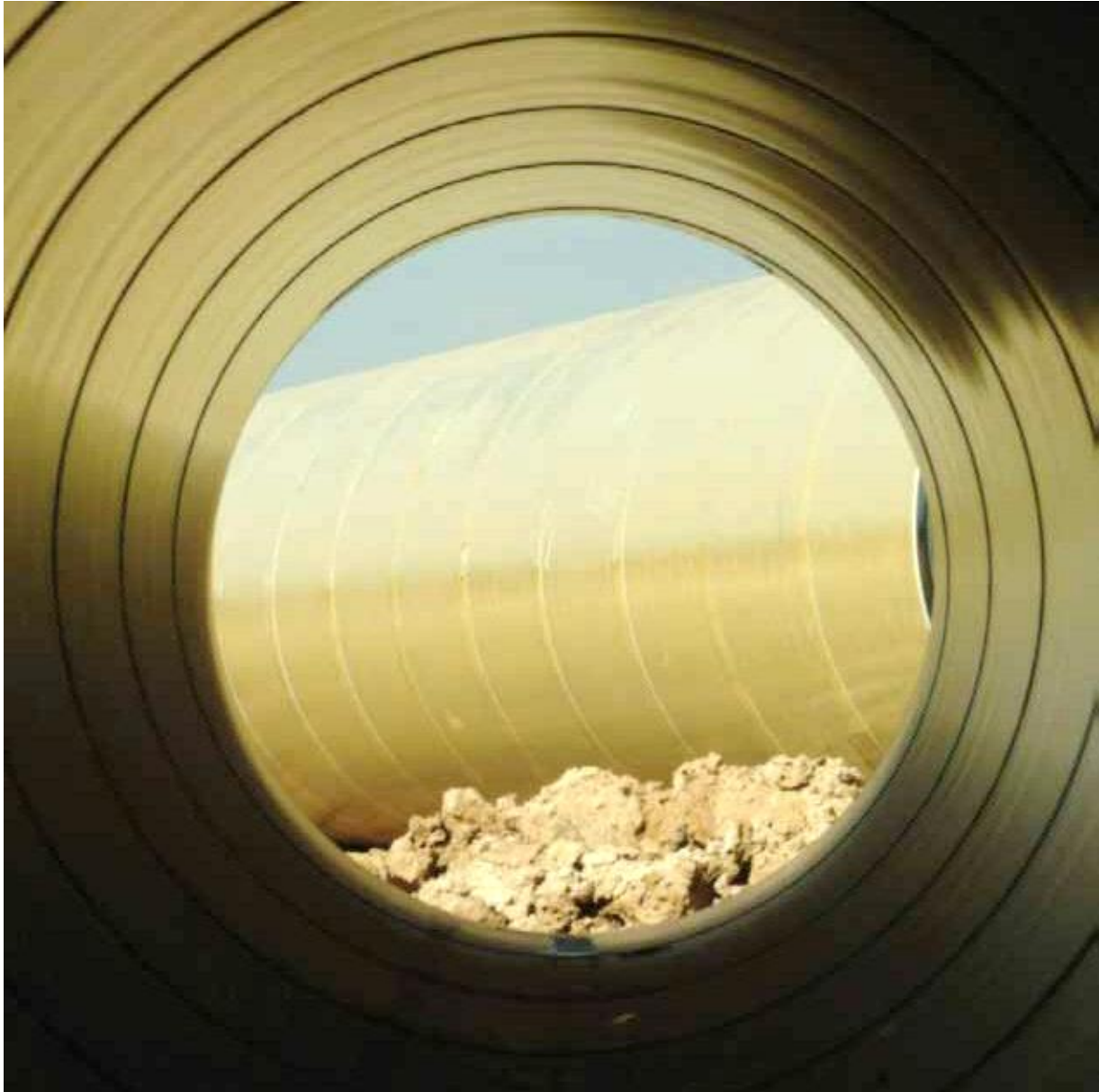




Product Data Booklet FiberTec HDD Coating System

FiberTec HDD Coating System
Bringing Unparalleled Toughness to HDD Coating



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1. The FiberTec Pipe Protection System for HDD Pipelines

The FiberTec mechanical protection system for HDD Pipelines consists of:

- Pre-cut FiberTec 1.0m width x pipe circumference + 100mm, packed and sealed
- FiberTec Tension Tape (96mm x 71m Roll)

KEY NOTES

FiberTec application should commence at the rear of the string so the overlap weatherboard effect ripples to the rear.

It is a FiberTec recommendation that the 1st 10% of the pipe string be double coated as this initial section will endure the most wear and tear.

Where FiberTec overlaps on to itself it must be a **wet-on-wet** joint.
E.g., the topmost film must be removed before joining layers of FiberTec.
Overlaps should be staggered to avoid overlap upon overlap.
Unless specified otherwise all overlaps on FiberTec to measure 100mm.

STORAGE CRITERIA.

Keep below 25°C if stored for less than 2 weeks.
Keep below 15°C if stored for more than 2 weeks.

QUALITY OF APPLICATION

Make use of the *FiberTec Application ITP* and *FiberTec Application Coating Checklist* documents.

2. Pipe Surface Preparation

Surface to be clean and free of any loose materials, such as sand, dust, grease, oil or any other deleterious material.

All sharp edges/protrusions to be removed.

Once cleaned the parent coating should be holiday tested and repaired as required.

2.1 Shaded Application

Do not expose FiberTec to UV during handling and application, **keep shaded**.

2.2 Keep Parent Coating Dry

If parent, coating is damp / wet, dry surface with rags to remove moisture.

If moisture is quickly reforming, warm the substrate to prevent moisture reformation.

2.3 Surface temperature

Pipe surface to be no less than 5°C and dry as described above.

Pipe surface not to exceed 75°C.

FiberTec temp. not to exceed 40°C immediately before application.

3. Application of FiberTec

The blue film is progressively removed from FiberTec underside whilst wrapping the exposed adhesive around pipe, cigarette wrap fashion.

The clear top film on FiberTec is peeled back at the overlap area to provide a wet-on-wet joint then replaced.

When sheets of FiberTec are progressively overlapped a 100mm width of top film is removed on the currently installed piece of FiberTec to permit the new piece of FiberTec to achieve a wet-on-wet joint.

Overlaps should be staggered as further pieces are added to avoid overlap upon overlap.

4. Application of Clear Tension Tape

Tension Tape application follows immediately after FiberTec install.

It is applied spirally with approx. 50% overlap with high tension.

Tension Tape compresses the FiberTec creating an intimate bond with the substrate.

5. Curing of FiberTec

At completion of application of Tension Tape, FiberTec may be cured by exposure to sunlight.

FiberTec must be handled carefully whilst uncured, support the FiberTec coated pipe on the uncoated ends, not on the uncured FiberTec, do not place slings on uncured FiberTec. Under full sunlight FiberTec will cure rapidly (120 minutes). On cloudier days cure will be extended. FiberTec must reach 60 Barcol Hardness before going into the drill hole.

6. Repairing damaged FiberTec

After FiberTec application, pipelines are to be handled as per parent coating manufacturer's guidelines.

Minor Damage

In case of minor damage up to 50mm x 50mm in size, take following steps to repair the defect:

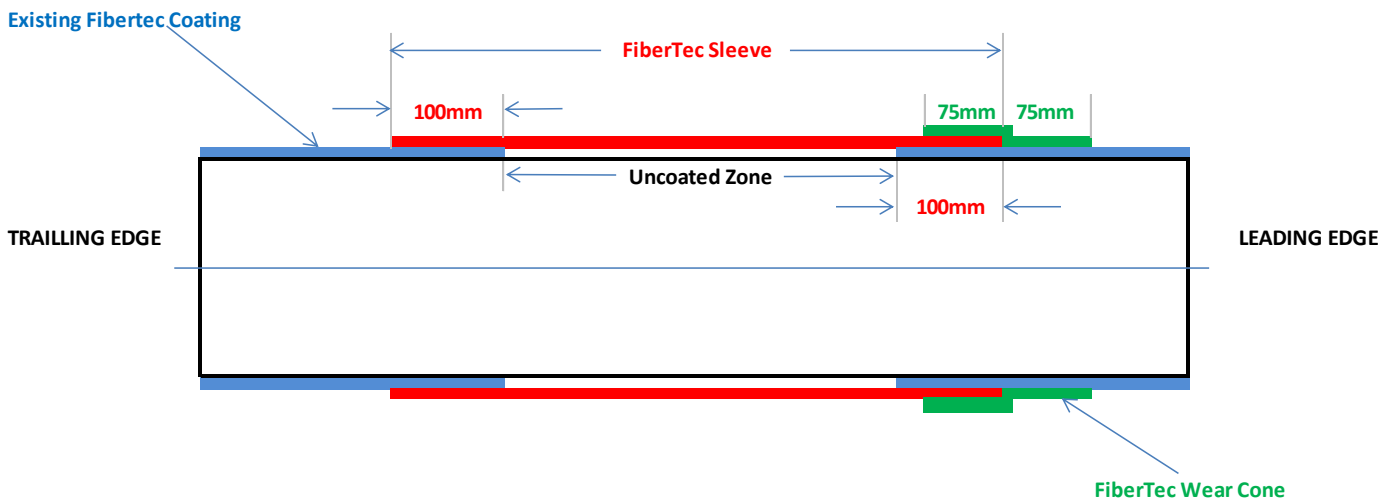
1. Remove the transparent polyethylene film if it has been left on. Lightly abrade the damaged area + 100mm overlap.
2. Make sure it is clean from any dirt, dry, and degreased.
3. Cut and apply a suitable sized repair patch of FiberTec, making sure it overlaps the surrounding area by at least 100mm.
4. Apply Tension Tape to keep FiberTec repair patch in place and leave for curing as per normal procedure.

Major Damage

In case of major damage larger than 50mm x 50mm in size, take following steps to repair the defect:

1. Remove the transparent polyethylene film if it has been left on. Lightly abrade full pipe circumference to accept a new sheet of FiberTec.
2. Make sure it is clean from any dirt, dry, and degreased.
3. Cut and apply a suitable sized sheet of FiberTec, making sure it overlaps the surrounding area by at least 100mm.
4. Apply Tension Tape to keep FiberTec sheet in place and leave for curing as per normal procedure.

7. Coating of Skid Areas and Golden Welds



Remove existing Tension Tape and Top Film from cured FiberTec as follows either side of uncoated skid area or golden weld zone

- 100mm width at trailing edge
- 175mm width at leading edge

Cut FiberTec sleeve to suit uncoated zone width + 200mm.

Install FiberTec Sleeve equi-spaced over uncoated zone. This will provide 100mm overlap both sides of uncoated zone.

Cut a FiberTec wear cone 150mm width. Install wear cone equi-spaced over leading edge of the FiberTec sleeve and existing coating.

This will provide a 75mm overlap on the FiberTec sleeve and existing coating.

Apply FiberTec overwrap as per standard procedure.

8. UV Exposure

FiberTec can be left exposed to direct sunlight for 3 months after curing.

If there is a requirement to exceed 3 months outdoor storage, tarpaulins should be employed to provide a UV barrier for the coated pipe. Pipes may be stored indefinitely when shielded by tarpaulins.



Universal Corrosion Coatings

FIBERTEC ITP & QUALITY PLAN

(Read in conjunction with Application Instruction and Coating Checklist)

Sr. no.	Particulars	Test Frequency	Description & Acceptance Criteria	Inspection Record Documentation	Inspection by Coating Inspector	Inspection by Contractor	Inspection by Owner
Document No: ITP FiberTec		Rev. No.: 2	Application of Fibertec And Tension Tape				
		Date:					
A	Raw Materials						
1	FiberTec	Each shift	Manufacturers Batch Certificates	FiberTec Coating Application Checklist	H	R	R
2	Tension Tape	Each shift	Manufacturers Batch Certificates	FiberTec Coating Application Checklist	H	R	R
3	Isopropyl Alcohol	Each shift	Manufacturers Batch Certificates	FiberTec Coating Application Checklist	H	R	R
4	Material storage (Inside container)	Each shift	Stored Horizontally in Container in Original Packaging	FiberTec Coating Application Checklist	H	R	R
5	Material storage (Inside container)	Each shift	< 25°C if stored for < 2 weeks < 15°C if stored for > 2 weeks	FiberTec Coating Application Checklist	H	R	R
B	Set up & Surface Prep						
1	Shaded Work Area	Each shift	Material fully shaded during handling and application	FiberTec Coating Application Checklist	H	R	R
1	Holiday Test	Each shift	Surface to be clear of foreign material, sharp edges	FiberTec Coating Application Checklist	H	R	R
2	Clean substrate	Each shift	(Visual) Surface to be clear of foreign material, sharp edges	FiberTec Coating Application Checklist	H	R	R
3	Solvent Degrease	Each shift	Surface to be free of oil / grease	FiberTec Coating Application Checklist	H	R	R
4	Dry Surface	Each shift	(Visual) Surface is Dry	FiberTec Coating Application Checklist	H	R	R
5	Surface Temperature	Each shift	<75°C	FiberTec Coating Application Checklist	H	R	R
6	Ambient Temperature	Each shift	>5°C	FiberTec Coating Application Checklist	H	R	R
7	Humidity	Each Shift	(Visual) No dew on pipe	FiberTec Coating Application Checklist	H	R	R



Universal Corrosion Coatings

FIBERTEC ITP & QUALITY PLAN

(Read in conjunction with Application Instruction and Coating Checklist)

Document No: ITP FiberTec		Rev. No.: 2	Application of Fibertec And Tension Tape				
		Date:					
Sr. no.	Particulars	Test Frequency	Description & Acceptance Criteria	Inspection Record Documentation	Inspection by Coating Inspector	Inspection by Contractor	Inspection by Owner
C	Coating Application						
1	Confirm Radial Overlap On FiberTec PPS Wrap	Each Shift	>100mm	FiberTec Coating Application Checklist	H	R	R
2	Confirm Lineal Overlap on FiberTec PPS Wrap	Each Shift	>100mm	FiberTec Coating Application Checklist	H	R	R
3	Confirm all overlaps are wet-on-wet	Each Shift	Wet-on-wet joints	FiberTec Coating Application Checklist	H	R	R
4	Confirm No Wrinkling in FiberTec PPS Wrap	Each Shift	(Visual) No significant wrinkling	FiberTec Coating Application Checklist	H	R	R
5	Confirm Tension on FiberTec Overwrap	Each Shift	(Visual) Confirm tight application.	FiberTec Coating Application Checklist	H	R	R
D	Post Application Inspection & Testing: (Production)						
1	Fully Cured Coating	Each Shift	Check for hard finish after 120 minutes full UV exposure	FiberTec Coating Application Checklist	H	R	R
2	Barcol Hardness	Each Shift	> 60	FiberTec Coating Application Checklist	H	R	R
3	Final Release	Each Shift	Confirm ready for HDD	FiberTec Coating Application Checklist	H	R	R
Legend: H: HOLD W: WITNESS R: REVIEW / RECORD R/M: RANDOM CHECK							



Universal Corrosion Coatings

FiberTec Coating Application Checklist

(Read in Conjunction with Application Instructions and Coating Checklist)

Client:			Project:		
Application location:			Date:		
Batch Number FiberTec:			Batch Number Tension Tape:		
Start Time:		Finish Time:	No. of wraps applied:		Approx. meterage:
			Inspection by		
Sr. No.	Particulars	Description & Acceptance Criteria	Coating Inspector	Contractor	Owner
A	Raw Materials				
1	FiberTec PPS Wrap	Manufacturers Batch Certificates			
2	FiberTec OverWrap	Manufacturers Batch Certificates			
3	Sovent - IsoPropyl Alcohol	Manufacturers Batch Certificates			
4	Material storage (Inside container)	Stored Horizontally in Container in Original Packaging			
5	Material storage (Inside container)	< 25°C if stored for < 2 weeks < 15°C if stored for > 2 weeks			
B	Set up and Surface Prep				
1	Appropriate Shading of Work Zone	Fibertec Shaded from UV during handling and application.	kV	kV	kV
2	Holiday Test existing Coating	Surface to be clear of foreign material, sharp edges	kV	kV	kV
3	Clean existing coating and steel	(Visual) Surface to be clear of foreign material, sharp edges			
4	Degrease existing coating and steel	Surface to be free of oil & grease			
5	Dry existing coating and steel	(Visual) Surface is Dry			
6	Temperature of existing coating and steel	< 75°C	°C	°C	°C
7	Ambient Temperature	> 5°C	°C	°C	°C
8	Humidity Check	(Visual) No dew on pipe			
C	Coating Application				
1	Confirm Radial Overlap On FiberTec PPS Wrap	>100mm			
2	Confirm Lineal Overlap on FiberTec PPS Wrap	>100mm			
3	Confirm all overlaps are wet-on-wet	Wet-on-wet joints			
4	Confirm No Wrinkling in FiberTec PPS Wrap	(Visual) No significant wrinkling			
5	Confirm Tension on FiberTec Overwrap	(Visual) Confirm tight application.			
E	Post Application Inspection & Testing: (Production)				
1	Fully Cured Coating	Check for hard finish after 120 minutes full UV exposure			
2	Barcol Hardness	> 60			
3	Final Release	Confirm ready for HDD			
Legend: H: HOLD W: WITNESS R: REVIEW / RECORD R/M: RANDOM CHECK					

FiberTec

Table 1. Technical Information on FiberTec (UV-curing Polyester)

Properties	Unit	Value	Method
Volume weight/density	g/cm ³	1.84	ISO 1183
Tensile strength	MPa	65	EN ISO 527-4
Tensile modulus	MPa	9.000	EN ISO 527-4
Strain at break	%	1.7	EN ISO 527-4
Flexural strength	MPa	150	EN ISO 14125
Flexural modulus	MPa	9.000	EN ISO 14125
Compressive strength	MPa	150	EN ISO 14126
Compressive modulus	MPa	14.000	EN ISO 14126
Impact strength	kJ/m ²	57	EN ISO 179
Coefficient of linear thermal expansion	K ⁻¹	20 x 10 ⁻⁶	ISO 11359-2
Glass content	%	25	ISO 1172
Volume shrinkage	%	0.15	ISO 2577
Hardness	Barcol	>60	ASTM D2583
Water absorption	mg/100 hr.	0.2	EN ISO 62
Water vapour permeability	metric perms	0.001	ASTM E96
Insulation resistance	Ω	3.2x10 ⁴	
Styrene emission	PPM	< 20	
Service temp.	°C	min. -165 max 90	
Heat distortion temp.	°C	225	
Application temperature	°C	>5	

(All figures can show small differences)

Table 2. Dimensions and weight of FiberTec (UV-curing Polyester)

Standard roll length	10 m	Thickness	1.8 mm
Roll width	1.0 m	Weight	± 3.5 kg/m ²
Net sqm per roll	10	Total weight (incl. packing)	± 38 kg

(All figures can show small differences)

Transportation, storage & shelf life:

Keep away from UV.

Always store in horizontal position.

Keep below 25°C if stored for less than 2 weeks.

Keep below 15°C if stored for more than 2 weeks.

Shelf life is at least 24 months from date of manufacture when stored horizontally and below 15°C.

FiberTec

GUIDE TO THE RESISTANCE OF FULLY CURED FIBERTEC LAMINATES

In the table, recommendations are effective for all concentrations of chemicals except where otherwise stated.

Key to table

A	Suitable for use cold up to 50°C (85°F)
B	Intermittent exposure only - cold
C	Suitable for use hot - up to 75°C (167°F)
D	Intermittent exposure only - hot
X	Not recommended

Reagent

Acetic Acid 10%	C	Ferric and Ferrous Sulphate	C
Acetic Acid 25% (50°C)	C	Fluosilicic Acid 23%	X
Acetic Acid 75%	B	Formaldehyde 37%	A
Acetic Anhydride	X	Glycerine	C
Acetone	B	n-Heptane	A
Acetonitrile	X	Hexane	A
Acrylonitrile	B	Hydrazine	X
Aluminium Chloride	C	Hydrobromic Acid 50%	B
Aluminium Citrate	C	Hydrochloride Acid 10%	C
Aluminium Fluoride	X	Hydrochloride Acid 20%	A
Aluminium Sulphate	C	Hydrochloride Acid 37%	A
Ammonia (liquid)	X	Hydrofluoric Acid 10%	B
Ammonium Benzoate	C	Hydrofluoric Acid 20%	X
Ammonium Chloride	C	Hydrofluosilicic Acid (gas)	X
Ammonium Citrate	C	Hydrogen Peroxide 25%	X
Ammonium Hydroxide 10%	B	Hydrogen Sulphide	A
Ammonium Hydroxide 18%	B	Hypochlorous Acid 50%	A
Amylamine	X	Isodecanol	C
Aniline	X	Isopropyl Sulphate 100%	X
Aniline Hydrochloride	C	Kerosene	C
Aniline Sulphate	C	Linolenic	C
Aqua Regia vapour	X	Lactic Acid	C
Barium acetate	C	Lead Acetate	C
Barium Chloride	C	Lead Chloride	C
Barium Hydroxide 10%	X	Lead Nitrate	C
Barium Sulphide	A	Levulinic Acid	C
Benzaldehyde	B	Bromine	X
Benzene	B	Butyl Acetate	X
Benzoic Acid	C	Butyl Benzyl Phthalate	X
Boric Acid	C	Butyl Cellocolve	X
Brine (Saturated)	C	B Butylene Glycol	C
Diethylene Glycol	C	Butyraldehyde	X
Diethyl Ether	B	Butyric Acid 25%	A
Ethanol (wet)	A	Capric	C
Ethanolamine, mono	B	Calcium Chlorate	C
Ethanolamine, tri	B	Calcium Chloride	C
Ethyl Acetate	X	Calcium Hydroxide 20%	X
Ethylene Chlorohydrin	A	Calcium Hypochlorite 10%	A
Ethylene Diamene	X	Carbon Dioxide (Saturated)	C
Ethylene Dichloride	X	Carbon Disulphide	X
Ethylene Glycol	C	Carbon Tetrachloride	B
Fatty Acids – Saturated	C	Chloractic Acid 50%	A
Formaldehyde 44%	A	Chlorine Dioxide 10%	B
Formic Acid 25%	B	Chlorine Gas (wet or dry)	A
Ferric and Ferrous Acetate	C	Copper Ammonium Chloride	C
Ferric and Ferrous Chloride	C	Creosote	X
Ferric and Ferrous Nitrate	C	Cresylic Acid	X

FiberTec

Cupric and Cuprous Acetate	C	Sodium Glucoheptonate	C
Cupric and Cuprous Chloride	C	Sodium Hydrosulphite	A
Cupric and Cuprous Cyanide	C	Sodium Hydroxide (10%)	C
Cupric and Cuprous Nitrate	C	Sodium Hypochlorite (10%)	C
Cupric and Cuprous Sulphate	C	Sodium Nitrite	C
Cyclohexane	A	Sodium Sulphate	C
Decanol	C	Sodium Thiocyanate	A
Dialtyl Phthalate	C	Stoddard Solvent	C
Dimethyl Kentonr	B	Sulphanilic Acid	B
Dimethyl Maleate 5%	B	Sulphite Liquors	X
Dimethyl Maleate 100%	X	A Sulphur Dioxide	B
Dipropylene Glycol	C	Sulphuric Acid 50%	C
Dibutyl Phthalate	C	Sulphuric Acid 75%	C
Dichlorobenzene	X	Sulphuric Acid 25%	B
Linseed Oil	C	Tannic Acid	X
Lauric	C	Tartaric Acid	B
Linoleic	C	p-Toluene Sulphonamide	B
Magnesium Chloride	C	Toluol	X
Magnesium Nitrate	C	Toluylene Disolcyanate	C
Myristic	C	Trichloroacetic Acid 50%	X
Palmitic	C	Triethanolomine	C
Oleic	X	Trisodium Phosphate 10%	B
Stearic	C	Tung Oil	C
Sorbitol	C	Water	C
Sodium Chloride (Saturated)	X	Xylol	C
Sodium Citrate	B		

Tension Tape for FiberTec

Description Tension Tape is designed to compress and densify the FiberTec coating, ensuring an intimate bond with pipe substrate.
It is applied spirally under tension, incorporating approx. a 50% overlap.

Properties	Value
Tape Thickness (um)	65 ± 2
Backing	Polyethylene
Adhesive	Water base Adhesive 28microns
Colour	Transparent
Adhesion to Steel, N/25mm	7.0
Tack, Ball Number	≥ 30
Holding Power, hr/kg/24mm	≥ 100

Product Packaging	
Roll Widths (mm)	Lengths (m)
96mm	71m

Core Size (ID): 75mm

Storage Conditions: Store in a clean, dry place. Temperature of 4-26°C and 40-50% relative humidity are recommended.