Thermopex manufactured according to DIN 16892/16893 and JS (Jordanian Standard) 1021/22/23.

Crosslinking of PE

What is Crosslinking?



Crosslinking of PE

The molecules of the high-density polyethylene (HDPE) base material are permanently linked to each other by a process known as cross-linking. Crosslinking gives PEX pipes greater long-term stability against internal pressure, and reduced creep (material flow) under compression at fittings. Polyethylene can be crosslinked using several technologies. All methods induce links between the single strands of PE to form a dense network through radical reactions. The number of links between the strands determines the crosslink density and is an important factor in determining the physical properties of the material.

The minimum % crosslinking for each method is specified in the standards. The three most common methods of crosslinking polyethylene are as follows:

1- PEX-b Moisture-cured Vinylsilane

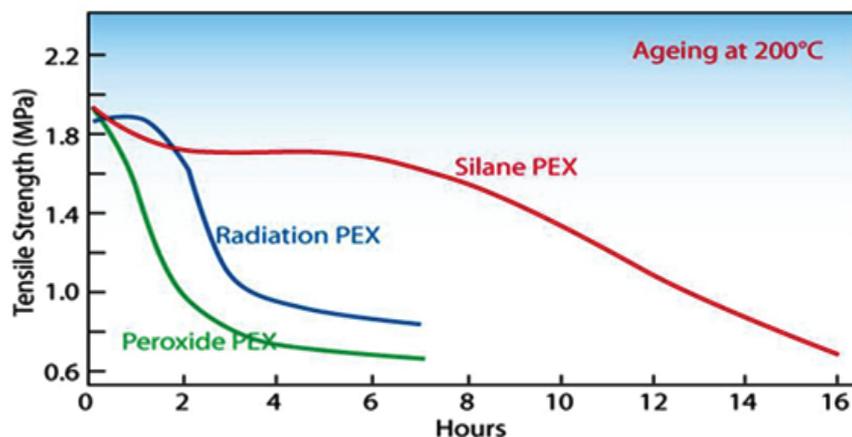
- This method involves grafting a reactive silane molecule to the backbone of the polyethylene. This is called the Silane Process.

2- PEX-a Peroxide

- Peroxides are heat-activated chemicals that generate free radicals for crosslinking. This is called the Engel Process.

3- PEX-c Beta Irradiation

- This method involves subjecting a dose of high-energy electrons to the PE. This is called the Radiation Process.



Better weatherability of XLPE from silane cure

Benefits of Silane Crosslinking (PEX-b) :

- High processing rates (Productivity).
- Crosslinking can be triggered at the desired time.
- Reactivity can be easily adjusted.
- Applicable to a wide range of polymers and blends.
- Low operating costs (Energy).
- Easy to implement: low capital investment.
- Many process alternatives available depending on the particular extruder and configuration.

Flexible, Easy, and Cost-Effective!

The rate of crosslinking depends on:

- The rate of diffusion of water molecules into the wall of the article is dependent on main factors:
 - Wall thickness.
 - Temperature.
 - Number of faces exposed to hot water or steam.



PEX materials are inert (not chemically reactive) and cannot contaminate the potable water passing through them.

Please see table below for compared values of operating pressure:

Operating Temperature (°C)	Service Life (Years)	Operating Pressure (Bar)
20	50	16.0
40	50	10.4
60	50	8.0
70	50	7.0
80	25	6.0
90	10	5.5
95	10	5.0

MANIFOLD PLUMBING SYSTEMS

The parallel manifold plumbing concept is relatively simple. Each faucet or water outlet is fed by its own dedicated line which runs from a central manifold. By providing each outlet with its own distribution line, the system offers quieter water flow, more balanced water pressure, a dramatic reduction in the number of fittings required, and the ability to save both water and energy, versus traditional system designs.

The following information applies to a PEX tubing plumbing manifold system in addition to the general limitations and installation information on PEX tubing and fittings:

- Manifolds can be installed in a horizontal or vertical position.
- In larger installations, remote manifolds may be used to handle groups of remote outlets.
- Each faucet or water outlet is fed by its own dedicated line from the manifold, which may be located near the water supply or water heater.

- Tubing shall be run continuously and as directly as possible between fixture and manifold locations. Approved fittings may be used to repair kinked or damaged PEX distribution lines, or to add to a distribution line that was mistakenly cut too short during installation. Excessive use of fittings is unnecessary.
- Shutoff valves can be placed at the manifold.
- Tubing shall not be pulled tight. Leave slack to allow for expansion and contraction.
- Install tubing continuously to avoid binding, kinking, or abrasion.
- Leave excess tubing at the beginning and end of runs for connection to fixtures and the manifolds.
- When running lines to a group of fixtures, they may be bundled together, but must be bundled loosely enough to allow individual tubing movement. Plastic ties may be used.
- Do not use tape when bundling tubing as it may restrict movement of tubing runs.
- When bundled lines pass through conventional structural members, cut a hole at the centerline of the member. Consult the applicable code for maximum allowable hole size.
- Identify and mark all lines at the manifold.

Characteristics

- The installation of PEX pipe is generally easier than rigid pipe.
- It is available in long coils which eliminates the need for coupling joints.
- The mechanical fittings are secure and reliable when installed properly.
- The pipe is lightweight, making it safe to transport and easy to handle.
- **Durability** Based on extensive testing and material performance over the span of more than 50 years, PEX piping has proven to be a durable material that does not suffer from some of the historical problems associated with metallic piping, such as reduced interior dimension, corrosion, electrolysis, filming, mineral build-up, and water velocity wear.
- PEX piping will typically expand if the system is allowed to freeze, and return to its original size when the water thaws.
- **Cost Effectiveness** PEX plumbing systems have lower installation costs than rigid metallic plumbing systems.
- **Installation time** and **labor required** is greatly reduced.
- In service, the use of PEX systems can reduce energy and water use by delivering water to the fixtures faster and by reducing losses in the piping.
- **Energy Efficiency** PEX piping offers reduced heat loss and improved thermal characteristics.
- **Less energy** is used by the water heater because of shorter delivery time for hot water with PEX parallel plumbing systems.
- **Noise Reduction** When properly secured, PEX piping can be significantly quieter than rigid systems. It is inherently less noisy due to its flexibility and ability to absorb pressure surges.

- **Water Conservation** Properly designed PEX plumbing systems have the potential to conserve water and The flexibility of PEX allows it to bend around corners and run continuously, reducing the need for fittings.
- **The lighter weight** of PEX compared to metallic piping helps to lower transportation costs and energy consumption.
- **The flexible nature** of PEX allows it to be bent gently around obstructions and installed as one continuous run without fittings. Slight changes in direction are made easily by bending the pipe by hand. There is a predetermined bend radius of a 90-degree change of direction without installing a fitting (reference manufacturer's installation instructions). Minimizing mechanical connections can result in quicker installations, less potential for leaks at fittings, and less resistance due to pressure drops through fittings.
- **Noise and Water Hammer Resistance** : As water flows through pipes, pressure in the system gives moving water energy, known as kinetic energy. Kinetic energy increases with the speed of water and also with the mass of water that is flowing. When the flow of water is stopped, such as when a valve or faucet is closed, this kinetic energy must be dissipated in the system.
The ability of a plumbing pipe to dissipate energy due to surge in water pressure is based on the pipe's modulus of elasticity, a measure of material stiffness. A higher modulus of elasticity means the material is more rigid. Copper pipe is 180 times more rigid than PEX pipe. This means that with rigid piping systems, pressure surges can produce noticeable banging sounds as energy is dissipated, thus causing what is known as "water hammer." The pressure surge that causes water hammer can produce instantaneous pressures of 300 to 400 psi (2070 to 2760 kPa), which can cause damage to rigid pipes, fittings, and connections.
The flexibility of PEX pipe allows the pipe itself to absorb energy from pressure surges and eliminate or reduce the occurrence of water hammer.

- **Resistance to Freeze Damage**

PEX pipes are less susceptible to the effects of cold temperatures retaining their flexibility even below freezing. This flexibility means that if water-filled PEX piping freezes, the elasticity of the material allows it to expand without cracking or splitting, and then to return to its original size upon thawing. This applies when PEX pipes have room to expand evenly along their length, as is typical when installed within walls or ceilings. PEX pipes inside a slab may not be able to expand evenly.

- **Chlorine Resistance**

Environmental Protection Agency (EPA) recommends that all drinking water be disinfected, typically using free chlorine, chloramines, or other less common methods.

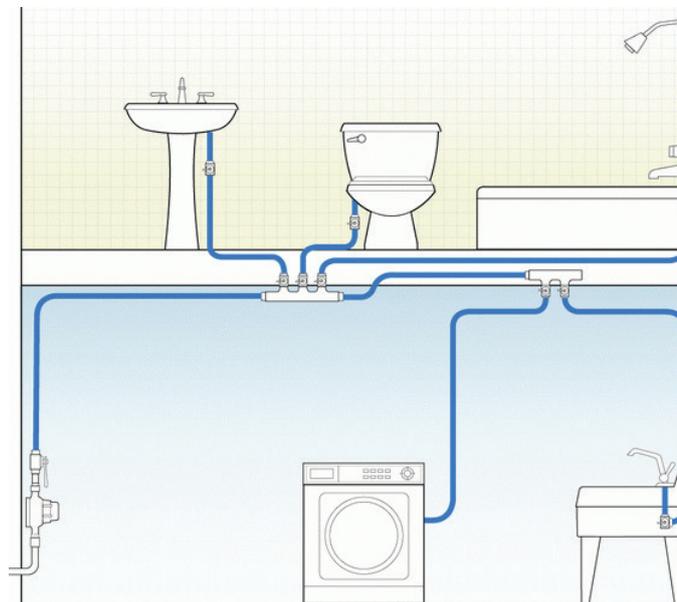
For water treated with free chlorine, the EPA sets a maximum disinfectant level of 4.0 parts per million (ppm) within the water distribution system.

The second-most common disinfectant is chloramines. PEX pipe has shown itself to be resistant to attack from chlorine and chloramines under a wide range of conditions.

- **Corrosion Resistance**

PEX pipe and fittings have been tested extensively with aggressive potable water conditions and did not pit or corrode. PEX pipe and fittings are tested with corrosive pH levels between 6.5 and 6.7, much lower and more aggressive than levels found in common water systems.

A related aspect of corrosion in pipes is concerned with flow erosion.



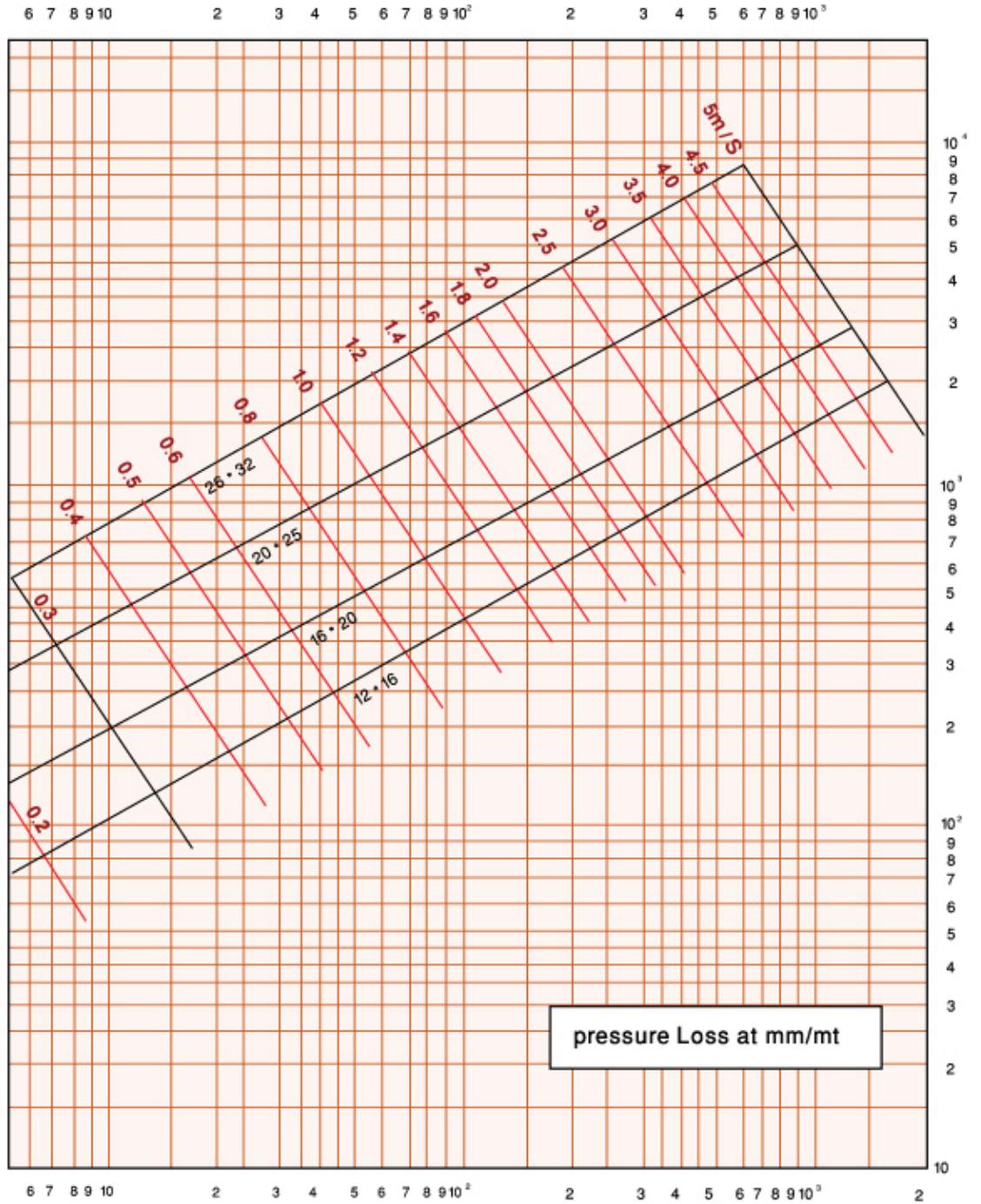
Ultraviolet (UV) Resistance:

Like most plastics, the long-term performance of PEX will be affected by UV radiation from sunlight. Although most PEX pipes have some UV resistance, PEX pipes should not be stored outdoors where they are exposed to the sun. Precautions must be taken once the pipe is removed from the original container. Each PEX pipe manufacturer publishes a maximum recommended UV exposure limit, based on the UV resistance of that pipe. Do not allow PEX pipes to be over-exposed beyond these limits. PEX pipes should not be installed outdoors, unless they are buried in earth or properly protected from UV exposure, either direct or indirect.

Indirect (diffused) and reflected sunlight also have UV energy. If PEX will be exposed to sunlight continuously after installation, such as in an unfinished basement, cover the pipe with a UV-blocking sleeve (black preferred) or approved pipe insulation. Different manufacturers' pipes have different degrees of UV resistance as indicated on their labels.



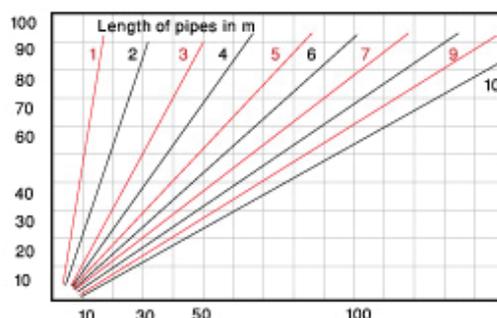
Water Temperature +80 °C



PRESSURE MONOGRAM

Fast & Easy Workability

Lightness & flexibility of Thermopex Pipe, together with its complete range of fitting, permit an easy & fast construction of the hydro thermo sanitary installations.



Physical, Mechanical & Thermal Properties

Properties	Unit	Value
Density	g/cm ²	(0.915-1.4)
Thermal conductivity	W/m.k	0.4
Coefficient of Linear Expansion		
20 °C	m/m.c	14 x 10 ⁻⁴
100 °C		2 x 10 ⁻⁴
Specific Heat Capacity	KJ/Kg.C	2.3
Impact Strength		
20 °C	KJ/m ²	No break
20 °C		No break
UV light resistance	10	Good



THERMOPERT (PE – RT)

“ Polyethylene of Raised Temperature Pipes “

PE - RT is a polyethylene (PE) resin in which the molecular architecture has been designed such that a sufficient number of tie chains are incorporated to allow operation at elevated or raised temperatures (RT). Tie chains “tie” together the crystalline structures in the polymer, resulting in improved properties such as; elevated temperature strength and performance, chemical resistance and resistance to slow crack growth. PE – RT has a unique molecular structure and crystalline microstructure, which provides excellent Long Term Hydrostatic Strength at high temperatures without the need for Cross-Linking the material.

PE - RT type materials have been used successfully in domestic hot and cold water piping systems for more than 20 years, and in application areas such as under-floor heating and radiator connections. More recently, the easy processing and outstanding material properties have also made these resins attractive for use in many larger diameter industrial applications, where regular Polyethylene cannot be used due to its high temperature limitations. In this respect, PE - RT can also compete with high-end engineering plastics, offering significant cost savings. The use of PERT materials provides significant process advantages to the converters, allowing high line speed pipe production and providing excellent flexibility and ease of installation for the application.



Types of Thermopert (PE – RT) :

There are Two types of PE-RT :

1 – Type I

2 - Type II

According to DIN 16833 and DIN EN ISO 22391-2 Standards, the mechanical characteristics of these two types (Type I & Type II) are indicated in the tables (1 & 2) below.

Mechanical characteristics of PE-RT **Type I** pipes Table

Characteristic	Requirement	Test parameters				Test methods
		For individual tests				
Resistance to internal pressure	No failure during the test period	Hydrostatic (hoop) stress	Test temperature	Test period	Number of test pieces	ISO 1167-1 and ISO 1167-2
		MPa	°C	h		
		9,9	20	1	3	
		3,8	95	22	3	
		3,6	95	165	3	
		3,4	95	1 000	3	
		For all tests				
Sampling procedure		Not specified				
Type of end cap		Type a)				
Orientation of test piece		Not specified				
Type of test		Water-in-water				

Mechanical characteristics of PE-RT **Type II** pipes Table

Characteristic	Requirement	Test parameters				Test methods
		For individual tests				
Resistance to internal pressure	No failure during the test period	Hydrostatic (hoop) stress	Test temperature	Test period	Number of test pieces	ISO 1167-1 and ISO 1167-2
		MPa	°C	h		
		10,8	20	1	3	
		3,9	95	22	3	
		3,7	95	165	3	
		3,6	95	1 000	3	
		For all tests				
Sampling procedure		Not specified				
Type of end cap		Type a)				
Orientation of test piece		Not specified				
Type of test		Water-in-water				

Advantages of Thermopex & Thermopert:

- Safety of potable water and long-term reliability.
- Resistance to corrosion, tuberculation, deposits.
- Improved chemical resistance.
- Improved aging resistance.
- Increased abrasion resistance.
- Flexibility to speed installations.
- Freeze-break resistance.
- Light weight, easy to transport.
- Noise and water hammer resistance.
- Low scrap value, avoiding jobsite theft.
- Durability and toughness to survive jobsite installations.
- No flame used for joining, with many fitting and joining options.
- Recyclable, eco-friendly material.
- Heat Fusible for virtually leak-free performance.
- Increased maximum operating temperature.
- Improved impact strength.
- Reduced raid crack propagation (RCP) even at low temperature.

Applications of Thermopex & Thermopert:

- District-heating.
- Domestic hot and cold water.
- Air-conditioning systems.
- Under floor heating.
- Central heating.
- Transport of industrial gases, compressed air and fluids.
- Process engineering and other specialized applications.
- Natural gas supply in extreme ambient conditions.

Procedure for Thermopex & Thermopert Installation

Installation Procedure can be summarized as the following:

- 1- Cut the required length, using the pipe cutter, make sure that the surface is perpendicular to the pipe longitudinal axis.
- 2- Use approved type of fittings to join pipes.
- 3- Use the appropriate sleeve dimension in accordance with each pipe size.
- 4- Install Thermopex away from direct sunlight or other Ultra-Violet (UV) sources.
- 5- Check the system for leakage by venting the system and applying pressure.

Thermopex & Thermopert Fittings

The Fittings types that should be used for the pipe are Brass Fittings, Picture (1) shows the different parts, as follows: Nut, Compression ring, insert and Nipple.

Fittings Installation Procedure:

- 1- After cutting the required pipe length, select the fittings according to the pipe outside diameter and thickness.
- 2- Put in the Nut.
- 3- Place the compression ring as shown in picture (1).
- 4- Enter the insert in the pipe.
- 5- Assemble the nut with the nipple as shown in picture (2). In practice, the nipple is to be fixed to other fittings (Manifold), then the nut is assembled to it after being fitted to the pipe.



Standard Dimensions

Thermopex (Cross Linked Polyethylene) is manufactured according to (DIN 16893) and Thermopert (Polyethylene of Raised Temperature- PERT) is manufactured according to (DIN 16833).

The dimensions of Thermopex & Thermopert are as follows:

Standard Dimensions

Thermopex & Thermopert are manufactured in the following dimensions according to (DIN 16893) & (DIN 16833).

OD X Thickness (mm)	ID (mm))	Standard Lengths (m)
16 x 2.0	12.0	50 / 100 /.../ 500
20 x 2.0	16.0	50/100
25 x 2.3	20.4	50
32 x 3.0	26.0	50

OD: Outside Diameter

ID: Inside Diameter

- Other dimensions & pipe lengths adapted to norms are available upon request.
- Thermopex, natural color is white, other colors (Black, Red) are available upon request.
- Thermopert, natural color is white, other colors (Black, Red) are available upon request.



HANDLING AND STORING TUBING

- Do not drag the tubing over rough terrain, rocks, or any surface that can cut, puncture, or damage the tubing wall.
- Do not crush or kink the tubing. Inspect all tubing before and after installation. Cut out and replace all damaged sections.
- Tubing shall be stored in a way to protect the system from mechanical damage (slitting, puncturing, etc.). Tubing should be stored undercover to keep it clean and avoid exposure to sunlight.

TO AVOID PROBLEMS

- Protecting the piping from damage before installation.
- Inspecting piping for cuts and damage before installation and rejecting damaged piping.
- Never permitting rocks and sharp objects to be against piping.
- Never "reverse bend" coiled piping.
- Installing piping without placing stress on fittings.
- Never permitting plastic piping to be kinked or installed under strain at a metal fitting.
- Snaking the piping in the ditch to allow for temperature differences.
- Flushing the line free of dirt before the final connection.
- Filling the line with water and pressure testing before back filling.

Quality That Lasts

As we shown our range of pipes cover a wide area of applications, including, sanitary, heating, potable water networks. We are the only local company, to produce multi-layer pipes, with Oxygen diffusion barrier.

The quality control procedure starts from raw materials to the time of delivery. In 1996 World Plastics attained the quality management system certificate ISO 9001, for satisfying the requirements of the quality management system. Our customers now have clear confirmation all our processes are properly regulated and consistently applied.

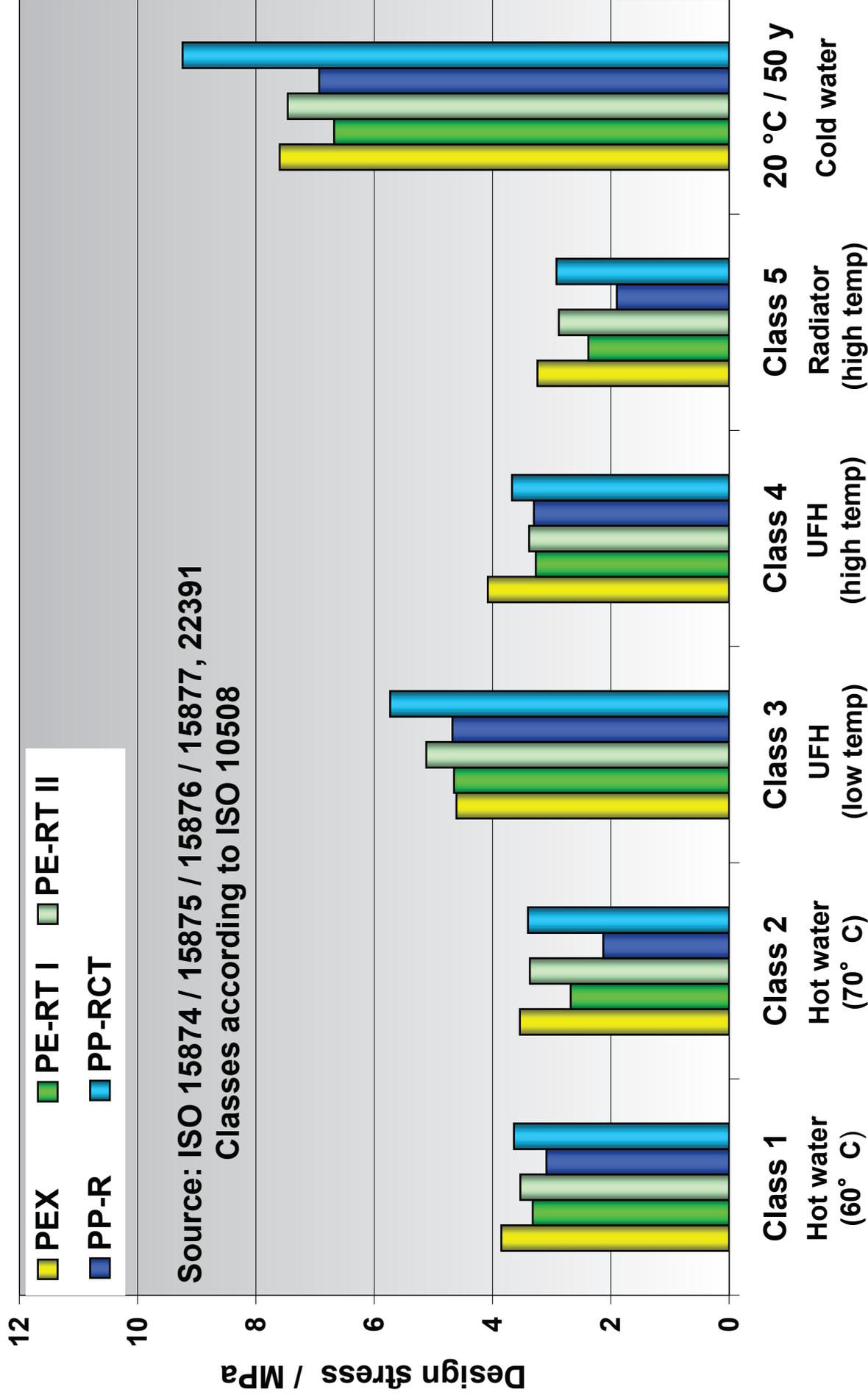
In its search for reducing environmental liability and risk, helping to maintain consistent compliance with legislative & regulatory requirements, up was given certificate of ISO 14001 in year 2001, after incorporating environmental aspects into operations and product standards.

The ISO 14001 standard specifies requirements for establishing an environmental policy, determining environmental aspects & impacts of products/activities/services, planning environmental objectives and measurable targets, implementation & operation of programs to meet objectives & targets, checking & corrective action, and management review.

All information are subjected to modification without prior notice, all the information are for general knowledge, for technical support please contact the company.

Pressure Performance Chart for:

PEX, PE-RT I, PE-RT II, PP-R, PP-RCT



Thermopex[®]

Cross linked Polyethylene

Thermopex pipe | **Size**

16mm x 2mm

20mm x 2mm

25mm x 2.3mm

32mm x 3mm



Clean, Safe, Reliable

Thermopert[®]

Polyethylene of Raised Temperature

Thermopert pipe | Size

16mm x 2mm

20mm x 2mm

25mm x 2.3mm

32mm x 3mm



Clean, Safe, Reliable

Aluminum Pex

Multilayer Pex b

AL_PEX pipe | Size

16mm x 2mm

20mm x 2mm

25mm x 2.3mm

32mm x 3mm



Clean, Safe, Reliable



Male plastic tube fittings

701L | **Size**

1/2"x16/12

1/2"x20/16

3/4"x20/16

3/4"x25/20.4

1"x26/20.4

1"x32/26

1.1/4x32/26



Straight Coupling

703F | **Size**

16 mm x 16 mm

20 mm x 20 mm

25 mm x 25 mm

32 mm x 32 mm



Female plastic tube adapter

782L | **Size**

1/2"x16/12

1/2"x20/16



Sanitary system connection with nipple

755LG | **Size**

1/2"x16

1/2"x20



Elbow male
connection with female

753L | **Size**

1/2"x20/16

3/4"x20/16

3/4"x25/20.4

1"x25/20.4

1"x32/26

1.1/4x32/26



Plug for manifolds-self sealing

c/o 583 | **Size**

1/2"

3/4"

1"

1.1/4"



End piece

584M c/o | **Size**

3/4"

1"

1.1/4"



Automatic air vents

585 | **Size**

3/8"



MF minivalve

892 | **Size**

1/2" * 1/2"



Ball valve female-female

850FF | **Size**

1/2"

3/4"

1"

1.1/4"

1.1/2"

2"



Ball valve
female-female with union

861MF | **Size**

3/4"

1"

1.1/4"



Manifold with holes on one side

2 WAY up to 15 WAY

970 | **Size**

3/4"x 1/2"

1"x 1/2"

1.1/4" x 1/2"

pre-assembled manifold for radiant floor heating system.



930 | **Size**

1" x 3/4"

2 WAY up to 13 WAY

pre-assembled manifold for radiant floor heating system
With flowmeters



940 | **Size**

1" x 3/4"

941 | **Size**

1.1/4" x 3/4"

940 2 WAY up to 13 WAY

941 7 WAY up to 13 WAY



Multilayer pex b
Aluminium / pex b pipe

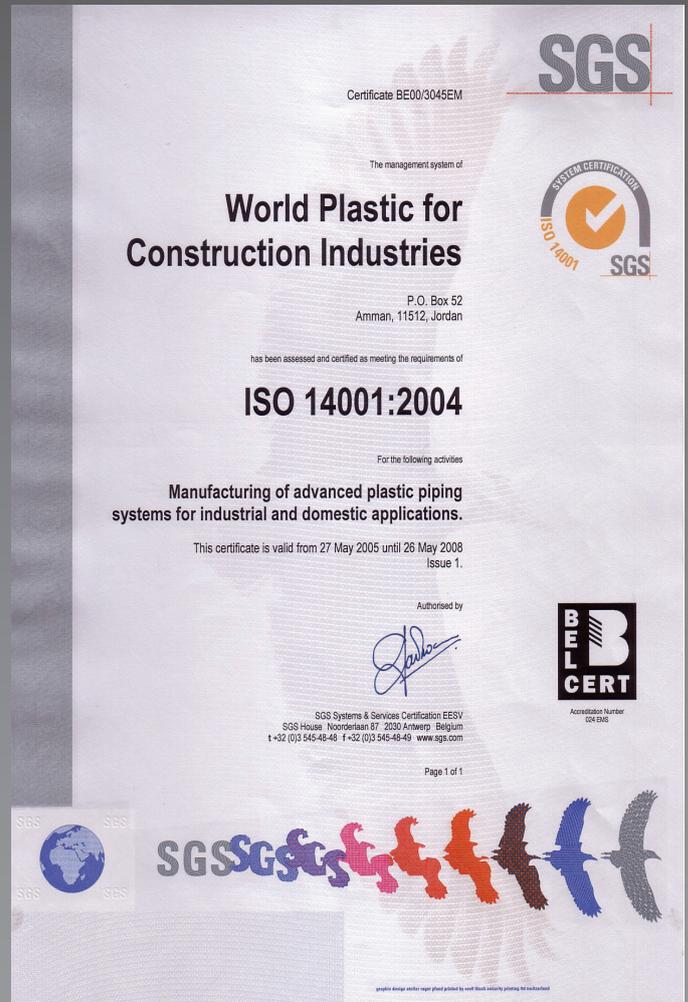
AP100 | **Size**

16mm x 2mm

20mm x 2mm

26mm x 3mm

32mm x 3mm





الرقم: 12546 ج ع
التاريخ: 1439 / 10 / 07 هـ
الموافق: 2018 / 06 / 21 م

السادة شركة عالم البلاستيك للصناعات الانشائية المحترمين
ص.ب ٥٣ عمان ١١٥٢٢ الأردن
هاتف (٠٦-٤٧١١١٢١) فاكس (٠٦-٤٧١١٥٠٠)

الموضوع: شكر واستمرارية

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وتفضلوا بقبول فائق الاحترام..

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مساعد المدير العام للشؤون الإدارية
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القسم: المختبرات الميكانيكية
المختبر: البلاستيك و المطاط

الرقم السري للبيانات: ١٧/١٠٩/٩١٨/٢٠١٣-٣
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السادة	مؤسسة المواصفات والمقاييس/ شركة عالم البلاستيك للصناعات الانشائية
العنوان	ص.ب ٩٤١٢٨٧ - عمان - ١١١٩٤ - الأردن
التاريخ: ٢٠١٨/٠٤/١٩	إشارة رقم: ١٧/١٠٩/٩١٨/٢٠١٣
إشارة رقم: ج/٤٠٠/٩	نوع العينة: أنابيب متعدد الإيثيلين المترابط قطر ١٦ مم
تاريخ: ٢٠١٨/٠٤/١٩	طريقة إحصار العينة: تم إحصار العينة من قبل مندوبكم
	تاريخ الاستلام: ٢٠١٨/٠٤/٣٠
	تاريخ انتهاء الفحص: ٢٠١٨/٠٥/١٠

اسم المواصفة ورقمها: علامة الجودة الأردنية ج أ - م ف ٤٢ / ٤٢ - ٢٠١٨
١- إشارة لظلمكم تم فحص عينة مؤلفة من جزء من لفة أنابيب متعدد الإيثيلين المترابط ذات لون ابيض ذات قطر اسمي ١٦ مم ومحاكاة اسمية ٢ مم (عينة تحتوي على خط احمر وكوبك عليها بواسطة الطابعة باللون الاسود):
٢- تم إجراء الفحوصات التالية على عينة الأنابيب حسب المواصفة الأردنية المذكورة أعلاه وذلك بناء على طلبكم:-
(١) المسكاة والظفر (الأبعاد): حسب المواصفة الأردنية رقم ١٠٢١ لسنة ٢٠٠٤
(٢) الفحص البصري: حسب المواصفة الأردنية رقم ١٠٢١ لسنة ٢٠٠٤
(٣) فحص درجة الترابط في التقرير رقم ١٠٢١ لسنة ٢٠٠٤
(٤) فحص الثقبية الحرارية: حسب المواصفة الأردنية رقم ١٠٢١ لسنة ٢٠٠٤
(٥) فحص مقاومة الضغط الداخلي: حسب المواصفة الأردنية رقم ١٠٢١ لسنة ٢٠٠٤
(٦) فحص التسدود عند القطع: حسب المواصفة البريطانية ٣٧٧١١ لسنة ٢٠١٠
٣- تعتبر عن إجراء باقي الفحوصات في الوقت الحاضر.
٤- كانت نتائج الفحوصات حسب ما هو مبين تاليا:

ملاحظات: - رمز العينة JQM-SA/16/10/S2/03/001
- حالة العينة عند الاستلام: جيدة.
** تم إجراء فحص درجة الترابط في قسم مختبرات الكيمياء الصناعية في الجمعية العلمية الملكية

مسؤول المختبر: م. أماني عكوك
رئيس القسم: د. أحمد الطراونة
FORM NO. RSPMP1302, Issue 5 REV.(1)
صفحة (١) من (٤)

هاتف: ٤٧١١٥٠٠ - ٤٧١١١٢١ فاكس: ٤٧١١١٢١ - ٤٧١١١٢٢ عمان ١١٥٢٢ الأردن
Tel: +962 6 5344701 Fax: +962 6 5344806 P.O Box 1438 Amman 11941 Jordan



JAS
نظام الاعتماد الأردني
Accreditation Unit

تقرير فحص عينة PEX
الرقم السري: ١٧/١٠٩/٩١٨/٢٠١٣-٣
رقم التقرير: ٣٧٧

Test-002

اسم المواصفة ورقمها: علامة الجودة الأردنية ج أ - م ف ٤٢ / ٤٢ - ٢٠١٨			
<ul style="list-style-type: none"> فحص المسكاة والظفر (الأبعاد): طريقة الفحص حسب المواصفة الأردنية رقم ١٠٢١ لسنة ٢٠٠٤. ظرف لشمس الأبعاد: ١- تم الفحص عند درجة حرارة ٢٣ ± ٢°س لمدة ٣٠ دقيقة، ٢- تم الفحص عند درجة حرارة ٢٤ ± ٢°س لمدة ٣٠ دقيقة. 			
أظهر العينة الاسمي	١٦ مم		
المسكاة المقاسة (مم)	الداخلية: ٢٠.١ الخارجية: ٢٠.٢		
قيم الظفر المقاسة (مم)	الداخلية: ١٦.٢ الخارجية: ١٦.٢		
نتائج الفحص			
تتعلق العينة			
المختبرية فقط			
أي كشط أو تعديل يلغي هذا التقرير			
<ul style="list-style-type: none"> فحص العينين العكزي: طريقة الفحص حسب المواصفة الأردنية رقم ١٠٢١ لسنة ٢٠٠٤. ١- ظروف الفحص: ١- وسط جاف، ٢- طول العين: ١٠٠ مم، ٣- درجة الحرارة: ٢٠ ± ٢°س، ٤- زمن الفحص: ١٠-٢٠ دقيقة. ٢- نتائج الفحص: ١- طرف تربة ورقي الأبعاد: درجة حرارة ٢٣ ± ٢°س لمدة ٣٠ دقيقة، ٢- طرف تربة ورقي الأبعاد: درجة حرارة ٢٤ ± ٢°س لمدة ٣٠ دقيقة. 			
رقم الأيوب	أعلى نسبة للغير في الظل (%) بعد العينين العكزي	ملاحظات	متوسط الغير في الظل (%) بعد العينين العكزي
١	١,٠٨٠	-	١,٠٢٠
٢	١,١٨٠	-	١,٠٢٠
٣	١,١٨٠	-	١,٠٢٠

Test report is only valid with division stamp and signature

Test report shall not be reproduced other than in full, except with the written approval of the issuing party

The test results relate only to the items tested
Any erasure or attrition in the report will invalidate it

مسؤول المختبر: م. أماني عكوك
رئيس القسم: د. أحمد الطراونة
FORM NO. RSPMP1302, Issue 5 REV.(1)
صفحة (٢) من (٤)



الجمعية العلمية الملكية
Royal Scientific Society

تقرير فحص عينة PEX

الرقم السري: ١٧/١٠٩/٩١٨/٢٠١٣-٣
رقم التقرير: ٣٧٧

JAS
نظام الاعتماد الأردني
Accreditation Unit

Test-002

اسم المواصفة ورقمها: علامة الجودة الأردنية ج أ - م ف ٤٢ / ٤٢ - ٢٠١٨			
<ul style="list-style-type: none"> فحص الإزلاق والضغط الداخلي: طريقة الفحص حسب المواصفة الأردنية رقم ١٠٢١ لسنة ٢٠٠٤. 			
١- ظروف الفحص:	درجة حرارة الفحص: ٢٣ ± ٢°س الجهاد المسلط: ١.٧٠ ميو نيوتن/سم ^٢ وسط الفحص: ماء بارد الظفر الحر لشمس الفحص: ٣٠٠ مم عدد المكروبات: ٣		
٢- نتائج الفحص:	الظفر الإجمالي لشمس الفحص: ٣٠٠ مم		
رقم الأيوب	الأبعاد المقاسة (مم)	متوسط الفحص (بار)	الفترة الزمنية لفحص الملاحظات
١	٢٠,٨	١٦,٠	١٢,٨
٢	٢٠,٨	١٦,٠	١٢,٨
٣	٢٠,٧	١٦,٠	١٢,٨
<ul style="list-style-type: none"> فحص التسدود عند القطع: طريقة الفحص حسب المواصفة العنق رقم ١٠٢١ - ٢٠٠٤ و ٣٧٧١١ - ٢٠١٠ ١- ظروف الفحص: ١- شكل العينة: TYPE 2 تم فحص العينة بواسطة (Punching), ٢- طرف تربة ورقي الأبعاد: درجة حرارة ٢٣ ± ٢°س لمدة ٣٠ دقيقة، ٣- طرف تربة ورقي الأبعاد: درجة حرارة ٢٤ ± ٢°س لمدة ٣٠ دقيقة، ٤- سرعة الفحص: ٥٠ مم/دقيقة، ٥- عدد مكروبات العينة التي تم فحصها: أربعة مكروبات (تم الحصول على النتائج على القطع داخل منطقة الفحص بها). 			
٢- نتيجة الفحص:			
المتوسط التسدود	١٧,٥		
الإجمالي للباربي	١٩,٥		

Test report is only valid with division stamp and signature

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مسؤول المختبر: م. أماني عكوك
رئيس القسم: د. أحمد الطراونة
FORM NO. RSPMP1302, Issue 5 REV.(1)
صفحة (٣) من (٤)

هاتف: ٤٧١١٥٠٠ - ٤٧١١١٢١ فاكس: ٤٧١١١٢١ - ٤٧١١١٢٢ عمان ١١٥٢٢ الأردن
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CERT

DVGW type examination certificate

DVGW-Baumusterprüfzertifikat

DW-8501CN0176
Registration Number
Registriernummer

Field of Application Anwendungsbereich	products of water supply Produkte der Wasserversorgung
Owner of Certificate Zertifikatinhaber	APE Raccorderie S.r.l. Via Gozzano 8 Ponte Zanano, I-25068 Sarezzo (BS)
Distributor Vertreiber	APE Raccorderie S.r.l. Via Gozzano 8 Ponte Zanano, I-25068 Sarezzo (BS)
Product Category Produktart	installation systems and system joints: drinking water installation system (8501)
Product Description Produktbezeichnung	drinking water installation system consisting of compression connectors made of metal and multilayer pipes PE-Xb/Al/PE-Xb
Model Modell	System APE
Test Reports Prüfberichte	laboratory control test: 76460-16/01 from 09.06.2016 (KIW) type testing: 100401493-1 from 02.07.2012 (KIW)
Test Basis Prüfgrundlagen	DVGW W 534-(P) (01.07.2015) DVGW CERT ZP 8500 (01.01.2017) UBA METALLE (15.03.2017) UBA ELASTOM (16.03.2016) DVGW W 270 (01.11.2007)
Date of Expiry / File No. Ablaufdatum / Aktenzeichen	02.07.2022 / 17-0330-WNV

22.06.2017 GI A-1/2

Date, Issued by, Sheet, Head of Certification Body
Datum, Bearbeiter, Blatt, Leiter der Zertifizierungsstelle

DVGW CERT GmbH is an accredited body by DAKKS according to DIN EN ISO/IEC 17065:2013 for certification of products for energy and water supply industry.

DVGW CERT GmbH ist von der DAKKS nach DIN EN ISO/IEC 17065:2013 akkreditierte Stelle für die Zertifizierung von Produkten der Energie- und Wasserversorgung.



Deutsche
Akkreditierungsstelle
D-ZE-16028-01-05

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Fax +49 228 91 88-993
www.dvgw-cert.com
info@dvgw-cert.com



CERT

DVGW type examination certificate

DVGW-Baumusterprüfzertifikat

DW-8231CN0175
Registration Number
Registriernummer

Field of Application Anwendungsbereich	products of water supply Produkte der Wasserversorgung
Owner of Certificate Zertifikatinhaber	APE Raccorderie S.r.l. Via Gozzano 8 Ponte Zanano, I-25068 Sarezzo (BS)
Distributor Vertreiber	APE Raccorderie S.r.l. Via Gozzano 8 Ponte Zanano, I-25068 Sarezzo (BS)
Product Category Produktart	composite tubes for drinking water installations: PE-Xb/Al/PE-Xb tube, manufacturing group 1 (8231)
Product Description Produktbezeichnung	multilayer pipe (PE-Xb/Al/PE-Xb) for the drinking water installation
Model Modell	APE Multilayer
Test Reports Prüfberichte	laboratory control test: 20170322 from 22.06.2017 (KIW) type testing: 100401493-1 from 02.07.2012 (KIW) KTW testing: 031700002-0080 from 14.06.2017 (KIC) hygienic testing: W-217773e-12-SI from 15.06.2012 (WHY)
Test Basis Prüfgrundlagen	DVGW W 542 (01.08.2009) UBA KTW (07.03.2016) DVGW W 270 (01.11.2007)
Date of Expiry / File No. Ablaufdatum / Aktenzeichen	02.07.2022 / 17-0330-WNV

22.06.2017 GI A-1/2

Date, Issued by, Sheet, Head of Certification Body
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Partner for progress

Number	K25301/02	Replaces	K25301/01
Issued	2008-02-01	Dated	2004-09-15

Product Certificate Metal fittings

Based on pre-certification tests as well as periodic inspections by Kiwa, the products referred to in this certificate and marked with the Kiwa-mark as indicated under 'Marking', manufactured by

APE Raccorderie S.r.l.

may, on delivery, be relied upon to comply with

Kiwa evaluation guideline BRL-K536, Part E
"Plastic piping systems of Aluminium/PE-X, for the transport of cold and hot drinking water".

ing. B. Meekma
Director Certification and Inspection, Kiwa N.V.

This certificate is issued in accordance with the Kiwa-Regulations for Product Certification.

This certificate consists of 3 pages.
Publication of the certificate is allowed.

Supplier
APE Raccorderie S.r.l.
Via Gozzano, 8
Frazione Ponte Zanano
I-25068 SAREZZO (BS)
Italy
Phone: +39 30. 8920912
Fax: +39 30. 8926224
info@ape-raccorderie.com

Kiwa N.V.
Certification and Inspection
Sir W. Churchill-laan 273
Postbus 70
2280 AB Rijswijk
The Netherlands
Tel. +31 70 414 44 400
Fax +31 70 414 44 420
Internet www.kiwa.nl



Partner for progress

Declaration
of Conformity
Date

K66647/01
2012-02-13

Declaration of Conformity

Declaration of conformity

Kiwa declares that, based on tests, the 'APE Multilayer' system as certified by Kiwa and manufactured by

APE Raccorderie s.r.l.

may, on delivery, be relied upon to comply with:
ISO 21003: "Multilayer piping systems for hot and cold water installations - inside buildings".

Remarks

The 'APE Multilayer' system is composed of PE-Xb/Al/PE-Xb pipes and metal press fittings and is tested for application class 2/5 according to ISO 10508 and a working pressure of max. 10 bar.

The following dimensions are covered under this declaration of conformity:
PE-Xb/Al system: 16 x 2,0 mm, 20 x 2,0 mm and 26 x 3,0mm.

Marking

- The marking must be in compliance with ISO 21003.

Recommendations for customers

Check at the time of delivery whether:

- the products show no visible defects as a result of transport etc.
- this declaration of conformity is valid.

Publication of this declaration is allowed.

This declaration consists of 1 page.

Bouke Meekma,
Director Kiwa N.V.

Manufacturer
APE Raccorderie s.r.l.
Via Gozzano 8
25068 SAREZZO
Italy
Tel: +39 030.89 20912
Fax: +39 030.82 6624
E-mail: info@ape-raccorderie.com

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Tel. +31 70 414 44 00
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Approval Number: 1902525
Test Report: J-00320514



Water Regulations Advisory Scheme Ltd.
Unit 13,
Willow Road,
Pen y Fan Industrial Estate,
Crumlin,
Gwent,
NP11 4EG

10th April 2019

World Plastics for Construction Industries
Al-Gastal Industrial Zone,
Amman,
Jordan

**WATER REGULATIONS ADVISORY SCHEME LTD. (WRAS)
MATERIAL APPROVAL**

The material referred to in this letter is suitable for contact with wholesome water for domestic purposes having met the requirements of BS6920-1:2000 and/or 2014 'Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water'.

The reference relates solely to its effect on the quality of the water with which it may come into contact and does not signify the approval of its mechanical or physical properties for any use.

POLYETHYLENE - COMPONENTS.

5240

*THERMOPEX. White coloured (with red stripe), extruded PEX pipe. For use with water up to 85°C.

APPROVAL NUMBER: 1902525

APPROVAL HOLDER: WORLD PLASTICS FOR CONSTRUCTION INDUSTRIES

The Scheme reserves the right to review approval.
Approval 1902525 is valid between February 2019 and February 2024

An entry, as above, will accordingly be included in the Water Fittings Directory on-line under the section headed, 'Materials which have passed full tests of effect on water quality'.

The Directory may be found at www.wras.co.uk/directory

Yours faithfully

Jason Furnival
Approvals & Enquiries Manager
Water Regulations Advisory Scheme



Unit 30 | Fern Close | Pen-Y-Fan Ind Est | Oakdale | Gwent | NP11 3EH | UK
Tel: +44 (0) 1495 236280 wales@nsf.org | www.nsf.org

TEST REPORT

Customer: C0427425

World plastics for construction industries
PO Box 53
Amman, 11512
Jordan

Result This product has satisfied the criteria set out in BS 6920: Part 1: 2014 "Specification" and thus is suitable for use with hot (up to 85°C) and cold water.

Customer Name	World plastics for construction industries
Product	Thermo PEX (Cross-Linked Polyethylene Pipe)
Test Undertaken	BS 6920: 2014 - Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water
Job Number	J-00320514
PAMS Number	181532

Thank you for having your product tested by NSF Wales Ltd.

Please contact your Account Manager if you have any questions or concerns pertaining to this report.

Report Date 06-FEB-2019

Report Authorisation *M Rees*

Matthew Rees - Materials Laboratory Supervisor



0626

F120190206051900

J-00320514

Page 1 of 14

This report is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This report shall not be reproduced, except in its entirety, without the written approval of NSF Wales Ltd. This report does not represent NSF Certification or authorisation to use the NSF Mark. Authorisation to use the NSF Mark is limited to products appearing in the Company's Official NSF Listing (www.nsf.org). The results relate only to those items tested, in the condition received at the laboratory.

Certificate



Technical approval-with-product certificate K66358/01

Issued 2012-01-15
Replaces --
Page 1 of 3

APE Multilayer piping system

APE Raccorderie s.r.l.

STATEMENT BY KIWA

This technical approval-with-product certificate is issued on the basis of EN 1336 part E "Plastics piping systems of PE-X/Al intended for transport of hot and cold drinking water" issued on 18-06-2006, in accordance with the Kiwa Regulations for Product Certification.

Kiwa declares that legitimate confidence exists that the by the producer manufactured plastics piping system comply with the technical specifications as laid down in this technical approval-with-product certificate, provided that the plastics piping system have been marked with the Kiwa®-mark in the manner as indicated in this technical approval-with-product certificate.

Within the framework of this technical approval-with-product certificate Kiwa does not impose any inspections with regard to the production of other parts of the plastics piping system nor the manufacturing of the plastics piping system itself.

Bouke Meekma

Publication of the certificate is allowed.

Advice: consult www.kiwa.nl in order to ensure that this certificate is still valid

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www.kiwa.nl



Certification process consists of initial and regular evaluation of:
• quality system
• product



Product certificate K66359/01

Issued 2012-01-15
Replaces --
Page 1 of 3

Multilayer pipes

APE Raccorderie s.r.l.

STATEMENT BY KIWA

This product certificate is issued on the basis of EN 1336 part E "Plastics piping systems of PE-X/Al intended for the transport of hot and cold drinking water", in accordance with the Kiwa Regulations for Product Certification.

Kiwa declares that legitimate confidence exists that the by the producer manufactured products comply with the technical specifications as laid down in this product certificate, provided that the products have been marked with the Kiwa®-mark in the manner as indicated in this product certificate.

Bouke Meekma
director Kiwa Nederland B.V.

Publication of the certificate is not allowed.

Advice: consult www.kiwa.nl in order to ensure that this certificate is still valid

Company
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Fax: 070 674 66 20
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Certification process consists of initial and regular evaluation of:
• quality system
• product

Thermopex®

Cross Linked Polyethylene



APE
ITALY FITTINGS



Thermopipe®

(PPR & PPR-CT) Pipes & Fittings

The Best Choice
For Pure Water



aquapipe®

High Density Polyethylene Pipe

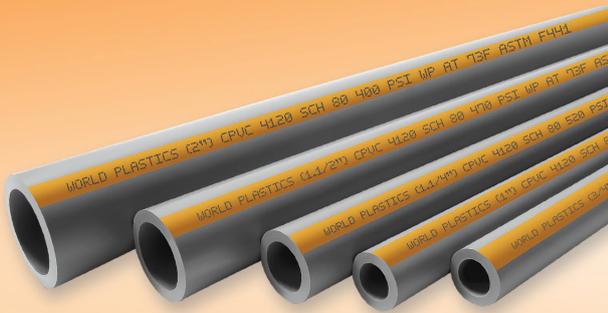


High Quality
HDPE PIPE





World Plastics
C.P.V.C
 pipes & fittings



www.advanced-piping.com



World Plastics
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 pipes & fittings

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Electropipe

PVC conduits



The Best Protection





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for Construction Industries