

**PT/536/0524 (May 2024)**

**Assessment Schedule for the  
BLUeLiGHT® PAA-F Liner™ LED Cured-  
In-Place Pipe lining system as  
manufactured by Bluelight GmbH &  
Bluelight Lining Ltd**



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## **1. SCOPE**

This schedule specifies the requirements for the BLUeLiGHT® PAA-F Liner™ LED Cured-In-Place Pipe lining system as manufactured by Bluelight GmbH & Bluelight Lining Ltd.

This approval is not applicable to:

- Leak tightness of end seals.
- Reconnection of laterals.

## **2. PRODUCT DESCRIPTION**

### **2.1 Introduction**

The BLUeLiGHT® PAA-F Liner™ LED Cured-In-Place Pipe lining system is for the rehabilitation of gravity drains and sewers in diameters between 100mm and 300mm. The system can accommodate a dimensional diameter change of up to 33% and a maximum bend of 90° without folding.

The PAA-F LINER™ LED liner consists of a polyester sleeve with internal membrane (installed) and a styrene free vinylester resin.

The PAA-F LINER™ LED liner can be installed with or without a PE Preliner or a fabric reinforced PVC Preliner in accordance with the BLUeLiGHT® installation manual<sup>(1)</sup>.

The PAA-F LINER™ LED liner can be supplied either as a factory impregnated lining ready for site or as components where the sleeve and resin are combined on site in accordance with the BLUeLiGHT® installation manual.

The BLUeLiGHT® PAA-F LINER™ LED liner is installed by inversion and curing is only by BLUeLiGHT® LED equipment.

### **2.2 Applicable standards**

The following relevant standard was identified for Cured-In-Place Pipe liners:

- BS EN ISO 11296-4:2018+A1:2021<sup>(2)</sup>

### **2.3 Approval History**

The BLUeLiGHT® PAA-F LINER™ was originally awarded WRc Approved™ certification in May 2019 under approval number:

- PT/437/0519.

## **3. REQUIREMENTS AND TESTING**

### **3.1 General**

The BLUeLiGHT® PAA-F LINER™ LED liner system shall comply with the requirements of BS EN ISO 11296-4:2018+A1:2021.

### **3.2 Materials and components**

The resin system must comply with BS EN ISO 11296-4:2018+A1:2021, Clause 5.3, Table 2.

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### 3.3 Type Testing

#### Mechanical characteristics

The BLUeLiGHT® PAA-F LINER™ LED liner shall comply with the test requirements based upon BS EN ISO 11296-4:2018+A1:2021 listed in Tables 1 and 2.

**Table 1 – Short-term mechanical characteristic**

Characteristic	Declared value
Initial specific ring stiffness, $S_0$	Minimum: $\geq 0.25$ kPa Declared: 1.23 kPa
Short-term flexural modulus, $E_0$	2400 MPa
Flexural stress at first break, $\sigma_{fb}$	26 MPa
Flexural strain at first break, $\varepsilon_{fb}$	Minimum: $\geq 0.75\%$ Declared: 0.89 %

**Table 2 – Long-term mechanical characteristics**

Parameter	Requirement
Long-term flexural modulus under dry or wet conditions, $E_{x,wet \text{ or } dry}$	714 MPa

#### Mechanical resistance

The mechanical resistance shall be demonstrated by calculation in accordance with DWA-A143.2<sup>(3)</sup> or ASTM F1216-22<sup>(4)</sup>.

### 3.4 Manufacture

To ensure the quality and performance of the BLUeLiGHT® PAA-F LINER™ LED lining system, the manufacturing process shall include appropriate systems for the:

- Specification of component materials.
- Verification component materials received are to specification.
- Handling and storage of all component materials and finished linings.
- Detailed drawing / schedule for manufacture.
- Manufacture / assembly of BLUeLiGHT® PAA-F LINER™ LED lining system, and
- Fabrication and quality control of workmanship.

The production of the BLUeLiGHT® PAA-F LINER™ LED lining system and related quality control procedures shall comply with requirements to ensure the stated performance of the product is reliably achieved.

### 3.5 Installation

When installed in accordance with the installation documentation<sup>(1)</sup>, the BLUeLiGHT® PAA-F Liner™ LED liner system shall be reasonably expected to perform as described.

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**4. APPROVAL**

The BLUeLiGHT® PAA-F Liner™ LED liner system has been audited and successfully met all the requirements stated within this assessment schedule.

Signed:

A handwritten signature in black ink, appearing to be 'G.L.' with a horizontal line extending to the right.

Valid until 2<sup>nd</sup> May 2024

**5. REFERENCES**

1. BLUeLiGHT® Procedure Manual, VH-PAA-F Procedure Manual PAA-F-Liner™ / LED (current version: Revision 1.8, valid from Mar 2023).
2. BS EN ISO 11296-4:2018+A1:2021 Plastics piping systems for renovation of underground non-pressure drainage and sewerage networks - Lining with cured-in-place pipes.
3. DWA-A 143-2- Rehabilitation of drainage systems outside buildings - Part 2: Static calculation for the rehabilitation of wastewater pipes and pipes with lining and assembly methods (July 2015).
4. ASTM F1216- 22 Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube.



# Product Certificate

This is to certify that the following product has met the requirements detailed below

## Bluelight PAA-F® LED™ Cured-in-Place Pipe Lining System

For the assessment of the Bluelight PAA-F LED cured-in-place pipe lining system, applicable to the rehabilitation of gravity sewers and drains supplied by Bluelight GmbH and Bluelight Lining Ltd.

### **Bluelight GmbH**

Motorstr. 25  
74099 Stuttgart  
Germany

This product meets the requirements set out in WRc Assessment Schedule PT/536/0524.

Assessor

Director

Issue Date

3rd May 2024

Expiry Date

2nd May 2029

Certificate Number

**PT/536/0524**

The WRc approved logo, featuring the letters 'WRc' in a large, bold, white font, with a small teal leaf icon to the right. Below 'WRc' is the word 'approved' in a smaller, white, lowercase font, with a teal checkmark integrated into the letter 'v'. A trademark symbol (TM) is located to the right of 'approved'. The entire logo is set against a dark teal background.