



Test Report issued under the responsibility of:

**SGS Fimko Ltd.**

<b>TEST REPORT</b> <b>IEC 60670-1</b> <b>Boxes and enclosures for electrical accessories for household and similar fixed electrical installations</b> <b>Part 1: General requirements</b>	
Report Number .....	298048-1b
Date of issue .....	2.9.2020
Total number of pages .....	10
Applicant's name .....	SGS Fimko Ltd 
Address .....	Takomotie 8, FI-00380 HELSINKI, FINLAND
<b>Test specification:</b>	
Standard .....	IEC 60670-1 (First Edition): 2002 + A1:2011
Test procedure .....	NCS/FI Scheme
Non-standard test method.....	N/A
Test Report Form No.....	IEC60670_1B, modified by SGS Fimko for Multiflanges and Membranes
Test Report Form(s) Originator.....	IMQ S.p.A.
Master TRF .....	Dated 2012-02, 2017-08
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Test item description .....	Multiflange
Trade Mark .....	MC
Manufacturer .....	Trelleborg Industrial Products Finland Oy
Model/Type reference .....	MC 35 MULTIFLANGE
Ratings .....	For cables Ø 6-10, 7-12, 10-14, 12-18, 17-32 mm IP65

<p><b>List of Attachments (including a total number of pages in each attachment):</b></p> <p>Attachment 1 (1 page) Testing and Measuring Equipment for IEC 60670-1:2002-12, Edition 1</p> <p>Attachment 2 (2 pages) Photographic documentation.</p>	
<p><b>Summary of testing:</b></p>	
<p><b>Tests performed (name of test and test clause):</b></p> <p>All relevant tests performed on all samples For SFS 4698, see Test Report 298048-1a.</p>	<p><b>Testing location:</b></p> <p>SGS Fimko Ltd Takomotie 8 FI-00380 HELSINKI FINLAND</p>
<p><b>Summary of compliance with National Differences</b></p> <p>List of countries addressed: Semko, Nemko, Demko</p> <p><input checked="" type="checkbox"/> The product fulfils the requirements of EN 60670-1:2005 + A1:2013</p>	
<p><b>Copy of marking plate</b></p> 	
<p>See also Photographic documentation in Attachment 2.</p>	

**General product information:**

Metal-reinforced cable gland plate size: C-flange  
 For number of cable and diameter: 2x6-10, 14x7-12, 16x10-14, 2x12-18, 1x17-32 mm

**Material:**

TPE, EPDM as follows:  
 Onflex S FR 50A-S1831  
 Onflex S FR 60A-3E 1923  
 RTP2799  
 Kraiburg Thermoplast K TC6FRN – 735

**Test item particulars.....:**

7.1	Nature of material	<input checked="" type="checkbox"/>	7.1.1	Insulating
		<input checked="" type="checkbox"/>	7.1.2	Metallic insert
		<input type="checkbox"/>	7.1.3	Composite
7.3	Nature of material	<input checked="" type="checkbox"/>	7.3.1	With inlets for sheathed cables for fixed installations
		<input type="checkbox"/>	7.3.2	With inlets for flexible cables
		<input type="checkbox"/>	7.3.3	With inlets for plain or corrugated conduits
		<input type="checkbox"/>	7.3.4	With inlets for threaded conduits
		<input type="checkbox"/>	7.3.5	With inlets for other types of conductors/cables or conduits
		<input type="checkbox"/>	7.3.6	With spouts (hub)
7.5	Minimum and maximum temperatures during installation	<input type="checkbox"/>	7.5.1	-5 °C to +60 °C
		<input type="checkbox"/>	7.5.2	-15 °C to +60 °C
		<input checked="" type="checkbox"/>	7.5.3	-25 °C to +60 °C
		<input type="checkbox"/>	7.3.7	Without inlets. Inlet openings will be made during installation

IEC 60670-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Test probe 11 of IEC 61032 applied for 1 min with a force of 20 N do not penetrate in the internal volume of the enclosure, as show in Figure 26, which are accessible after installation		P
	Additional test at (35 ± 2) °C with probe 11 of IEC 61032 on enclosures according to 7.1.1 and 7.1.3 with parts of thermoplastic or electrometric material applied to:		
	- all places, except membranes or the like, where yielding of insulating material could impair the safety, with a force of 75 N		P

<b>11</b>	<b>PROVISION FOR EARTHING</b>	<b>N/A</b>
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<b>12</b>	<b>CONSTRUCTION</b>	
	Boxes and enclosures are constructed without sharp edges	P

<b>13</b>	<b>RESISTANCE TO AGEING, PROTECTION AGAINST INGRESS OF SOLID OBJECTS AND AGAINST HARMFUL INGRESS OF WATER</b>		
13.1	Resistance to ageing		
13.1.1	Specimens of insulating and composite boxes and enclosures, glands, grommets and replaceable membranes placed in a heating cabinet at (70 ± 2) °C for (168 + 4) h and then kept at room temperature for (96 + 4) h		
	Glands tightened with a torque equal to 2/3 of the torque applied during the test of 12.13 (Nm) ..... :	-	—
	Greater torque value stated by the manufacturer, if any (Nm) ..... :	2,0	—
	After the test: no harmful deformation or similar damage		P
13.1.2	Grommets, blanking-plug and entry membranes in inlet openings and protecting membranes are reliably fixed and are not displaced by the mechanical and thermal stresses occurring in normal use		P
	Specimens that have been subjected to the treatment specified in 13.1.1 placed in a heating cabinet at (40 ± 2) °C for 2 h ± 15 min		
	Immediately after this period the tip of test probe 11 of IEC 61032 is applied for (5 ± 1) s with a force of (30 -2) N. During the tests: grommets, blanking-plug and/or membranes not deformed to such an extent that live parts of any included accessory become accessible		P

IEC 60670-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- IP5X: test performed as specified in IEC 60529 category 2 with the drain holes, if any, not opened		N/A
	- IP≤4X: test probe does not pass through any opening other than drain holes		N/A
	- IP≤4X: test probe applied on drain holes does not touch live parts within the enclosure		N/A
	- IP5X: dust does not cover the whole inner surface		N/A
	- IP6X: there is no dust inside the box or enclosure		P
13.3	Protection against harmful ingress of water		
13.3.1	Enclosures with IP>X0 provide a degree of protection against harmful ingress of water in accordance with the declared IP code .....	<b>IPX5</b>	P
	Enclosure dimensions: reference surface S (m <sup>2</sup> ) / perimeter (m) .....	-	—
	Appropriate test performed on surface, flush or semi-flush enclosures as specified in IEC 60529 under the following conditions:		
	- dimension S ≤ 0,04 m <sup>2</sup> or perimeter ≤ 0,8 m according to 13.3.2 and 13.3.3		P
	- dimension S > 0,04 m <sup>2</sup> and perimeter > 0,8 m according to 13.3.2 and 13.3.4		N/A
	Enclosures with screwed glands or grommets fitted with cables as declared by the manufacturer:		
	- type of cable, smallest cross-sectional area (mm <sup>2</sup> ) .....	<b>6, 7, 10, 12, 17</b>	—
	- type of cable, largest cross-sectional area (mm <sup>2</sup> ):	<b>10, 12, 14, 18, 32</b>	—
	Enclosures with screwed glands or grommets fitted with conduits as declared by the manufacturer:		
	- smallest diameter or dimensions (mm) .....	-	—
	- largest diameter or dimensions (mm) .....	-	—
	Fixing screws of the cover or cover-plate tightened with a torque equal to 2/3 of the value of Table 4 used for the test of 12.9 (Nm) .....	-	—
13.3.3	Immediately after the test no more than 0,2 ml x S (cm <sup>2</sup> ) water in the enclosure (ml).....	<b>No water inside enclosure</b>	P
	Specimens withstand an electric strength test specified in 14.3 started within 5 min of the completion of IP test		N/A
13.3.4	Immediately after the test: indicator paper still dry		N/A
<b>14</b>	<b>INSULATION RESISTANCE AND ELECTRIC STRENGTH</b>		<b>N/A</b>



Project: 298048-1  
 Tested by: HPU

ATTACHMENT 1a, -1b: TEST EQUIPMENT LIST

List made on: 2.9.2020

Inv.nbr	Manufacturer	Model	Equipment	Calibration date	Cal.interval	Status
3601	Yokogawa Electronic	245516	Temperature Meter	22.06.2020		12 OK
3592	Yokogawa Electronic	245516	Temperature Meter	11.09.2019		12 OK
4223	Snap-on	±10 Nm/0.5 Nm	Torque meter	03.09.2019		12 OK
10542	Ehlers GmbH	FM42i	Flow Meter	19.02.2020		12 OK
9311	SGS Fimko Oy	Standard 6233668-1:2014	Test Finger	18.02.2018		36 OK
9315	MARK-10	MG50E	Force Gauge	19.03.2020		12 OK
10031	EDS Embedded Data Systems	OW-ENV-THPL	Temp/Humidity/Barometric Pressure & Light Sensor	07.11.2019		12 OK
10029	EDS Embedded Data Systems	OW-ENV-TH	Temperature / Humidity Sensor	17.10.2019		12 OK
10016	EDS Embedded Data Systems	OW-ENV-TH	Temperature / Humidity Sensor	07.11.2019		12 OK
10017	EDS Embedded Data Systems	OW-ENV-TH	Temperature / Humidity Sensor	07.11.2019		12 OK
8538	Testing Europe	T4-08	Glow-wire test apparatus	17.06.2020		18 OK
5386	Vaisala Oy	HMP237	Temperature / Humidity Meter	11.06.2020		12 OK
5120	Mitutoyo Ltd	500-311 (CD-15D)	Digital Caliper	10.10.2019		12 OK
7723	Mitutoyo Ltd	500-628	Digital Caliper	12.03.2020		12 OK



Attachment 2: Photographic documentation

Type: Multigate MC 35

Manufacturer: Trelleborg Industrial Products Finland Oy

