T-flex for Mining and Dredging

Mining and dredging require effective drainage systems that should withstand constant abuse from fluctuating pressures and aggressive materials that pass through the pipeline every day. T-flex pipe systems are best suited for drainage of a variety of effluents. T-flex pipe systems offered by Dadex are manufactured from polyethylene (PE) compound. That is why it can withstand harsh and abrasive materials flowing through it such as marine and mining slurries, industrial effluents and so on.

Today, T-flex pipe system is replacing steel and concrete piping because of its superior mechanical and chemical properties and cost-effective handling characteristics.

WHY T-FLEX PIPE SYSTEMS?

All T-flex pipes and fittings are produced from premium quality imported raw material that are engineered and tested to exacting industry standards.

T-flex pipe system offers superior performance under harsh conditions that occur in mining because of it's:

- Ultra-violet resistance
- High flexibility
- Outstanding slurry and abrasion resistance
- Lightweight and ease of handling
- Superior design life
- Higher flow characteristics
- Excellent resistance to weatherability
- Heat-fused, fully restrained joints
- Resistant to most chemical environments

- Outstanding Slurry And Abrasion Resistance

T-flex pipes have an extremely high resistance to abrasion created by slurries. When compared to traditional materials, PE pipes generally have superior wear characteristics. For example, it will outlast steel by a wide margin in mining. Additionally, T-flex is lighter in weight and easier to install than steel in typical slurry or discharge line installations. An added benefit of T-flex is that it is easy to maintain and resists corrosion.

Wear characteristics of polyethylene slurry lines are related to the type of slurry material, velocity, and other pipeline conditions. Most important is "critical velocity", or the point at which solids leave the state of suspension and begin to settle out in slurry. Critical velocity depends on a number of variables:

- Particle density
- Particle shape
- Concentration
- Particle size distribution
- Carrier fluid density

It is important that critical velocity be established for any slurry application, as flow velocities below the critical level can result in higher than normal wear rates. Because of the many variables involved in slurry applications, it is very difficult to establish a definitive table of wear rates for various types of materials.

- Ultraviolet Resistant

The instantly recognizable black colour of T-flex pipe system indicates its excellent UV resistance and makes it ideal for mining. With this distinctive feature pipelines can now be laid over the ground as T-flex pipes sustain UV exposure and extreme weather effects.

- High Flexibility

T-flex pipes are highly flexible that is they can bend according to the contour of the ground without the need of fittings. This makes pipe laying easy and economical.

- Thermal Expansion

Plastics have a comparatively high coefficient of linear heat expansion, which should be taken into account when laying PE pipes.

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 50 m 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 bar (Butt Fusion Type)

Cold Bending Radii (CBR):

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

Standards:

T-flex systems are manufactured as per latest International Standards.

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.

FIELDS OF APPLICATION

- Acid / Caustic Lines
- Chilled Water Piping
- Coal Slurry
- De-Watering Pipes
- Drain Lines / Industrial Effluents
- Dredging
- Fly Ash
- Hazardous Waste
- Out Fall Pipelines
- Sea Water Effluents
- Sludge Piping

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

S.No.	Chemicals	PE
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
34.	Chloroform	C
35.	Chromic Acid 50%	A
36.	Citric Acid	A
37.	Copper Sulphate	B
38.	Diesel Fuel	C
39.	Ethylene Glycol	B
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

S.No.	Chemicals	PE
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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