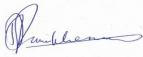




Report No	2371/8313024	This Report consists of 11 pages	
Client	Fibrelite Composites Limited Snaygill Industrial Estate Keighley Road Skipton BD23 2QR		
Authority & date	BSI Quotation Acceptance Form Number BSI 0000674281 Dated 05 March 2015 Sample ID 1054621		
Items tested	Composite manhole covers		
Specification	BS EN 124:1994 Clauses 4, 5, 7, 8.3.1, 8.3.2 and 9		
Results	See Summary of Results on Page 2		
Prepared by	D Pankhania 		Test Engineer
	C Higby 		Senior Engineer
Authorized by	S Ginger 		Team Leader
Issue Date	13 March 2015		
Conditions of issue	This Test Report is issued subject to the conditions stated in current issue of <i>CP0322 'Conditions of contract for testing'</i> . 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 Managing Director, BSI, 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 DIRECT COMMISSION TEST SAMPLES

### INTRODUCTION

At the request of Fibrelite Composites Limited the composite manhole tops, detailed below and received on 17 February 2015, were tested and assessed against the requirements of BS EN 124:1994 Clauses 4, 5, 7, 8.3.1, 8.3.2 and 9 as indicated on the following pages of this Report.

It is emphasised that assessments were not made against the other clauses of the Specification.

The tests and assessments contained in this Report were undertaken at BSI Engineering Laboratory from 10 March 2015.

### TEST ITEMS

Test item No.	Class	Code	Description	Nominal clear opening (mm)	Nominal frame depth (mm)
1	C250	FL90	Composite manhole top	900Ø	100
2	C250	FL76	Composite manhole top	760 x 760	100
3	D400	FL760	Composite manhole top	760Ø	100

One sample of each test item was submitted for testing.

### SUMMARY OF RESULTS

Test items 1 and 2 met the requirements of those clauses, or parts thereof, of the Specification against which assessments were made.

Test item 3 failed to meet the requirements of clause 9 but met the requirements of those other clauses, or parts thereof, of the Specification against which assessments were made.

Note: Attention is drawn to the non-assessment of test item 3 to clause 7.12 on page 10

**BS EN 124:1994****TEST ITEM NO: 1**

**COMPONENT DESCRIPTION:** Class: C250 Model ref: FL90  
Manhole top (Composite circular cover and composite circular frame)

**EXAMINATION AND TEST**

<b>CLAUSE</b>			<b>ASSESSMENT</b>
<b>4.</b>	<b>CLASSIFICATION</b> The manhole top was designated class C250.		Pass
<b>5.</b>	<b>PLACE OF INSTALLATION</b> The manhole top was intended for installation in a Group 3 area.		Pass
<b>6.</b>	<b>MATERIALS</b>		
<b>6.1</b>	<b>General</b>		
<b>6.1.3</b>	<b>Other materials</b> The manhole cover and frame were made from a composite material.		Not assessed
<b>7.</b>	<b>DESIGN REQUIREMENTS</b>		
<b>7.1</b>	<b>General</b> The manhole top was free of defects which might impair its fitness for use.		
<b>7.3</b>	<b>Clear openings of manhole tops for man entry</b>		
		<b>Specified</b>	<b>Actual</b>
	Clear opening (mm)	-	900 Ø
			Not assessed
<b>7.4</b>	<b>Depth of insertion</b>		
		<b>Specified</b>	<b>Actual</b>
	Depth of insertion, A (mm)	-	36.0-103
			Not assessed
<b>7.5</b>	<b>Total clearance</b>		
		<b>Specified</b>	<b>Actual</b>
	Total clearance, a (mm)	9 max	3.3
			Pass
<b>7.6</b>	<b>Seatings</b> The manufacture of the manhole top was such as to ensure the compatibility of its seating.		Pass

**EXAMINATION AND TEST (CONTINUED)**

<b>CLAUSE</b>				<b>ASSESSMENT</b>
<b>7.</b>	<b>DESIGN REQUIREMENTS (continued)</b>			
<b>7.8</b>	<b>Securing of the cover/grating within the frame</b>			
	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.			Pass
<b>7.12</b>	<b>Surface condition</b>			
		<b>Specified</b>	<b>Actual</b>	
	Flatness of upper surface of cover (mm)	-	<1	Not assessed
	The manhole top had a raised pattern on its upper surface.			Pass
		<b>Specified</b>	<b>Actual</b>	
	Height of raised pattern (mm)	2 to 6	2.3	Pass
	Surface area of raised pattern (% of total upper surface area)	10 to 70	38.9	Pass
<b>7.13</b>	<b>Loosening and opening of covers and gratings</b>			
	Provision for the effective loosening and for the opening of the cover was made by means of 1 keyway slot.			Pass
<b>7.14</b>	<b>Sealed manhole tops</b>			
	The manhole top was sealed with an elastomeric seal.			Not assessed
<b>7.15</b>	<b>Frame bearing area</b>			
	The frame bearing area was designed in such a way that it provided an adequate contribution to stability under working conditions.			Pass
		<b>Specified</b>	<b>Actual</b>	
	Bearing pressure in relation to test load (N/mm <sup>2</sup> )	7.5 max	1.57	Pass
<b>7.16</b>	<b>Frame depth</b>			
	Depth of frame (mm)	-	96.7	Not assessed

**EXAMINATION AND TEST (CONTINUED)**

<b>CLAUSE</b>				<b>ASSESSMENT</b>
<b>8.</b>	<b>TESTING</b>			
<b>8.3</b>	<b>Testing procedure</b>			
<b>8.3.1</b>	<b>Measurement of permanent set of the cover or grating after the application of 2/3 of the test load (167kN)</b>			
	Material of intermediate layer used: Rubber pad			
	Permanent set (mm)	<b>Specified</b> 3.0 max	<b>Actual</b> 0.0	Pass
	<b>For information</b>			
	Clear opening (mm)	<b>Specified</b> -	<b>Actual</b> 900Ø	-
<b>8.3.2</b>	<b>Application of the test load</b>			
	The unit was capable of withstanding a test load of 250kN for 30 seconds without cracking.			Pass
	<b>For information:</b> The unit was subsequently loaded to 275kN without cracking.			-
<b>9.</b>	<b>MARKING</b>			
	<b>Specified marking</b>			
	a) – EN 124			Pass
	b) – appropriate class			Pass
	c) – name or identification mark of manufacturer			Pass
	– place of manufacture			Pass
	d) – mark of certification body			Pass
	The markings were clear and durable			Pass
	<b>(On cover)</b> <b>Top</b> Fibrelite BS EN 124 1994 PAS 26 1998 ♥ MODEL FL90 CLASS C250	<b>(Label on frame)</b> FIBRELITE (Made in U.K.) BS EN 124 1994 PAS 26 1998 ♥ MODEL FL90 CLASS C250 FRAME SERIAL No. 039718		
	<b>Underside (Etched)</b> 14 13636	<b>Etched on frame</b> WC 39718 14		

**BS EN 124:1994****TEST ITEM NO: 2**

**COMPONENT DESCRIPTION:** Class: C250 Model ref: FL76  
Manhole top (Composite Square cover with square aluminium frame)

**EXAMINATION AND TEST (CONTINUED)**

<b>CLAUSE</b>		<b>ASSESSMENT</b>		
<b>4.</b>	<b>CLASSIFICATION</b> The manhole top was designated class C250.		Pass	
<b>5.</b>	<b>PLACE OF INSTALLATION</b> The manhole top was intended for installation in a Group 3 area.		Pass	
<b>6.</b>	<b>MATERIALS</b>			
<b>6.1</b>	<b>General</b>			
<b>6.1.3</b>	<b>Other materials</b> The manhole cover was made from a composite material.		Not assessed	
<b>7.</b>	<b>DESIGN REQUIREMENTS</b>			
<b>7.1</b>	<b>General</b> The manhole top was free of defects which might impair its fitness for use.			
<b>7.3</b>	<b>Clear openings of manhole tops for man entry</b>			
	Clear opening (mm)	<b>Specified</b> -	<b>Actual</b> 760 x 760	Not assessed
<b>7.4</b>	<b>Depth of insertion</b>			
	Depth of insertion, A (mm)	<b>Specified</b> -	<b>Actual</b> 57.0-105	Not assessed
<b>7.5</b>	<b>Total clearance</b>			
	Total clearance, a (mm)	<b>Specified</b> 9 max	<b>Actual</b> 3.5	Pass
<b>7.6</b>	<b>Seatings</b> The manufacture of the manhole top was such as to ensure the compatibility of its seating.		Pass	

**EXAMINATION AND TEST (CONTINUED)**

<b>CLAUSE</b>				<b>ASSESSMENT</b>
<b>7.</b>	<b>DESIGN REQUIREMENTS (continued)</b>			
<b>7.8</b>	<b>Securing of the cover/grating within the frame</b>			
	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.			Pass
<b>7.12</b>	<b>Surface condition</b>			
		<b>Specified</b>	<b>Actual</b>	
	Flatness of upper surface of cover (mm)	-	<1	Not assessed
	The manhole top had a raised pattern on its upper surface.			Pass
		<b>Specified</b>	<b>Actual</b>	
	Height of raised pattern (mm)	2 to 6	2.7	Pass
	Surface area of raised pattern (% of total upper surface area)	10 to 70	47.3	Pass
<b>7.13</b>	<b>Loosening and opening of covers and gratings</b>			
	Provision for the effective loosening and for the opening of the cover was made by means of one keyway slot.			Pass
<b>7.14</b>	<b>Sealed manhole tops</b>			
	The manhole top was sealed with an elastomeric seal.			Not assessed
<b>7.15</b>	<b>Frame bearing area</b>			
	The frame bearing area was designed in such a way that it provided an adequate contribution to stability under working conditions.			Pass
		<b>Specified</b>	<b>Actual</b>	
	Bearing pressure in relation to test load (N/mm <sup>2</sup> )	7.5 max	1.26	Pass
<b>7.16</b>	<b>Frame depth</b>			
	Depth of frame (mm)	-	95.0	Not assessed

**EXAMINATION AND TEST (CONTINUED)**

<b>CLAUSE</b>				<b>ASSESSMENT</b>
<b>8.</b>	<b>TESTING</b>			
<b>8.3</b>	<b>Testing procedure</b>			
<b>8.3.1</b>	<b>Measurement of permanent set of the cover or grating after the application of 2/3 of the test load (167kN)</b>			
	Material of intermediate layer used: Rubber			
	Permanent set (mm)	<b>Specified</b> 2.53 max	<b>Actual</b> 1.42	Pass
	<b>For information</b>			
	Clear opening (mm)	<b>Specified</b> -	<b>Actual</b> 760 x 760	-
<b>8.3.2</b>	<b>Application of the test load</b>			
	The unit was capable of withstanding a test load of 250kN for 30 seconds without cracking.			Pass
	<b>For information:</b> The unit was subsequently loaded to 275kN without cracking.			-
<b>9.</b>	<b>MARKING</b>			
	<b>Specified marking</b>			
	a) – EN 124			Pass
	b) – appropriate class			Pass
	c) – name or identification mark of manufacturer			Pass
	– place of manufacture			Pass
	d) – mark of certification body			Pass
	The markings were clear and durable			Pass
	<b>(On cover)</b>	<b>(Label on frame)</b>		
	<b>Top</b>	FIBRELITE (Made in U.K.)		
	Fibrelite	BS EN 124 1994		
	BS EN 124 1994	PAS 26 1998		
	PAS 26 1998	♥		
	♥	MODEL FL76		
	MODEL FL76	CLASS C250		
	CLASS C250	PASSED FINAL INSPECTION		
	<b>Underside</b>	IMPORTANT Clean the frame		
	PROTECTED BY US GRANTED	And seal after installation		
	PATENT APPLICATIONS	<b>Underside (etched)</b>		
	ALL RIGHTS RESERVED	141160		
	MADE IN U.K.			
	14 13564 DB			



**BS EN 124:1994****TEST ITEM NO: 3**

**COMPONENT DESCRIPTION:** Class: D400 Model ref: FL760  
Manhole top (Composite circular cover and composite circular frame)

**EXAMINATION AND TEST (CONTINUED)**

<b>CLAUSE</b>		<b>ASSESSMENT</b>		
<b>4.</b>	<b>CLASSIFICATION</b> The manhole top was designated class D400.		Pass	
<b>5.</b>	<b>PLACE OF INSTALLATION</b> The manhole top was intended for installation in a Group 4 area.		Pass	
<b>6.</b>	<b>MATERIALS</b>			
<b>6.1</b>	<b>General</b>			
<b>6.1.3</b>	<b>Other materials</b> The manhole cover and frame were made from a composite material.		Not assessed	
<b>7.</b>	<b>DESIGN REQUIREMENTS</b>			
<b>7.1</b>	<b>General</b> The manhole top was free of defects which might impair its fitness for use.		Pass	
<b>7.3</b>	<b>Clear openings of manhole tops for man entry</b>			
	Clear opening (mm)	<b>Specified</b> -	<b>Actual</b> 760 Ø	Not assessed
<b>7.4</b>	<b>Depth of insertion</b>			
	Depth of insertion, A (mm)	<b>Specified</b> 50 min	<b>Actual</b> 52.0-100	Not assessed
<b>7.5</b>	<b>Total clearance</b>			
	Total clearance, a (mm)	<b>Specified</b> 9 max	<b>Actual</b> 3.2	Pass
<b>7.6</b>	<b>Seatings</b> The manufacture of the manhole top was such as to ensure the compatibility of its seating.		Pass	
	The seating was manufactured in such a way as to ensure stability and quietness in use in the form of a machined seating.		Pass	

**EXAMINATION AND TEST (CONTINUED)**

<b>CLAUSE</b>				<b>ASSESSMENT</b>
<b>7.</b>	<b>DESIGN REQUIREMENTS (continued)</b>			
<b>7.8</b>	<b>Securing of the cover/grating within the frame</b>			
	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.			Pass
<b>7.12</b>	<b>Surface condition</b>			
		<b>Specified</b>	<b>Actual</b>	
	Flatness of upper surface of cover (mm)	6 max	1.3	Pass
	The manhole top had a raised pattern on its upper surface.			Pass
		<b>Specified</b>	<b>Actual</b>	
	Height of raised pattern (mm)	-	2.3	Not assessed*
	* Note: Assessment to this clause has not been made due to previous skid resistance testing on this product to PAS 26:1998 clause 4.3			
	Surface area of raised pattern (% of total upper surface area)	10 to 70	27.5	Pass
<b>7.13</b>	<b>Loosening and opening of covers and gratings</b>			
	Provision for the effective loosening and for the opening of the cover was made by means of one keyway slot.			Pass
<b>7.14</b>	<b>Sealed manhole tops</b>			
	The manhole top was sealed with an elastomeric seal.			Not assessed
<b>7.15</b>	<b>Frame bearing area</b>			
	The frame bearing area was designed in such a way that it provided an adequate contribution to stability under working conditions.			Pass
		<b>Specified</b>	<b>Actual</b>	
	Bearing pressure in relation to test load (N/mm <sup>2</sup> )	7.5 max	1.27	
<b>7.16</b>	<b>Frame depth</b>			
	Depth of frame (mm)	100 min	102.5	Not assessed

**EXAMINATION AND TEST (CONTINUED)**

<b>CLAUSE</b>				<b>ASSESSMENT</b>
<b>8.</b>	<b>TESTING</b>			
<b>8.3</b>	<b>Testing procedure</b>			
<b>8.3.1</b>	<b>Measurement of permanent set of the cover or grating after the application of 2/3 of the test load (267 kN)</b>			
	Material of intermediate layer used: Rubber			
	Permanent set (mm)	<b>Specified</b> 2.53 max	<b>Actual</b> 0.09	Pass
	<b>For information</b>			
	Clear opening (mm)	<b>Specified</b> -	<b>Actual</b> 760 Ø	-
<b>8.3.2</b>	<b>Application of the test load</b>			
	The unit was capable of withstanding a test load of 400kN for 30 seconds without cracking.			Pass
	<b>For information:</b> The unit was subsequently loaded to 440kN without cracking.			-
<b>9.</b>	<b>MARKING</b>			
	<b>Specified marking</b>			
	a) – EN 124			Fail
	b) – appropriate class			Pass
	c) – name or identification mark of manufacturer			Pass
	– place of manufacture			Pass
	d) – mark of certification body			Fail
	The markings were clear and durable			Pass
	<b>(cast on cover)</b>	<b>(label on frame)</b>		
	<b>Top</b>	Fibrelite (Made in UK)		
	FL 760 D400	BS EN 124 1994		
	Fibrelite	PAS 26 1998		
	<b>Etched Underside</b>	♥		
	2087 15	MODEL FL760		
		CLASS D400		
		FRAME SERIAL No 000179		
		<b>Etched</b>		
		179 MG 15		

End of Report