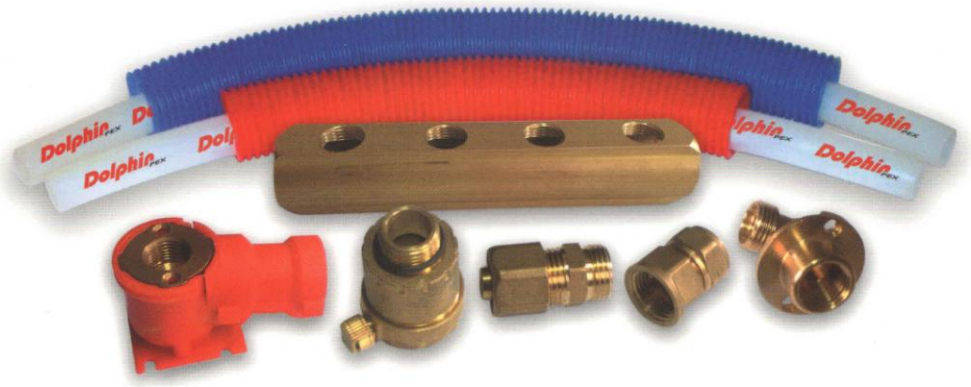
Dolphin PEX



تأسســت شــركة الميســرة لصناعة البلاســتيك عام ٢٠٠٨ وهي من اكبر الشركات الاردنيــة لصناعة الانابيب والقطع البلاســتيك من مواد الـ UPVC والـ CPVC والـ PPR والـ PEX والـ HDPE

يتم انتاج القطع والانابيب البلاستيكيه بأحدث الماكنات الموردة من قبل أشهر المصنعين العالميين في مجال تكنولوجيا الســحب والحقن وبإشــراف فريق فني مؤهل وذلك لضمان اعلى مســتويات الجودة لخدمــة القطاعات الصناعية والزراعية والاســكان في الاردن وفي الدول المجاورة .

إن نجاح ونمو شــركة الميســرة لصناعة وتجارة البلاســتيك يقوم علــى ثلاثة دعائم رئيسية هي: الزبائن، الموظفون والتكنولوجيا.

الزبائــن: إن جميع موارد وقدرات الشــركة موجهة نحو تحقيــق الهدف الأعلى الذي يتمثل بطموحنا : أن نكون شــركاء يعتمد عليهم على المدى الطويل لزبائننا لأننا نقدم أعلى مستويات الجودة في الخدمة والمنتج النهائي وبكلفة معقولة .

الموظفــون: الموظفــون هم أهم الأصول في الشــركة ، إن إخلاصهــم وتحفزهم نحو تقــديم أفضــل الخدمات للزبائننا فــي بيئة عمل صحية ومأمونة هو الســبب الرئيســي لنجاحنا .

التكنولوجيــا: إن إعتمادنا على أحدث ما توصلت اليه التكنولوجيا في أنتاجنا وأدارة عملياتنا هو عنصر أساسي وفعال في تقدمنا على المنافسين .

أهدافنا : تهدف شركة الميسرة لصناعة وتجارة البلاستيك أن تكون الشركة الرائدة في مجال تصنيع الأنابيب والقطع البلاســتيكية في الســوق الاردني والشرق الاوسط وذلك عن طريق تقديم أعلى مستويات الجودة في الخدمة والمنتج النهائي

وتعد شــركتنا من أشــهر الموردين في مجال الأنابيب البلاســتيكية الــى دولة العراق والاردن وهي ذو خبرة كبيرة في مجال تجارة الانابيب البلاستيكية وقطعها .

وأصبحت الشــركة من اقوى المصانع الاردنية في هذا المجال وأصبحت شــركة الميسرة من أشــهر المصانع في دولة العراق بالاضافة الى الاسواق الخارجية الاخرى مثل دولة اليمن والمغرب العربي والسودان بالأضافة للسوق المحلي الاردني .

والله ولي التوفيق

Introduction

Dolphin PEX (Cross - linked polyethylene)

A polymer is a macromolecule made up of a high number of basic units called monomers.
Technically revelant polymers are classified according to their physical characteristics as thermoplastics (plastomers) elastomers and thermosetting polymers (duromers).
Polyethylene is a thermoplastic material formed by numerous long chains. Even at moderately high temperatures below the melting point - the material starts to acquire a significant degree of fluidity. The excellent qualities of this material are thus limited by the working temperature. With the cross - linking process, the molecules of the polyethylene are bonded to from a more complex structure and the chemical reaction of cross-linking transforms the product from thermoplastic to thermosetting. The material undergoes a structural change that improves many of its featres such as abrasion , chemical resistance and mechanical resistance through time.
Cross linking considerably reduces the material degree of fluidity so that its performance is greatly enhanced. in addition to increased performance at high temperatures cross linked polyethylene maintains the excellent properties of thermoplastics.
Cross - Linking greatly increases the safety margin and produces pipes that easily meet international specifications for hot water and heating systems. Cross - linked polyethylene pipes can never be fUlly cross-linked because this would make them too brittle and highly prone to stress cracking however too little cross linking may not lead to the expected increase in the material performances compared to pure polyethylene ones.
The task is then to find a degree of cross linking which would result in the best mechanical strength while retaining the flexibility needed for working with pipe and at the same time eliminate any stress cracking.The degree of cross- linking ranges from 65% to 89% depending on the cross - linking process used. There are different ways of cross- linking polyethylene. However since this material has no functional units with alinking capacity, it is necessary to add another component to it .

A • peroxide method

Extrusion takes place at less than 160 ÷ 170C to prevent the peroxides mixed with the poiyethylene from decomposing and starting to cross link prematurely . This involves low production speeds and very high pressures. Cross -linking always takes place in line but after the pipes calibration, with the extruded pipe passing through a chamber at a temperature of 209 - 230 C which sets off the chemical process of cross- linking the minimum degree of cross linking allowed method is 70%.

B. Silane method

Cross- linking takes place with the creation of chemical bonds due to the presence of silanes . While some of the cross -linking occurs in the extruder, the majority actually takes place in a second stage during which the bars or coils of pipe are placed in a water bath at 70 95 C the cross linking process is started by the water and the temperature; it is then accelerated by the addition of the a suitable catalyst in this case the minimum degree of cross linking obtained is 65%

C. Radiation method

This is a physical cross-linking process obtained by using sources that irradiate electromagnetic waves
Yradiation (nuclear process) or high power electrons ß, radiation (electron bombardment process).In this case the minnmum degree of cross-linking is 60%

Fields of applications

Dolphin PEX Pipes are for

Hot and cold water supply using the' Pipe in Pipe'

- Traditional water supply systems.
- Traditional heating systems using radiators and convectors
- Under - floor heating systems
- Compressed air distribution networks
- Air conditioning applications
- Transportations of chemicals in the industry

Mechanical Properties:

Physical and mechanical properties of Dolphin PEX pipe

PROPERTY	UNIT	VALUE	METHOD
Density at 23 °C	Kg/m3	944	ASTM D - 792
Mell flow rale at 190 °Cwelght 2.16 kg (MFR 190/2.16)	G/10.mln	0.33	Suppliers test method
Tensile strenglh al break	Mpa	20	ASTM D - 638
Elongation al break	%	400	ASTM D - 638
Tensile creep modulus			ISO R527
At -40 °C	Mpa	2240	
At 0 °C	Mpa	1350	
At 23 °C	Mpa	870	
Flexural creep modulus			Iso 178
At - 40 °C	Mpa	498	
At 0 °C	Mpa	312	
At 23°C	Mpa	183	
Hot elongalion , 15 min, 200 C, 0.2 N/mm .			Iec 811
On load	%	30	
After cooling	%	0	
Softening point temparature vlcat	C°	126	ASTM D-1525
Specific heat at 23° C	KJ/kg.K	1.92	
Thermal conductivity	W/m.k	0.38	
Linear thermal expansion coefficient	k^{-1}	$1.9.10^{-4}$	ADTM D·696

Advantage of Dolphin PEX Pipe

1 Resistance to chemical and electrochemical corrosion

Dolphin PEX is highly resistant to both acid and alkalines as a resuit it can be used to convey such chemical substance without reducing its physical and mechanical properties.
Given that Dolphin PEX is a bad conductor of electricity, it is not prone to destruction by stray current, which perforates metal pipe systems.

2 Resistance to abrasion

Dolphin PEX pipes are highly resistant to abrasion. this feature makes them suitable for conveying solids in water or relining operations where the outer wall of the pipe slides along the inner wall of the pipe to be relined absence of
scale and
mould Metal pipes are rough inside this causing scaling which reduces the bore of the pipe
Plastic pipes on the other hand are extremely smooth so that the risk of obstruction caused by the build of scale and

3 Low head loss

The surface of plastics is extremely smooth as it is free from the cracks and micro flows, typical of metal pipes traditionally used for conveying water. this feature results in high flow rates and low head losses.

4 Low thermal conductivity

The low load conductivity of plastics with respect to metal is a very important factor in energy saving the thermal conductivity of pex being a mere 0.38 w/m c as against 45 w/m c for 52w/m c for cast iron and 348 w/m c for copper.
plastics pipe in fact reduce the formation of condensate on the outer surface, which is not the case with metal pipes

5 Low noise

One of the main features of pex is its high coefficient of acoustic insulation, which considerably reduces the noise level during operation. Even in presence of water hammering

6 Rheological memory

This is a particular feature of pex when the pipe is heated to the softening temperature of around 130 C (i.e. the temperature at which the material becomes transparent) it is possible for the pipe to return to its original shape. this means that wrong bending or squashing can be easily corrected. However operation must not be done on piping with

7- Excellent workability

Dolphin$_{PEX}$ pipes used in private dwelling usually come in coils. since this material is extremely lightweight they can be handled without any special equipment,The average specific weight of pex is 0.'95g/cm as against 7.85 g/cm for steel and' 8.9 g/cm for copper. A 100meter coil of 2- mm pipe diameter 16 mm Weighs around 9 kg .
Cold bending of Dolphin$_{PEX}$ pipes can be done without any particular equipment. the radiuses of curvature can be up to eight times the diameter of the pipe .hot bending is necessary for very small curvatures or high -pipe diameters the pipe is heated by hot air to the softening temperature when it becomes transparent it can be shaped as required once the pipe cools it keeps its new shape .due to its rcheological memory, wrong bending can be corrected by reheating and repeating the operation.

8- Long life

Taking in to account the normal pressure and temperature values in private dwellings and thanks to the excellent properties of Dolphin$_{PEX}$ piping system made up using this material have a life expectancy comparable to that of masonry A pipe undergoes mechanical stress because of the inside pressure and thermal stress due to the temperature considering the property of Dolphin$_{PEX}$ the working temperature can range from - 100 °C to +110 °C. At working temperature below 0 °C the pipe does not become brittle, as metal pipes typically do. However this does not mean that the pipe can withstand the huge stresses generated by the water freezing and expanding inside the pipe.
At temperatures above 0 °C,the regression curve of Dolphin$_{PEX}$ gives the working pressure values for different temperatures for a working life of 50 years.

9- Non- toxicity

Dolphin$_{PEX}$ pipes are hygienically and toxicologically suitable for conveying drinking water and meet the most rigorous standards.

MPF

شـــركة الميســـرة لصناعـــة وتجـــارة البلاســـتيك

AL-MAISRHA MANUFACTURING & TRADING PLASTIC CO.

Dolphin PEX Range

Dolphin PEX pipes are produced in conformity with different standards every size hase one or more standard references

Outside Diameter	Wall thiekess	Inside Diameter	Standard
De(mm)	S (mm)	Di (mm)	
15	2.0	11.0	UNI9338-PN10-SDR11
15	2.5	10.0	UNI 9338 - PN16-SDR7.4
16	1.5	13.0	NFT54-085-SS-SDR 11 UNE EN ISO 15875 ·S5-SDR11 DIN· 16892-S5·SDR11
16	1.8	12.4	UNE EN 1S0 15875- S 4-SDR9 DIN 16892 -S4-SDR 9
16	2.0	12.0	UNI 9338 -PN 10 - SDR 11 DIN 16892-S3. 15-SDR 7.3
16	2.2	11.6	UNI 9338 -PN 16 - SDR 7.4 UNE EN ISO 15875-S3.2 -SDR 9 DIN 16892-S3.15-SDR 7.3
18	2.0	14.0	UNI 9338-PN 10-SDR11
18	2.5	13.0	UNI 9338 -PN 16-SDR7.4
20	1.9	16.2	UNE EN ISO 15875-S5-SDR 11 NF T 54-085-S5-SDR11 DIN 16892-S5-SDR 11
20	2.0	16.0	UNI 9338-PN10-SDR11 DIN 16892-S3.15-SDR 7.3
20	2.8	14.4	UN 19338-PN 16-SDR7.4 UNE EN ISO 15675-S3.2-SDR 7.4 DIN 16892-S3.15-SDR 7.3
22	2.0	18.0	UNI9338-PN 10-SDR 11
22	3.0	16.0	UNI9338-PN 16-SDR7.4
25	2.3	20.4	UNI 9338-PN 10-SDR 11 UNE EN ISO 15875-S5-SDR4 NF T 54-085-S5- SDR 11 DIN 16892-S5-SDR 11
25	3.5	18.0	UNI 9338-PN 16-SDR7.4UNE ISO 15875-S3.2-SDR 7.4
32	2.9	26.2	UNE ISO 1S875·S5·SDR 11 NF T 54-085-S5-SDR 11 DIN 16892·S5-SDR 11
32	3.0	26.0	UNI 9338 -PN 10-SDR 11 DIN 16892-S3.15-SDR 7.3
32	4.4	23.2	UNI 9338-PN 16-SDR 7.4 UNE EN ISO 1S87S -S3.2-SDR 7.4 DIN 16892-S3.12-SDR 7.3

Corrugated conduits range

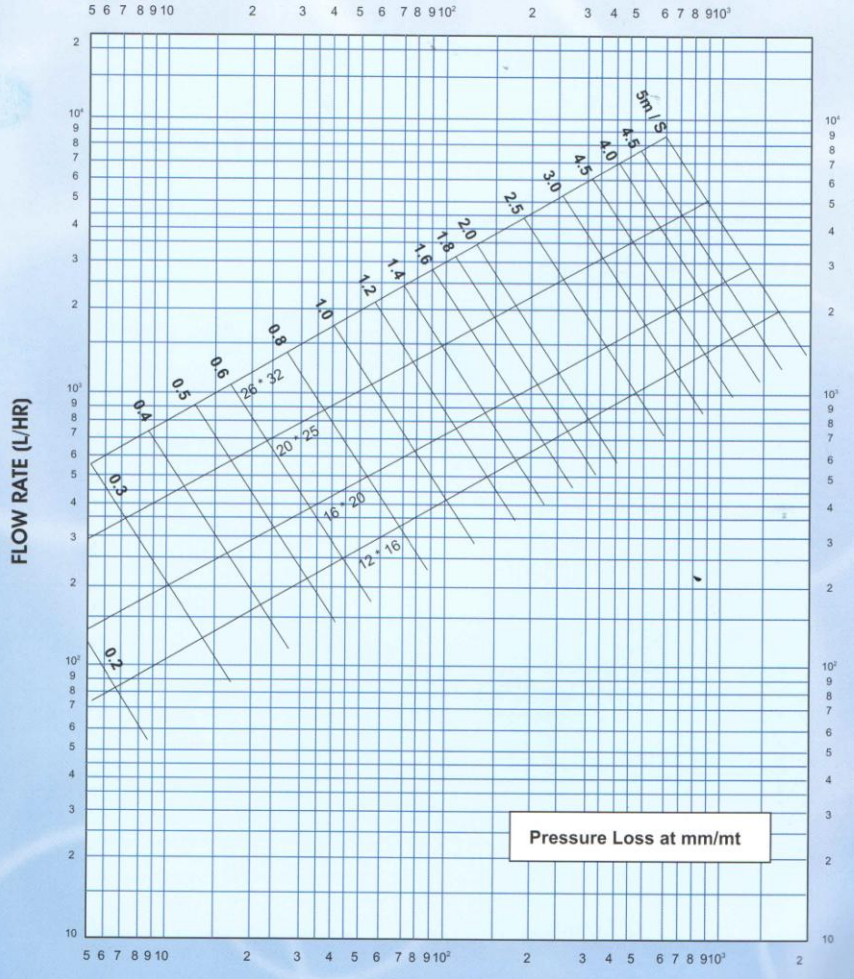
Also New Dolphin PEX produce corrugated conduits which are made of virgin high density polyethylene material to insure high flexibility .incase the conduit is accidentally squeezed with aload it is capable to regain its original shape after the load is removed.

item	Out side diameter	colour
Corrugated conduits	19 mm	Blue/Red
Corrugated conduits	25mm	Blue/Red
Corrugated conduits	32mm	Blue/Red
Corrugated conduits	40mm	Blue/Red
Corrugated conduits	50mm	Blue/Red

Working pressure of Dolphin PEX

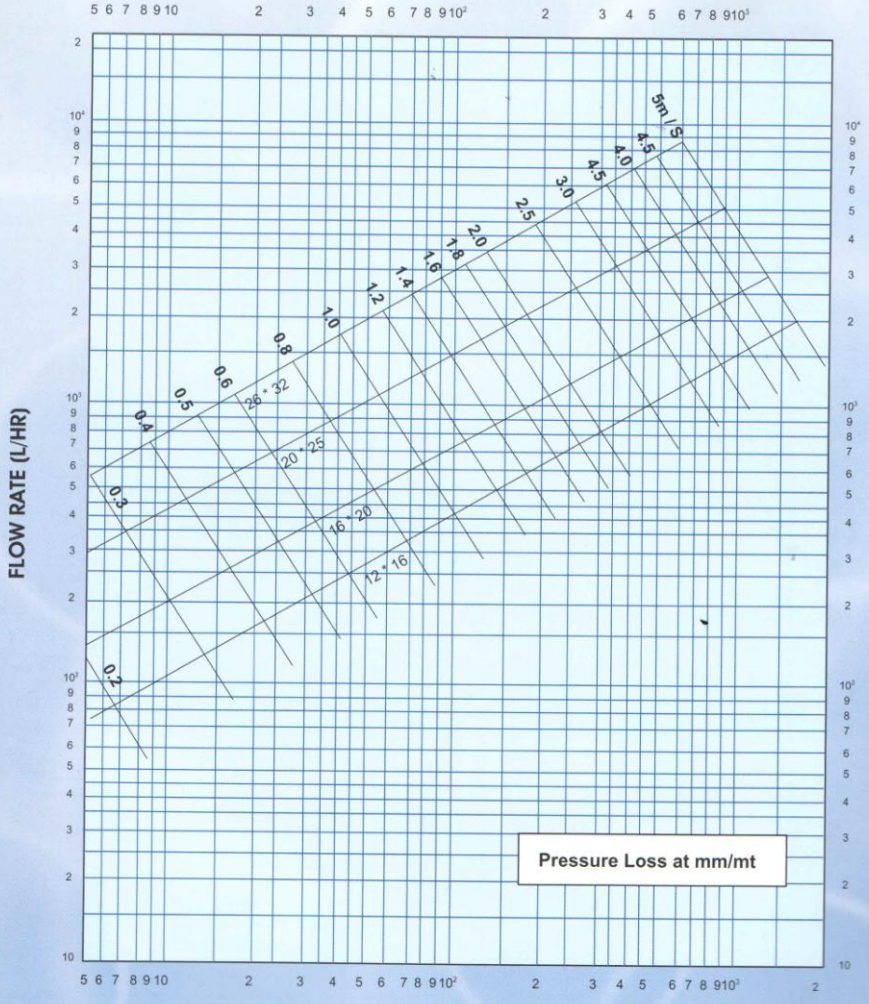
Operating temperature (C)	Service life (years)	Operating pressure (bar)
20	50	12.5
40	50	10.4
60	50	8.0
70	50	7.0
80	25	6.0
90	10	5.5
95	10	5.0

Water Temperature +50 °C



PRESSURE MONOGRAM

Water Temperature +80 °C



PRESSURE MONOGRAM

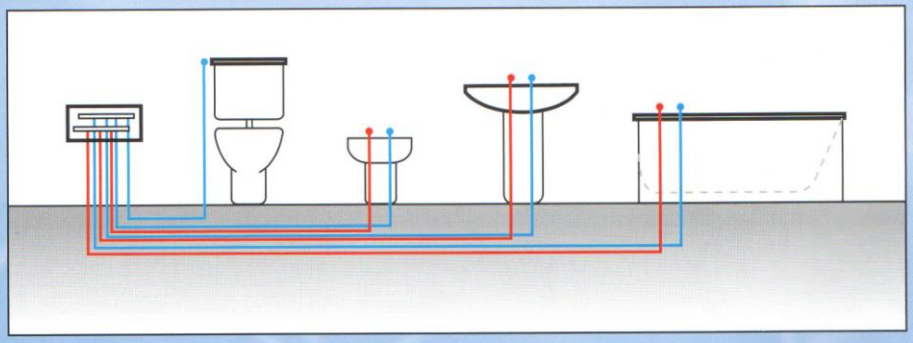
Water supply systems

Dolphin$_{PEX}$ pipes are used to convey hot and cold drinking water under pressuer in low-temperature cooling and heating systems (radiating panel systems) and in high -temperature ones (radiator systemes up to 90 °C)
Given the exceptional properties of this material, the pipes can be used for conveying gas and chemical substances and in drainage system's. Finally they are the preferred type to use in relining operation given their high resistance to abrasion

Sanitary distribution systems

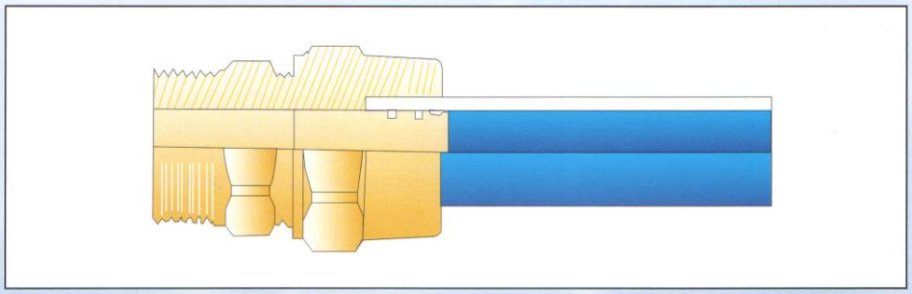
Given the excellent properties of Dolphin$_{PEX}$ the pipe made from this material are largely used to build up systems to distribute hot and cold drinking water Dolphin$_{PEX}$ pipes are actually highly resistant to corrosion they are non - toxic and given that their coefficient of acoustic insulation high the noises transmission is considerably reduced Dolphin$_{PEX}$ pipes applied in sanitary systems are usually placed inside abiue or red corrugated pipe (pipe in-pipe system) which makes it easy to find out the kind of circuit as well as quickly and easy to replace pieces of pipe which have been damaged. Its lightness and the easiness of its hot and coid bending make the product laying easy. As a matter of fact bends of eight times the pipes diameter can be made without using any fitting. However since cross linked polyethylene
cannot be either melt or glued it is necessary to use mechanical fitting to mabe narrower bends branches connections.

Water distribution in sanitary systems



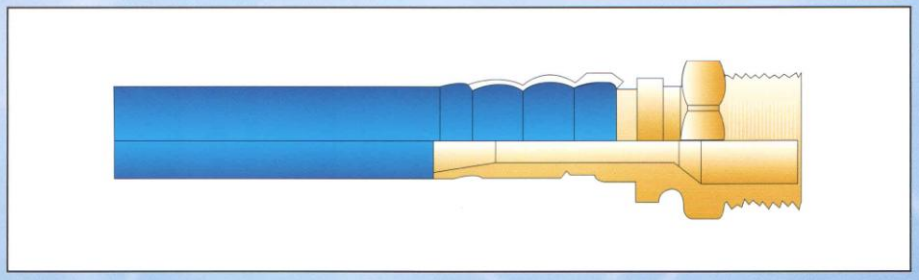
Mechanical fittings to joint Dolphia pipes can be either screwing fitting or press - fittings either brass or steel screwing fittings are made in three components; the fitting body, seal sleeve ,a screw nut .While tightening, the screw nut operates on the sleeve deforming and pressing it onto the fitting body as well as onto the pipe. The O-ring placed onto the sleeve makes the hydraulic seal possible

Screwing fitting



Press- fittings are made of a fitting body - which can be made from either brass, steel or even a synthetic material (technopolymers) and from a steel seal sleeve.
Tightening results from the sleeve which is deformed by an electric - pneumatic tool that presses it on the external surface of the pipe The pressure the pipe exerts on the O-rings placed on the fitting body makes the hydraulic seal possible

Press-fitting



Dolphin PEX

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