







TEST REPORT EN 60670-1 Boxes and enclosures for electrical accessories for household and similar fixed electrical installations Part 1: General requirements	
Report Reference No.	285909-2b
Date of issue.....	07.10.2016
Total number of pages	9 pages
CB/CCA Testing Laboratory.....	SGS Fimko Ltd 
Address	P.O.BOX 30, FI-00211 Helsinki, Finland
Applicant's name	Trelleborg Industrial Products Finland Oy
Address	Kikkerlöntie 72, FI-38300 SASTAMALA, FINLAND
Test specification:	
Standard	EN 60670-1:2005 + A1:2013
Test procedure.....	NCS/FI
Non-standard test method.....	N/A
Test Report Form No.	IECEN60670_1A, modified by SGS Fimko for Multiflanges and Membranes
Test Report Form(s) Originator	IMQ/VDE
Master TRF	Dated 2007-03, 2011-04
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Test item description	MULTIGATE
Trade Mark	
Manufacturer.....	Trelleborg Industrial Products Finland Oy
Model/Type reference	MC 35/37
IP code	IP66/67
Dimension sheet(s), if any.....	Flange size C For cables Ø: 4x 6-10, 14x 8-12, 16x 10-14, 2x 12-18, 1x 17-32 mm

Testing procedure and testing location:	
<input type="checkbox"/> CB/CCA Testing Laboratory:	SGS Fimko Ltd
Testing location/ address.....:	Särkiniementie 3 FI-00210 Helsinki, Finland
<input type="checkbox"/> Associated CB Laboratory:	-
Testing location/ address.....:	
Tested by (name + signature)	Kari Heikkilä Testing Engineer 
Approved by (+ signature)	Markus Kajander Testing Engineer 
<input type="checkbox"/> Testing procedure: TMP	-
Tested by (name + signature)	
Approved by (+ signature)	
Testing location/ address.....:	
<input type="checkbox"/> Testing procedure: WMT	-
Tested by (name + signature)	
Witnessed by (+ signature).....:	
Approved by (+ signature)	
Testing location/ address.....:	
<input type="checkbox"/> Testing procedure: SMT	-
Tested by (name + signature)	
Approved by (+ signature)	
Supervised by (+ signature).....:	
Testing location/ address.....:	
<input type="checkbox"/> Testing procedure: RMT	-
Tested by (name + signature)	
Approved by (+ signature)	
Supervised by (+ signature).....:	
Testing location/ address.....:	

Summary of testing:

Tests performed (name of test and test clause):

All relevant tests performed on samples.

For SFS 4698 test results, see Test Report TR 285909-2a

For Manufacturing site(s), see page 9.

Attachment 1 (1 page) Testing and Measuring Equipment

Attachment 2 (2 pages) Photographic documentation

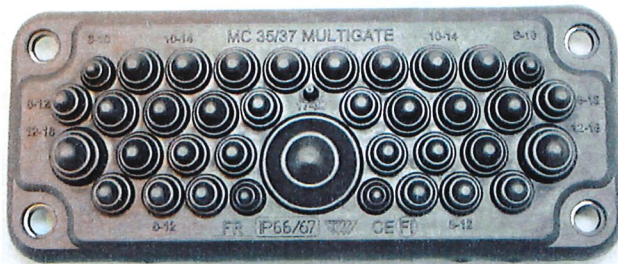
Testing location:

SGS Fimko premises

Summary of compliance with National Differences:

Complies with Nordic National Differences

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 checked="" type="checkbox"/> 7.1.2	Metallic insert
		<input type="checkbox"/> 7.1.3	Composite
7.3	Type(s) of inlets (outlets)	<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 are 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

Possible test case verdicts:

- 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)**

Testing :

Date of receipt of test item : **14.09.2016**

Date (s) of performance of tests : **23.09 – 07.10.2016**
General remarks:

This Test report form is based IEC/EN 60670-1:2005 form to be suitable for Multiflanges/Membranes.
All unnecesasry clauses and parts removed.

The test results presented in this report relate only to the object tested.
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"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.

Note: This TRF includes EN Group Differences together with National Differences and Special National Conditions, if any. All Differences are located in the Appendix to the main body of this TRF.

Throughout this report a comma (point) is used as the decimal separator.

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Unless otherwise stated: (a) the results shown in this document refer only to the sample(s) tested and (b) such sample(s) are retained for 3 months. This document cannot be reproduced except in full, without prior approval of the company.

General product information:

Multiflange for cables diameter: 4x 6-10, 14x 8-12, 16x 10-14, 2x 12-18, 1x 17-32 mm

Material:

TPE, EPDM as follows:
Onflex-S FR 50A-3S1831 VN7094CF 50 ShA RAL 7035 UL
Onflex S FR 60A-3E1923 60 ShA BL FR
Elastron G300.A50.701.S RAL7035
Elastron G300.A50.702.S RAL 7032
RTP 2799 S X 113561 E S-889041 GREY

EN 60 670-1			
Clause	Requirement + Test	Result - Remark	Verdict
8	MARKING		
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 >IP2X	IP6X	P
	c) IP code against harmful ingress of water if >IPX0	IPX6,IPX7	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
	Information marked on the boxes and enclosures or provided by the manufacturer on the smallest package unit or in the instructions of the manufacturer:		
	e) type reference, which may be a catalogue number	MC 35/37	P
8.2	Marking is durable and easily legible		P
	Rubbing test 15 s with water and 15 s with petroleum spirit		P
	After the test: marking still legible		P

9	DIMENSIONS		
	Boxes and enclosures comply with the appropriate standard sheets, if any..... :	C-Flange	P

10	PROTECTION AGAINST ELECTRIC SHOCK		
	In boxes and enclosures assembled, equipped and installed as for normal use in accordance with the manufacturer's instructions: live parts are not accessible		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 elastomeric 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

11	PROVISION FOR EARTHING		N/A
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Clause	Requirement + Test	Result - Remark	Verdict

12	CONSTRUCTION		N/A
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13	RESISTANCE TO AGEING, PROTECTION AGAINST INGRESS OF SOLID OBJECTS AND AGAINST HARMFUL INGRESS OF WATER		
13.1	Resistance to ageing		
13.1.1	Specimens of insulating and composite boxes and enclosures, seals, grommets and replaceable membranes placed in a heating cabinet at $(70 \pm 2) ^\circ\text{C}$ for (168 ± 4) h and then kept at room temperature for (96 ± 4) h		
	Greater torque value stated by the manufacturer, if any (Nm) :	2,0 Nm	—
	After the test: no harmful deformation or similar damage		P
13.1.2	Grommets 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 $(40 \pm 2) ^\circ\text{C}$ for $2 \text{ h} \pm 15 \text{ min}$		
	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 and/or membranes not deformed to such an extent that live parts of any included accessory become accessible		P
	Grommets and/or membranes likely to be subjected to an axial pull: axial pull of $(30 - 2)$ N applied for (5 ± 1) s. During the tests: grommets 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 and/or membranes not subjected to any treatment		P
	After the test: no harmful deformation, cracks or similar damage		P
13.1.3	Grommets and entry membranes in inlet openings of boxes and enclosures classified according to 7.5.2 and 7.5.3: introduction of the cables permitted when the ambient temperature is low		P
	Test on enclosures fitted with grommets and/or membranes not subjected to any ageing treatment kept for 2 h in a refrigerator		

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Clause	Requirement + Test	Result - Remark	Verdict
	Test temperature (°C) :	-25 °C	—
	Immediately after conditioning: it is possible to pierce any blind grommets and entry membranes and to introduce cables 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 (mm²)..... :		—
	- type of cable, largest cross-sectional area (mm²)..... :		—
	Enclosures mounted as in normal use with screwed glands or grommets fitted with conduits as declared by the manufacturer:		
	- smallest diameter or dimensions (mm) :	Ø 6, 8, 10, 12, 17	—
	- largest diameter or dimensions (mm)..... :	Ø 10, 12, 14, 18, 32	—
	Greater torque value stated by the manufacturer, if the relevant information is provided (Nm) :	2,0 Nm	—
	- 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 :	IPX6 / IPX7	P
	Enclosures with screwed glands or grommets fitted with cables as declared by the manufacturer:		

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Clause	Requirement + Test	Result - Remark	Verdict
	- type of cable, smallest cross-sectional area (mm ²)	Ø 6, 8, 10, 12, 17	—
	- type of cable, largest cross-sectional area (mm ²)	Ø 10, 12, 14, 18, 32	—
	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 ²) water in the enclosure (ml)		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		P
14	INSULATION RESISTANCE AND ELECTRIC STRENGTH		N/A
15	MECHANICAL STRENGTH		N/A
16	RESISTANCE TO HEAT		N/A
17	CREEPAGE DISTANCES, CLEARANCES AND DISTANCES THROUGH SEALING COMPOUND		N/A
18	RESISTANCE OF INSULATING MATERIAL TO ABNORMAL HEAT AND FIRE		
	Glow-wire test according to Clauses 4 to 10 if IEC 60695-2-11	See appended table 18	P
19	RESISTANCE TO TRACKING		N/A
20	RESISTANCE TO CORROSION		N/A
21	ELECTROMAGNETIC COMPATIBILITY (EMC)		N/A

EN 60 670-1			
Clause	Requirement + Test	Result - Remark	Verdict

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)
Multiflange		TPE, EPDM	650	N	-	N
supplementary information:						

Manufacturing site	Trelleborg Industrial Products Finland Oy
Address	Kikkerläntie 72
.....	FI-38300 SASTAMALA
.....	FINLAND

Testing and Measuring Equipment for SFS 4698:2006				
Clause	Description	Instrument / Device	Type / Range	Inv. no
9.2	Heating cabinet	0..250°C		4995
10.2/12.2	Degree of protection first characteristic numeral	Test probe series	IEC 60529	4701
11.2	Low temperature	Gram	H4344	4604
12.2	Degree of protection first characteristic numeral	Dust chamber		1886
	Degree of protection second characteristic numeral	Hose nozzle	6,3 mm	4923
	Torque meter	TSD350		7387