
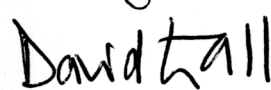


# Test Report



Report No	285/005357
Licence/Certificate No	KM 40638
Client	Fibrelite Composites Limited Snaygill Industrial Estate Keighley Road Skipton North Yorkshire BD23 2QR
Authority & date	BSI Form PCE002 dated 4 February 1999 Contract No 22394 Sample ID 43437
Items tested	Composite Manhole Top
Specifications	BS EN 124:1994 PAS 26:1998 Type Test for product certification
Results	Pass - See Summary of Results on Page 2
Prepared by	D H Miller 
Authorized by	D T Gall 
Issue Date	24 FEBRUARY 1999
Conditions of issue	This Test Report is issued subject to the conditions stated in current issue of <i>Test Leaflet 1</i> 'General conditions relating to acceptance of testing'. The results contained herein apply only to the particular sample/s tested and to the specific tests carried out, as detailed in this Test Report. The issuing of this Test Report does not indicate any measure of Approval, Certification, Supervision, Control or Surveillance by BSI of any product. No extract, abridgement or abstraction from a Test Report may be published or used to advertise a product without the written consent of the General Manager, BSI Product Services, who reserves the absolute right to agree or reject all or any of the details of any items or publicity for which consent may be sought.

## **TESTING, EXAMINATION AND ASSESSMENT OF COMPOSITE MANHOLE TOPS SUBMITTED AS TYPE TESTING SAMPLES**

### **INTRODUCTION**

For the purposes of product certification the composite manhole top detailed below, submitted on behalf of Fibrelite Composites Limited, was tested and assessed against the requirements of BS EN 124:1994 and limited assessments of PAS 26:1998, as indicated on the following pages of this Report. This request was made on Form PCE002 dated 4 February 1999 Contract No 22394. It is emphasized that assessments were not made against the other clauses of the Specification.

The tests and assessments contained in this Report were undertaken at BSI Product Services' Engineering Laboratory from 1 February 1999.

Reference should also be made to previous Report No 285/005181.

### **TEST ITEM**

<b>Class</b>	<b>Manufacturer's Code</b>	<b>Component Description</b>
C250	FL90	Composite manhole top

### **SUMMARY OF RESULTS**

The test item met the requirements of those clauses, or parts thereof, of the Specifications against which assessments were made.

Reference should be made to Clause 9 of BS EN 124 and Clauses 4.6 and 5 of PAS 26 for the test item.

BS EN 124:1994

COMPONENT DESCRIPTION: Class C250, Type FL90 Manhole cover and frame

## EXAMINATION AND TEST

CLAUSE		ASSESSMENT
4.	<b>CLASSIFICATION</b> The manhole top was designated class C250	Pass
5.	<b>PLACE OF INSTALLATION</b> The manhole top was intended for installation in a Group 2 area. (appropriate areas as defined in PAS 26)	Pass
6.	<b>MATERIALS</b>	
6.1	<b>General</b>	
6.1.3	<b>Other materials</b> The manhole top was made from a composite material. The manhole top was also subjected to the additional tests and assessments as detailed in pages 6 and 7 of this Report (PAS 26:1998).	Pass
7.	<b>DESIGN REQUIREMENTS</b>	
7.1	<b>General</b> The manhole top was free of defects which might impair its fitness for use.	Pass
7.3	<b>Clear openings of manhole tops for man entry</b>	
	Clear opening (mm)	<b>Actual</b> 899 dia.
7.5	<b>Total clearance</b>	
	Total clearance, a (mm)	<b>Specified</b> 9 max <b>Actual</b> 2.5
		Pass

**EXAMINATION AND TEST (CONTINUED)**

**CLAUSE**

**ASSESSMENT**

**7.6 Seatings**

The manufacture of the manhole top was such as to ensure the compatibility of its seating.

**7.8 Securing of the cover/grating within the frame**

The cover was secure within its frame. This was achieved by means of the seating arrangement. This arrangement was designed so as to allow opening of the cover by means of usual tools

**7.12 Surface condition**

The manhole top had a raised pattern on its upper surface.

	<b>Specified</b>	<b>Actual</b>
Height of raised pattern (mm)	2 to 6	2.1
Surface area of raised pattern (% of total upper surface area)	10 to 70	20.6

**7.13 Loosening and opening of covers and gratings**

Provision for the effective loosening and for the opening of the cover was made by means of one closed keyway incorporated in the cover.

**7.15 Frame bearing area**

The frame bearing area was designed in such a way that it provided an adequate contribution to stability under working conditions.

	<b>Specified</b>	<b>Actual</b>
Bearing pressure in relation to test load (N/mm <sup>2</sup> )	7.5 max	1.6

**EXAMINATION AND TEST (CONTINUED)****CLAUSE****ASSESSMENT****8. TESTING****8.3.1 Measurement of permanent set of the cover or grating after the application of 2/3 of the test load (167kN)**

	<b>Specified</b>	<b>Actual</b>
Permanent set (mm)	3.00 max	0.53

**For information**

Clear opening (mm) 899 dia.

**8.3.2 Application of the test load**

The unit was capable of withstanding a test load of 250 kN without cracking.

Pass

**9. MARKING**

The marking on the unit was not intended to comply with the requirements of this clause.

**Specified marking:**

- |  |   |
|--|---|
| a) - EN 124                                      | * |
| b) - appropriate class                           | * |
| c) - name or identification mark of manufacturer | * |
| d) - mark of certification body                  | * |

The markings were clear and durable.

**For information:**

\*The manufacturer's representative provided evidence of the proposed EN 124 and PAS 26 marking of the product. The proposed marking meets the requirements of Clause 9 of EN 124 and Clause 5 of PAS 26.

(marked on cover)  
Fibrelite

There was no marking on the frame.

See also clause 5 of PAS:26 (Page 7 of this Report)

**PAS 26:1998 Manhole tops intended for use on service station forecourts and pavement areas.**

**EXAMINATION AND TEST (CONTINUED)**

<b>CLAUSE</b>		<b>ASSESSMENT</b>
<b>3</b>	<b>MATERIALS</b>	
<b>3.1</b>	<p><b>Composite and plastics material</b>            The material from which the manhole top was produced, comprised a composite material cover and frame, to enable manufacture of a manhole top conforming to BS EN 124 (See pages 3 to 5 of this Report) and the other requirements of PAS 26 as applicable.</p>	
<b>4</b>	<b>PERFORMANCE</b>	
<b>4.1</b>	<p><b>Stress relief</b>            A manhole top was tested in accordance with BS EN 295-3:1991, 16.3 at a temperature of <math>(150 \pm 5)^{\circ}\text{C}</math> for 1 hr.</p> <p><b>FL 90 manhole top:</b> There were no visible defects, blistering, cracks or delaminations.</p>	<b>Pass</b>
<b>4.2</b>	<p><b>Impact resistance</b>            A manhole top was conditioned at a temperature of <math>-20 \pm 2^{\circ}\text{C}</math> for 1 h. A <math>4.5 \pm 0.1</math> kg indenter with a <math>50 \pm 1</math> mm diameter hemispherical end was dropped from a height of <math>1\text{m} \pm 10\text{mm}</math> on to the manhole top.</p> <p><b>FL 90 manhole top:</b> There was no visible cracking.</p> <p><b>Water ingress resistance</b>            The manhole top was tested as follows:             A water reservoir was created over the sealing arrangement of the manhole top to a depth of <math>50 \pm 5</math> mm for 7 h.</p> <p><b>FL 90 manhole top:</b>            The sealing arrangement showed no visible sign of leakage through the seal.</p> <p>With the reservoir remaining above the sealing arrangement a load of <math>5 \pm 0.2</math> tonnes was applied at a rate of between 1kN/s and 5kN/s through a test block as specified in BS EN 124:1994, Clause 8.2.2. Once the load was achieved, it was released immediately.</p>	<b>Pass</b>

**PAS 26:1998 Manhole tops intended for use on service station forecourts and pavement areas.**

**EXAMINATION AND TEST (CONTINUED)**

**CLAUSE**

**ASSESSMENT**

4.6 (continued)

**FL 90 manhole top**

The sealing arrangement showed no visible sign of leakage through the seal.

Pass

**Note:**

There was a slight weep through the cover at the interface of the keyway casting and surrounding material. The manufacturer's representative stated that sealant would normally be applied to the underface at this point to prevent any leakage. Additionally, means are provided within the chamber to collect small amounts of water/condensation that may form in the chamber.

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**MARKING**

Manhole tops shall, in addition to markings in accordance with BS EN 124:1994, Clause 9, also bear the following marking:

PAS 26:1998 (as the marking of this Product Assessment Specification).

The manufacturer's representative provided evidence of the proposed PAS 26 marking of the unit.

The proposed marking meets the requirements of PAS 26 .

Pass