

WSAA PRODUCT APPRAISAL CERTIFICATE

Pipe Core Pty Ltd Cured-In-Place Pipes (CIPP) for Renovation of Drinking Water Pipes

This Appraisal is for a styrene-free vinyl ester resin impregnated GRP liner designated as SAERTEX-LINER H2O Type S+XR. The CIPP liner is installed by pull through techniques and inflated using compressed air. Curing is affected by the application of ultraviolet light.

Available sizes are from DN 250 to DN 1200. The structural wall thickness of the liner is between 4.3 and 12.3 mm and the maximum allowable operating pressure ranges from 3.3 MPa to 0.58 MPa, depending on size.

The liner is designated as Class A offering full structural support to the host pipe and is suitable for renovation of Ductile Iron, Steel, Asbestos Cement and Reinforced Concrete host pipes.

A listing of Quality Certificates and details of products are included in Schedules A and B.

Product Category	CIPP Liners for Drinking Water Pipes
PA Number:	PA 2211
Applicant:	Pipe Core Pty Ltd
Brand	SAERTEX multiCom®
Standards	WSA 150:2021 <i>Industry Standard for Cured-In-Place Pipes (CIPP) used for the Renovation of Drinking Water Pipes</i>
WSAA Product Specification	WSA PS 450 <i>Cured-In-Place Pipes (CIPP) used for the Renovation of Drinking Water Pipes</i>
Other Specifications	
Issue date	16 August 2023
Expiry date	15 August 2028
Recommendations	It is recommended that WSAA members, subject to any specific requirements of the member, consider product acceptance of SAERTEX-LINER H2O Type S+XR, as detailed in this report, for use in the renovation of drinking water pipes, provided installation is in accordance with WSA 202 Manual for Selection and Application of Cured-In-Place Pipe (CIPP) and Spray Liners for use in Water Pipes and the manufacturer's requirements.
Disclaimer	The disclaimer on Page 2 explains a number of very important limits on your ability to rely on the information in this Product Appraisal Certificate and the assessment criteria used to underlay it. Please read it carefully and take it into account when considering the content in this Certificate.

1. Disclaimer

This Product Appraisal Certificate (Certificate) is issued by WSAA on the understanding that:

This Certificate applies to the product(s) as submitted in Schedule A. Any changes to the product(s) either minor or major shall void this Certificate.

To maintain the recommendations of this Certificate any such changes shall be detailed and notified to the Product Appraisal Manager for consideration and review of the Certificate including the product appraisal criteria underlying it and appropriate action. Appraisals and their recommendations will be the subject of continuous review dependent upon the satisfactory performance of products.

WSAA reserves the right to undertake random audits of product manufacture and installation. Where products fail to maintain appraised performance requirements the appraisal and its recommendations may be modified and reissued. Certificates will be reviewed and reissued at regular intervals not exceeding five (5) years.

WSAA reserves the right to withdraw this Certificate at any time in its sole and absolute discretion for any reason.

The following information explains a number of very important limits on your ability to rely on the information in this Certificate. Please read it carefully and take it into account when considering the contents of this Certificate.

Any enquiries regarding this Certificate should be directed to the Product Appraisal Manager Phone: 03 8605 7601 email carl.radford@wsaa.asn.au.

1.1. Issue of Certificate

This Certificate has been published and/or prepared by WSAA and nominated Project Manager and peer group of technical specialists (the Publishers).

The Certificate and the underlying product appraisal criteria have been prepared for use within Australia only by technical specialists that have expertise in the function of products such as those appraised in the Certificate (the Recipients).

By accepting this Certificate, the Recipient acknowledges and represents to the Publisher(s) and each person involved in the preparation of the Certificate and product appraisal criteria underlying it that the Recipient has understood and accepted the terms of this Disclaimer.

1.2. Limits on Reliance on Information and Recommendations

1.2.1. Disclaimer of liability

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This Certificate does not contain all information that a person might require for the purposes of assessing any product discussed or appraised within it. The product appraisal criteria used in preparing this Certificate may not address all relevant aspects of the Product.

Recipients should seek independent evidence of any matter which is material to their decisions in connection with an assessment of the Product and consult their own advisers for any technical information required. Any decision to use the Product should take into account the reliability of that independent evidence obtained by the Recipient regarding the Product. Recipients should also independently verify and assess the appropriateness of any recommendation in the Certificate, especially given that any recommendation will not take into account a Recipient's particular needs or circumstances.

WSAA has not evaluated the extent of the product liability and professional indemnity insurance that the provider of the product maintains. Recipients should ensure that they evaluate the allocation of liability for product defects and any professional advice obtained in relation to the product or its specification including the requirements for product liability and professional indemnity insurance.

1.3. No Updating

Neither the Publisher(s) nor any person involved in the preparation of this Certificate or the product appraisal criteria underlying it [has] [have] any obligation to notify you of any change in the information contained in this Certificate or of any new information concerning the Publisher(s) or the Product or any other matter.

1.4. No Warranty

The Publisher(s) do[es] not, in any way, warrant that steps have been taken to verify or audit the accuracy or completeness of the information in this Certificate, or the accuracy, completeness or reasonableness of any recommendation in this Certificate.

QUALITY CERTIFICATIONS

A copy of the following Quality Certificate is available from WSAA.

**TABLE A1
SAERTEX MULTICOM GMBH – MANAGEMENT SYSTEMS**

Brochterbecker Damm Saerbeck Germany	
Quality Systems Standard	ISO 9001:2015
Certification Licence No.	80116044/2
Certifying Agency	Dekra Certification
First Date of Certification	18 December 2020
Current Date of Certification	5 March 2021
Expiry Date of Certification	18 December 2023



PRODUCT LITERATURE

Product data sheet
SAERTEX-LINER® H₂O, TYPE S+XR

As at: November 2022

GENERAL INFORMATION		
Product group	GFRP LINER supply	
Product range	SAERTEX-LINER® H ₂ O	
Design	Type S+XR	
Utilization	Potable water	
Approvals	DVGW-W270, KTW, NSF/ANSI Standard 61 and others*	
Reinforcing material	multiaxial fabric made of glass fiber	
Resin type	styrene-free vinyl ester resin (SFVE)	
Impregnation	pre-impregnated at the factory	
Installation procedure	light-curing pipe lining (UV-CIPP)	
Placement procedure	pulling in	
Inflation procedure	compressed air	
Shelf life	6 months:	3 months:
	- WD ≤ 8.3 mm - 7°C - 18°C	- WD > 8.3 mm - 7°C - 14°C
Pressure table	available	
EC Safety Data Sheet	available	

* Australia, New Zealand, Brazil, China, Israel, Poland, Slovakia, Spain, Italy, Czech Republic etc.

DESIGN CHARACTERISTICS	
maximum operating pressure (MDP)	33 bar
Host pipe profile	circular
Diameter range	DN 250 - 1200
structural wall thickness	4.3 mm-12.3 mm, in 1 mm steps
structural classification according to DIN EN ISO 11295/ AWWA M28	Class A/Class IV: independent - fully statically loadable
Wall mounting	analog DIBt approval Z-42.3-350, Annex 1 and 2, abZ/AB



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Product data sheet
SAERTEX-LINER® H₂O, TYPE S+XR

As at: November 2022

FOILS	
Inner foils with barrier function	Hygienic
- Remains in the liner	Permanent
- Materials	PE/PA, nonwoven PET
- Thickness	up to 400 µm
Protective outer gliding foil, UV light protection**, integrated	
- Material	PVC, fabric reinforced in places
- Thickness	up to 500 µm
Permanent outer foil with barrier function	
- Material	PE/PA/PE and nonwoven PP
- Thickness	up to 200 µm

**Up to DN 600 and max. 2.5 t liner weight and corresponding condition of host pipe installation possible without additional gliding foil.

Notes (terms ISO 11296- 4):

- temporary: Foil takes over function during installation and must be removed afterwards
- semi-permanent: Foil takes over function during installation and remains in the liner
- permanent: Foil takes over function during installation and also in operation and remains in the liner

MECHANICAL CHARACTERISTICS	
Short-term circumferential E modulus according to DIN EN 1228	≥ 20.500 N/mm ²
Short-term bending E modulus according to DIN EN ISO 11296-4 // DIN EN ISO 178	≥ 16.800 N/mm ²
Short-term bending stress according to DIN EN ISO 11296-4 // DIN EN ISO 178	≥ 270 N/mm ²
Long-term circumferential E modulus*** _{ex 50 years} according to DIN EN 761	16.000 N/mm ²
Long-term bending stress E modulus*** _{ex 50 years} according to DIN EN 761	210 N/mm ²
Reduction factor A after 10,000 hours according to DIN EN 761	1.28
Creep tendency after 24 hours according to DIN EN ISO 899-2	≤ 6 %

*** These values are used for the static calculation of the liner's stability according to DWA-A 143-2.



Product data sheet
SAERTEX-LINER® H₂O, TYPE S+XR

As at: November 2022

COMPOSITE	
Glass fiber type according to DIN 61850	permanently corrosion and chemical resistant, ECR
Number of layers multiaxial fabric	at least 3
Glass area weight per mm wall thickness	1210 g/m ² ± 150 g/m ²
specific density according to DIN EN ISO 1183-2	2.62 g/cm ³
Glass content according to DIN EN ISO 1172	≥ 49% (mass-based)
Barcol hardness according to DIN EN 59	≥ 40 IRHD
longitudinal seam	Yes
Winding	No



SAERTEX-LINER[®] H₂O (Type S+XR)

Pressure Table

Status: June 2021



diameter mm	design thickness ^{*1,*2} mm	total wall thickness ^{*3} mm	max. operating pressure ^{*4} bar
250	4.3	6.5 ± 1	33.0
300	4.3	6.5 ± 1	27.3
400	4.3	6.5 ± 1	18.2
500	4.3	6.5 ± 1	14.4
600	5.3	7.5 ± 1	11.6
700	6.3	8.5 ± 1	10.7
800	7.3	9.5 ± 1	8.8
900	8.3	10.5 ± 1	7.9
1000	9.3	11.5 ± 1	7.1
1100	10.3	12.5 ± 1	6.5
1200	11.3	13.5 ± 1	5.8

This table is based on the results of long-term burst pressure tests (10,000 h) following DIN EN 1796 / DIN EN 14364 and DIN EN 1447 and is valid for Class A Liner according to DIN EN ISO 11295 and Class IV Liner according to AWWA M28.

- *1 The calculation of the design thickness takes internal and external loads into account, i.e. impact from internal pressure and external water pressure (1.50 m) respectively, traffic with a minimum cover of 1.00 m. The actual design thickness which has to be used will be determined specifically for each project, based on the information from the Technical Questionnaire.
- *2 The design thickness takes a system test pressure (STP) of 1.5 x MDP into account.
- *3 Depending on the actual execution, the total wall thickness can differ from these values.
- *4 The specific maximum operating pressure (MDP) applies only to straight sections without bends.

SUPPLIER CONTACTS

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