



T-flex for Water

Water is an essential element of human life. It is nature's most widely used resource having diversified users in households, industries, agriculture and other sectors that are an integral part of society. Today, diminishing water reserves call for its efficient distribution and usage that ensure minimum wastage of water during its supply, distribution and usage. Piping systems used for supply and distribution of water play a key role in water management. An ideal piping system should not just transport water but it should also protect water from variables that threaten to contaminate it, such as bacteria, corrosion and abrasion.

T-flex is fast replacing conventional piping systems for water supply and distribution. T-flex pipe systems offered by Dadex are manufactured from polyethylene (PE) compound. T-flex pipe systems are extensively used for new as well as replacement piping works throughout the world. The inherent characteristics of PE such as corrosion resistance, availability in long lengths, ease of installation and leak free joints make T-flex pipe systems a preferred choice.

DADEX

T-FLEX - THE OBVIOUS MATERIAL OF CHOICE

DRINK PLENTY, DRINK SAFE

A safe to use pipe system is one that does not allow algae growth, rot or rust over time. T-flex pipe systems are extremely resistant to scale build up, which can lead to decreased flow rates and decontaminated water. T-flex pipes are impervious to most aggressive chemicals and corrosive elements. In addition, polyethylene fittings are more chemically resistant than steel.

Why T-flex pipe systems?

- **Leak Free**

T-flex pipes are normally joined by compression, heat fusion or electro fusion methods. These methods create a joint that is as strong as the pipe itself and is virtually leak free.

- **Resistant To Corrosion, Abrasion & Chemicals**

T-flex has excellent corrosion resistance and is virtually inert. It does not need expensive maintenance or cathodic protection. It offers better overall resistance to corrosive acids, alkalis and salts than most piping materials.

- **Excellent Flow Characteristics**

Because polyethylene has smoother inner walls than steel, cast iron, ductile iron, or concrete, a smaller diameter T-flex pipe can carry good amount of flow without significant pressure loss due to friction. It has less drag and a lower tendency for turbulence at high flow.

- **Long Length & Flexible**

T-flex pipes are available in long lengths ranging between 6m and 12m although higher lengths can be produced on special requests from customers. It is also manufactured in coils of 50m and 100 m eliminating the need for fittings and aiding in developing a leak free system. With little need for fittings T-flex pipe systems result in a speedy installation. T-flex pipe systems resist the effects of freezing and allow bending. They can be installed with bends over uneven terrain easily in continuous lengths without additional welds or couplings.

- **Lightweight & Easy To Install**

It is lightweight and does not require the use of heavy lifting equipment for installation

- **Ductility & Toughness**

T-flex pipe systems are inherently tough, resilient and resistant to damage caused by external loads, vibrations and pressure surges such as water hammer. Being manufactured from PE, T-flex pipes are tolerant to handling and bending in cold weather.

PRODUCT RANGE

T-flex Pipe Dimensions:

T-flex pipes are manufactured in nominal outside diameter of size 20,25,32,40,50,63,75,90,110,125,160,180,200 and 250 mm.

Standard Lengths:

Coils up to 50m and 100m lengths are available for sizes up to 90 mm. T-flex pipes are available in straight lengths of 6m and 12m for sizes up to 250mm.

TECHNICAL SPECIFICATIONS

Pressure Rating Of T-flex Pipes:

Operating pressure of T-flex pipes range between 6, 8, 10, 12.5 and 16 bar. The nominal pressure (PN) corresponds to the maximum allowable working pressure in bar for pipe at 20°C.

Operating Pressure Of T-flex Fittings:

10 bar (Compression Type)

16 bar (Compression Type) are also available against commercially feasible quantities.

8 - 16 bars (Butt Fusion Type)

Cold Bending Radii (CBR):

CBR in metres at 20°C = 22 x Outside Diameter of pipe.

Standards:

T-flex pipes for potable water application are manufactured according to latest International Standard ISO 4427: 1996, PE pipes for Water Supply specification, DIN 8074/8075 and PS - 3580: 1997.

TABLE 1: TYPICAL PHYSICAL PROPERTIES OF POLYETHYLENE (BLACK)

Properties		Typical Value*	Unit	Test Method
Density	(Compound)	950-959	Kg/m ³	ISO 1183
Melt Flow Rate	(190°C/5.0 kg)	0.3	g/10 min	ISO 1133
Tensile Stress at Yield	50 mm/min	19-21	MPa	ISO 1133
Elongation at Yield		9	%	ISO 527-2
Elongation at Break		>350	%	ISO 527-2
Charpy Impact Strength, notched	0°C	14	kJ/m ²	ISO 179/1eA
Carbon Black Content		≥2	%	ASTM D 1603
Brittleness Temperature		<-70	°C	ASTM D 746
ESCR	10% Igepal, F ₆₀	>10000	h	ASTM D 1693-A
Thermal Stability	210°C	>15	Min	EN 728

* The above given data is valid for PE 80. Pipes and fittings of PE 100 can also be supplied against specific requirements.

LOWER LIFE CYCLE COST, HOW?

- **Corrosion Resistant:** Its corrosion resistant nature adds to its useful service life
- **Leak Tight:** Mechanical and heat-fused joints create a homogenous, monolithic system. The fusion joint is stronger than the pipe.
- **High Strain Allowance:** Virtually eliminates breakage due to freezing of water inside pipes.
- **More Savings:** Additional cost savings are achieved by virtually no need of repairs. With no exfiltration or infiltration, potable water losses and groundwater nuisance treatment costs encountered in traditional piping systems are eliminated.

REDUCED INSTALLATION COSTS BECAUSE ...

- Fewer fittings are needed due to pipe flexibility.
- Allowable bending radius of 20 to 25 times outside diameter of pipe.
- Lighter equipment required for handling and installation than with metallic materials.
- Eliminates the need for thrust blocking. Heat fused joints are fully end restrained.
- Light weight and longer lengths allow for significant savings in labour and equipment.

OUR CLIENTS

Our various clients have installed T-flex pipe systems for water supply and distribution. Some of them include:

- Clariant Pakistan Ltd.
- Clough Engineering Ltd., Australia
- Enar Petrotech Pak Pvt. Ltd.
- Liberty Textile Mills Ltd.
- M. Hanif Industries
- Pak Arab Refinery Corporation
- Razzak Engineering Pvt. Ltd.
- Union Texas Pvt. Ltd.

FIELDS OF APPLICATION

- Potable Water Distribution Systems
- Chilled Water Piping
- Cooling Water
- De-Watering Pipes
- Drip Irrigation Systems
- Sea Water Effluents
- Storage Tank Piping
- Water Intakes
- Water Outfalls
- Water Treatment/Sewage Treatment and many more

INDUSTRIES SERVED

Its versatility of use makes T-flex cater to a wide variety of industries. Some of them include:

- Agriculture
- Breweries
- Chemicals
- Food Processing
- Marine
- Power Generation
- Petroleum
- Textile (Dyeing / Bleaching/ Effluents)
- Tanneries

TABLE 2: CHEMICAL RESISTANCE CHART*

Common chemicals resisted by polyethylene pipes are listed below where

A = Very Good

B = Good

C = Moderate

D = Not recommended

S.No.	Chemicals	PE
1.	Acetaldehyde	C
2.	Acetamide	A
3.	Acetic Acid 80%	D
4.	Acetone	B
5.	Acetylene	A
6.	Alcohols: Amyl	B
7.	Benzyl	D
8.	Butyl	A
9.	Ethyl	B
10.	Isopropyl	A
11.	Methyl	A
12.	Aluminum Sulphate	A
13.	Ammonia	C
14.	Aniline	B
15.	Aromatic Hydrocarbons	C
16.	Arsenic Acid	B
17.	Barium Carbonate	B
18.	Barium Sulphate	B
19.	Benzaldehyde	A
20.	Benzene	C
21.	Benzonic Acid	B
22.	Benzol	C
23.	Borax	A
24.	Boric Acid	A
25.	Butadiene	D
26.	Butane	C
27.	Butylene	B
28.	Calcium Sulphate	B
29.	Butylene	B
30.	Carbon Dioxide	C
31.	Carbon Disulfide	C
32.	Carbonic Acid	B
33.	Chlorine, anhydrous	B

S.No.	Chemicals	PE
34.	Chloroform	C
35.	Chromic Acid 50%	A
36.	Citric Acid	A
37.	Copper Sulphate	B
38.	Diesel Fuel	C
39.	Ethylene Glycol	A
40.	Fatty Acids	A
41.	Ferric Chloride	A
42.	Ferric Sulphate	A
43.	Flourine	C
44.	Formaldehyde 100%	B
45.	Formic Acid	B
46.	Gasoline	C
47.	Heptane	B
48.	Hydrochloric Acid 20%	A
49.	Hydrogen Peroxide	C
50.	Iodine	A
51.	Magnesium Hydroxide	A
52.	Mercury	A
53.	Oleum 100%	D
54.	Petrolatum	B
55.	Phenol	B
56.	Phosphoric Acid	B
57.	Potassium Carbonate	A
58.	Silver Nitrate	B
59.	Sodium Bicarbonate	A
60.	Stearic Acid	B
61.	Sulphuric Acid	B
62.	Tannic Acid	B
63.	Toluene	C
64.	Zinc Sulphate	A

* Data should not be used for specification work. Dadex Technical section should be consulted for specific operational conditions with respect to pressure, temperature and fluid concentration prior to specifying the product.

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Note: All information contained in this literature is given in good faith. The user should, however, check that the product is suitable in the application for which it shall be used. Please ensure compliance with all health and safety requirements. Whilst continuing its programme of continuous development, Dadex reserves the right to modify or extend any published information without any prior notification. No responsibility can be accepted for any error, omissions or incorrect assumptions.

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