

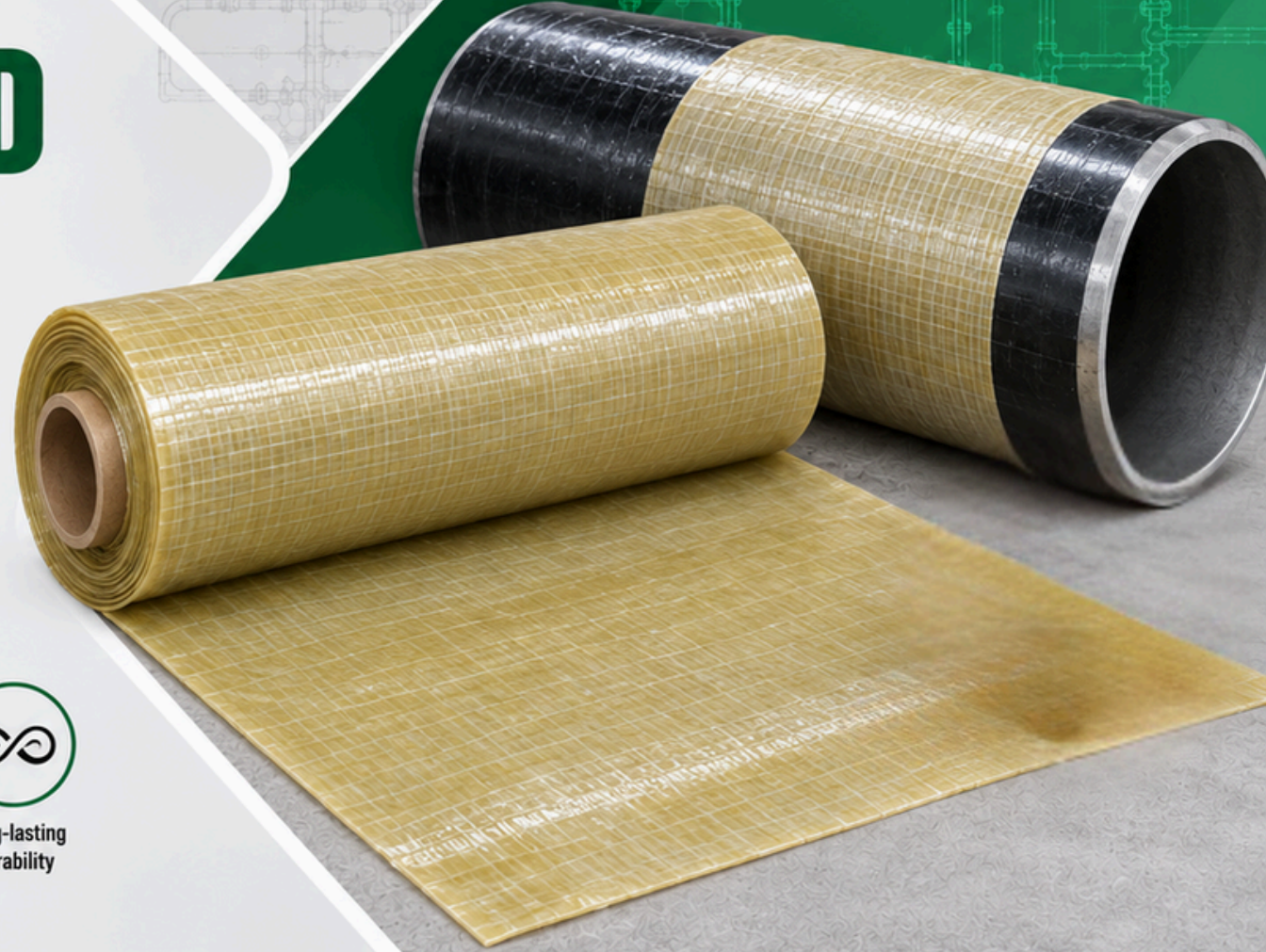


**COLD WRAP & PIPE
PROTECTION**

TECHNICAL DATA SHEET CHAPTER

COLD APPLIED MECHANICAL PROTECTION

FIBRE GLASS REINFORCED POLYESTER SYSTEM



Cold Application



Sunlight Cured



Mechanical
Protection



HDD
Applications



Long-lasting
Durability



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TECHNICAL DATA SHEET

COLD APPLIED MECHANICAL PROTECTION

FIBRE GLASS REINFORCED POLYESTER SYSTEM



Sunlight Cured

YTM MAKINA Cold Applied Mechanical Protection is a system for the mechanical protection of buried and above-ground pipes. Formed by two elements — polyester reinforced with fibre glass and an adhesive tape — it is designed for application at jobsite or mill, in new line construction or for reconditioning existing metallic pipes. Specially designed for horizontal directional drilling (HDD), it is applied over the pipe's main coat; the fibre glass cures with sunlight, acquiring extreme hardness a few hours after application.



THICKNESS
1.8 / 2MM



ROLL DIMENSIONS
1000 MM X 10 M



SERVICE TEMPERATURE
APPLY > 5 °C · MAX ≤ 100 °C



COMPATIBLE COATINGS
PE / PP / PU / FBE / CTE



APPLIED OVER PIPE MAIN COAT

KEY ADVANTAGES

- ✓ Guaranteed mechanical protection
- ✓ Easy, cold application
- ✓ Long-lasting durability
- ✓ Economical solution
- ✓ Environmentally friendly

TECHNICAL CHARACTERISTICS

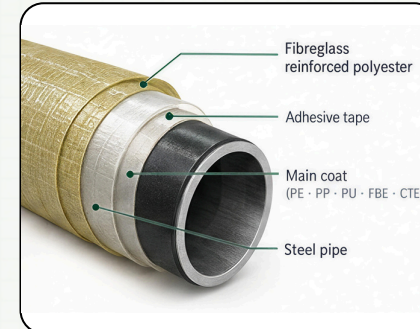
Technical Characteristic	Unit	Value	Test Method
Volumetric Weight	kg/m ³	1805	DIN 53479
Tensile Strength	N/mm ²	55,7	DIN 53455
Elongation at Break	%	1,1	DIN 53455
Resistance to Impact	kJ/m ²	57,5	DIN 53453
Fibre Content	% by weight	20	DIN 53479
Volume Shrinkage	%	0,15	DIN 53464
Hardness	Barcol	60	—
Vaporability	mg/100 u.	0,34	DIN 53495
Insulation Resistance	Ω	3,2 × 10 ⁴	—
Styrene Emission	ppm	< 20	—
Application Temperature	°C	> 5	—
Max. Service Temperature	°C	≤ 100	—

DIMENSIONS AND WEIGHTS

Thickness (mm)	Roll Width (mm)	Roll Length (m)	Weight (kg/m ²)	Total Roll Weight (kg)
1,8 / 2	1000	10	3	± 31

i These values could vary slightly

SYSTEM CONSTRUCTION



APPLICATION PRINCIPLE

- 1 APPLY**
Wrap the laminate over the pipe's main coat at above 5 °C.
- 2 SUN CURE**
Sunlight cures the polyester – a fully cold-applied process.
- 3 PROTECT**
Extreme hardness within a few hours – ready for HDD and demanding service.



APPLICATION GUIDE FIELDS OF APPLICATION

 **HORIZONTAL DIRECTIONAL DRILLING (HDD)**

 **THRUST / SLICK BORES & PULL-THROUGH**

 **ROAD, RAIL & RIVER CROSSINGS**

 **SOIL-TO-AIR TRANSITIONS**

 **BENDS, TEES & FIELD JOINTS**

 **ROCKY BACKFILL & REHABILITATION**

SURFACE PREPARATION

- ✓ Main coat (PE, PP, PU, FBE, CTE) must be fully cured, intact and free of damage; repair defects before wrapping.
- ✓ Surface must be clean and dry – remove oil, grease, dust, mud and all loose material.
- ✓ Lightly abrade glossy coating surfaces to improve adhesion; remove abrasion dust.
- ✓ Substrate temperature should be at least 3 °C above the dew point; do not apply on wet or frosted surfaces.

APPLICATION CONDITIONS

Parameter	Requirement
Application temperature	> 5 °C
Max. service temperature	≤ 100 °C
Substrate vs. dew point	≥ 3 °C above
Surface condition	Clean · dry
Curing	Sunlight (UV)
Hardness after cure	60 Barcol

Curing is faster in strong sunlight and higher temperatures; allow longer in overcast conditions.

STORAGE & HANDLING

- ✓ Store rolls in their original, unopened protective packaging.
- ✓ Keep in a cool, dry, covered area – away from direct sunlight and any UV light source, which will start the curing process.
- ✓ Store rolls horizontally; do not stack heavy loads on top.
- ✓ Open packaging only immediately before use, in a shaded area.
- ✓ Re-cover the master roll and any pre-cut pieces with light-proof film straight after cutting.
- ✓ Handle with care to avoid creasing or damaging the laminate before application.

APPLICATION PROCEDURE

1 PREPARE

Inspect and prepare the main coat as described under Surface Preparation. Work in a shaded area or under a tent.

2 MEASURE & CUT

Cut the laminate to the pipe circumference plus a minimum 50 mm overlap. Keep cut pieces covered from light.

3 WRAP

Wrap tightly around the pipe over the main coat, pressing out air. Overlap adjacent wraps by min. 50 mm.

4 SECURE

Fix the overlaps and wrap ends with the system adhesive tape to hold the laminate firmly in place during curing.

5 SUN CURE

Expose to sunlight. The polyester cures by UV radiation; the pipe underside or shaded areas may need longer exposure.

6 INSPECT

After a few hours the laminate reaches extreme hardness. Check overlaps and hardness before pull-in or backfill.

COVERAGE GUIDE (THEORETICAL, ONE LAYER)

Size	Pipe OD (mm)	Laminate per Wrap (m)	Pipe Length per Roll (m)	Weight per Metre of Pipe (kg)
DN 100	114,3	0,41	23,2	1,3
DN 150	168,3	0,58	16,4	1,8
DN 200	219,1	0,74	12,9	2,3
DN 250	273,0	0,91	10,5	2,9
DN 300	323,9	1,07	8,9	3,4
DN 400	406,4	1,33	7,2	4,2
DN 500	508,0	1,65	5,8	5,2
DN 600	610,0	1,97	4,8	6,2
DN 800	813,0	2,60	3,6	8,2
DN 1000	1016,0	3,24	2,9	10,2
DN 1200	1219,0	3,88	2,4	12,3

Based on 1000 × 10 m roll, 50 mm circumferential and 50 mm longitudinal overlap, 3 kg/m². Add an allowance for cutting waste.

PACKAGING

Parameter	Specification
Roll size	1000 mm × 10 m
Area per roll	10 m²
Roll weight	± 31 kg
Supplied as	Laminate + adhesive tape

 **Contact YTM MAKINA for project-specific requirements.**

HEALTH & SAFETY

- ! Wear protective gloves and safety glasses during handling and application.
- ! Work in well-ventilated areas (styrene emission < 20 ppm).
- ! Avoid skin contact with uncured resin.
- ! Read the Safety Data Sheet before use; dispose of waste per local regulations.

YTM MAKINA guarantees that the product conforms to the physical characteristics stated in this data sheet, tested according to the referenced standards. Values are typical and may vary slightly. Because application conditions are beyond our control, the user is responsible for determining the suitability of the product for the intended use. Information is subject to change without notice; this document supersedes all previous versions.