





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 .....	HELES2106000688-2
Date of issue .....	2021-11-12
Total number of pages .....	11
Applicant's name .....	SGS Fimko Ltd 
Address .....	P.O.BOX 30, FI-00211 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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<b>This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.</b>	
Test item description .....	MULTIGATE
Trade Mark .....	Trelleborg
Manufacturer .....	Trelleborg Industrial Products Finland Oy
Model/Type reference .....	MC 3 MULTIGATE
Ratings .....	For cables Ø 24-54, 30-60 mm, IP65

<b>Testing procedure and testing location:</b>			
<input checked="" type="checkbox"/>	<b>CB Testing Laboratory:</b>	SGS Fimko Ltd	
<b>Testing location/ address .....</b>		Takomotie 8, FI-00380 HELSINKI, FINLAND	
Tested by (name + signature) .....		Heikki Puranen Testing Engineer	
Approved by (name + signature).....		Kari Heikkilä Testing Engineer	
<input type="checkbox"/>	<b>Testing procedure: TMP</b>	N/A	
<input type="checkbox"/>	<b>Testing procedure: WMT</b>	N/A	
<input type="checkbox"/>	<b>Testing procedure: SMT</b>	N/A	

**List of Attachments (including a total number of pages in each attachment):**

Attachment 1 (1 page)  
 Testing and Measuring Equipment for IEC 60670-1:2002-12, Edition 1  
 Attachment 2 (2 pages)  
 Photographic documentation.

**Summary of testing:**

**Tests performed (name of test and test clause):**  
 All relevant tests performed on all samples  
 For SFS 4698, see Test Report HELES2106000688-1

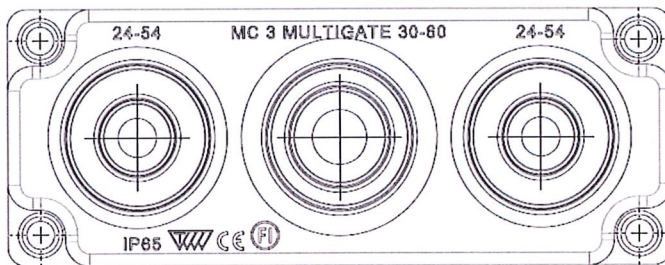
**Testing location:**  
 SGS Fimko Ltd  
 Takomotie 8  
 FI-00380 HELSINKI  
 FINLAND

**Summary of compliance with National Differences**

Semko, Nemko, Demko

The product fulfils the requirements of EN 60670-1:2005 + A1:2013

**Copy of marking plate**



See also Photographic documentation in Attachment 2.

Test item particulars .....			
7.1	Nature of material	<input checked="" type="checkbox"/> 7.1.1	Insulating
		<input type="checkbox"/> 7.1.2	Metallic
		<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)
		<input type="checkbox"/> 7.3.7	Without inlets. Inlet openings will be made during installation
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

**General product information:**

Metal-reinforced cable gland plate size: \*) C-flange, with reduced width 84 mm

For number of cable and diameter: 2x Ø24-54, 1x Ø30-60 mm

**Material:**


TPE, EPDM as follows:

RTP 2799 S X 113561 E S-889041 GREY

Onflex S FR 60A-3E1923 60 ShA BL FR

Kraiburg Thermoplast K TC6FRN-735

<b>Possible test case verdicts:</b>	
- test case does not apply to the test object.....:	N/A
- test object does meet the requirement.....:	P (Pass)
- test object does not meet the requirement .....	F (Fail)
<b>Testing</b> .....	
Date of receipt of test item .....	2021-08-24
Date (s) of performance of tests .....	2021-08-30...-11-12
<b>General remarks:</b>	
<p>This Test report form is based on Test Report Form No. IECEN 60670_1A and modified to be suitable for Multiflanges and Membranes. All unnecesasry clauses and parts removed.</p> <p>The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory. "(see Enclosure #)" refers to additional information appended to the report. "(see appended table)" refers to a table appended to the report.</p> <p>Throughout this report a <input checked="" type="checkbox"/> comma / <input type="checkbox"/> point is used as the decimal separator.</p> <p><i>This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="http://www.sgs.com/en/Terms-and-Conditions.aspx">http://www.sgs.com/en/Terms-and-Conditions.aspx</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx">http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx</a></i></p> <p><i>Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law."</i></p> <p><i>Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only</i></p>	
<b>Name and address of factory (ies) .....</b>	Trelleborg Industrial Products Finland Oy Kikkerläntie 72 FI-38300 Sastamala FINLAND

IEC 60670-1			
Clause	Requirement + Test	Result - Remark	Verdict
<b>8</b>	<b>MARKING</b>		
8.1	Boxes and enclosures are marked with:		
	a) name, trade mark or identification mark of the manufacturer or the responsible vendor..... :		P
	Enclosures are marked in addition with:		
	b) IP code against ingress of solid objects if higher than IP2X .....	IP6X	P
	c) IP code against harmful ingress of water if higher than IPX0 .....	IPX5	P
	IP code is marked on the outside of the enclosure so as to be easily discernible when the enclosure is mounted and wired as for normal use		P
	e) type reference, which may be a catalogue number..... :	MC 3 MULTIGATE	P
	Information marked on the boxes and enclosures or provided by the manufacturer on the smallest package unit or in the instructions of the manufacturer:		
	g) necessary information concerning the openings which can be made during installation for boxes and enclosures classified according to 7.3.7..... :	-	N/A
	h) minimum temperature during installation for boxes classified according to 7.5.2 and 7.5.3 .....	-25°C	P
	Further information given in the manufacturer's catalogue or in an instruction sheet .....	See appended Annex	N/A
	Higher degree of protection achieved by the use of special parts: an instruction sheet is provided and it indicates the higher degree of protection		N/A
8.2	Marking is durable and easily legible		P
	Rubbing test 15 s with water and 15 s with petroleum spirit	Moulded markings: tested according to Standard SFS 4698, which required rubbing test for all kind of markings.	P
	After the test: marking still legible		P
<b>9</b>	<b>DIMENSIONS</b>		
	Boxes and enclosures comply with the appropriate standard sheets, if any .....	C-flange *) SFS 2528	P



IEC 60670-1			
Clause	Requirement + Test	Result - Remark	Verdict
<b>10</b>	<b>PROTECTION AGAINST ELECTRIC SHOCK</b>		
	In boxes and enclosures assembled, equipped and installed as for normal use in accordance with the manufacturer's instructions: live parts are not accessible		<b>P</b>
	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		<b>P</b>
	Additional test at $(35 \pm 2)$ °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		<b>P</b>
<b>11</b>	<b>PROVISION FOR EARTHING</b>		<b>N/A</b>
<b>12</b>	<b>CONSTRUCTION</b>		
	Boxes and enclosures are constructed without sharp edges		<b>P</b>
<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 $(70 \pm 2)$ °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) ..... :	<b>2,0</b>	—
	After the test: no harmful deformation or similar damage		<b>P</b>
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		<b>P</b>
	Specimens that have been subjected to the treatment specified in 13.1.1 placed in a heating cabinet at $(40 \pm 2)$ °C for $2 \text{ h} \pm 15 \text{ min}$		

IEC 60670-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Immediately after this period the tip of test probe 11 of IEC 61032 is applied for $(5 \pm 1)$ 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
	Grommets, blanking-plug and/or membranes likely to be subjected to an axial pull: axial pull of $(30 - 2)$ N applied for $(5 \pm 1)$ s. During the tests: grommets, blanking-plug and/or membranes not deformed to such an extent that live parts of any included accessory become accessible		N/A
	Test repeated on same enclosures fitted with grommets, blanking-plug and/or membranes not subjected to any treatment		N/A
	After the test: no harmful deformation, cracks or similar damage		P
13.1.3	Grommets, blanking-plug and entry membranes in inlet openings of boxes and enclosures classified according to 7.5.2 and 7.5.3: introduction of the cables and conduit permitted when the ambient temperature is low		P
	Test on enclosures fitted with grommets, blanking-plug and/or membranes not subjected to any ageing treatment kept for 2 h in a refrigerator		
	Test temperature (°C) .....	-25	—
	Immediately after conditioning: it is possible to pierce any blind grommets, blanking-plug and entry membranes and to introduce cables and conduit of the maximum diameter intended		P
	After the test: no harmful deformation, cracks or similar damage		P
13.2	Protection against the ingress of solid objects		
	Enclosures provide a degree of protection against the ingress of solid objects in accordance with the declared IP code .....	IP6X	P
	Enclosures mounted as in normal use with screwed glands or grommets fitted with cables as declared by the manufacturer:		
	- type of cable, smallest cross-sectional area (mm <sup>2</sup> ) .....	-	—
	- type of cable, largest cross-sectional area (mm <sup>2</sup> ):	-	—
	Enclosures mounted as in normal use with screwed glands or grommets fitted with conduits as declared by the manufacturer:		
	- smallest diameter or dimensions (mm) .....	24, 30	—



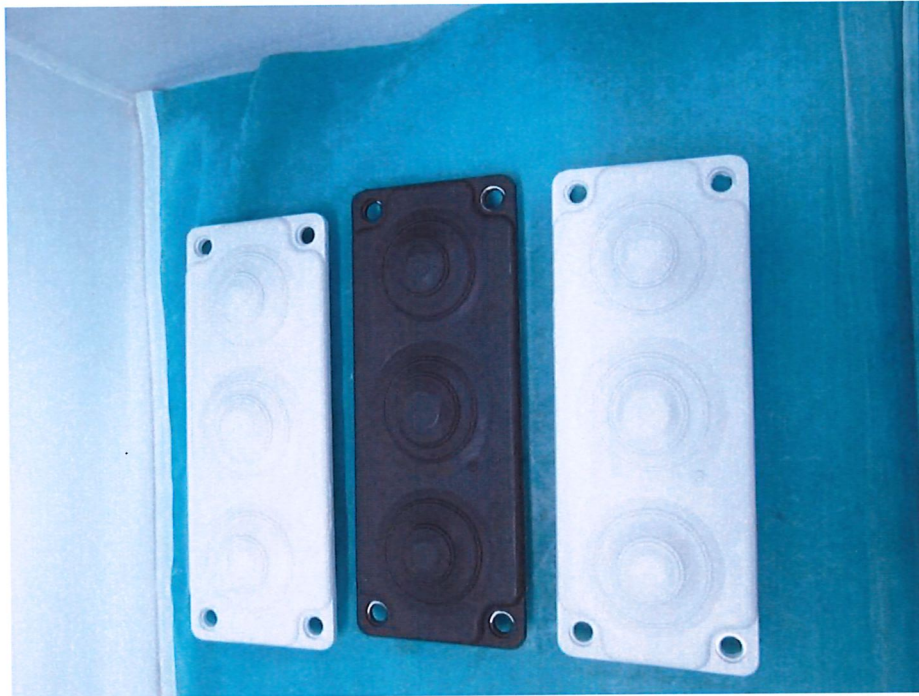
IEC 60670-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- largest diameter or dimensions (mm) .....	<b>54, 60</b>	—
	Fixing screws of the cover or cover-plate tightened with a torque equal to 2/3 of the value of Table 4 used for the test of 12.9 (Nm) .....	-	—
	Greater torque value stated by the manufacturer, if the relevant information is provided (Nm) .....	<b>Flange 2,0</b>	—
	- IP5X: test performed as specified in IEC 60529 category 2 with the drain holes, if any, not opened		<b>N/A</b>
	- IP≤4X: test probe does not pass through any opening other than drain holes		<b>N/A</b>
	- IP≤4X: test probe applied on drain holes does not touch live parts within the enclosure		<b>N/A</b>
	- IP5X: dust does not cover the whole inner surface		<b>N/A</b>
	- IP6X: there is no dust inside the box or enclosure		<b>P</b>
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>	<b>P</b>
	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		<b>P</b>
	- dimension S > 0,04 m <sup>2</sup> and perimeter > 0,8 m according to 13.3.2 and 13.3.4		<b>N/A</b>
	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>∅ 24, 54</b>	—
	- type of cable, largest cross-sectional area (mm <sup>2</sup> ):	<b>∅ 30, 60</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>	<b>P</b>

IEC 60670-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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>
<b>15</b>	<b>MECHANICAL STRENGTH</b>		<b>N/A</b>
<b>16</b>	<b>RESISTANCE TO HEAT</b>		<b>N/A</b>
<b>17</b>	<b>CREEPAGE DISTANCES, CLEARANCES AND DISTANCES THROUGH SEALING COMPOUND</b>		<b>N/A</b>
<b>18</b>	<b>RESISTANCE OF INSULATING MATERIAL TO ABNORMAL HEAT AND FIRE</b>		
	Glow-wire test according to Clauses 4 to 10 if IEC 60695-2-11	See appended table 18	<b>P</b>
<b>19</b>	<b>RESISTANCE TO TRACKING</b>		<b>N/A</b>
<b>20</b>	<b>RESISTANCE TO CORROSION</b>		<b>N/A</b>
<b>21</b>	<b>ELECTROMAGNETIC COMPATIBILITY (EMC)</b>		
	No tests necessary		—

IEC 60670-1			
Clause	Requirement + Test	Result - Remark	Verdict

**APPENDED TABLE:**

18	TABLE: glow-wire test					
part under test	material designation	test temperature (°C)	visible flame and sustained glowing (Y/N)	flames and glowing extinction time	ignition of the tissue paper (Y/N)	
Flange	RTP 2799 S X 113561	650	N	-	N	
Flange	Onflex-S FR 60A-3E1923	650	N	-	N	
Flange	Kraiburg Thermoplast K TC6FRN-735	650	N	-	N	
supplementary information:						



Attachment 2: Photographic documentation

Type: Multigate MC 3

Manufacturer: Trelleborg Industrial Products Finland Oy

