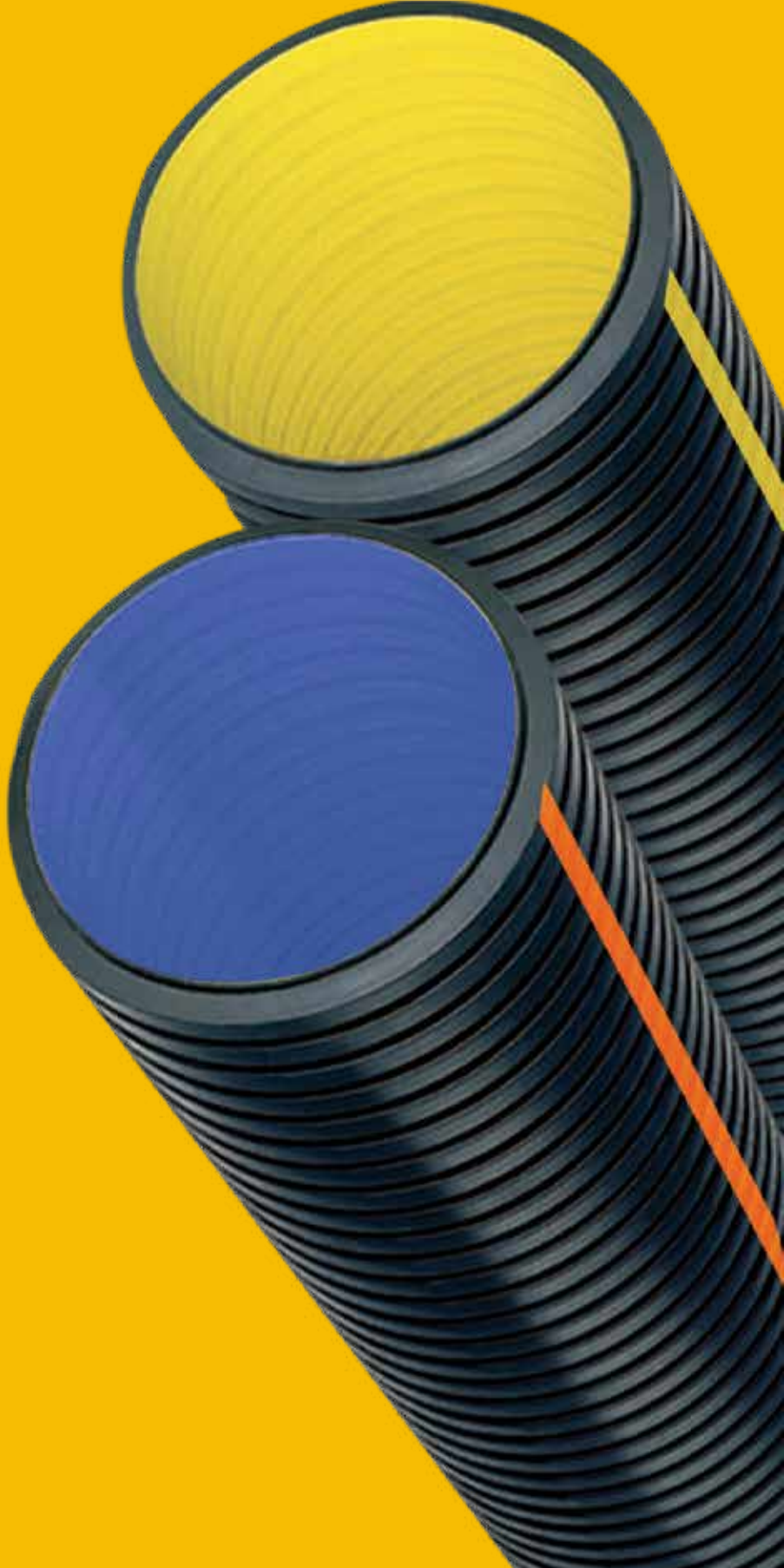


# 4

## Corrugated Pipes and Fittings for Sewage Discharge



# CORRUGATED PIPES AND FITTINGS FOR SEWAGE DISCHARGE

## PRODUCT IDENTITY

Product Name	SEWAGE DISCHARGE PIPES AND FITTINGS
Raw Material	HDPE
Product Color	Black
Production Standard	TS EN 13476-1, TS 12132
Other Standards	DIN 16961, EN 155, EN 13476

## PRODUCT SPECIFICATIONS

Production Range	100 mm - 450 mm
Pipe Length	6 meter

## QUALITY CERTIFICATES OF DİZAYN GROUP



Turkey



Rusya



Ukranie



# CORRUGATED PIPES AND FITTINGS FOR SEWAGE DISCHARGE

## 4.1- Advantages of Dizayn HDPE Corrugated Sewage Pipes and Fittings

- These pipes have the advantage of having light weight and being suitable for easy and quick installation. These characteristics are big advantages in places where the construction season is short and there is big traffic.
- These pipes give good result in welding which ensures perfect leak proof at welding points.
- They have high durability.
- They are flexible.
- They have perfect strength against abrasion and external impacts.
- They require less excavation area and less amount of sand filling after installation compared to the other pipe types.
- The raw material of HDPE pipes have higher resistance to the chemicals and not affected from corrosion, decaying and abrasion.
- HDPE pipes are applicable to various welding and jointing techniques which is also big plus from the side of the quick installation and cost analysis.
- HDPE pipes do adopt themselves to the shape of the land.
- HDPE pipes are not affected from the earth movements.
- Because of the Carbon Black content HDPE pipes are not affected from direct sun light for years and years (UV protection).
- HDPE pipes can be connected out of the trench because of their elastic nature which means easiness and big economy savings in the installation works.
- HDPE pipes have minimum 50 years service life and 1000 years of guarantee against decaying.
- The production facilities of HDPE pipes are movable easily to another place which gives a big economy in the transportation cost of the pipes in big pipe line projects.
- HDPE pipes are manufactured in accordance to the World Standards like DIN 16961, EN 155, TS 12132, etc.



Picture 4.1.1 - A view from "Izmir İZSU Great Canal Project" application.

## 4.1.1 - Perfect leak – proof at connection points

Dizayn HDPE Sewage Pipes and Fittings can be connected to each other by either welding or by means of socket with o-ring. All of these are guaranteed leak-proof connection methods. As it is well known, in case of concrete pipes, at the connection points 100% leak proof never can be reached. Why is the Leak-Proof so important?

- In case of leakage from sewage piping systems, wastes will contact with underground water reservoirs which will create mortal sanitary pollutions.
- At places where the underground water level is near to the earth surface, these clean waters will enter the sewage discharge pipes forming an extra load in these pipe systems. This fact must be taken into account when choosing the sewage pipe diameter to be installed.

Nominal Diameter	Allowable leakage per m <sup>2</sup> (lt)	Actual leak amount for Dizayn PE Pipes
125-250	0.6	0
300-600	0.5	0
700-1000	0.4	0
more than 1000	0.3	0

Table 4.1.1 - Allowable leakage amounts for concrete pipes.



# CORRUGATED PIPES AND FITTINGS FOR SEWAGE DISCHARGE

## 4.1.2 Corrugated PE Sewage Pipes

It is a common practice to increase the wall thickness of the pipe in order to increase its resistance to the increasing external loads because of bigger installation depths.

This simple solution also brings the problem of increased pipe diameter and weight as well as some other parameters increasing the installation costs.

Dizayn PE Corrugated PE Sewage Pipes bring a wonderful solution to this problem that instead of increased by wall thickness of the pipe, the resistance of the pipe is increased by using a different corrugation profile on the pipe.

What are the main advantages of Dizayn PE Corrugated Sewage Pipes?

1. Since the strength of the pipe is ensured by only use of different corrugation profile type on the pipe. Instead of increased the wall thickness, it is possible to obtain ultra-light PE pipes in comparison to the other pipe types.
2. Because of their perfect internal surface smoothness, it is possible to use one size smaller PE pipe in comparison to the same diameter of concrete pipes.
3. This enables the contractors making less excavation and sand filling.
4. This characteristic brings bigger advantage where the underground water level is high and expensive erection works must be done.
5. Because of their high impact resistance value, Dizayn PE pipes are not broken easily. For this reason, during installation or in case of earth movements or earth settlements there becomes no damage on the pipe. This means minimum service and maintenance cost for the PE pipe line.
6. Because of their perfect resistance to chemical materials, Dizayn PE pipes and tanks are ideal for chemical solution transfer or storage.
7. Because of their light unit weight, Dizayn PE corrugated Pipes are laid down easily and quickly. This feature enables the contractors to finish the excavation works with lower costs within shorter period of time.
8. Guaranteed service life of Dizayn PE pipes is 50 years. But even better this service life they continue to serve because the plastic raw material has a decaying time of 1000 years.

9. Dizayn PE pipes are light in weight. This feature makes them suitable for telescopic transport. By inserting the smaller diameter pipe into bigger diameter pipes, a considerable economy can be made in the transport invoice for the pipes.
10. Dizayn PE pipes can be used at places where 100% leak proof is required, (like water reservoirs.)
11. Since Dizayn PE pipes can be used in making manholes or other fittings, practical at-side solution can be done with minimum cost.

As a result of their advantage above, Dizayn PE corrugated sewage pipes fulfill the requirements of a perfect sewage discharge system and enable city planning authorities to create a city free from every day excavations for repair works.



# CORRUGATED PIPES AND FITTINGS FOR SEWAGE DISCHARGE

4.1.3 Dizayn sewage pipes are hydraulically smooth. This feature gives the advantage of using smaller diameter pipe in comparison to the concrete pipes for the same work.

Concrete Pipe			Dizayn PE Pipe		
Nominal Diameter	Flow rate % 100 Flow rate	Flow rate % 60 Flow	Nominal Diameter	Flow rate % 100 Flow	Flow rate % 60 Flow
mm	l/s	l/s	mm	l/s	l/s
1000	2.309	1.524	900	2.492	1.644
800	1.492	945	700	1.505	933
400	225	148	350	237	156
300	104	69	250	97	64

Table 4.1.2 - Comparison of flow rates for Concrete and Dizayn PE Sewage Pipes.

As it can be seen from the table above, Dizayn PE sewage pipes can make the same work with a smaller diameter compared the concrete pipes.

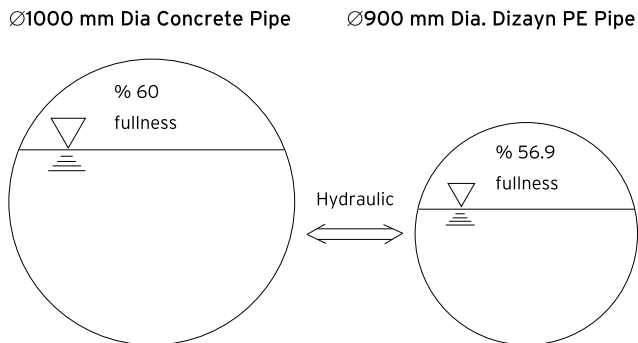


Figure 4.1.1 - The comparison for hydraulic flow rates between concrete and Dizayn PE

4.1.5 Dizayn PE Corrugated Sewage Pipes are easy to install

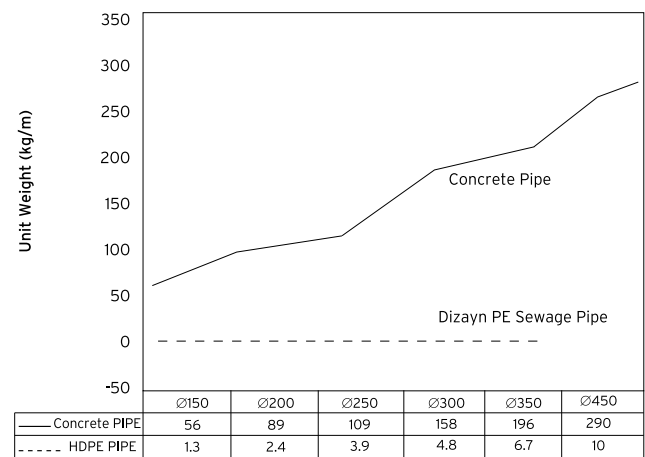


Figure 4.1.3 - Comparison of unit weights of concrete pipes and Dizayn PE Sewage Pipes

4.1.4 Advantage of availability of more than one connection method diameter pipe in comparison to the concrete pipes for the same work.

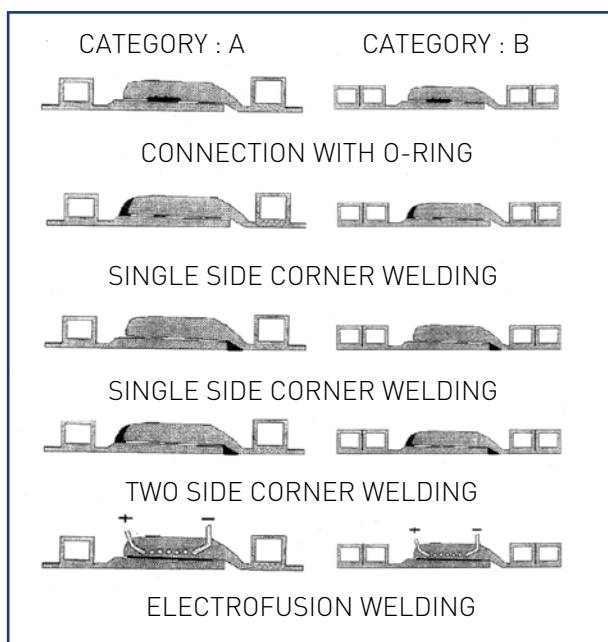


Figure 4.1.2 - Connections methods for sewage pipes.

4.1.6 Advantage of weldability out of the trench

Because of the elastic nature of the PE pipes, these pipes can be welded at a suitable place near the trench. Once the tip of the pipe is bounded there will be no cracks or slipping of the pipe from the joint places. Welding of PE pipes out of the trench can be applied to all diameters.

- For installation, it is enough to open a trench which is 5 cm larger than pipe diameter. This means less excavation and less sand filling - a huge economy in installation costs.
- For each type of pipes, it is so difficult to make connection in the trench. This can be done for PE pipes very easily out of the trench with less workers and machinery.
- Connection of the pipes can be done without opening the trench. But in case of opening trench, installation of the pipes should be done immediately just after the excavation of the trench. Because when the trench is excavated before a long time, the trench will deform and need to be cleaned.

# CORRUGATED PIPES AND FITTINGS FOR SEWAGE DISCHARGE

## 4.1.7 Dizayn PE Sewage pipe do not affected from abrasion

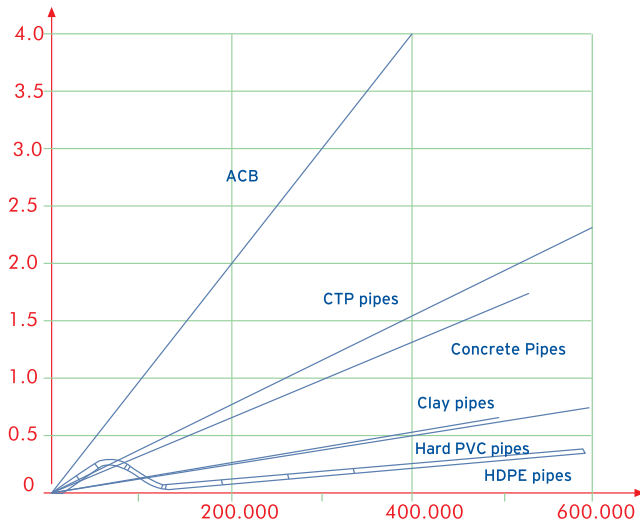


Figure 4.1.4 - The curve of abrasion test

Dizayn PE Sewage pipe have the best values for resistance to abrasion in comparison to the other pipe types. High performance of Dizayn Pe sewage pipes can be monitored the above test results the service life, the abrasion on Dizayn PE Sewage pipes is only 0.09 mm. this research also revealed a surprising result that the abrasion on asbestos steel pipes and GRP pipes is more than that of concrete pipes. Besides it good resistance against abrasion, Dizayn PE Corrugated Sewage pipes have also high resistance against chemical substances. They can be safely used for acidic, alkaline and salty fluids.

## 4.1.8 Less requirement of special filling sand, less need for big excavation area hence, less sand filling as a result big economy in excavation costs.

Big diameter Dizayn PE pipes can be welded from inside the pipe. For these pipes there is no need to bring special filling sand. It is enough to prepare the surface with an angle 120 degree. The earth derived from excavation can be used as filling sand after a simple elimination of big and sharp stones which can damage the pipe.

### Advantages

Since there isn't any need to bring special filling sand, PE pipes have big economy in installation costs.

Because of less excavation need for PE Sewage pipes, the installation invoice will still decrease.

