

Introduction

AC/FC sewer pipes are widely used internationally due to unmatched and versatile characteristics of Chrysotile cement (CC) material.

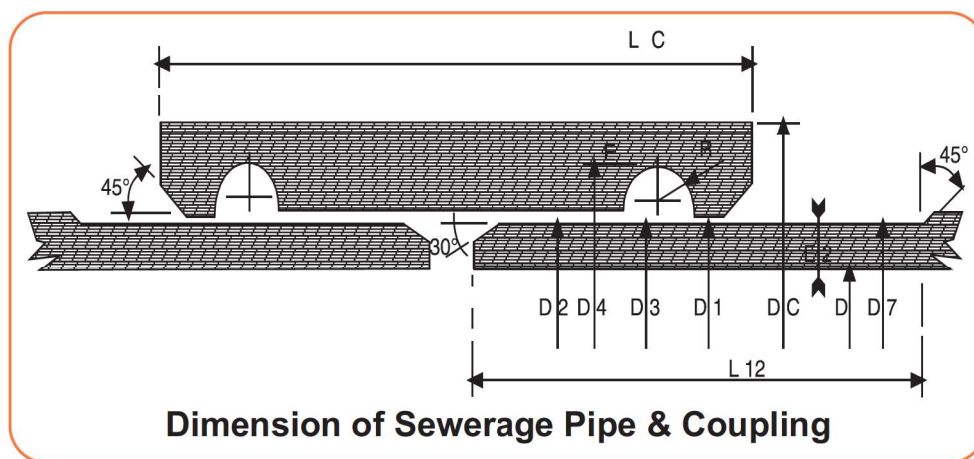
In Pakistan, Dadex CC sewer pipe system has been successfully used for sewerage application. Sewer Pipes conform to ISO 881 and PS 558. They are ideal for non-pressurised disposal (gravity flow) of domestic town mix and industrial waste water. Dadex CC Sewer Pipe system is also used for culverts as jacket pipes and cable pipes.

These pipes can be supplied in diameters from 80mm, 100mm, 150mm, 200mm, 250mm, 300mm, 350mm, 400mm, 450mm, 500mm, 600mm, 700mm up to 1000mm and in standard lengths of 4, 3.75, 3.5 and 3.0 meter.

For domestic applications, these pipes can be made available in standard length of 2 meters (6.5ft approx.).

Dadex CC Sewer Pipes are joined using Dadex Comete Couplings and Rubber Rings as shown in the figure below.

High quality rubber rings for CC Sewer Pipes are manufactured by Dadex that conform to PS 1915.



Composition of CC Sewer Pipe Systems

The material used in CC sewer pipes is Chrysotile fibre and cement. The reinforcing Chrysotile fibre is bound in cement matrix. Chrysotile is a natural hydrous magnesium silicate fibre that acts like reinforcement when encapsulated in cement matrix and gives required strength to sewer pipe because Chrysotile fibre has a very high tensile strength which is 3 to 4 times greater than steel.

Internally/Externally Coated Pipes

Dadex CC sewer pipes with internal/external protective coatings are according to the nature of the effluent and the soil.

Experience of over 45 years supports that it is important to protect CC sewer pipes with an internal coating, fully adopted to the prevailing conditions. Coated pipes are divided into two categories, according to their applications, that add to the successful life:

1. Pipes for domestic sewage.
2. Pipes for Industrial effluents

For domestic town mix and municipal sewage pipes coated internally with coal tar Epoxy (EPILUX 5) is suitable corrosive nature of H_2SO_4 (Sulphuric Acid (H_2SO_4)) is formed through the oxidation of Hydrogen Sulphide (H_2S) present in sewers).

Table 1: Limits up to which CC Sewer Pipes can be used without protection

DESCRIPTION OF CHEMICAL	LIMITS	
pH	> 6	
Titration Acidity in ml NaOH N/10 per 100gm of soil	< 20	
NH ₄ in mg/l	< 80	
SO ₄ in mg/l in function of Cl in mg/l (seawater)	Cl	(SO ₄)
	0	< 500
	3000	< 800
	5000	< 1430
MgO in mg/l in function of SO ₄ in mg/l	(SO ₄)	MgO
	0	< 2000
	200	< 700
Alkaline Solutions in %	< 10%	
Vegetable oil and fats in mg/l	< 300	
Impure alcohol, Esters, Wax, Fat	Protection Required	
Alkaline soap, Benzol, Tolvol, Xylol		
Pure alcohol, Glycol, Glycerin, Acetone	Protection Required	
Phenol in mg/l	< 70	
Sugars	< No Attack (if pipe is fully hardened)	
Acetic Acid, Lactic Acid, sugar fermentation products	Protection required	
Domestic Sewage (Town Mix). H ₂ S corrosion.	Protection required against H ₂ SO ₄	

Why Dadex Sewer Pipe Systems?

- Resistant to corrosion
- Longer life due to the material's inherent characteristics
- Smooth and uniform internal surface and hence smoother flow
- Resistant to wear and tear
- Nominal excavation required as compared to other pipes due to smaller external diameter
- Angular deflection without jeopardizing the leak proofing of the system
- Larger lengths of pipes make installation economical
- Perfect sealing and jointing system using synthetic rubber ring
- Efficient hydraulic flow characteristics



Specifications

Dadex Sewer Pipes are classified according to their crushing strength. The minimum crushing load for the following series is based on load per unit area of the pipe. According to ISO 881 and PS 558 the following four series can be manufactured.

Table 2

Specifications		Crushing Strength	
Series	1	40	kN/m ²
Series	2	60	kN/m ²
Series	3	90	kN/m ²
Series	4	120	kN/m ²

Dimensions

Table 3: DIMENSIONS OF CC SEWER PIPE SYSTEM

PIPE								COMETE JOINTS						RUBBER RING	
Dia	Outside Diameter	OD Tol.	WT Turn End	WT Tol.	WT Barrel	Tolerance Barrel	TE Width	Internal D2	Tolerance D2	Groove Depth	D4 D2+2 [G.D]	OD of C/J	Min. OD of C/J	Socket Width	Outside Diameter
80	95	+0.6 & -0.4	7.5	+0.3 & -0.2	9.5	-1.5	120	102	+1.0 & -0.5	7	116.0	133	131.0	110	121
100	115	+0.6 & -0.4	7.5	+0.3 & -0.2	9.5	-1.5	120	122	+1.0 & -0.5	7	136.0	153	151.0	110	142
150	166	+0.6 & -0.4	8	+0.3 & -0.2	10.5	-2.0	140	173	+1.0 & -0.5	7	187.0	206	203.0	130	198
200	220	+0.6 & -0.4	10	+0.3 & -0.2	12	-2.0	140	227	+1.0 & -0.5	8	243.0	266	263.0	130	253
250	272	+0.6 & -0.4	11	+0.3 & -0.2	13	-2.0	140	279	+1.0 & -0.5	10	299.0	324	321.0	130	310
300	324	+0.6 & -0.4	12	+0.3 & -0.2	14	-2.0	140	331	+1.0 & -0.5	12	355.0	383	379.0	130	361
350	376	+0.6 & -0.4	13	+0.3 & -0.2	16	-2.0	140	383	+1.5 & -0.6	14	411.0	441	437.0	130	417
400	430	±1.0	15	±0.5	18	-2.0	140	438	+1.5 & -0.6	15	468.0	502	498.0	160	472
450	484	±1.0	17	±0.5	20	-2.0	170	492	+1.5 & -0.6	16	524.0	563	558.0	160	525
500	538	±1.0	19	±0.5	22	-2.5	170	546	+1.5 & -0.6	17	580.0	623	618.0	160	580
600	644	±1.0	22	±0.5	26	-2.5	170	652	+2.0 & -0.6	19	690.0	740	734.0	190	690

All dimensions in mm

a) Tolerance in pipe length = + 5mm & - 20mm

(Presently, series II is being manufactured by Dadex. Pipes of other series can be manufactured against specific orders).

Specification

Angular Deflection

CC Sewer Pipes have smooth and regular inner surface. The couplings are of comete type and their mix design is same as that of the pipes. They are fitted with two sealing rubber rings. The sizes of coupling and rubber rings are such that they ensure a leak proof sealing of the pipeline against infiltration and leakage, even when the pipes have been assembled under maximum allowable angular deflection (figure 2).

Hydraulic Properties

The production process guarantees smooth interior pipe wall. This feature, together with pipe length and high dimensional accuracy of pipes and couplings, ensures a minimum resistance to flow in a Dadex sewer pipe.

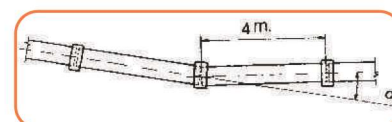


Fig. 2 Angular Deflection

PERMISSIBLE DEFLECTION IN PIPE LINES

PIPE INTERNAL DIAMETER mm	DEFLECTION ALLOWED MAXIMUM degrees (a)	DISPLACEMENT (D) for 4m lengths cm
80	6°	42
100	6°	42
150	6°	42
200	5°	35
250	5°	35
300	4°	28
350	3° 30'	24
400	3°	21
450	2° 30'	18
500	2° 30'	18
600	2° 30'	18
700	2° 30'	18
800	2° 30'	18
900	2° 30'	18
1000	2°	14

Sewer Pipe Laying and Jointing System

Pipe Laying

The photographs and fig. 3 depict typical trench and laying conditions with a Comete Joint. This system is similar to Dadex AC/FC Pressure Pipe System laying and jointing (for more information on laying and jointing techniques please consult with the Dadex Customer Services Department).

Pipe Connections/Joints

The Comete Joint offers a tight sealing, a significant aspect of Dadex Sewer Pipe System. The installation of Comete Joint is simple, quick and economical.

The ring is so dimensioned, that it tightly fits in the groove.

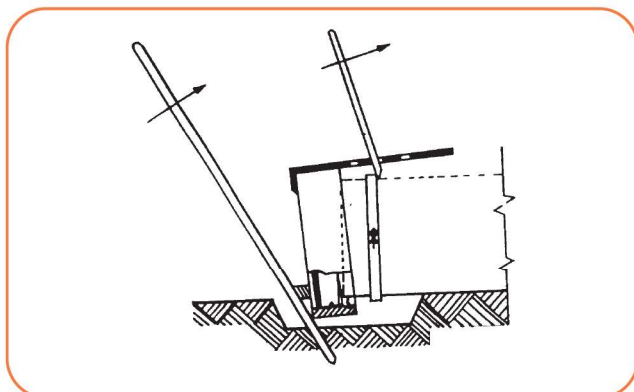
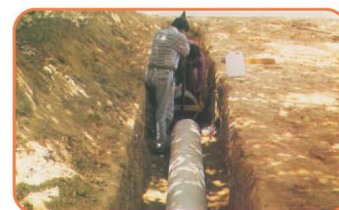
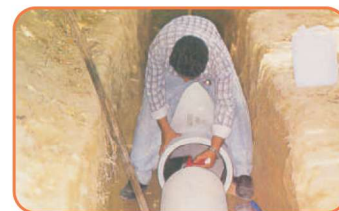


Fig. 3 Typical Laying and Jointing

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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 for purpose, 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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