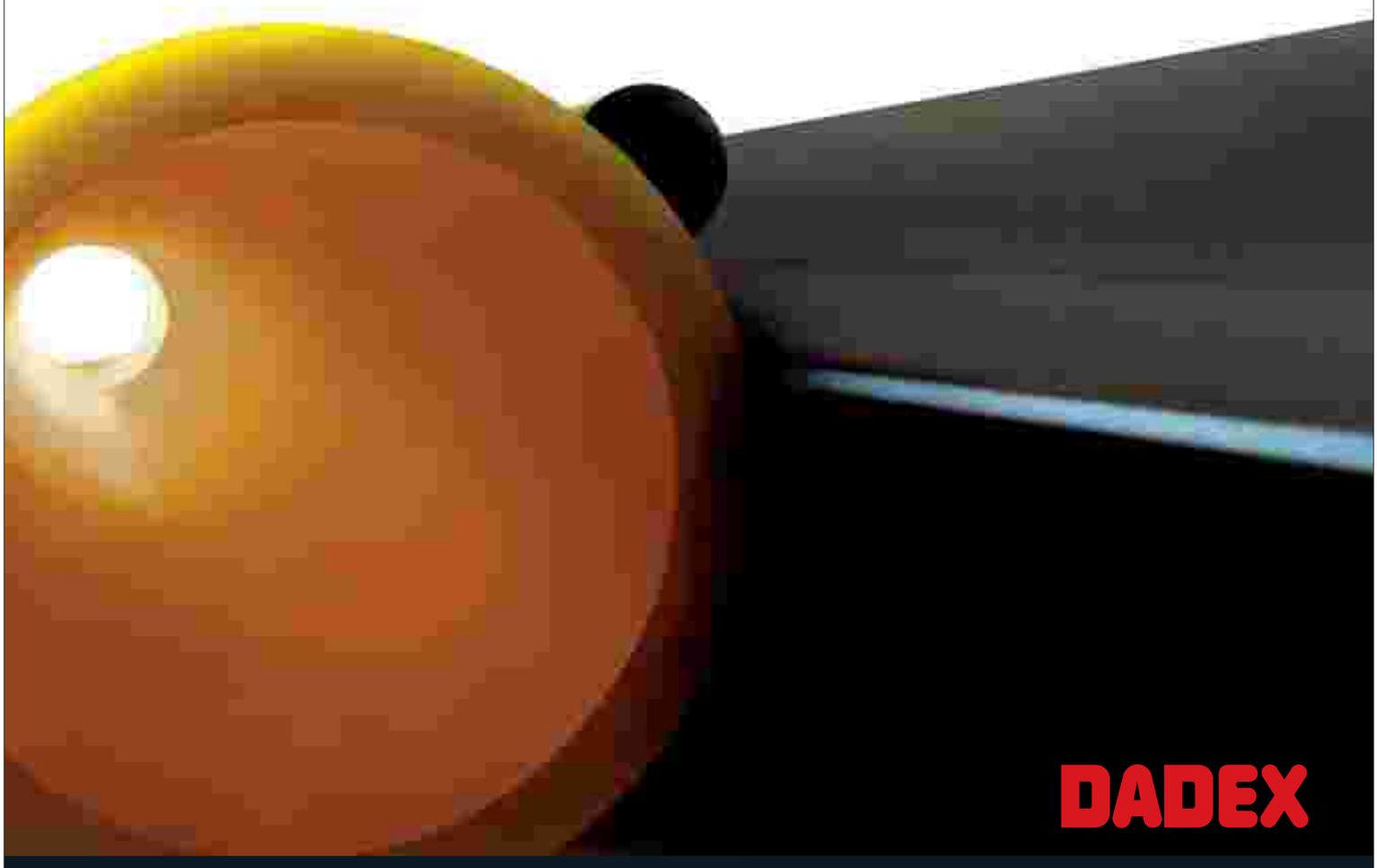
T-Flex

The flexible pipe system for multiple applications



DADEX

T-flex pipe systems are designed for many pressure and non pressure applications such as water supply and distribution, compressed air, chemicals, hazardous wastes, utility, slurries, marine, mining, and agriculture. T-flex pipe systems offered by Dadex are manufactured from polyethylene (PE) compound. That is why T-flex provides professionals an option to choose the best system for the most demanding projects.

T-flex pipes have excellent abrasion resistance, superb impact resistance, and extraordinary toughness. These pipes are resistant to a broad range of corrosive chemicals, they do not support biological growth, and resist the adherence of scale and deposits.

FEATURES

Prominent features of T-flex pipe systems include:

- Identification Stripes and Colours
- Resistant to Ultraviolet rays
- Light weight & easy to install
- Narrow Traenching
- Non-Contaminating (food grade material)
- Outstanding Chemical Resistance
- Excellent Hydraulics
- Abrasion Resistance
- Lower Life Cycle Costs
- Handling
- Flexibility and Toughness
- Pressure Rating
- Service Temperatures
- Odourless
- Sealed, Leak-Tight Heat Fusion Joints
- Surge and Liquid Velocity
- Thermal Expansion

Flexibility and Toughness

T-flex is flexible, allowing it to follow rolling terrain contours and reducing the need for fittings. It retains working flexibility even in harsh climates. Water within the pipe may freeze without damaging the pipe. Unstable soils and seasonal freeze/thaw conditions have little effect on this flexible, plastic pipe system. It also exhibits high stress/strain sustainability arising due to mechanical & thermal changes.

Sealed Joints

T-flex pipes can be joined into long, continuous lengths by compression, butt fusion or electro fusion fittings. These jointing techniques provide leak-free joints that are as strong and chemically resistant as the pipe itself.

Non-contaminating (food grade material)

The purity of the fluids being conveyed is safeguarded by the absence of easily extractable substances. The raw material used for manufacturing T-flex piping system for potable water has been evaluated and certified by authorities. Potable water products meet the requirements of standards such as ISO/DIN/EN.

Outstanding Chemical Resistance

Few materials offer better over-all resistance to corrosive acids, alkalis and salts. In addition, T-flex is not affected by bacteria, fungi or even aggressive naturally occurring soils. It has good resistance to many organic substances, such as solvents and fuels. T-flex pipes do not rust, rot, corrode, or tuberculate like traditional metal or concrete pipes. It is not subject to galvanic or hydrogen sulphide corrosion.

Identification Stripes and Colours

T-flex pipes are commonly manufactured in black colour with blue/yellow coloured stripes and also in solid colours as per standard application. Standard Dadex marking identify application (water, fire, effluents, fibre optic cables, etc.), standard dimension ratio (SDR) and batch number.
(Note: actual markings vary with respect to difference in sizes)

Light Weight & Easy to Install

T-flex is much lighter than ductile iron, steel and reinforced concrete. Thus it does not require heavy handling and laying equipment otherwise commonly used for conventional pipe systems. This makes installation of pipes easier and quicker.

Excellent Hydraulics

T-flex behaves as an “ideally smooth conduit,” offering extremely low resistance to the flow of fluids. Superior chemical resistance and a non-wetting (wax-like) surface combine to virtually eliminate scaling and pitting, and to preserve excellent hydraulic characteristics throughout its service life.

UV Resistant

T-flex contains carbon black as UV stabilizer which is one of the most efficient and widely used UV absorbers. Carbon black converts harmful ultraviolet radiation into harmless infrared radiation or thermal energy, which dissipates through the polymer matrix neutralizing the harmful effect of UV. Thus, T-Flex is UV resistant and safe to use in exposed conditions.

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 250mm.

Standard Lengths:

Coils up to 50m and 100m lengths are available for sizes up to 90mm. 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.

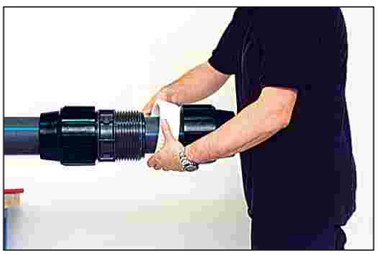
JOINTING TECHNIQUES

T-flex pipes can be joined together by any of the following techniques:

1. Compression Fitting
2. Butt Fusion
3. Electro Fusion

1. Compression Fitting

Assembly of compression fittings with T-flex pipes

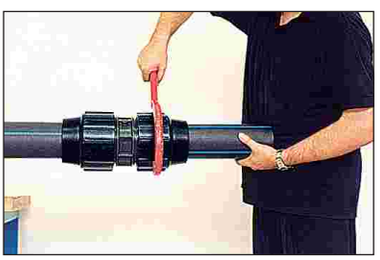


a. Cut the pipe at 90° according to its axis with a small saw or with a special pipe cutter

b. Insert the locking nut then the 'Clinching Ring'. Avoid pushing it too much forward on the pipe.

c. Arrange the 'O Ring' on the pipe end and then feed and push along the pipe axis the body of the fitting. It may be necessary to put some lubricant (soap solution) on the 'O Ring'.

d. Before screwing in 'Locking Nut' ascertain that the pipe, 'Clinching Ring' and 'O Ring' are pushed well into the body of the fitting.



e. The 'Locking Nut' can be fully screwed on by hand up to sizes 20-32 mm. For bigger dimensions it is advisable to use stamp wrench or pipe wrench.

f. To ensure the best clamping, ascertain that mouth of the 'Locking Nut' does not exceed the last thread of the body.

2. Butt Fusion

A method of joining T-Flex pipes where the two pipe ends or pipe-fitting ends are heated to a molten state, and brought together to form a homogenous bond.

a. Ensure the pipes to be joined are the same diameter, SDR and polymer.

b. If necessary pipe and fitting should be washed with clean water and paper wipes before clamping in machine.

c. The pipe ends must be reasonably square cut, if not, re-cut pipe ends with pipe cutting equipment.

d. At the start of each working day (welding session) the cold heater plate should be washed with clean water and dried with new paper wipes.

e. Check the butt fusion equipment is clean and in working order, that the correct size clamp inserts are available and the heater plate is up to working temperature.

f. To avoid the risk of contamination at site the butt fusion machine should be kept on a clean base board or tarpaulin.

g. If the weather is windy or wet, jointing should be carried out inside a protective shelter.

h. To prevent cooling of the heater plate from draughts, the pipe ends should be plugged or covered before welding commences.

i. Before jointing commences the fusion pressure and fusion times should be established for the pipe being jointed. The information should be attached to the fusion machine.

j. Check that the generator has sufficient fuel to last for the full jointing cycle.

3. Electro Fusion

Electro fusion is a method of joining T-flex pipes and fittings. Electro fusion fitting contain metallic heating terminals. These terminals are connected to the electro fusion machine which passes electric current through the terminals of fitting. The pipe and fitting melts due to heat generated by the coil and fuse together.

FIELDS OF APPLICATION

- Acid / Caustic Lines
- Brine
- Cable Conduits
- Chilled Water Piping
- Coal Slurry
- Cooling water
- Crude oil
- De-Watering Pipes
- Drain Lines / Industrial Effluents
- Dredging
- Drilling Mud
- Drip irrigation/Sprinkle irrigation
- Fertilizer
- Fire Water Mains
- Fly ash
- Hazardous Waste
- Out Fall Pipelines
- Process Piping

- Sea Water Effluents
- Sewage Treatment
- Sludge Piping
- Slurries
- Storage tank piping
- Underground services
- Utility Piping
- Water Supply and Distribution
- Gas (manufactured as per ISO4437)
- Compressed Air (buried)

TYPICAL INDUSTRIES SERVED:

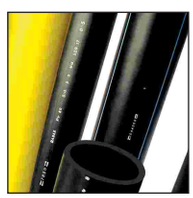
- Agriculture
- Breweries
- Chemicals
- Desalination / Water Treatment Plants
- Food Processing
- Irrigation / Agriculture
- Marine
- Mining / Mining Processing
- Paint
- Power Generation
- Pulp / Paper/ Wood
- Refineries
- Tanneries
- Textile (Dyeing / Bleaching/ Effluents)
- Gas (manufactured as per ISO4437)

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.	Calcium Sulphate	B
31.	Carbon Dioxide	C
32.	Carbon Disulfide	C
33.	Carbonic Acid	B
34.	Chlorine, anhydrous	B



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

*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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