

UV-CIPP in large diameter pipes

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25th May 2023



ABOUT US

RELINE
Alphaliner – Portfolio
UV Equipment



ALPHALINER

Design and Certification
Built up
Production



APPLICATION

Logistics
Site organisation
Installation and curing



TQM

Curing Protocol
Quality control
Feedback

Introduction

RELINE is the **world's only manufacturer** of GRP hose liners to design and produce **complete systems and equipment**, ranging from **UV curing equipment** through to the **full turnkey fitout of rehabilitation and service vehicles**.



SYSTEM PROVIDER: OUR COMPLETE SOLUTION FOR YOUR PROJECTS

GRP hose liners

- Gravity drainage pipes
- Pressure pipes
- Manholes

UV Technologies

- UV curing systems
- Light sources
- Vehicle assembling

RELINE ACADEMY

- Education
- Training
- Bespoke training

Technical Support

- Application Engineering
- Engineering
- Technical consulting

AT A GLANCE

RELINE UV GROUP LOCATIONS



5

EMPLOYEES WORLDWIDE



285

USERS WORLDWIDE



180

RELINEEUROPE FOUNDED



2009

PROJECTS WORLDWIDE



55 COUNTRYS

UV CURING SYSTEMS

Made in
Rohrbach



136

ALPHALINERS INSTALLED

Made in
Rohrbach



140,000 LINERS

ALPHALINERS INSTALLED

Made in
Rohrbach



7,000,000 METERS

HEAVIEST ALPHALINER

Made in
Rohrbach



**Alphaliner1800H
45.5 metric tons**

Alphaliner



Deutsches
Institut
für
Bautechnik

DIBt

A public-law institution operated jointly by the German federal government and its federal states

Approval and licensing body for construction products and techniques

Date/Reference:
02/16/2021 III 54-1.42.3-3/21

**National Technical
Approval /
General Construction
Technique Permit**

Number:
Z-42.3-447

Period of validity
from: **March 1, 2021**
to: **March 1, 2026**

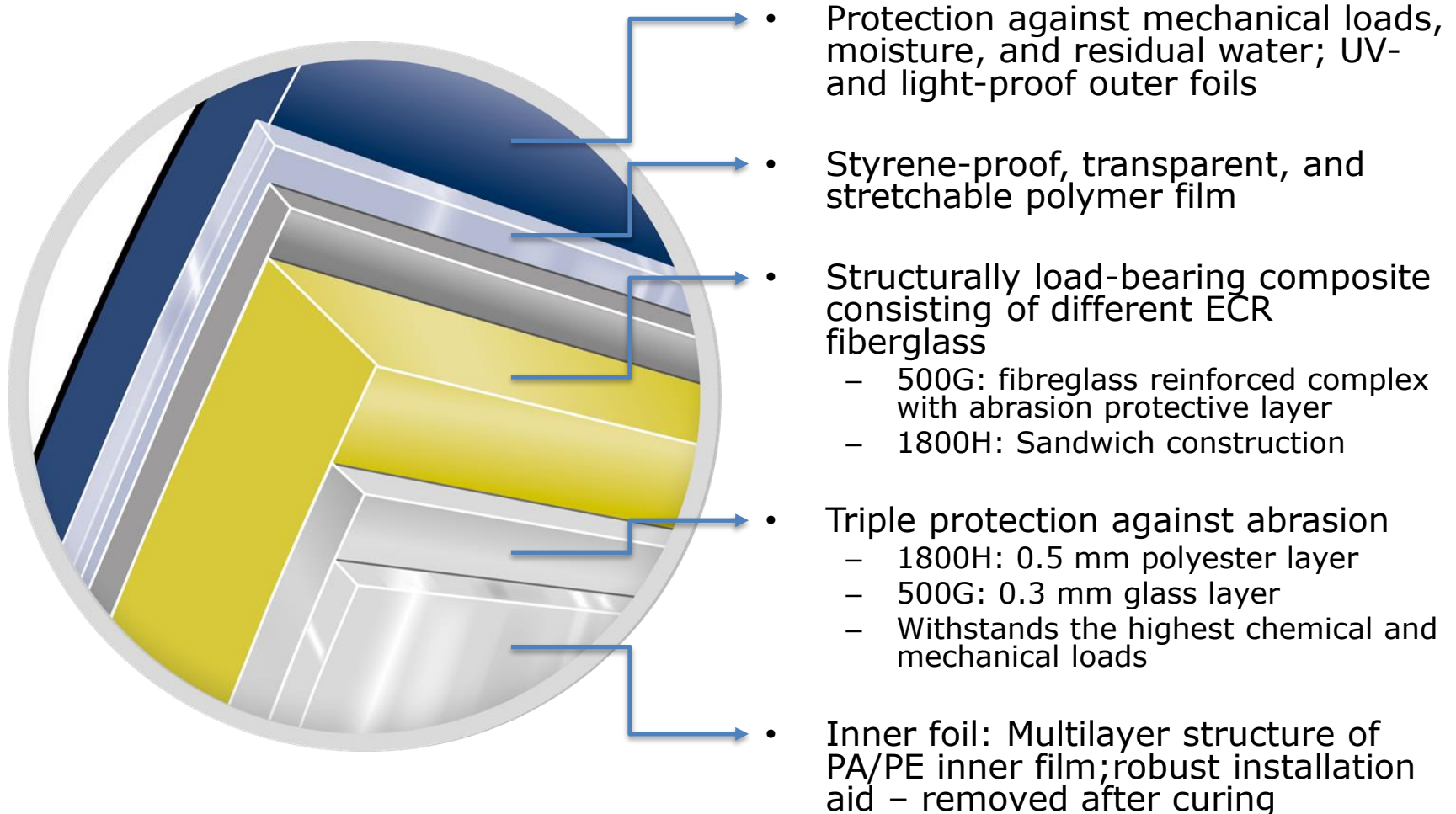
Applicant:
RELIN EUROPE GmbH
Große Ahlmühle 31
D-75865 Rohrbach

Subject of this decision:
Construction products and their use to produce "Alphaliner" hose liners for the rehabilitation of damaged underground sewage pipes with circular profiles in the nominal widths DN 150 to DN 1900 and with oval-profile cross-sections in the dimensions 200 mm/300 mm to 500 mm/1350 mm

The abovementioned subject of the ruling is hereby granted a national technical approval/permit. This decision comprises 25 pages and 35 annexes.

Electronic copy of DIBt national technical approval:

THE ALPHALINER: PROPERTIES THAT SET NEW STANDARDS



Mechanical properties

Property	Unit	A500G	A1800H
E-Modulus Short Term Ring [EN 1228]	N/mm ²	9776	21209
Flexural-E-Modulus Short Term [ISO 178]	N/mm ²	8500	19062
Flexural Strength Short Term [ISO 178]	N/mm ²	180	380
Flexural Elongation at Break Short Term	%	2,0	1,8
50-Year Creep Factor [ISO 761/DIN 53769-1]	-	1,60	1,31
E-Modulus Long Term [EN 1228]	N/mm ²	6110	16190
Flexural-E-Modulus Long Term [ISO 178]	N/mm ²	5312	14551
Flexural Strength Long Term [ISO 178]	N/mm ²	112	290

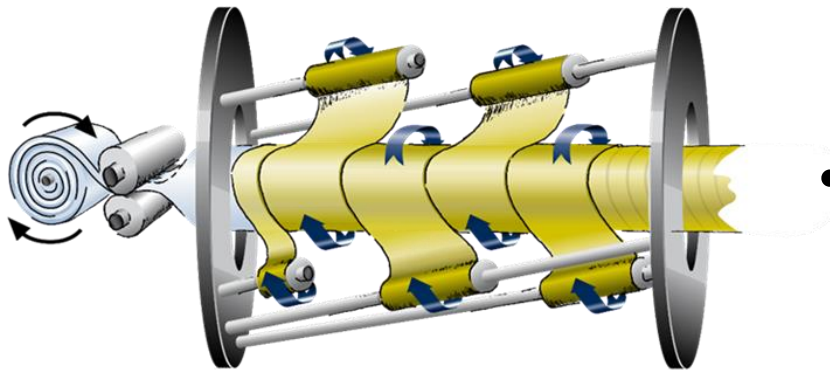
WALL THICKNESSES REQUIRED: A COMPARISON

EXAMPLE: OLD PIPE CONDITION II*	DN 800	DN 1200	DN 1800
FELT LINER MCG 3**	13.0 mm	19.4 mm	29.3 mm
STANDARD GRP LINER MCG 8**	8.3 mm	12.2 mm	18.1 mm
Alphaliner500G MCG 13**	6.9 mm	10.4 mm	14.9 mm
Alphaliner1800H MCG 25**	5.0 mm	7.5 mm	10.7 mm

*Pipe/soil system still capable of bearing loads on its own, groundwater level above pipe bottom 3 m, structural calculation in accordance with DWA-A143-2, EasyPipe software

** Material Characteristic Group in accordance with DWA-M144-3

THE ALPHALINER: HIGH QUALITY UNIQUE PRODUCT DESIGN



Spiral winding process

- **Continuous production** of pre-impregnated glass-fiber tapes into a seamless hose
- Individual lengths available up to 350 meters as standard (can be extended to up to **600 meters**)
- Specific design **for all manner of different liner types**, each with precisely defined properties

Large diameter applications

The impossible must be made possible

- XXL Liner Box
- Manhole opening not suitable for liner insertion
→ Excavation for pipe access
- Requirements and risks increase with liner size
- Heavy liners require suitable equipment for unloading and handling on site



Logistics and site organisation



- Organization of job site footprint before delivery of the liner and equipment
- Additional space and free air space for unloading with suitable mobile crane
- Preparation of ground accessibility, possibly heavy-duty drive-over plates

Job site footprint for large diameter



- A lot of space is needed to work safely
- Assembly, execution and dismantling can take several days.
- Crate and conveyor belt must be in alignment

A detailed and carefully prepared job site leads to a perfect result



BEHIND THE SCENES: CASE STUDIES



CUSTOMIZED PROFILE: REHABILITATION OF STORM CULVERTS PORTUGAL

LimpaCanal	Rectangular profile	Circular profile
Liner type	Alphaliner1800H UP	Alphaliner1800H UP
Shape	800 x 1200 mm	DN 1200
Length and weight	2 x 65 m 7.4 metric tons per box	2 x 76 m 5.9 metric tons per box
Wall thickness	15.6 mm Composite thickness	8.6 mm Composite thickness
UV curing system	REE4000 mobile	REE4000 mobile
Curing speed	approx. 0.42 m/min.	approx. 1.04 m/min.
Duration of construction work	6 days	6 days



BIG LINER: HS2 PROTECTION OF CONCRETE PIPES UNDER A10 – BERLIN

Frisch & Faust Tiefbau

Circular profile

Liner type

Alphaliner1800H

DN

DN 1600

Length and weight

84 m
11 metric tons

Wall thickness

Composite thickness 10 mm

UV curing system

REE4000

Packer

Folding packer DN 1300 REE

Curing speed

approx. 0.7 m/min.

Duration of construction work

1 day

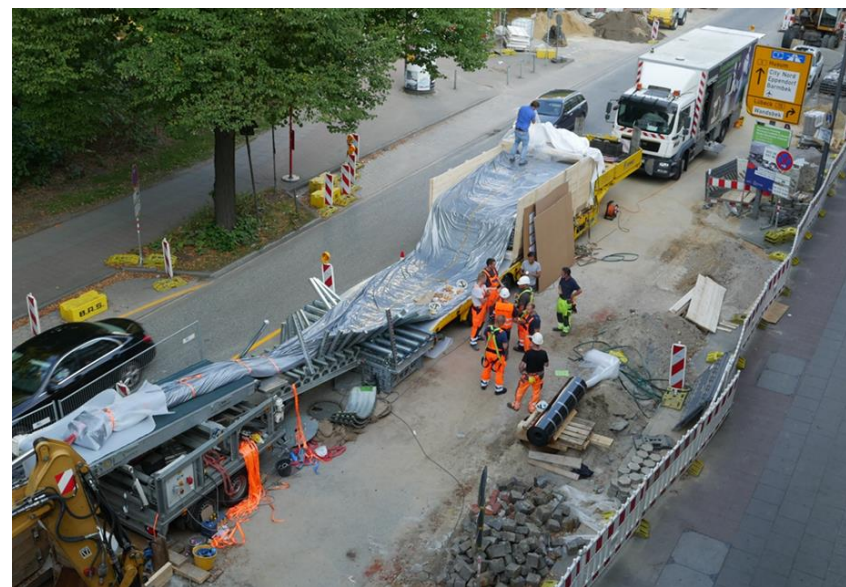


BIGGEST OVOIDE PROFILE: 1420x1720 MM – HAMBURG

Rohrsanierung Jensen

Oval profile

Liner type	Alphaliner1800H
DN	1420 x 1720 mm
Length and weight	161 m @ 22 metric tons
	151 m @ 20 metric tons
	50 m @ 6 metric tons
Wall thickness	Composite thickness 14.3 mm
UV curing system	REE4000
Packer	Folding packer DN 1300 REE
Curing speed	approx. 0.6 m/min.
Duration of construction work	6 days



Application engineering

RELINE offer the support through the application engineering department

- Design of liner type.
- Calculation of structural thickness.
- Production and delivery on time of liner and accessories.
- Supporting of site preparation.
- Supporting during liner installation and curing.



Thank you very much!

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TIME FOR YOUR QUESTIONS AND YOUR PROJECT



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