# PT/461/0920 - AS (September 2020) Assessment Schedule for the iMPREG® GL01 styrene free full-length UV-cured liner system for gravity drains and sewers as supplied by iMPREG GmbH

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## 1. SCOPE

This schedule specifies requirements for the iMPREG® GL01 styrene free full-length UV cured-in-place pipe (CIPP) liner system as manufactured by iMPREG GmbH. It is applicable to the renovation of gravity drains and sewers.

It is applicable to host pipes having internal diameters as follows:

**Table 1 Diameter range of iMPREG® GL01 styrene free liner**

| Liner Type | Circular host pipe diameter (mm) | Non-circular host pipe major diameter (mm) |
|---|---|---|
| GL01 | 250-1262 | 200-300 to 1000-1500 |

The approval is not applicable to:

- The installation or reconnection of laterals.
- Performance of the liner end seals.

## 2. PRODUCT DESCRIPTION

### 2.1 Introduction

The system comprises of a glass fibre reinforced woven sleeve which is factory impregnated with an ultra violet (UV) light curing polyester or vinyl ester thermosetting resin. When installed and cured this forms a full length cured-in-place structural liner within the host pipe.

### 2.2 Relevant standards

The following standard was identified for cured-in-place pipe liners:

- BS EN ISO 11296-4:2018(1)

### 2.3 Approval History

This is the first re-approval of the iMPREG® GL01 styrene free UV cure liner which has been awarded the following WRc Approved™ certification:

- PT/415/0118

This approval supersedes previous issues.

## 3. REQUIREMENTS AND TESTING

### 3.1 Requirements

Appearance: The internal surface of the liner shall be smooth, clean and free from scoring, cavities, wrinkling and other surface defects that would prevent the iMPREG® GL liner from meeting the general fitness for purpose requirement.

### 3.2 Type Testing

The iMPREG® GL liner system shall comply with the following test requirements which are based upon BS EN ISO 11296-4:2018.

Mechanical Characteristics Testing: Mechanical testing requirements of BS EN ISO 11296-4 are listed in Table 2.

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**Table 2 iMPREG® GL01 styrene free liner mechanical characteristics**

| Characteristics | Declared Value |
|---|---|
| Short-term ring stiffness | 10,270 MPa |
| Long-term ring stiffness | 6,625MPa |
| Short-term flexural modulus | 9,500 MPa |
| Short-term stress at first break | 145 MPa |
| Long-term stress at first break | 94 MPa |
| Long-term strain corrosion | 0.451% extrapolated at 50 years |
| Reduction factor after 10,000 hrs | 1.55 |

### 3.3 Structural Design

The liner can be designed using any of the recognised international design codes dependent upon the country of installation. The iMPREG® GmbH default design for the liners is DWA-A143-2[(2)] or ASTM F1216-16[(3)].

### 3.4 Manufacture

To ensure the quality and performance of iMPREG® GL 01 styrene free linings, the manufacturing process shall include appropriate systems for:

- Verification that component materials received are to specification.
- Handling and storage of all component materials and finished units/linings.
- Records of manufacture.
- Inspection and maintenance of manufacturing equipment.

The production of iMPREG® GL linings and related Quality Control procedures shall comply with requirements to ensure the stated performance of the product is reliably achieved.

### 3.5 Quality Control Test

Lining samples are taken each day or from each batch of impregnated lining and cured. The cured sample is tested in accordance with BS EN 11296-4:2018 for the tests shown in Table 3.

**Table 3 Quality Control tests**

| Parameter | Requirement |
|---|---|
| Wall structure | Section 8.4.3 Table 4 |
| Wall thickness | Section 8.4.3 Table 4 |
| Initial specific ring stiffness or short-term flexural modulus | Section 8.5.2 Table 5 |
| Flexural stress at first break | Section 8.5.2 Table 5 |
| Flexural strain at first break | Section 8.5.2 Table 5 |

### 3.6 Installation

When installed in accordance with the installation documentation[(4)], the installation shall be practicable and suitable for conditions that could reasonably be expected on site.

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## 4. APPROVAL

iMPREG® GmbH has been audited and has successfully met all the requirements stated within this assessment schedule for the GL01 styrene free liner system.

Signed:

Valid until 9th September 2025

## 5. REFERENCES

1. BS EN ISO 11296:2018 Part 4 Plastics piping systems for renovation of underground non-pressure drainage and sewerage networks. Part 4: Cured-in-place-pipes.
2. DWA-A143-2 The rehabilitation of drainage systems outside buildings part 2 static.
3. ASTM F1216-16 Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin Impregnated Tube.
4. Installation manual for UV for iMPREG UV curing (tl/tg gl vh001).

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