Kanaflex

Materials for solar power generation and wind power generation

High-strength fiber concrete **Kanacrete**®

Achieved a weight

45% less

than conventional concrete products!

KC prefabricated manhole
KanaCrete®

Kanalex ML

What is Kanacrete®?

Kanacrete® is an ultra-lightweight fiber-reinforced concrete, which is a lightweight ceramic material that has achieved a “structure with no reinforcing bars” by compounding special fibers.

Despite its lightweight, it has approximately **3** times the bending strength and approximately **twice** the compressive strength of ordinary concrete and it also has excellent thermal insulation and fire resistance.

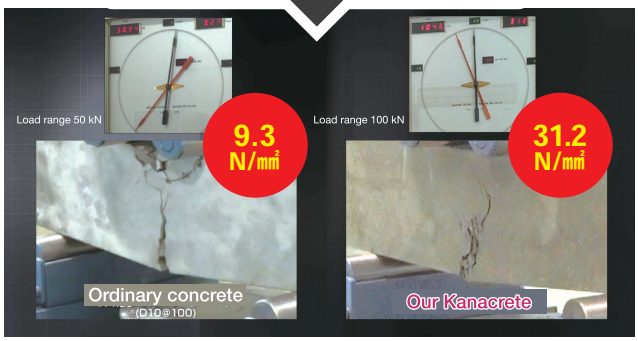
Material and characteristics

As Kanacrete® is a high-strength and lightweight fiber concrete made by compounding special fibers, it

has achieved approximately twice the compressive strength and approximately three times the bending strength of reinforced concrete.

Compressive strength test

Bending fracture strength



Accelerated carbonation test

Tested by the Japan Testing Center for Construction Materials in accordance with JIS A 1153

This test measures the carbonation depth when carbonation in concrete is accelerated by increasing the concentration of carbon dioxide in the atmosphere.
52 weeks = 1 year, corresponding to 100 years in the outdoor environment.

The carbonation depth of Kanacrete® products was 0 mm in 52 weeks. The test result proves that Kanacrete® will not have carbonation in natural environments (outdoor) for more than **100 years.**

Permeability test

The water permeation resistance of Kanacrete® is approximately 13 times higher than that of general concrete.

The permeability coefficient of general concrete is 2.4×10^{-12} cm/sec.
Based on Table-3 Permeability coefficient obtained by various permeability test methods in the article “Long-term saturated permeability of concrete” in the Concrete Research and Technology vol. 22, No. 2, 2000.

Freezing and thawing test

Result of repeating 300 cycles of 5 → -18 → 5°C

The mass decrease rate was -1.4% or less, and the relative dynamic modulus of elasticity increased to 116% with no decrease.

The result of this test has proved that Kanacrete® is resistant to freezing and thawing in cold regions.

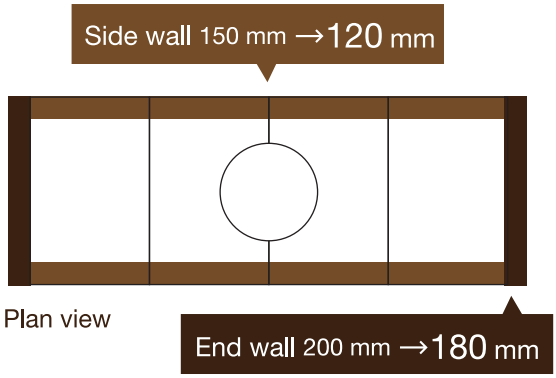
Features of a KC prefabricated manhole

1. More compact and more lightweight

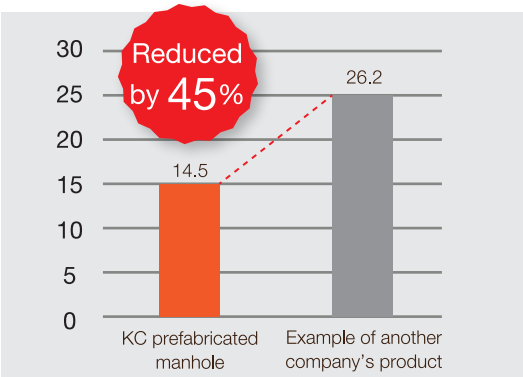
We have reduced the wall thickness by approx. 20% by using high-strength lightweight Kanacrete, and also thanks to the light unit weight of Kanacrete, the weight of precast products has been reduced by approx. 45%, achieving more compact and more lightweight prefabricated manholes.

W 1300 × H 1800 × L 8400	Side wall thickness	End wall thickness	Total weight
Example of another company's product	150 mm	200 mm	Approx. 26.2 t
KC prefabricated manhole	120 mm	180 mm	Approx. 14.5 t

*The thickness of the end wall varies depending on the specifications of the pull-in metal fittings.



Weight comparison (Unit: t)



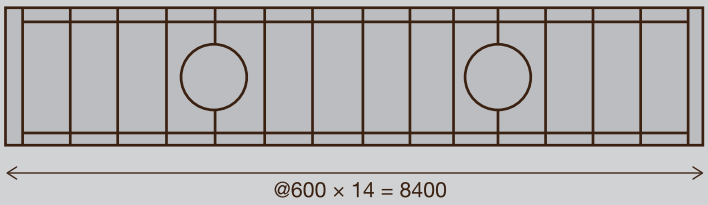
Lightweight and having quick joint couplings!
Fast construction!

*Connectable with our Kanalex ML and NEW Kanalex

2. The number of divided sections can be changed. (Change of dimension L)

The length can be increased by reducing the weight.
When the skeleton is 2 t or less, the section length of another company's prefabricated manhole is 600 (L = 600), but a KC prefabricated manhole can make the section length 1,200 (L = 1,200).
By reducing the number of joints, the number of times required for connection work is reduced and the construction time is shortened.

Example of another company's product

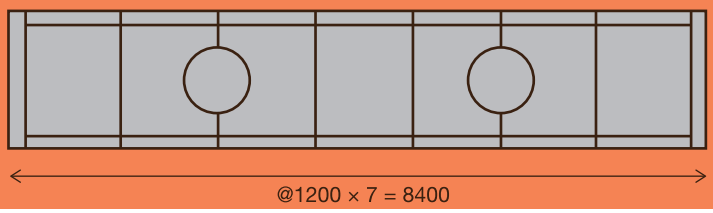


Example of another company
(Number of divided sections: 14)
When connection work takes approx. 30 minutes

30 min × 13 = 390 min

Working time 50% or less

KC prefabricated manhole



KC prefabricated manhole
(Number of divided sections: 7)
When connection work takes approx. 30 minutes

30 min × 6 = 180 min

3. Cost reduction

Its smaller cross-section and lighter weight help to reduce the excavation width and generated soil, resulting in lower construction costs.
The lighter weight not only reduces installation costs but also reduces constraints on routes when underground lines are designed, thereby making it possible to reduce the costs of carry-in route construction and environmental measures.

Advantages of introducing KC prefabricated manholes

Drastic shortening of the construction period

Drastic reduction in the total cost

- The reduced size and weight **enables construction with a backhoe*** without using a rough terrain crane.
- The reduction in the number of divided sections **improves workability*.**
- More flexible design of underground lines helps to reduce the costs of environmental measures, **making it possible to reduce the total cost.**

*When weight reduction is important due to the field situation

With increased constructions of power plants using renewable energies such as wind power, solar power, geothermal power, small and medium hydropower, and biomass, demands for manholes for electrical facilities and handholes are increasing.

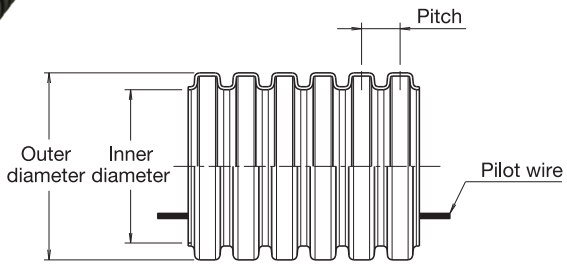
Corrugated hard synthetic resin pipe (FEP)

NEW Kanalex®

Pipes for duct system electric lines specified in JIS C3653 (Product conforming to the corrugated hard synthetic resin pipes specified in Appendix 1)

Standard dimensions

NEW Kanalex, a corrugated hard synthetic resin pipe (FEP), is an underground line duct having a unique structure with varying wall thickness, which is flatter and has more load-bearing capacity than conventional pipes. With its “ease of bending”, “good workability”, and “economic efficiency, it has received a favorable reception.



1. Prevents bending tendency!

2. Its quick connection reduces the connecting time to approximately half!

3. Good workability thanks to its flexibility!

4. Easy to cut!

5. The unique handhole coupling reduces the installation time to approximately half!

6. Watertightness with no water leakage for 10 minutes at an external water pressure of 0.05 MPa!

Size	Product No.	Nominal		Inner dia. (mm)	Outer dia. (mm)	Pitch (mm)	Length (m)	Reference packing dimension Outer dia. × Width (mm)
ø30	KLX-030	NEW Kanalex	ø30	30	37	8	300	1200 × 700
ø40	KLX-040	NEW Kanalex	ø40	40	50	9	200	1500 × 500
ø50	KLX-050	NEW Kanalex	ø50	50	61	13	200	1600 × 600
ø65	KLX-065	NEW Kanalex	ø65	65	80	15	100	1600 × 600
ø80	KLX-080	NEW Kanalex	ø80	80	100	17	100	2000 × 600
ø100	KLX-100	NEW Kanalex	ø100	100	123	17	100	2000 × 600
ø125	KLX-125	NEW Kanalex	ø125	125	158	26	50	2000 × 800
ø150	KLX-150	NEW Kanalex	ø150	150	195	33	50	2100 × 800
ø200	KLX-200	NEW Kanalex	ø200	200	260	44	30	2300 × 800

*The standards and specifications are subject to change without notice due to product improvement.
(Note-1) For the nominal diameter of NEW Kanalex to be purchased, please select an internal diameter at least 1.5 times as large as the finished outer diameter of the cable to be put in the NEW Kanalex.

- The lineup of all NEW Kanalex products includes a flame-resistant type. -

You can designate a flame-resistant type by putting "N" before the part number of NEW Kanalex (including its parts). This applies to all NEW Kanalex types. [Some products are common to both flame-resistant and non-flame-resistant types]

(Example) KLX-30 (NEW Kanalex ø30)

N KLX-30 (Flame-resistant NEW Kanalex ø30)

Multiple protection pipe for power and communication cables

Kanalex® ML

Patented

Registered to New Technology Information Systems (NETIS) of the Ministry of Land, Infrastructure, Transportation and Tourism
(Former) Registration No. KK-060019-V "Technology that has undergone ex-post evaluation" and "Quasi recommended technology in 2014"

Unique shape by a combination of square portions and circular portions

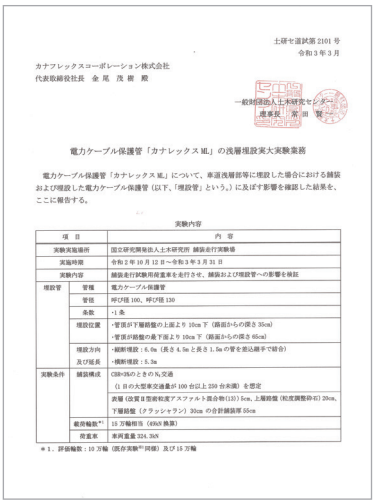
Improved excellence in strength to withstand sand-falling compared to other company's square pipes and can dramatically solve the risk of cave-in of road surfaces!!

Kanalex® ML is easy to fill sand in installation at a shallow depth and can avoid the risks of deformation of pipes due to hollowing and cave-in of road surfaces.

- Easy bending work
- Easy to pull in cables
- Quick connection for couplings of all sizes
- Enables space-saving piping
- Excellent flame resistance
- Excellent pressure resistance

Quick connection

Public Works Research Center (Test report)



土研七道試第2101号
令和3年3月

カナフレックスコーポレーション株式会社
代表取締役社長　金 尾 茂 樹　殿

一般財団法人土木研究センター
理事長　茅 田 [illegible]

電力ケーブル保護管「カナレックス ML」の浅層埋設実大実験業務

電力ケーブル保護管「カナレックス ML」について、車道浅層部等に埋設した場合における舗装および埋設した電力ケーブル保護管（以下、「埋設管」という。）に及ぼす影響を確認した結果を、ここに報告する。

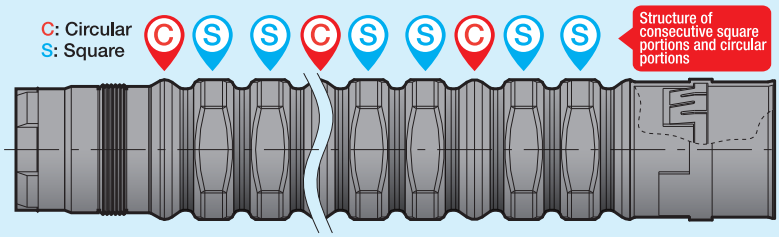
実験内容

項　目		内　容
実験実施場所		国立研究開発法人土木研究所 舗装走行実験場
実施時期		令和2年10月12日～令和3年3月31日
実験内容		舗装走行試験用荷重車を走行させ、舗装および埋設管への影響を検証
埋設管	管種	電力ケーブル保護管
	管径	呼び径100、呼び径130
	条数	・1条
	埋設位置	・管頂が下層路盤の上面より 10cm 下（路面からの深さ 35cm） ・管頂が路盤の最下面より 10cm 下（路面からの深さ 60cm）
	埋設方向及び延長	・縦断埋設：4.0m（長さ 4.0m と長さ 1.5m の管を差込継手で結合） ・横断埋設：5.3m
実験条件	舗装構成	CBR=25のときのN₃交通 （1日の大型車交通量が100台以上 250台未満）を想定 表層（改質Ⅱ型密粒度アスファルト混合物(13)）5cm、上層路盤（粒度調整砕石）20cm、 下層路盤（クラッシャラン）30cm の合計舗装厚 55cm
	載荷輪数*1	15万輪相当（49kN換算）
	荷重車	車両重量 324.36N

＊1．評価輪数：15万輪（既存実験**同様）及び15万輪

Kanalex® ML has a unique shape made up of a combination of square portions and circular portions, compared to another company's square FEP (our old model).

C: Circular
S: Square

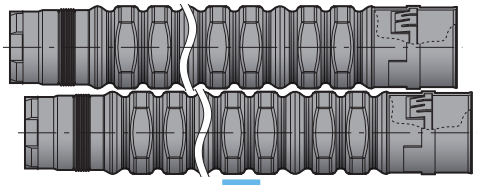


Quick connection

Easy to connect with a prefabricated manhole

Kanalex® ML can reliably be connected with a prefabricated manhole by a quick connection. Thanks to less labor in the connection work, the total cost can be reduced and the work period can drastically be shortened as well.

Installation of multiple pipes <misalignment of pipes>



Unevenness of consecutive square portions and circular portions is less likely to have blocking areas even if the pipes are misaligned.

Sand-falling test

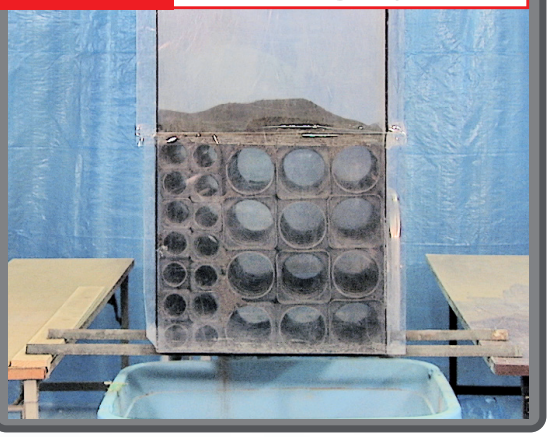
Regenerated sand for backfilling (Particle size: less than 2 mm)

Kanalex ML — 67%

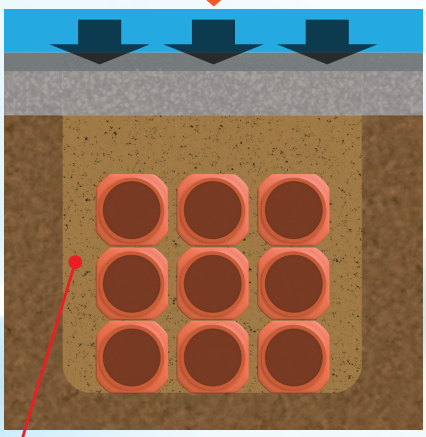
Another company's square FEP (Our old model) — 13%

Sand-falling rate

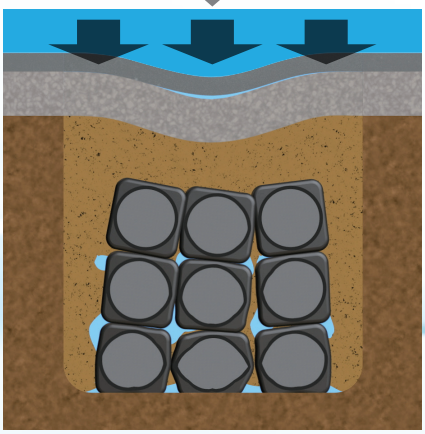
Approx. 5.2 times



Kanalex ML

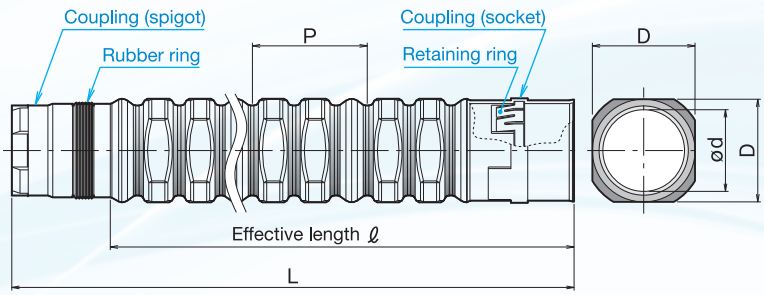


Another company's square FEP (Our old model)



The strength of the pipes is increased by pouring sand around them.

Specifications



Nominal dia.	Outer dia. D (mm)	Inner dia. ød (mm)	Pitch P (mm) Reference value	Total length L (mm)	Effective length ℓ (mm)
50	72	51	71	5,250	5,190
75	99	76			
81	105	81			
100	125	100	142	5,300	5,180
130	162	130			
150	184	150			

website

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