



Dizayn  
stands by  
the craftsmen

WITH BRAND NEW PRODUCTS

# SANITARY and INFRASTRUCTURE GENERAL PRODUCT CATALOGUE





# DİZAYN GROUP

Dizayn Group was established in 1987 for developing and applying projects in sanitary piping sector and started to manufacture floor heating pipes in September 1992, then indoor clean water pipes. Now, it is the largest one of Mir Holding companies.

Dizayn Group organized many educational and promotional activities for popularizing plastic pipe use and makes production in its facilities in Çorlu, Azerbaijan and Trabzon, which has a total of closed production area over 35.000 m2 and a total of open production area over 100.000 m2.

Dizayn Group reserves 5% of its turnover every year for R&D and every product developed by the Group bears certificates, each received from international independent institutions. Some of these institutions are:

MEYER ISO 9001:2008, DVGW (Germany), Hygiene Institute (Germany), GOST (Russia), IMA (Germany), GOST (Ukraine), TSE (Turkey).

Dizayn Group exports to more than 80 countries, most important regions being the Middle East, South America, West and East Europe, Russia, Turkic Republics, North Africa, Far East and Australia. Dizayn Group also has more than 100 patents for products developed. In addition, Dizayn Group has been awarded in July 2004 by Turkish Patent Institute for its contribution in development of technology in our country and the world.

The reason for Dizayn Group to achieve such a success in a very short time is the three separate missions. With Product Development mission, Dizayn Group manufactures from 12 mm to 1600 mm diameter high pressure, from 50 mm to 8000 diameter low pressure, Polyethylene and Polypropylene raw material resilient to high soil and traffic load, 23 different systems with flow and more than 4.000 product varieties.

Product groups developed by Dizayn Group can be sorted as follows:

- Superstructure Product Group
  - Indoor clean water systems
  - Indoor waste water systems
  - Indoor heating installation systems
  - Radiator product group
  - Metal Systems
- Infrastructure Product Group
  - Drinking water systems
  - Sewerage systems
  - Natural gas systems
  - Pre-isolated city heating systems
- Agricultural Irrigation Product Groups
  - Drip irrigation systems
  - Sprinkler irrigation systems
  - Drill pipes

Dizayn Group has achieved a world first and broke a World record by manufacturing 1600 mm diameter pipe under PN 12,5 pressure in October 2001. Dizayn Group has perfectly manufactured this product, which the rivals in the World said to be impossible, by developing a completely different technology. Also with this record, Dizayn Group manufactured the first industrial product from Turkey being a world first.

In recent years, Dizayn Group has been supporting tens of doctorate, masters, license and project studies continuing in various universities of Turkey. Project and test subjects of these studies are in Dizayn Group's area of expertise. Again, more than 30 articles issued by Dizayn Group have taken part in various national and international publications.

With Investment Mission, Dizayn Group invests regarding the products developed. Objective of Dizayn Group in future years is to become an international company active in international arena with internal and external investments.

With Project Development mission, Dizayn Group develops projects for supplying city heating, drinking water needs, agricultural irrigation by carrying fluids (water, gas, etc.) from where it is in abundance to where it is lacking. At the same time, the Group designs a complete new system with primary and secondary distributions and establishes systems for the project.

Dizayn Group, as a part of many domestic and international projects, has been awarded by UNESCO with "Water and Water Management" for its project of bringing water to Sudan. Award Ceremony held place in "Water Symposium" organized in Cannes, France. Most important specialty of this award is that it has been given to a private company for the first time, Dizayn Group. On the other hand, Dizayn Group has been qualified to participate in the Turkey Final of World Young Entrepreneur Businessmen Competition as the winner of Universal Participation Award and the World Final as the winner of Grand Award for all developed projects, products, patents, quality certificates and other achievements since established. In the World Final, which was an international organization that took part in Philippines with participation of 12 countries such as Germany, UK, Netherlands, Mir Holding Chairman of the Board Mr. Ibrahim MirmahmutoğullarP successfully represented our country and won Grand Award of World Young Entrepreneur Businessmen Competition.

Another project successfully organized by Dizayn Group is "Encouragement of Brain Power Against Brain Drain" campaign. The aim of this campaign, which was first organized in 2002, is to prevent productive minds from leaving abroad and to support projects that can contribute to the economy.

We are aware of our responsibilities. The world needs Dizayn!

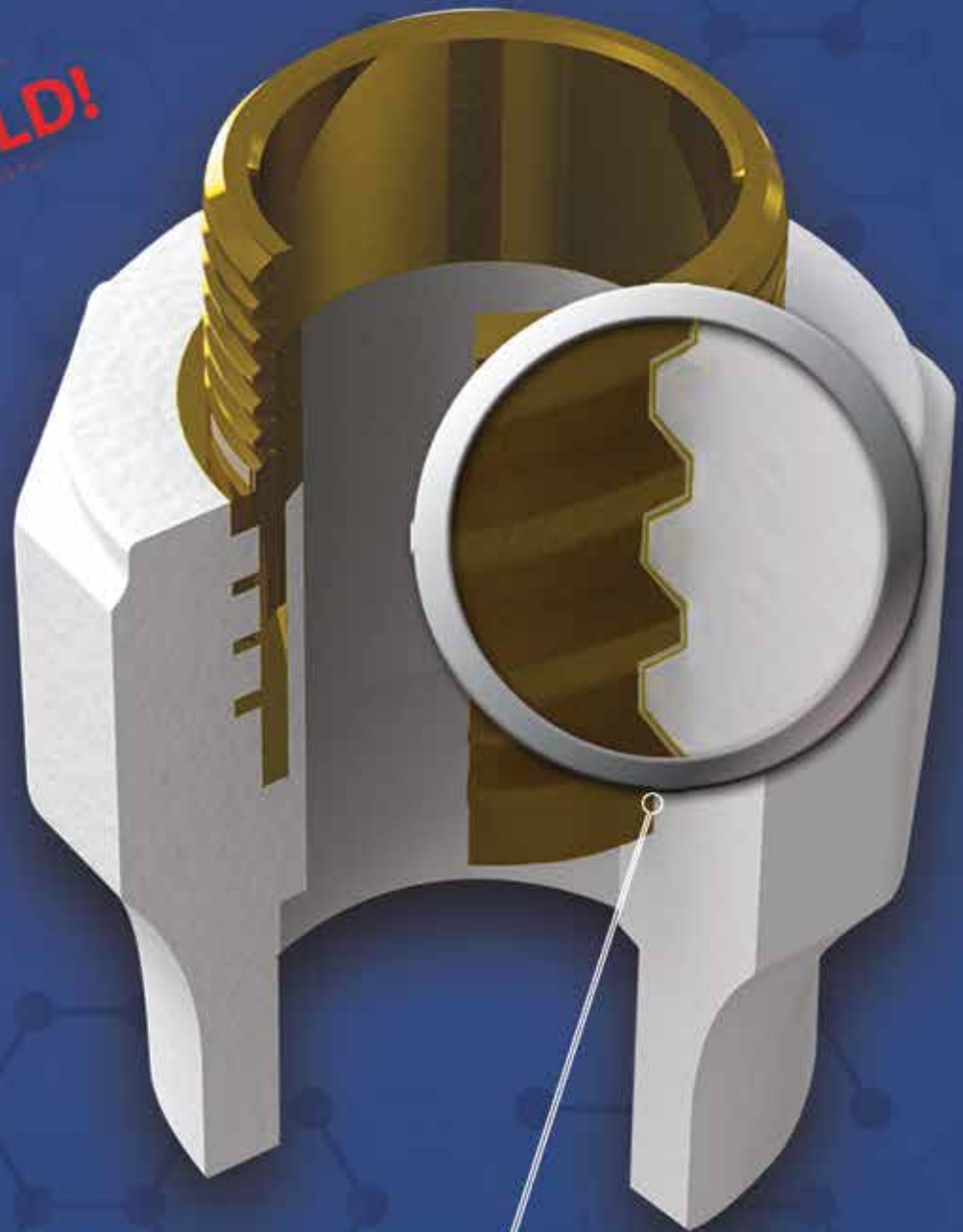




# NO MORE LEAKAGE!

Thanks to molecular bond between two materials, leakage between metal and plastic in PPR fittings is a history! Only with Dizayn!

**FIRST IN THE WORLD!**



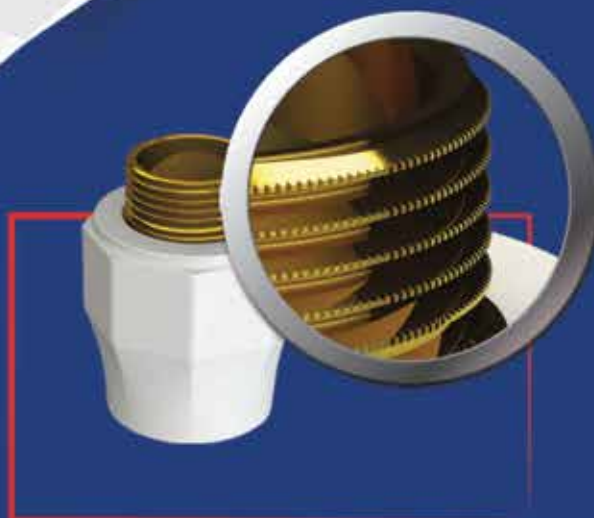
molecular bond



# A TECHNOLOGY WITH NO SLOWING DOWN BY THE CURVES

EASIER WATER FLOW  
BY SPECIAL DESIGN

UNIQUE TECHNOLOGY IS  
ONLY WITH DIZAYN



# PROBLEMS

# SOLUTIONS

## Leakage

For joining metal and plastic, the classical way is the mechanical conjunction. It is impossible to prevent leakage 100% with those products.



## Absolute Impermeability

- Dizayn's new technology, which is provided by Dizayn Group and protected by three different European patents, turns metal and plastic into one material rather than two separate materials.
- Another feature indicating the conjunction quality, TORQUE (spin force) value is risen to a level 5 times higher than the application standard.

100% impermeability can only be obtained by DİZAYN GROUP products.



ABSOLUTE IMPERMEABILITY  
THANKS TO THE MOLECULAR BOND

## Pressure Loses

The classical methods in designing PPR fittings cause pressure loses. So, our houses cannot be heated properly and enough water cannot be gained from the taps inside our buildings.



## Low Pressure Loses

- By optimizing fitting designs, local loss coefficients are lowered by 30%.
- Equivalent pipe lengths are reduced.
- Efficiency is increased by lowering pressure loses.



## Tiring Welding Periods

Long time taking welding applications cause the installers waste more time and get tired more and more.



## Fast Welding

- By the production of PPR pipes with a knurled surface as a first in the world, the surface pushed through the screw plate is reduced.
- Energy and time savings are acquired by decreasing the welding times.



## Constriction

The material piled up in the conjunction areas causes for a harder passage of water inside the system and lowers the efficiency of heating installments.



## Cleaner Welding

- Dizayn fittings are designed in conical shape and the melting material is prevented to accumulate inside the welding area.



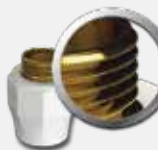
## Breaks in the Metals

Breaking the metal parts is a frequently seen problem during application.



## Metals with Lowered Fragility

- By rising the ratio of copper, which gains softness to metals, by 8,6%, the risk of break in metals is lowered.



### We Have Figured Out an Easier Way for Our Installers

The material piled up in the conjunction areas causes for a harder passage of water inside the system and lowers the efficiency of heating installments.



### Cleaner Welding

With Dizayn PPR pipes, plastic material that pouring out while melting and causing an ugly appearance is not going out of the welding area, so that a very clean welding is acquired. Plus fastly and easily!



### No More Cracking Pipes with Dizayn HI-TECH PPR Pipes

It is inevitable for PPR pipes to be cracked in cold weather. HI-TECH PPR Pipes absorb impact force via its knurled surface design, provides 30% more impact endurance than the regular pipes.



### Perfect Alum Compliance

HI-TECH PPR pipes' alum compliance is higher thanks to their knurled surfaces. The pipes remaining constant in the alum prolong the installment's life.

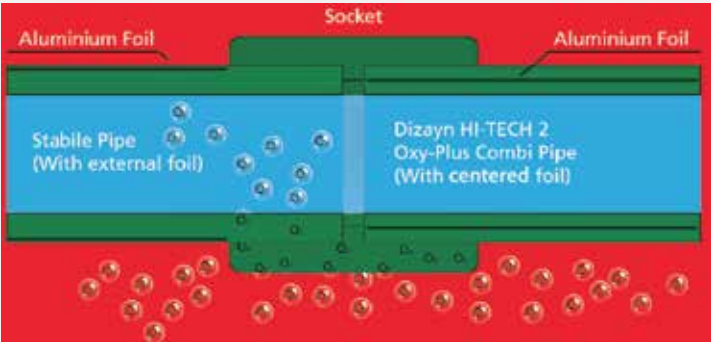
# Why to Use Oxy Plus Combi Pipes in Combi Boiler Installations?

Combi boiler installations work as closed circuits. In such installations, Oxygen molecules in the air may diffuse into the system because of the concentration differences. Those Oxygen molecules penetrating into the water in the system causes problems like **corrosion**, **cavitation** and **erosion** in metal parts; **lower efficiency**, **increased upkeep frequency**, **pump problems** in devices and **heating and circulation difficulties** in certain parts of the installments.

**Oxygen penetration into the closed circuit type installations happens through plastic pipes because of the usage of plastic pipes without Oxygen barrier (standard PPR pipes, PEX pipes, Glass Reinforced PPR – composite- pipes etc.).** You can see the Oxygen levels entering into the system based on the pipe type below.

	Intake oxygen to the system $N_A$ (mg/day)	Allowed oxygen permeability of DIN 4726 norm for the System $N_A$ (mg/day)
HI-TECH Oxy-Plus Combi Pipe	1,79	2,38
Conventional Aluminium Foil Pipe	4,91	2,38
Barrier-free PEX,PPR and Glass Reinforced PPR pipes	82,7	2,38

Oxygen transmission values of heating installations



If stabile pipes are used in the system, conjunction is made with PPR fittings that has no Oxygen barrier. In such cases Oxygen pass into the system occurs because of the fittings used. Since shaving problem is gone away with Oxy Plus Pipes with centered folio, as may be seen in the image above, Oxygen penetration into the system will be prevented almost totally.

Many combi boiler producers **does not start the guaranty** of their devices if pipes with oxygen barrier are not used in the installation.

In order to protect your investments, avoid **corrosion** and **installtion failures** and lower the Energy costs, **the best solution** is to use **Dizayn Oxy Plus Combi Pipe** with its **patented tecnology** in combi boiler heating installations.





## HI-TECH OXY PLUS COMBI PIPES / OUR SUPERIORITY



### **Dizayn HI-TECH OXY PLUS COMBI PIPE IS OXYGEN-PROOF**

Since the part of HI-TECH Oxy Plus Combi Pipe inside the fitting is foiled, the level of oxygen transmission is below the level 0,1 g/m<sup>3</sup>day anticipated by DIN 4726 standards.



### **Dizayn HI-TECH Oxy Plus Combi Pipe Does not Need to be Shaved**

With its unique technology, Dizayn HI-TECH Oxy Plus Combi Pipe which is put in the centre of wall thickness of aluminium folio removes the process of folio paring named as shaving. After the pipe is cut, with a simple face smoothing process the pipe will be wholly ready for welding.



### **Dizayn HI-TECH Oxy Plus Combi Pipe does not Diminish**

Since even the shortest parts are used easily in the practices of HI-TECH Oxy Plus Combi Pipe, it does not diminish.



### **Dizayn HI-TECH Oxy Plus Combi Pipe is Aesthetic**

HI-TECH Oxy Plus Combi Pipe and fittings are produced in white. Since in available products folio is near to the surface, the apparent colour is grey. Since this greyish colour does not comply with the colour of spare part, there is not any more colour aesthetic.



### **Dizayn HI-TECH Oxy Plus Combi Pipe Shows Resistance Against Elongation**

Since the aluminium folio is at the centre of HI-TECH Oxy Plus Combi Pipe, there are equal layers on both sides of the folio and both layers show equal resistance against elongation.



### **With Dizayn HI-TECH Oxy Plus Combi Pipe Minimum Time and Maximum Work**


With its technology which centres aluminium folio, Dizayn HI-TECH Oxy Plus Combi Pipe does not need shaving. Plumber uses face smoothing device and with a quick pipe face smoothing practice he prepares the pipe for welding without any great efforts and loss of time. So that the time of labour decreases in half and plumbing can be established with fewer employees and in less time.

- 7 Pressure Resistance with Dizayn HI-TECH Oxy Plus Combi Pipe is 32 bars / 50 years**


One more quality is added to HI-TECH Oxy Plus Combi Pipe equipped with great specifications. Aluminium folio at the centre of the pipe is welded continuous, it is hereby provided that it contributes to the pressure resistance of the pipe. Pressure resistance of the pipes which changes radically with the temperature will not change and pressure class can be increased to 32 bar.
- 8 1 Day is 48 Hours with Dizayn HI-TECH Oxy Plus Combi Pipe**

It is the right time to forget everything you know about plumbing!  
With HI-TECH Oxy Plus Combi Pipe our craftsmen will be able to weld double than with the available products under normal conditions in a day. We know that time is so important for our plumbers. With HI-TECH Oxy Plus Combi Pipe, you are forefront of everyone thanks to saving in heating time. HI-TECH For plumbers using HI-TECH Oxy Plus Combi Pipe one day is 48 hours from now on.
- 9 Thanks to Dizayn HI-TECH Oxy Plus Combi Pipe No More Cracking Pipes**


It is inevitable to prevent the cracking due to the pulse in cold weather. With HI-TECH Oxy Plus Combi Pipe design it absorbs pulse force, provides 30% more pulse endurance than the regular pipes.


- 10 Welding is More Clear Thanks to Dizayn HI-TECH Oxy Plus Combi Pipe**

With HI-TECH Oxy Plus Combi Pipe there is not any more nasty scene of plastic waste which screw plate causes during melting process. That nasty appearance of waste material in the junction area of pipe and spare part is not wished. With special design of HI-TECH Oxy Plus Combi Pipe melted material does not shed out of screw plate, squeezes between the pipe and spare part and welding lasts long time.


- 11 Perfect Trowel Coating Compliance with Dizayn HI-TECH Oxy Plus Combi Pipe**

Thanks to the exterior surface with knurled geometry of HI-TECH Oxy Plus Combi Pipe it is provided that pipe forms a wholeness with trowel coating. Therefore the risk of pipe's moving in the trowel coating is avoided. Also, with that knurled surface junction easiness is enabled and plumbers can easily hold the pipe.



## WELDING METHOD FOR OXY PLUS COMBI PIPES

1



Check whether the welding machine is heated up to 260 °C, the thermostat lamp went off and the screw plate is clean.

2



Cut the Oxy Plus Combi Pipe vertical to the axis using pipe scissors.

3



Place Oxy Plus Combi Pipe inside face smoothing apparatus. Do not forget that cutting the face vertical to the axis is not always possible with pipe scissors. Cutting the face horizontal causes problems during the welding process. Face smoothing apparatus is an elegant, well-designed engineering product that will solve this problem. Face smoothing apparatus has to be used.

4



Smoothen the face of the pipe using the face smoothing apparatus and make sure that a channel is opened in the part covered with folio. The face should be smoothened until the whole face surface touches the bottom of the face smoothening apparatus. Dizayn Group does not guarantee any installations made without using face smoothening apparatus.

5



Oxy Plus Combi Pipe hose face has been smoothened.

6



Push the Oxy Plus Combi Pipe and its spare part vertically towards the special welding screw plate at the same time. The special welding screw plate was designed to prevent possible mistakes by installation workers.

7



After you see that the melted material comes through the holes on the special welding screw plate, remove the pipe and its spare part from the screw plate (when you look at the face removed from the screw plate, you will see that the aluminium folio in the middle is inside the plastic). Special welding screw plate should certainly be used while welding Oxy Plus Combi Pipes.

8



Connect the pipe and spare part you removed from the screw plate immediately. Do not turn the pipe and spare part while connecting.

9



Our company guarantees installations made connecting Dizayn pipes with Dizayn spare parts and complying with the defined rules.

### Important Note

- 1- Screw plates used for welding should comply with DVS2208
- 2- Welding method mentioned above can be applied for all Dizayn Oxy Plus Pipes including HI-TECH Oxy Plus pipes.





# Dizayn Elit Pipe



**25% less clamp**  
**50% less elongation**  
**100% economical**

## A Breakthrough in PPR Pipe: Elit Pipe!

- Provides a solution to deflection problem on pipes thanks to 50% less elongation.
- By increasing the clamping range, clamp is used less by 25% and clamp costs are economised.
- It is economic.

### Other Advantages

- 50 year guaranteed service life
- Provides easy welding
- Applied quickly
- Application without wastage is possible
- Shows low investment requirements to the installer
- It doesn't corrode
- Diameter of minerals doesn't decrease as a result of reaction
- It doesn't oxidize and contaminate cleaning water
- It can be furnished easily in inconvenient positions thanks to its flexible structure

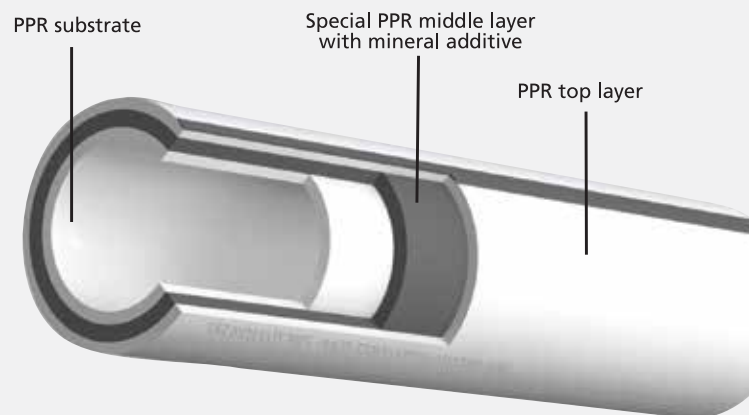
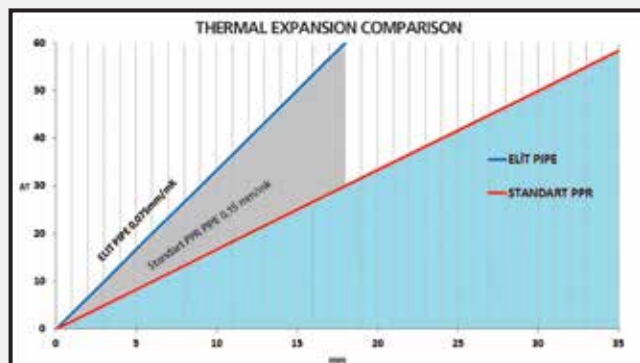
### Areas of Usage

- Indoor Hot-cold plumbing systems
- Compressed air systems
- Industrial pipe systems

### Clamp Distances Table

Temperature Difference $\Delta T$ (°C)	Pipe Diameter (mm)					
	20	25	32	40	50	63
0	105	125	145	165	180	205
20	95	110	130	145	150	160
30	90	105	120	135	140	155
40	80	100	110	125	130	145
50	75	90	105	115	125	145
60	70	83	95	105	115	130
70	60	70	85	95	105	120

\* Clamp distances are in cm.



### Thermal Expansion Table

Pipe Length (m)	Temperature Difference $\Delta T$ (°C)							
	$\alpha = 0,075 \text{ mm/m } ^\circ\text{C}$							
	10	20	30	40	50	60	70	80
	Amount of Elongation $\Delta L$ (mm)							
5	4	8	11	15	19	23	26	30
10	8	15	23	30	38	45	53	60
15	11	23	34	45	56	68	79	90
20	15	30	45	60	75	90	105	120
25	19	38	56	75	94	113	131	150
30	23	45	68	90	113	135	158	180
35	26	53	79	105	131	158	184	210
40	30	60	90	120	150	180	210	240
45	34	68	101	135	169	203	236	270
50	38	75	113	150	188	225	263	300



*Dizayn  
stands by  
the craftsmen*

# New Generation Composite Pipe

**More  
economical**

DIZAYN PPR COMPOSITE PIPE

DIZAYN PPR COMPOSITE PIPE



## COMPOSITE PIPE

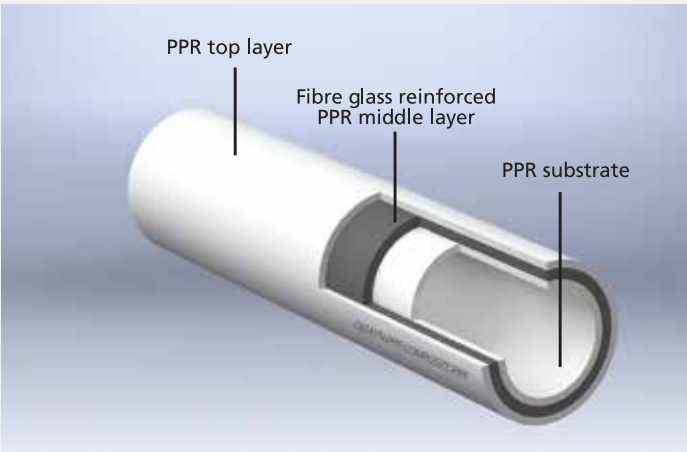
### General Specifications :

Dizayn PPR pipes and fittings are made of Polypropylene Random Copolymer raw material with low melt flow index, high molecular weight and high flexibility. Polypropylene raw materials are obtained via polymerization of propylene monomers, which are obtained by distilling crude oil, under controlled temperature and pressure. There are three known types of polypropylene raw material.

The most significant characteristic that distinguishes PPR from the others is the possibility to use it not only in sanitary installations but also in hot water installations. Socket welding is used as a method of connection. Since welding capability of the product is high, trouble-free welding operations are possible after 1-2 hour trainings. The product can be manufactured in various colours. The colour doesn't have any positive effect on quality.

For Dizayn Group Composite Pipes, connection can be made via Dizayn Group PPR fittings. A different fitting group is not required.

Dizayn Group's Composite Pipes consist of three layers. Substrates and top layers consist of (PPR), middle layer consists of a combination of glass fibre and PPR raw material. It can be manufactured under two different pressures; namely, PN 20 and PN 25.



### Advantages:

- Since expansion coefficient is very low, deflection values are almost zero in heating installations.
- Operating life is 50 years under normal conditions of use.
- Since they have a low expanding coefficient, they can be used in a temperature range between -20°C and 85°C (at 0°C, isolation must be applied by taking the freezing point of the fluid into account).
- They have slippery and shiny internal surfaces.
- It shows a high welding performance.
- With its aesthetic appearance, it can be used with surface mounted applications. Different colour of fibre glass is not revealed outside in contrast to other products.
- It doesn't have an assembly outage.
- Dizayn Composite Pipes doesn't cause any exudation and elongation problems in systems, which use heating and cooling together.
- Expanding coefficient is very close to foil pipes. This value, which is 0.030mm/mK for foil pipes, is 0.035mm/mK for composite pipes.
- Thanks to low elongation coefficient, clamp intervals can be kept longer. There the cost is reduced and labour and time is economized.
- It doesn't change the colour and taste of water.
- It shows a strong resistance to chemical substances.
- It is in B2 class according to DIN 4102 Standard.
- It is TSEK 28 certified.

### Areas of Usage

- Indoor hot-cold plumbing systems
- Indoor heating systems (For systems, in which oxygen flow is of no particular importance)
- Compressed air systems
- Industrial pipe systems
- Air-conditioning Systems

**Clamp distances table**

Temperature Difference $\Delta T$ (°C)	Pipe Diameter (mm)					
	20	25	32	40	50	63
0	115	130	150	165	185	215
20	90	100	115	130	145	165
30	90	100	115	130	145	165
40	80	90	105	120	135	155
50	80	90	105	120	135	155
60	70	80	100	115	130	145
70	65	75	90	105	120	135

\*Clamp distances are in cm.

**Thermal Expansion Table**

$\alpha = 0,035 \text{ mm/m}^\circ\text{C}$	Temperature Difference $\Delta T$ (°C)							
	10	20	30	40	50	60	70	80
	Amount of Elongation $\Delta L$ (mm)							
Pipe Length (m)	5	10	15	20	25	30	35	40
5	2	4	5	7	9	11	12	14
10	4	7	11	14	18	21	25	28
15	5	11	16	21	26	32	37	42
20	7	14	21	28	35	42	49	56
25	9	18	26	35	44	53	61	70
30	11	21	32	42	53	63	74	84
35	12	25	37	49	61	74	86	98
40	14	28	42	56	70	84	98	112
45	16	32	47	63	79	95	110	126
50	18	35	53	70	88	105	123	140

# DİZAYN PPR PIPE AND FITTINGS BENCH LIFE – TEMPERATURE – WORKING PRESSURE TABLE

Temperature	Allowed Service Life	Maximum Allowed Working Pressure (Bar)			Temperature
°C	Year	SDR 11 PN 16	SDR 7.4 PN 20	SDR 6 PN 25	°C
10	1	21.1	33.4	42.0	10
	5	20.0	31.6	39.8	
	10	19.3	30.6	38.5	
	25	18.7	29.6	37.3	
	50	18.2	28.8	36.3	
	100	17.7	28.1	35.4	
20	1	18.0	28.6	36.0	20
	5	16.9	26.8	33.8	
	10	16.4	26.1	32.8	
	25	16.0	25.3	31.8	
	50	15.5	24.5	30.9	
	100	15.0	23.8	29.9	
30	1	15.3	24.3	30.6	30
	5	14.4	22.8	28.7	
	10	13.9	22.0	27.7	
	25	13.4	21.3	26.8	
	50	13.1	20.7	26.1	
	100	12.8	20.2	25.5	
40	1	12.9	20.5	25.8	40
	5	12.1	19.2	24.2	
	10	11.8	18.7	23.6	
	25	11.3	18.0	22.6	
	50	11.0	17.5	22.0	
	100	10.7	16.9	21.3	
50	1	11.0	17.5	22.0	50
	5	10.2	16.2	20.4	
	10	9.9	15.7	19.7	
	25	9.6	15.2	19.1	
	50	9.3	14.7	18.5	
	100	8.9	14.2	17.8	
60	1	9.3	14.7	18.5	60
	5	8.6	13.7	17.2	
	10	8.3	13.2	16.6	
	25	8.0	12.6	15.9	
	50	7.7	12.1	15.3	
70	1	7.8	12.4	15.6	70
	5	7.2	11.4	14.3	
	10	7.0	11.1	14.0	
	25	6.1	9.6	12.1	
	50	5.1	8.1	10.2	
80	1	6.5	10.4	13.1	80
	5	5.7	9.1	11.5	
	10	4.8	7.6	9.6	
	25	3.8	6.1	7.6	
95	1	4.6	7.3	9.2	95
	5	3.0	4.8	6.1	
	10	2.6	4.0	5.1	



Dizayn  
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# ROCK SOLID

## Wastewater Silent - Nanotech Pipes are stronger now!

### **Silent**

Prevents disturbing noises in in-building installments by its specially developed interlayer.

### **Firm and strong**

You will feel the quality of Dizayn Wastewater Silent Nanotech Pipes even when you hold them before anything. It will make you feel its strenght by its firm look.

### **Keep its lenght**

Thanks to the specially developed interlayer inside the pipes, problems may the caused of elongation or shortning are prevented.

### **Cannot be squeezed**

Increased their resistance underground. Dizayn wastewater pipes are equipped with a non-squeezable strong structure.

### **Resistant**

More resistant thanks to its three layered structure developed by Dizayn technology.



## NEW WASTEWATER PRODUCTS OF DİZAYN: NANOTECH AND TRIPLEX

Installations are more silent, more reliable and more resistant thanks to Dizayn Wastewater Products!

**Dizayn Group, which constantly invests in its technology with its focus on serving people and has become the leading innovator of its sector, introduces two new products to you.**

### **Wastewater Silent-Nanotech Pipes:**

Multi-layered Wastewater Silent-Nanotech Pipes developed by Dizayn Group are much more resistant than normal pipes!

Contrary to normal pipes, Wastewater Silent-Nanotech Pipes are produced in 3 layers. Wastewater Silent-Nanotech Pipes were designed for underground and indoor use with high ring rigidity. Inner and outer layers of Wastewater Silent-Nanotech Pipes produced in three layers are made from Polypropylene raw material while the middle layer is made from improved polypropylene. Thanks to middle layer round underground is prevented; thanks to exterior Polypropylene layer impulse resistance of the product increases. Wastewater Silent-Nanotech Pipes comply with flammability class DIN 4102 norm.

Wastewater Silent Products, which are in B2 inflammableness class, do not emit any toxic gases (HCl etc.) in case of fire. Elongation and shrinking problems caused by temperature differences during wastewater system installation are minimized with Wastewater Silent Nanotech 2 Pipes. Thanks to the special layer located in the middle of the pipe, installation problems likely to occur due to elongation and shrinking have been prevented. Dizayn Wastewater Silent-Nanotech Pipes are both silent and resistant!

**Wastewater Silent-Nanotech**



- 1** | PP Outer Layer providing impact resistance
- 2** | Specially designed and mineral added PP Middle Layer providing silence and ring stiffness
- 3** | PP Inner Layer providing high temperature resistance and chemical resistance

### **Wastewater Mute-Triplex Pipes:**

Noise, which has a negative effect on human health and comfort, causes many psychological and physical ailments such as high blood pressure, headache, insomnia, performance decrease etc.

Dizayn Group's new Wastewater Mute-Triplex Pipes have been certified by German Fravawoter Institute. In the tests, Dizayn Wastewater Mute-Triplex Pipe has gone way below the cate 25 İB(A) of VDI studarks and certified as 18 İB(A).

With its new Dizayn Wastewater Mute Triplex Pipe that was made specially from PP raw material, Dizayn Group made sure that wastewater systems comply with DIN 4109 and VSI4100 standards. In this way, it moved silent pipes one step ahead and made them 'mute'. With the developing technology, standards have been set for noise formation caused by wastewater and it has been limited in developed countries.

Dizayn Group provides wastewater system installation with Wastewater Mute Triplex Pipes that does not violate the comfort conditions in buildings. Noise formation in the system is prevented with the improved raw material between Polypropylene layers.

Wastewater Mute Triplex Pipes are produced in conformity with DIN 4102 and DIN 4109 flammability standards. Wastewater Mute Pipes will be the new wastewater system solution of prestigious projects.



1



### **Dizayn Wastewater Silent-Nanotech Pipe and Fittings Never Leak**

Dizayn Wastewater Silent-Nanotech Pipe and Fittings have double lipped seals .Clip placed in the seal prevents the seals to quit from the channels when the pipe place to pipe socket. Smart seal applies force in order to return to its former shape and by that way tightness is enabled DIN standards.

2



### **Dizayn Wastewater Silent-Nanotech Pipe Conforms to the Inflammableness Standards and Pipe and Fittings does not Contain any Toxic Gases**

Inflammableness Class of Dizayn Wastewater Silent-Nanotech Pipe conforms to DIN 4102 norm . It is prevented that at the time of fire Dizayn Wastewater Silent-Nanotech Pipe and Its Spare Parts does not exhaust any toxic gas (HCl. Etc.). Dizayn Wastewater Silent-Nanotech Pipe has high ring rigidity and impulse resistance.

3



### **Dizayn Wastewater Sient-Nanotech Pipe and Fittings are Carried with Storage Clip**

Special clip system, a patented product of Dizayn, makes the carriage and the storage of the pipes practical; removes the loss amount inbuilding site conditions.

4



### **Dizayn Wastewater Silent-Nanotech Pipe has been developed for High Ring Rigidity, Underground and Indoor Uses**

Inner and exterior layer of Dizayn Wastewater Silent-Nanotech Pipe produced with layers are made from Polypropylene raw material while middle layer is made from improved Polypropylene. Thank to middle layer round underground is prevented; thanks to exterior Polypropylene layer impulse resistance of the product increases.

5



### **Dizayn Wastewater Silent-Nanotech Pipe and Fittings are Resistance to Earthquake**

Oscillatory motion that is caused by the earthquake causes cracks in the wastewater pipes and breakages in adhesive areas. Wastewater that leaks from the pipe causes moisture, oxidation on iron and concrete sections of your building. Dizayn Wastewater Silent-Nanotech Pipe prevents all such risks.

6



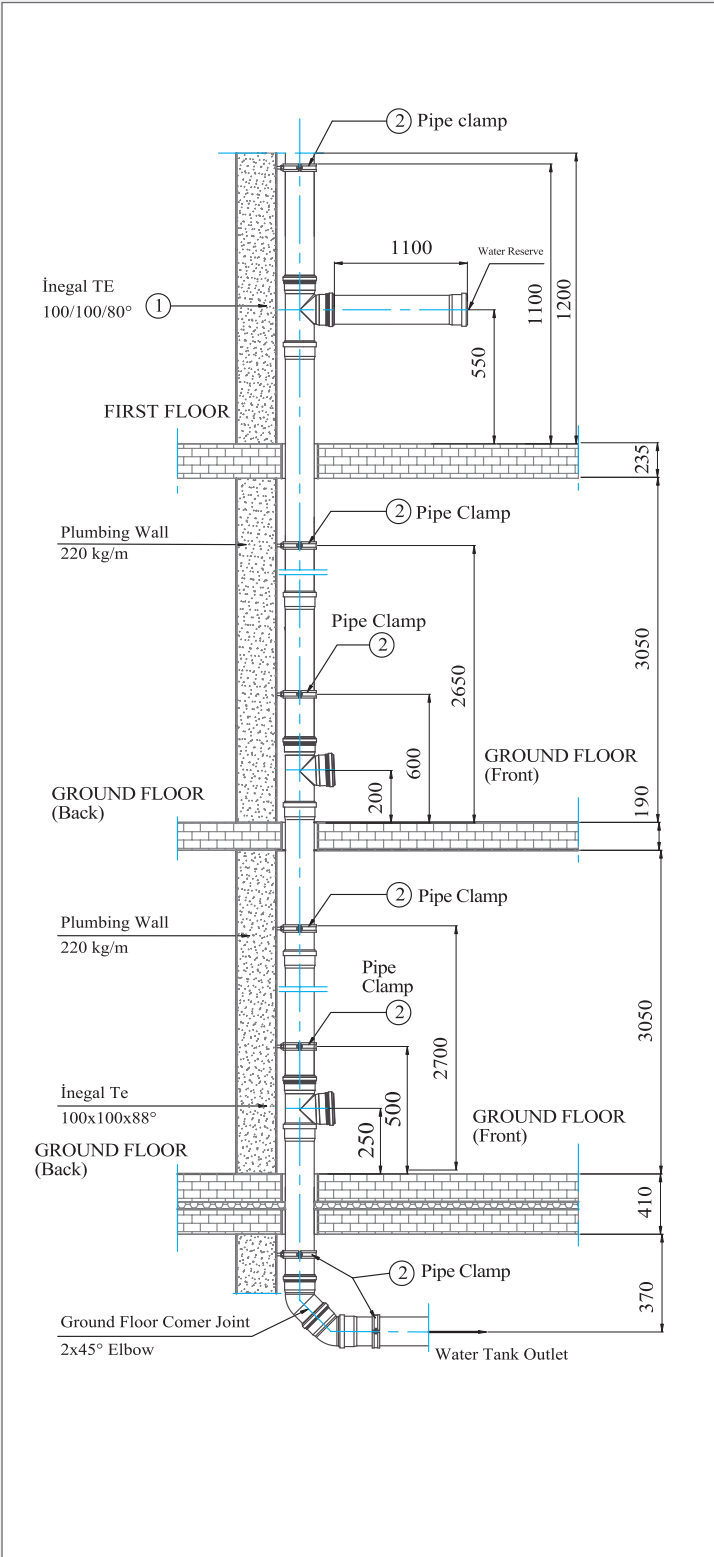
### **Dizayn Wastewater Silent-Nanotech Pipe is Tested with Leaking "U" test**

TSE oblige the "U" test with 05, bar to wastewater pipes. Dizayn Wastewater Silent-Nanotech Pipe preserves its leaking feature even at 4 bar of tests.

# DIZAYN WASTEWATER MUTE-TRIPLEX PIPE

## Wastewater Mute Triplex-Pipe Sound Insulation Testing

Dizayn Wastewater Mute Triplex-Pipe was subjected to a sound insulation test at Fraunhofer-Institut für Bauphysik Institute in Stuttgart-Germany and proved silent.

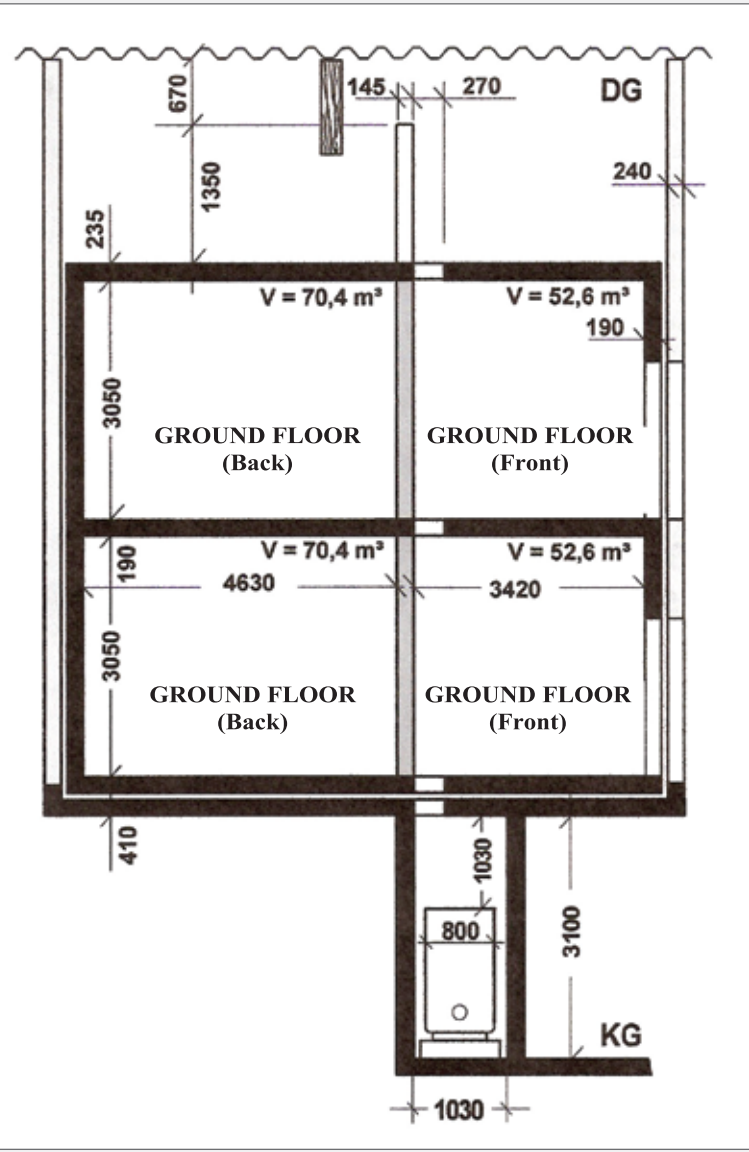


### 1. Dizayn Wastewater Mute Triplex-Pipe complies with DIN 4109 Standard.

In the sound measurement test performed in May 20, 2011 at Stuttgart / Germany Fraunhofer-Institut für Bauphysik according to DIN EN 14366, sound values of Dizayn Wastewater Mute Triplex Pipe was measured as 18 dB (A) According to these results, Dizayn Waste Water Mute Triplex-pipe meet the standards required by DIN 4109.

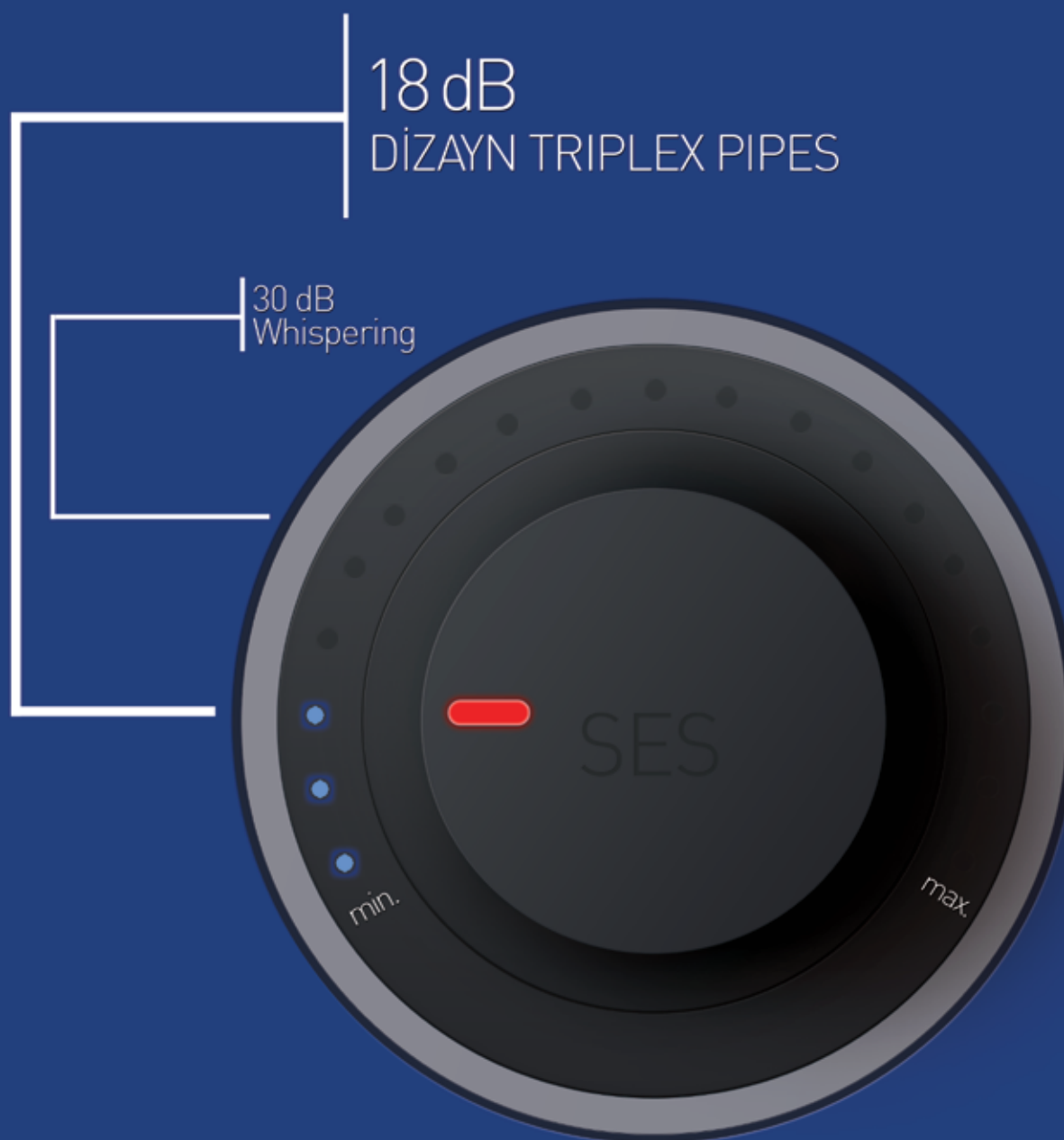
### 2. Dizayn Wastewater Mute Triplex-Pipe complies with VDI 4100 Standard.

In Dizayn Wastewater Mute Triplex-Pipe sound intensity at 41/s flow rate is 18 dB. This value is also below the maximum value, determined as 25 dB (A) for multi-storey buildings according to VDU 4100standard.



Fraunhofer-Institut für Bauphysik Institute Testing Room

# Turn the volume down...



Dizayn Triplex Pipes are quieter than whispering thanks to their special layer providing silence and their unique technology.





## Dizayn Group Stuttgart/ Germany Test Certificate

Tests are carried out at 20 May 2011 by  
Stuttgart/Germany Fraunhofer-Institut für Bauphysik

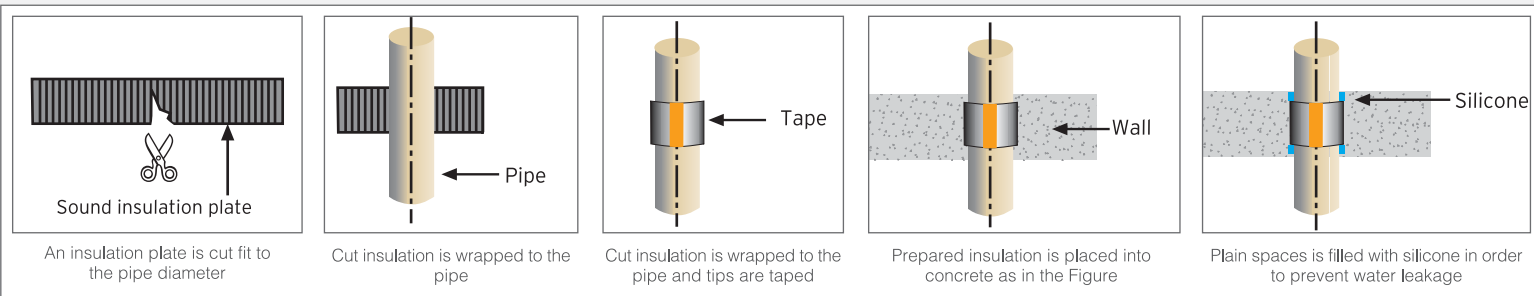


## A. WALL AND FLOOR TRANSITIONS

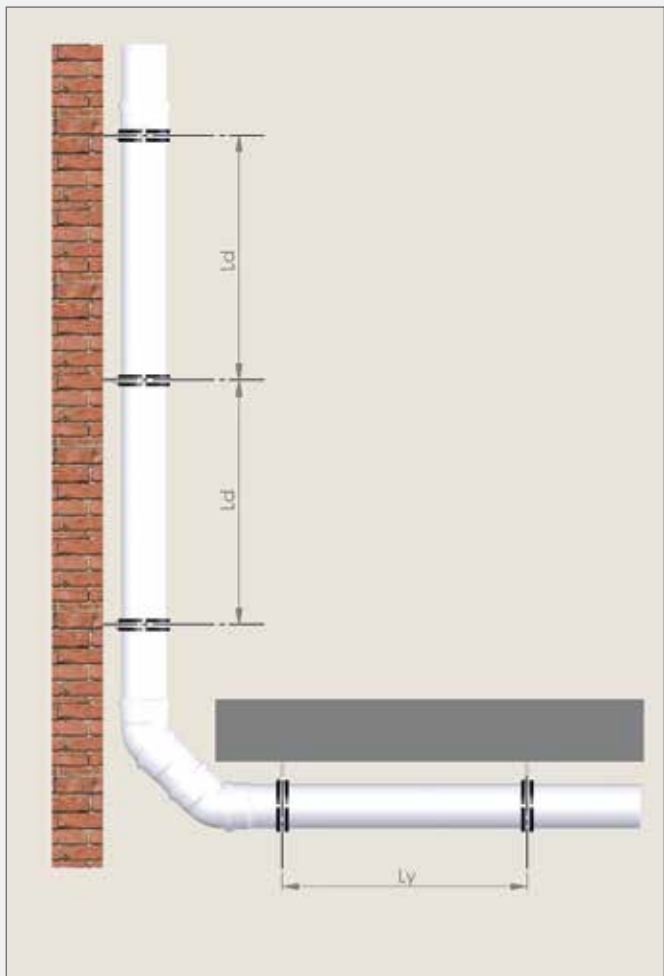
Wall transition piece is a solution that will prevent the building sound stemming from the structure contact (structure born) to be transferred to living areas. Therefore, use of wall transition piece is recommended at every wall transition.

This part has been made of rubber based material in shape of plate with a special. Transition pieces, which are designed in a way that minimizes contact sound, are cut in sizes required to enclose the pipe, wrapped around the pipe and their edges are adhered to each other. As it is also seen in the figure, pipe is located so that it is inside the wall completely. Necessary insulation must be made in order to prevent water leakage.

Concrete and pipe must not get into contact with each other in order to prevent sound progress through contact.



Usage of wall transition piece



Assemblage of horizontal and vertical clamp

## B. MONTAGE

### a. Clamp Distances

Clamp distances to be applied for vertical and horizontal lines in Dizayn Wastewater Mute-Triplex Pipe assembly are shown in Table 3.

PIPE DIAMETER (mm)	DISTANCE BETWEEN TWO CLAMPS (m)	
	HORIZONTAL(Ly)	VERTICAL(Ld)
50	0,8	1,0
75	0,8	1,1
110	1,1	1,7
125	1,3	1,9
160	1,6	2,4

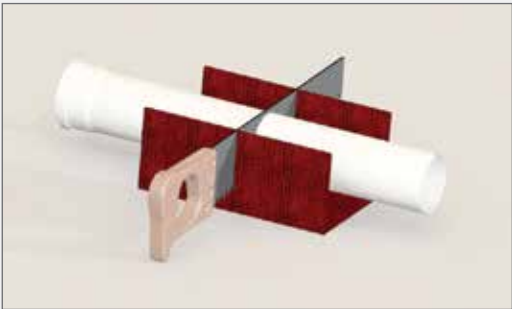
Horizontal and vertical distance between two clamps

### b. Dizayn Silent Clamp

Dizayn Silent Pipe should be assembled together with Dizayn Silent Clamp and clamps should be enough tight to prevent motion of pipe. Dizayn Silent Clamps have two types; fixed wood screw clamp and clamp with nut.



c. Cutting the Pipes



Cutting the pipes by using a manual

Pipes must be cut with a fine-tipped saw by using guides.



Chamfering in pipes

Pipes, which are cut in required lengths, must be mounted after chamfering process.

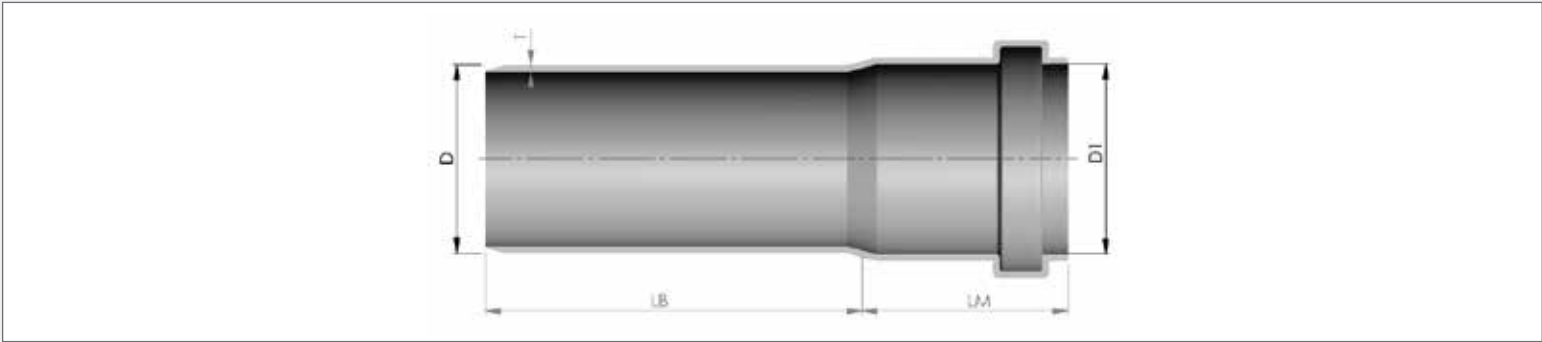
C. MEASUREMENTS

a. Pipe Dimensions

a1. Pipe Lengths

Dizayn Wastewater Mute-Triplex Pipe is produced in sizes of 150, 250, 500, 1000, 2000, 3000, 6000 mm; pieces (150 and 250 mm) are transported in package while the long pieces are carried with storage clip.

a2. Pipe Diameters and Wall Thickness



Pipe overall dimensioning

D	Tol.	LM	Tol.	T	Tol.	LB (mm)
50	-0/+0.3	67	-0/+1	2,4	-0/+0.2	150-250-500-1000-2000-3000-6000
75	-0/+0.4	76	-0/+1	2,6	-0/+0.2	150-250-500-1000-2000-3000-6000
110	-0/+0.4	78	-0/+1	3,4	-0/+0.2	150-250-500-1000-2000-3000-6000
125	-0/+0.4	82	-0/+1	3,4	-0/+0.3	150-250-500-1000-2000-3000-6000
160	-0/+0.5	84	-0/+1	4,0	-0/+0.3	150-250-500-1000-2000-3000-6000

Dizayn Wastewater Mute-Triplex Pipe Dimensions

DIZAYN WASTEWATER EXTRA PIPES AND FITTINGS

“PP Indoor Waste Water Pipe and Fitting Systems” used by developed countries have been produced by Dizayn Group for the first time in Turkey.

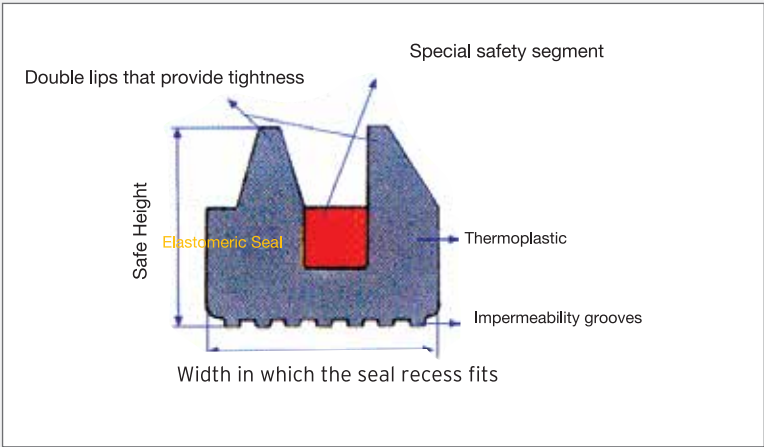
Why PP (Polypropylene) Wastewater?

Let us first take a look at the comparison of Indoor Wastewater Systems in the world and in our country:

	1999		2013	
	PVC	PP	PVC	PP
In developed countries	%1	%99	%0	%100
In Turkey	%100	%0	%70	%30

Comparison of indoor waste water systems

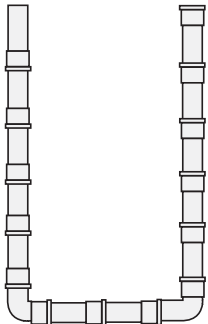
As it is clear in the table, PVC materials are no longer used at Indoor Wastewater Systems in developed countries and 100% of the materials they use are PP. PP Indoor Wastewater Systems, whose production was started by Dizayn Group in Turkey in 1999, acquired 30% market share in a short time. This improvement was thanks to the operations carried out by Dizayn Group. If the specified features of PP are completely understood this rate will increase to 100% in Turkey in a relatively shorter period of time.



Double lip seal and safety segments

Guaranteed Impermeability

Double lip seal made of thermoplastic rubber raw material and the safety segments inside it are placed in the muff at the factory. As a result of the tests, it has been demonstrated that the seal used is long-lasting and it also provides safe and guaranteed impermeability.



Conduct a “U” test to see the impermeability of waste water pipes !

**How to conduct the “U” test?**

Connect 8 pipes of 1 metre, and 2 brackets of 90° in “U” shape as you can see in the right, then you can find out if it leaks by filling it with water. When you conduct the tests, you will see that Dizayn Waste Water Extra Pipes are 100 % impermeable, moreover, pipes of other brands need adhesives for impermeability!

U test for Dizayn Waste Water Extra Pipes





# HIGH EFFICIENCY BY DIZAYN TECHNOLOGY

PEX Pipes



PEX Fittings





DİZAYN PEX-B PLUS PIPES

PEX means cross-linked polyethylene. “PE” represents polyethylene raw material, and “X” represents cross link.

Cross Linked Polyethylene Chains

Fundamental principle in cross linking is creating a link between polyethylene chains which are independent from each other, at certain intervals, and linking carbon atoms in two chains to each other. Polyethylene Crosslink is established by pulling off one of the hydrogen atoms in both chains and linking corresponding carbon atoms to each other.

Properties of PEX-b Crosslink Pipes

- Properties of PEX-b Crosslink Pipes
- It doesn't calcify, oxidize or corrode,
- It is light and easy to handle and mount.
- It has a low friction coefficient
- It is resistant to electrolysis
- It is resistant to chemical substances
- It is resistant to +95°C and -40°C
- It has a 50 years usage guarantee

PEX Pipes are cross linked in different forms depending on Crosslink method;

Pipe Type	Process	Min. Link Density
PEX-a	Peroxide	% 75
PEX-b	Silane	% 65
PEX-c	Irradiation	% 60
PEX-d	Azo Method	% 60

Crosslink Methods



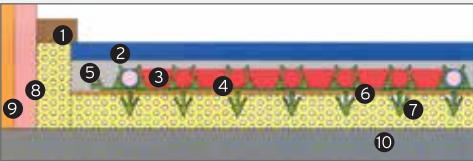
PEX Pipes are defined in terms of same standards regardless of which one of the four methods they are manufactured with. Therefore, a PEX pipe, which is manufactured according to the specification is suitable in functional terms regardless of its type. However, certain characteristic differences emerge due to Crosslink establishing method. While high density of crosslink increase the resistance of material, on the other hand, it also increases its brittleness. This means that PEX types, Crosslink density of which is high, are less flexible and more fragile in low temperatures. For this reason, ideal Crosslink is PEX-b, which is flexible, non-fragile and resistant to density, low and high temperature.

Standards

Dizayn PEX-b Pipes are manufactured in accordance with DIN 16893, DIN 4726 and TS EN ISO 15875 standards. Also, PEX-b pipes are manufactured in accordance with TS 10762 standards and TSE certified. PEX-b Pipes are subjected to steam curing in accordance with TS 10762 and DIN 16893 so that Crosslink process can be completed. PEX-b Pipes' Crosslink test and pressure test are conducted by our company in accordance with TS EN 579 test standard, and DIN 16893 and TS 10762 standards respectively.

Fields of Application for PEX-B cross-link pipes:

1- Under-floor Heating Systems:



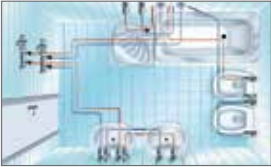
Under-floor heating system view

- 1 Skirting
- 2 Carpet
- 3 16x2 PEX HEATING PIPE
- 4 Pipe holder + Lama
- 5 Alum (5-7 cm)
- 6 Polypropylene foil
- 7 Styrofoam (16N18 density)
- 8 Plaster
- 9 Wall
- 10 Concrete slab

2- Central Heating Systems



3- Sanitary Systems



## DİZAYN PEX-B PIPES / OUR ADVANTAGES

Dizayn PEX-B Pipes are much more user-friendly and reliable thanks to PIPE-IN-PIPE technology, which is used by Dizayn Group for the first time in Turkey.

1



### **Saving of Time Thanks to Easy Installation**

At construction sites, for heating and sanitary installation applications, it takes a lot of effort and labor to insert pex pipe into spiral pipe. Spiral coil is opened, suspended down the construction and pex pipe is inserted in it. The result is loss of time, workmanship and muscle fatigue. Dizayn Pipe in Pipe Pex-b Plus Pipe, eliminates processes for inserting pex pipe inside spiral pipe; it provides more workmanship in less time and cost.

2

### **Advantage in Transporting and Storage**

Dizayn Pipe in Pipe Pex-b Plus Pipe, provides additional profit by eliminating the cost of transporting and storing spiral pipe and pex pipe separately.

3

### **Maximum Resistance to Sunlight**

Thanks to the carbon-black additive contained in its raw material, Dizayn Spiral Pipe prevents solar rays from disrupting the structure of material and cause product fragility.

4



### **Highest Compression Strength, Maximum Flexibility**

In plastic materials, as compressive strength of the material increases, its fragility also increases. With its strong research and development staff, Dizayn provides maximum compression strength without compromising flexibility.

5



### **Maximum Impact Resistance**

Thanks to its high ring rigidity, Dizayn Spiral Pipe doesn't squeeze, become damaged under harsh conditions of construction sites; it protects Pex Pipe and facilitates easy service in possible problems.

6



### **At 20°C 100 Year, at 95 °C 50 Year Guarantee**

With the raw materials and superior product design and production capability, Dizayn provides 100 years guarantee for 20°C and 50 years guarantee for 95°C



# DİZAYN PEX-B PLUS PIPES TABLE OF WORKING PRESSURE OF TEMPERATURE BENCH LIFE

Temperature (°C)	Allowed Service Life (Years)	PN12,5 PEX-B PLUS PIPES Allowed Working Pressure (Bar)	PN20 PEX-B PLUS PIPES Allowed Working Pressure (Bar)
------------------	------------------------------	--	--

10	1	15,10	24,00
	5	14,80	23,50
	10	14,70	23,30
	25	14,50	23,10
	50	14,40	22,80

20	1	13,70	21,70
	5	13,30	21,20
	10	13,20	21,00
	25	13,10	20,70
	50	12,50	20,00

30	1	12,30	19,60
	5	12,00	19,00
	10	11,90	18,80
	25	11,70	18,60
	50	11,60	18,40

40	1	11,00	17,50
	5	10,80	17,10
	10	10,70	16,90
	25	10,50	16,70
	50	10,40	16,50

Temperature (°C)	Allowed Service Life (Years)	PN12,5 PEX-B PLUS PIPES Allowed Working Pressure (Bar)	PN20 PEX-B PLUS PIPES Allowed Working Pressure (Bar)
------------------	------------------------------	--	--

50	1	9,70	15,40
	5	9,50	15,00
	10	9,30	14,80
	25	9,20	14,60
	50	9,10	14,40

60	1	8,70	13,80
	5	8,40	13,30
	10	8,30	13,10
	25	8,10	12,90
	50	8,10	12,80

70	1	7,70	12,20
	5	7,50	11,90
	10	7,30	11,60
	25	7,20	11,40
	50	7,10	11,20

80	1	6,50	10,40
	5	6,40	10,20
	10	6,30	10,10
	25	6,30	9,90

90	1	5,90	9,40
	5	5,80	9,20
	10	5,70	9,10

95	1	5,70	9,00
	5	5,50	8,80
	10	5,40	8,60



## DİZAYN SELF-VALVE COLLECTORS

Dizayn Group, is the first company in Turkey to manufacture plastic collector and receive utility model patent. Made of raw material which is developed for being used in floor heating and mobile heating systems, plastic collectors provide both cost advantage compared to metal collector, and ease of labor. 'With Self-Valve Series' more user-friendly functions will be provided to the users.

### DİZAYN COMBI FITTINGS

We are releasing the Combi fitting series, which consists of union bend and nipple, silt trap, check valve and brass core valve to our new price list. Material reliability of heating installation products is very significant since they work with hot water. Our products' compliance with standards is an indispensable aspect for Dizayn Group. Dizayn Combi Fittings with bushed pieces which are not adhesive but injected; core valve, which is not plastic but completely brass core; silt trap and check valve, pressure loss coefficient of which is optimized, will be indispensable products for the sector.



### DİZAYN FACE SMOOTHENING APPARATUS AND WELDING PLATE

Dizayn Face Smoothing Apparatus and Welding Plate are materials, which are developed for helping our products operate correctly. Butt trimming apparatus is the tool, which makes the pipe butt, which cannot be cut with pipe cutter, vertical and trim the excessive foil on the face, making the pipe ready for welding. If Dizayn is welding plate, it is developed for preventing timing and heating errors that stem from the welding machine or technician's mistakes. Butt section of the pipe, which is overheated during welding is deformed and it starts to diffuse. If connection is conducted with this method, it results with material accumulation in diameter narrowing, that is, in the joining piece. There is a hole on the specially designed and patented welding plate. Melt plastic that protrudes on this hole, informs the technician about the right time to make the connection. In this way, wrong connections that may stem from the errors of the machine or technician are prevented. Welding plate can easily be used with sanitary installation pipes and foil pipes as well as Dizayn Oxy Plus Combi Pipe, and provide significant advantages to the user.



# Dizayn Quality in Brass Material Group



Another brand new product by Dizayn Group, which expands the range of its products and provides you a single brand and maximum quality in indoor and outdoor installations... Dizayn Group complements the installations with metal systems such as metal ball valves, natural gas valves, corner radiator valves and metal collectors.

### Radiator Valves

Having been manufactured for being used in Heating Systems within the scope of TS 579 standards, Dizayn Group's radiator valves help controlling and shutting off fluid flow entering or exiting the Heater.

#### Some of the tests applied on the products:

Compressive Strength Test

External Sealing Text in Closed Position

Internal Leakage Test in Open and Closed Position

Coating Thickness Test

#### Installation and Operating Condition

Installing the product by taking following warning into consideration is significant for utilizing the products for a long period of time and maximum efficiency.

1. Valve must be used in heating systems. It must not be used in flammable and caustic gas systems.
2. System pressure must not exceed 10 bars, and operating temperature must not exceed 105°C.
3. Valve assembly should be done by a qualified plumber.
4. Before assembly, clean all kinds of foreign materials (sand, gravel, dirt etc.) in the installation.
5. Unpack the valve when you will connect it to the installation.
6. When connecting the valve to the installation, make sure that fluid's transition direction is the same with the arrow direction indicated on the valve body.
7. When opening and closing the valve, apply force in the direction of arrow indicated on the hand-wheel. Don't apply excessive force on the flywheel.

### Valves

Dizayn Group's bras valve group products are manufactured with high quality and durability standards, and made available to customer use.

Product Types:

- Universal valve (for gas and water use)
- Check Valve
- Flap Check Valve
- Silt Trap
- Gate Valve
- Various auxiliary attachments.



8. Make sure that valve and connection parts are in the same axis. Do not make forced installations, parts of which are not in line with each other.
9. Suitable sealing materials must be used on the threaded sections of the fittings.
10. During assembly, valve must be tightened with a suitable wrench from its nozzle section. Do not tighten the valve from its housing part.
11. Valve opening-closing operation must be made according to + and - marks on the guide lever. Guide lever must not be forced after it reaches its turning limit.
12. Abrasive materials must not be used in valve cleaning processes.
13. Installation must be protected against freezing.
14. Must be protected against external impacts during storing, assembly and usage.
15. Product use life determined and announced by





## BRASS MATERIAL GROUP (METAL SYSTEMS) FITTINGS

### Benefits:

- The products are manufactured in accordance with TS 13828 and TS 331 standards.
- The products are manufactured with first class materials and production technology.
- Offers advantage to plumber thanks to easy installation.
- Provides maximum resistance against corrosion.
- It has an outstanding design developed for impermeability.



### Installation and Operating Conditions

- 1- For universal valves, system pressure must not exceed 16 bar.
- 2 - Operating range must be between -20 °C and + 105 °C.
- 3 - Valve assembly should be done by a qualified plumber.
- 4 - Before assembly, clean all kinds of foreign materials (sand, gravel, dirt etc.) in the installation.
- 5 - Make sure that valve and connection parts are in the same axis. Do not make forced installations, parts of which are not in line with each other.
- 6 - Suitable sealing materials must be used on the threaded sections of fittings.
- 7- During assembly, valve must be tightened with a suitable wrench from its nozzle section. Do not tighten the valve from its housing part.
- 8- Valve must be used in fully open or fully closed position, it must not be forced after guide lever reaches its turning limit.
- 9- Abrasive materials must not be used in valve cleaning processes.
- 10- Installation must be protected against freezing.
- 11- Installation must be protected against external impacts during storing, assembly and usage.
- 12- Product use life determined and announced by the Ministry is 5 years.

## Collector

Dizayn Group's metal collectors provide service for fluid distribution and collection operations in floor heating systems, mobile heating systems, lean water systems etc.

### Installation and Operating Conditions

- 1- Collector must be used in heating systems. It must not be used in flammable and caustic gas systems.
- 2- System pressure must not exceed 16 bar.
- 3- Operating range must be between -20 °C and + 105 °C.
- 4- Collector assembly should be done by a qualified plumber.
- 5- Before assembly, clean all kinds of foreign materials (sand, gravel, dirt etc.) in the installation.
- 6- Make sure that collector and connection parts are in the same axis. Do not make forced installations, parts of which are not in line with each other.
- 7- Suitable sealing materials must be used on the threaded sections of fittings.
- 8- Abrasive materials must not be used in collector cleaning processes.
- 9- Installation must be protected against freezing.
- 10- Installation must be protected against external impacts during storing, assembly and usage.





Towards a cleaner world



**Dizayn PE 100 Potable Water Network Pressure Pipes and Fittings**

## DİZAYN PE 100 POTABLE WATER NETWORK PRESSURE PIPES AND FITTINGS

### Specifications of Dizayn PE 100 Pipes

- They don't allow fitting dislocation and rupture under pressure, and provide absolute water-proof performance.
- More than one connection method is possible. (Face welding, electrofusion welding, push-in socket...)
- It can be connected outside the channel.
- Chemical resistance of pipe material is high, it is not affected by corrosion, doesn't corrode or wear.
- Less filling is needed from outside the construction site and less excavation works are conducted.
- It can be used easily for locations such as sea, stream, river, lake and rough surface, where earth movement may occur.
- It is not affected by earth movements.
- Its internal surface is hydraulic and smooth. Pipe diameter used in project designing is minimized. Therefore, less electricity energy is consumed during processing; operational expenses decrease.

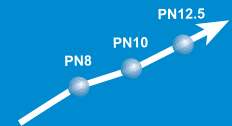
- It requires less brackets. Because turning can be made with a radius which is about 20-35 times as much as pipe diameter.
- It provides furnishing and handling convenience without any wastage.
- Production facilities can be mobilized. Important projects can save significant amount of transportation cost and energy thanks to on-site production.
- Its minimum service life is 50 years, it decomposes in nature only after 1000 years. Since it doesn't require maintenance, operational expenses are quite low.
- For laying PE pipes bracket, for sections such as TE, mass concrete is not needed.
- It is light; it is laid easily and quickly. It provides a significant advantage at locations where construction season is short and roads with heavy traffic.



- It has a flexible structure. Adapts to terrain features.
- It has a high cracking and impact resistance.
- Since it contains carbon black, it is not affected by sunlight. Its UV resistance is high.
- It can be manufactured under various pressure classes ranging from PN 2,5 to PN 32.
- Since it is not affected by the abrasive materials in the soil, it doesn't require precautions such as cathodic protection during pipe laying process.
- It is manufactured in accordance with TS 418 pr EN 12201-2 and DIN 8074 standards.

CONSECUTIVE  
WORLD  
RECORDS

3



Dizayn Group has managed to become first once again. We managed to produce 1600 mm PE pipe at PN 8 in June 2001, at PN 10 in August 2001 and at PN 12,5 in September 2001.



Inter Island Connection Project- Hong Kong



Antalya Hurma Wastewater Treatment Facility



Aliğa Power Plant Under Joint Venture of Bechtel and Enka - Izmir



The fitting specially produced for use in Aliğa Electric Station



Büyükçekmece Sea Discharge Project in Istanbul

Production Range	ø50 - ø1600 mm
Pressure Range	PN 2,5 - PN 32
Pipe Lengths	ø50 - ø125 - Coil
	ø110 - ø1600 - 11,8 m (Standart)
	ø600 - ø1600 - 6 m (Standart)

PE 100 Pipes

## Comparison of Dizayn HDPE Sewage Pipes with the other Pipe types

Features Pipe Type	Dizayn PE/PP	PVC	Steel	Ductile Font	Concrete	CTP	Asbestos	Explanation
Production range (mm)	ø20-ø3600	ø20-ø630	ø.-ø4000	ø50-ø2000	ø200-ø3200	ø20-ø1600	ø.-ø1600	For the pipes other then PE 100 pipes, the service life depends on many parameters like quality of the raw material of the pipe, bedding in the trench, etc.
Guaranted service life (year)	50	0-20	3-15	5-25	0-30	0-50	0-30	
Feature of breaking	Very Durable	Week	Durable	Durable	Very Week	Partially Durable	Very Week	
Max. Production length (m)	500	6	12	6	4	6/12	4	
Standard production length (m)	12	6	6	6	2	6	2	
Strength against corrosion and abrasion	Very Durable	Partially Durable	Very Week	Very Week	Partially Durable	Durable	Week	The evaluation depends on the nature and type of the chemical like SO <sub>2</sub> , Nax, Chlorine
The easiness of producing fittings	Very Easy	Very Easy	Difficult	Very Difficult	Very Difficult	Very Difficult	Very Difficult	
The easiness of the installation (The easiest: 100 the most difficult: 0)	100	50	25	40	15	45	5	
Superiority from the side of hygiene	Perfect	Doubtfull	Doubtfull	Doubtfull	Doubtfull	Good	Troubles	
Surface roughness coefficient (C)	149	149	~120	~130	~100	~145	~130	Depend on the quality of the production and raw material
Variety of fittings and their price	Perfect-Cheap	Perfect-Cheap	Limited-expensive	Limited-very expensive	Limited-expensive	Limited-expensive	Limited-expensive	
Strength against chemicals	Perfect	Doubtfulli	Troubles	Doubtfull	Doubtfull	Good	Doubtfull	
Surface elasticity coefficient (C)	377	33	0.5	1	4.4	>33	~0.5	
Ability for passifying the ram impact	Perfect	Troubles	Troubles	Troubles	Troubles	Troubles	Troubles	
The easiness of making pressure test at site	Very little	Troubles	Troubles	Troubles	Troubles	Troubles	Troubles	Since the connection of the pipes other than steel and PE pipes is done using o-ring, it is very difficult to have perfect leak proof it is necessary to take additional precautions for absolute leak proof.
Need of bends at tum points	Very little	Very much	Very much	Very much	Very much	Very much	Very much	For PE 100 pipes it is possible to make even full round shape with a diameter 25 times of the pipe outer diameter
Max. instant test pressure (for PN 10)	~28 bar	16 bar	>40 bar	>40 bar	>13 bar	~18 Bar	~13 Bar	
The safety ofl connection points (max. :100-min. :0)	100	0-50	0-80	0 - 80	0 - 30	0 - 70	0 - 40	The connections with o-ring always create problems. For PE pipes, since the connection is done by welding, the molecular fusion makes
Ability for passifying the ram impact	Perfect	Doubtfull	Troubles	Doubtfull	Troubles	Doubtfull	Troubles	
Needed trenc width (as %pipe diameter)	approx. %5-10 wider tahn the pipe dia	approx. %100 wider tahn the pipe dia	approx. %100 wider tahn the pipe dia	approx. %110 wider tahn the pipe dia	approx. %200 wider tahn the pipe dia	approx. %200 wider tahn the pipe dia	approx. %200 wider tahn the pipe dia	These figures are for pipes qith average 400mm diameter
Need of bedding around the pipe (max. :100-min.:0)	10	100	70	60	100	100	100	For PE 100 pipes, if there are'nt sharp stones which may damage the pipe, there is no need make bedding around the pipe.

We value your life



**Dizayn Natural Gas Pipes and Fittings**

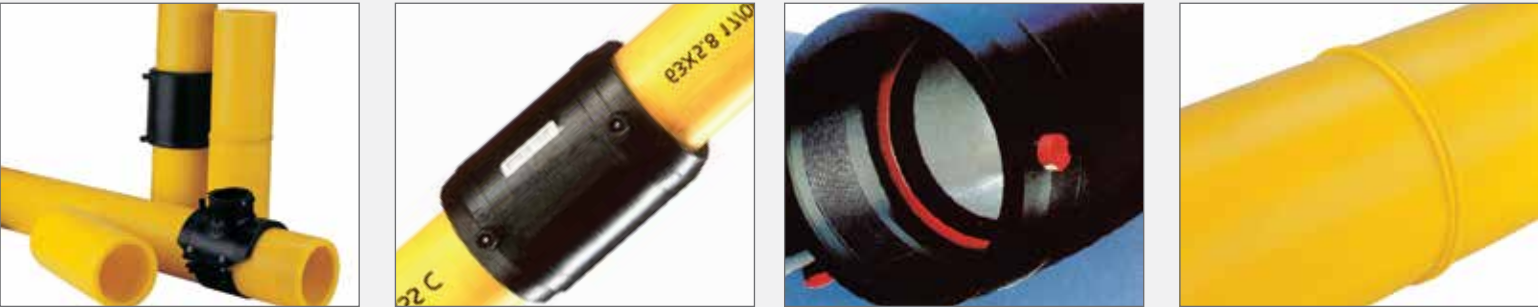


DİZAYN PE 80 NATURAL GAS SUPPLY NETWORK PIPE AND FITTINGS

Providing reliability and ease of use in Natural Gas Systems, Dizayn Natural Gas Pipes are made of PE 80 raw material.

Production Range	Ø25 - Ø500 mm
Pressure Range	SDR11 - PN 12,5 (for 4 bar systems in accordance with TSE)
Pipe Lengths	Ø25 - Ø125 - Coil Ø110 - Ø500 - 11,8 m (Standard)

PE 80 Pipes



PE 80 Natural Gas Pipes testing chart

Polymer Data	Value	Unit	Test Method
Density at (23 °C)	0.940	g / cm³	ISO 1183
Viscosity Number	280	cm³ / g	ISO 1628-3
MFR (190° / 5 kg)	0.85	g/10 min.	ISO 1133
MFR (190° / 25 kg)	18	g/10 min.	ISO 1133
Mechanical Properties			
Yield Stress	18	MPa	ISO 527
Elongation at yield	10-12	%	ISO 527
Tensile Modulus	>600	%	ISO 527
Notched impact strenght	600	Mpa	ISO 527
Charpy Impact Resistance (Notched)			
+ 23 °C	17	Kj / m²	ISO 179/1eA
- 20 °C	5	Kj / m²	ISO 179/1eA
Other Properties			
Oxidation - Induction time at (210 °C'de)	≥20	min.	ISO TR 10837
Carbon Black Content	2,3+0,2	%	ISO 6964
Carbon Black Dispersion	≤3,3		ISO CD 11420
MRS minimum Required Strenght	>8	Mpa	ISO TR 9080
Resistance to S.C.P (Slow Crack Propagation)x=4,6 Mpa, 80 °C Notched	>2000	hour	EN 33479
Resistance to R.C.P (Rapid Crack Propagation S4-test 110/10 mm 0°C	-	bar	ISO DIS 13477
Linear Thermal Expansion	1.5x10 <sup>-4</sup>	°C <sup>-1</sup>	ASTMD 696 (20-60 °C)
Specific Heat Capacity	1.9	J / g °C	BPCL
Electrical Properties			
Electric Strenght	20	kV / mm	BS 27 82:201 B
Volume resistivity	>10 <sup>13</sup>	m	BS 27 82:230A
Surface resistivity	>10 <sup>15</sup>		BS 27 82:231A
Relative permittivity	2.6	-	BS 2067 (1 to 20 MHZ)
Loss tangent	3x10 <sup>-4</sup>	-	BS 2067

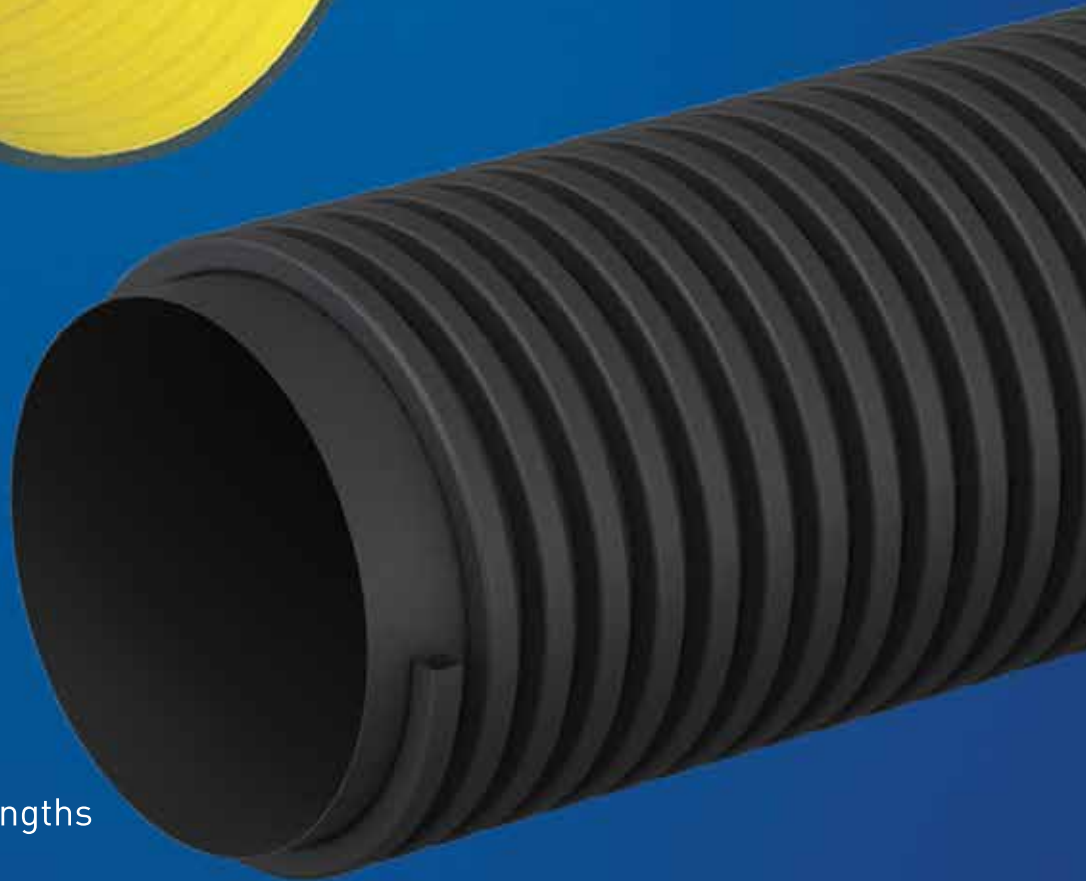
# Advanced Technology & Proper Solutions for Infrastructure



**CORRUGATED PIPES**

## **SPIRAL PIPES**

- \*with mobile (on-site)  
production advantage
- lesser costs
- higher diameters&lengths

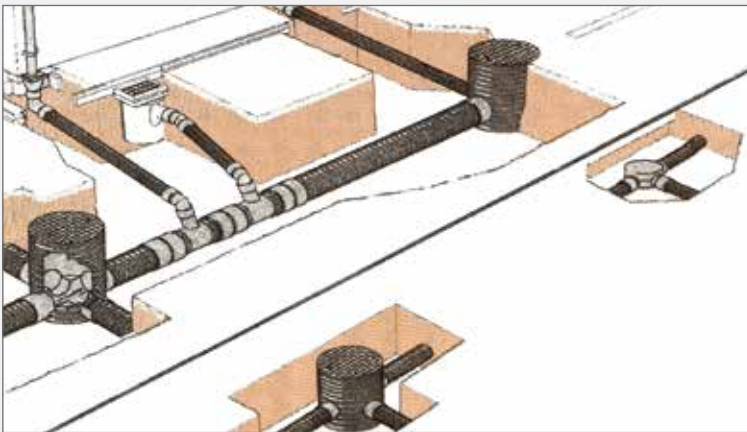


## DİZAYN CORRUGATED SEWERAGE SYSTEM PIPES AND FITTINGS

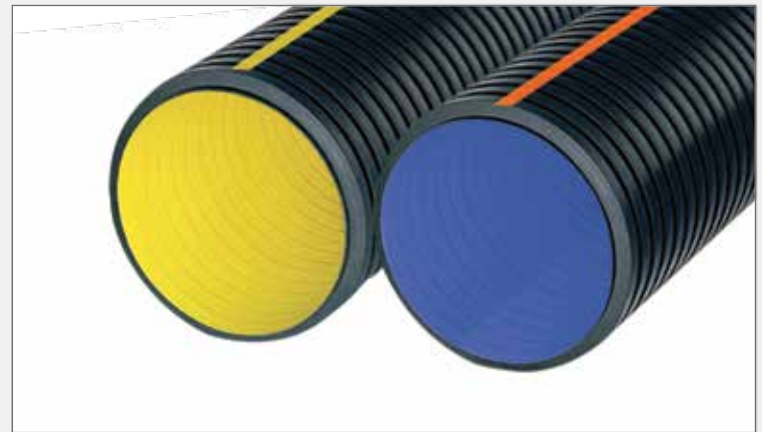
Corrugated sewerage system pipes provide an urban management, which is completely independent from sewerage system. Their contributions to the environment and anti-pollution effect are among the positive aspects of Dizayn Corrugated pipes

### Features of Dizayn PE/PP Corrugated Sewerage System Pipe:

- It is possible to obtain very light pipes by using PE-PP profiles instead of increasing wall thickness. As a result of this, the product is laid more easily and rapidly. It provides a significant advantage in terms of completing long-term projects in short period of time, at locations where construction season is short and on roads with heavy traffic.
- Since internal cedar roughness is minimum, it is possible to use a bottom diameter according to concrete pipe. In this way less excavation and filling work is required. This feature provides more advantages especially when underground water level is high and expensive excavation methods such as piling are utilized.
- It has a robust and flexible structure. Adapts to terrain features. Dizayn doesn't break since PE/PP material impact resistance is high. By this means, it doesn't cause any casualty both during laying process and ground movement and settling processes. Consequently, this minimizes maintenance and repair costs.
- Since Dizayn PE/PP is a material with high chemical resistance, it is ideal for transferring and storing abrasive chemicals.
- It is not affected by earth movements.
- Since it is much lighter than conventional systems in terms of handling and laying processes, operation costs are quite low.
- Presence of multiple connection methods (bolt, extrusion, electrofusion welding) facilitates project designing.
- Dizayn Corrugated Pipes are suitable for telescopic shipping since they are light. This way, it becomes possible to nest pipes with different diameters but used in the same project, and transfer more pipes in unit volume.
- Since it contains carbon black, it is not affected by sunlight. Its UV resistance is high.
- Dizayn Corrugated Pipes has first class welding qualities, its joints doesn't allow leakage. Since Dizayn PE material is also suitable for production end welding connection, it is used easily and reliably particularly with permeable soils (near water basins).
- It is in accordance with TS 12132, DIN 16961 and EN 155 standards.



A Review of Dizayn Corrugated Urban Project Implementation



Italy



European Free Trade Zone



İş Bankası General Directorate Buildings



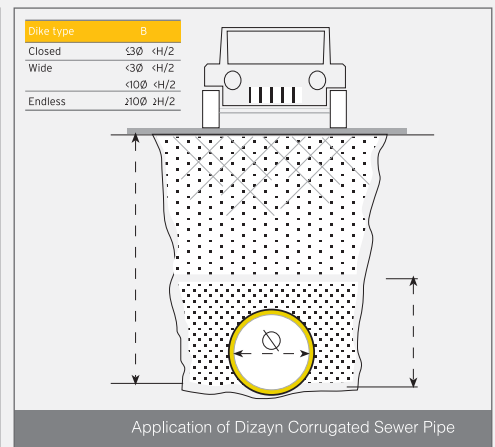
İzmir İzsu Big Channel Project



Telescopic Shipping



MOBILE Equipment



Application of Dizayn Corrugated Sewer Pipe



# DIZAYN GROUP SELAED THE ERA FOR STEEL PIPES: DIZAYN RTP PIPES

Thermoplastic based Dizayn RTP Pipes are as stronger as steel pipes but they are more durable as opposed to them. Corrosion, the biggest trouble for metal pipes, is no longer a problem. Moreover, necessity of using steel pipes where there is a need of high pressure resistance is overcome by Dizayn technology. Dizayn RTP Pipes present pressure resistance up to 200 bars even up to 315 mm diameter. Yet for bigger diameters, RTP Pipes still provides better solutions.

Combining the advantages of plastic pipes for flexibility, chemical resistance, corroison resistance and easy application features with high pressure and high temperature resistance by Dizayn technology, Dizayn RTP Pipes are the best solution for special projects.

Designed as 3-layered, Dizayn RTP Pipes can be produced from PN 15 to PN 200 thanks to its inner layer of continuous reinforced glass fiber. Dizayn RTP Pipes also decreases the project costs and shortens the project durations by lowering the time needed for production and assembling.

COMPARISON OF RTP, STEEL AND THERMOPLASTIC PIPES			
Feature	Steel Pipe	Thermoplastic Pipe	RTP Pipe
Flexibility	+	+	+
Corrosion Resistance	+	+	+
Chemical Resistance	+	+	+
Resistance for High Pressure	-	-	+
Lightness	+	+	+
Welding Easiness	+	+	+
Friction Coefficient for Inner Wall	-	+	+
Temperature Resistance	+	-	T
Bigger Inner Diameter	+	-	+
Less Elbow Need	-	+	+
Depreciation Time	-	-	+
Bending, Coiling (up to 125 mm)	-	+	+

## Fields of Application for RTP Pipes

- Main Drinking Water and Utility Water Lines with High Pressure
- Geothermal Water Transportation Lines
- Hydroelectric Power Plant Applications
- Natural Gas Transmission Lines
- Petroleum Transmission Lines
- Industrial Faicilities
- Offshore Applications





GEOTHERMAL RTP PIPES

Geothermal RTP Pipes are developed to be used for liquid transfer applications where heat isolation is important (heating or cooling). Geothermal RTP Pipes, as can be viewed in the diagram below, with their composite structure feature the high pressure resistance of steel pipes and high chemical resistance of plastic pipes.

1. RTP Pipe

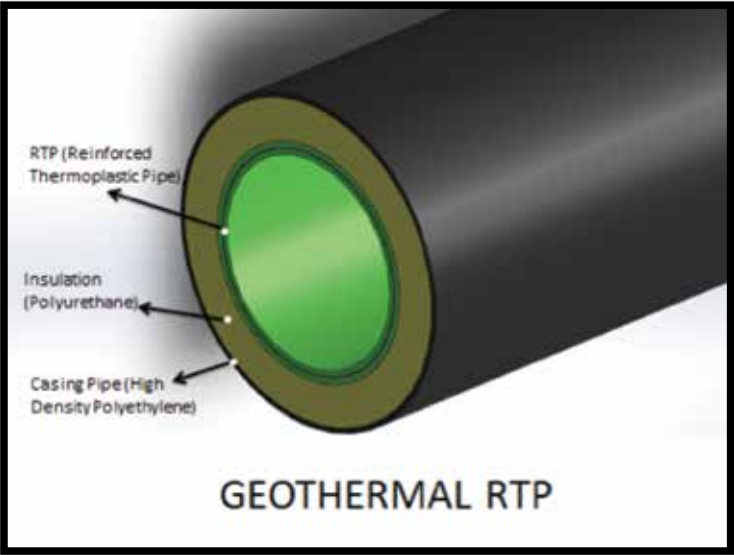
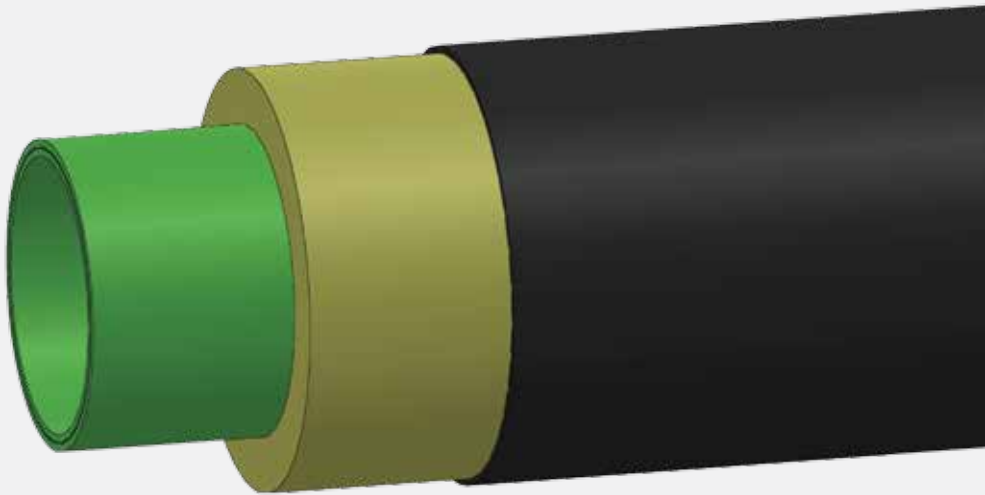
Showing resistance to heat and pressure of liquids, RTP Pipes are thermoplastic composite pipes for liquid transfer. While continuous fiber glass in the middle layer provides resistance against heat and pressure; protection for the continuous fiber glass layer, operating capability for the composite structure, high chemical resistance, convenience for assembling etc. features are gained with the thermoplastic layers on and under the fiber glass layer.

2. Polyurethane (Isolation Layer)






By means of the polyurethane layer in the middle of the geothermal pipe system, minimum heat loss (for heating systems) or gain (for cooling systems) is ensured while liquid transfer. Nevertheless, isolation layer can be constituted from rock wool, glass wool or other different materials based on project requirements. In Geothermal Pipe System, depending on customer needs special pipes with thicker isolation layers, rather than with standard thickness, can also be produced.

3. Casing Pipe (HDPE)

The casing pipe is a protection layer made of polyethylene in order to keep the isolation material and the transporter (service) pipe away from ground water, humidity and mechanical damages.



DESIGN RATIONALE

	STEEL PIPES	PLASTIC PIPES	RTP PIPES
			
PRESSURE RESISTANCE	 HIGH	LOW	HIGH
CHEMICAL RESISTANCE	LOW	 HIGH	HIGH

# Easy Use for the Farmer, Yield for the Farm!

## Dizayn Agricultural Irrigation Systems



Dizayn Sprinkler  
Irrigation Pipe



Dizayn Round Drip  
Irrigation Pipe



Dizayn Sprinkler  
Irrigation Elbow



Dizayn Labyrinth Drip  
Irrigation Pipe



Dizayn Sprinkler  
Irrigation Abot



Dizayn Flat Drip  
Irrigation Pipe

16 mm – 2 L/h Line Installation Interval for Round Drip Irrigation Pipes										
Dripper Interval (cm)	Flow Change %	Lateral Lengths (m)								
		No slope			Downward-sloping		Sloping Upward			
		0%	1%	2%	3%	1%	2%	3%		
20	10	42	45	47	49	39	37	34		
	15	50	53	55	57	48	46	43		
	20	58	60	62	64	56	53	51		
25	10	50	53	56	58	46	42	39		
	15	60	63	65	67	56	53	49		
	20	68	71	74	75	63	62	59		
33	10	61	66	70	75	55	50	45		
	15	72	77	81	84	68	62	58		
	20	84	88	91	95	79	74	70		
40	10	70	76	82	89	62	55	49		
	15	85	90	95	99	77	70	65		
	20	97	102	106	110	90	84	78		
50	10	82	91	99	103	72	63	54		
	15	99	107	113	120	89	80	73		
	20	113	121	127	133	104	96	89		
60	10	95	105	115	124	81	69	58		
	15	114	123	132	140	100	90	80		
	20	130	140	147	155	118	108	99		
75	10	110	120	129	151	94	76	65		
	15	133	140	159	170	116	100	90		
	20	153	165	176	188	137	124	112		
100	10	136	159	179	200	108	85	68		
	15	163	184	202	220	140	117	98		
	20	187	207	224	240	164	144	126		

Technical Properties of Dizayn ½ Sprinkler

Nozzle Diameter	Operating Pressure	Flow	Jet Range	Sprinkler Interval		
mm	atm.	m³/hour	metre	12x12	12x18	18x18
4,5x4,8	2	1,96	13	13,61	9,07	6,04
	2,5	2,22	14,4	15,41	10,27	6,85
	3	2,49	14,75	17,29	11,52	7,68

16 mm Line Installation Interval for Flat Drip Irrigation Pipes

Slope Ratio %	Dripper Intervals																				
	20 cm						30 cm			40 cm			50 cm			60 cm			75 cm		
	Flow (L/h)						Flow (L/h)			Flow (L/h)			Flow (L/h)			Flow (L/h)			Flow (L/h)		
	1,3	1,6	2	1,3	1,6	2	1,3	1,6	2	1,3	1,6	2	1,3	1,6	2	1,3	1,6	2	1,3	1,6	2
-2	95	83	71	116	102	88	130	117	104	143	128	115	151	139	127	160	151	141	173	161	150
-1	110	92	74	140	119	98	164	141	118	184	160	136	200	176	152	221	197	173	241	216	192
0	126	105	84	168	141	114	200	173	146	238	203	168	268	239	192	311	267	223	353	307	263
1	142	116	90	194	160	126	244	200	156	288	239	190	328	273	220	386	323	260	444	370	306
2	153	123	95	210	172	134	260	216	172	303	256	209	350	293	236	402	346	280	480	412	344





# DİZAYN PPR

Fresh Water and Heating Installation Pipe and Fittings

## PEX Pipe and Fittings

RTP & Geothermal Pipes

PE 80 Natural Gas Pipe and Fittings

Brass Material Group

Corrugated  
Spiral Pipes

Composite  
Pipe

Sewerage Pipe  
and Fittings

PE 100  
Fresh Water City Network Pipes

Hot-Cold Fresh Water Pipes

Wastewater Silent-Nanotech 2

Wastewater Mute-Triplex

Elit Pipe

SANITARY AND SUPERSTRUCTURE GENERAL PRODUCT CATALOGUE



Dizayn Group is a Mir Holding company.

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