

TEST REPORT

No. MI22-0079343-01

Empty enclosures for low-voltage switchgear and controlgear assemblies -General requirements performed in accordance with EN 62208:2011

PRODUCT	EMPTY ENCLOSURES SERIES 625
MODEL(s) TESTED	MAKROLON UV WHITE 2150 (POLYCARBONATE) and POLYNT SMC LS 3023 R18 7035 (POLYESTER)
TRADE MARK(s)	EC

APPLICANT	ELETTROCANALI SPA – VIA GENERALE CARLO ALBERTO DALLA CHIESA 18 – 24020 SCANZOROSCIATE (BG) ITALY
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Tested by	TESSE VITO ALBINO [Laboratory Technician]	
Approved by	PRIMICERIO ALESSANDRO [Laboratory Manager]	

Revision Sheet

Release No.	Date	Revision Description
Rev. 0	18/10/2022	First edition

GENERAL DATA:

SAMPLE		
Samples received on	29/06/2022	Item(s) sampled and sent by applicant
IMQ reference samples	BEM	109145
Samples tested No.	120	
Samples accepted on	29/06/2022	
Object under analysis recognition	Not carried out	
	Except where stated, characteristics of products were taken from client description and were not verified by the laboratory.	

TESTING LOCATION	
Testing dates	05/09/2022 to 18/10/2022
Testing laboratory	IMQ S.p.A. - Via Quintiliano, 43 – 20138 Milano
Testing site	As above

ENVIRONMENTAL CONDITION	
Parameter	Measured
Ambient Temperature	20 ÷ 25 °C
Relative Humidity	50 ÷ 60 %
Atmospheric Pressure	900 ÷ 1000 mbar

REFERENCE DOCUMENT:

	DOCUMENT	DATE	TITLE
<input checked="" type="checkbox"/>	EN 62208	2011	Empty enclosures for low-voltage switchgear and controlgear assemblies – general requirements
<input checked="" type="checkbox"/>	EN ISO 4892-2 +A1	2006 2009	Plastics - Methods of exposure to laboratory light sources – Part 2: Xenon-arc lamps
<input checked="" type="checkbox"/>	EN ISO 178	2010	Plastics — Determination of flexural properties
<input checked="" type="checkbox"/>	EN ISO 179-1	2010	Plastics — Determination of Charpy impact properties — Part 1: Non-instrumented impact test

SUMMARY OF CONTENTS:

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		TOTAL: 10

Note:

Attachments may include Schematics, Components information, Component test Reports, Particular Standard test Reports, Standard test Reports, Information from accompanying documents and similar.

EQUIPMENT UNDER TEST (EUT) DETAILS:

MODEL (basic)	Description
	Test carried out on 120 specimens of size 80x10x4 mm (EMPTY ENCLOSURES SERIES 625)
VARIANTS (derived)	Description
/	/

MANUFACTURER	/
ASSEMBLY PLANT(s)	ELETTROCANALI SPA – VIA GENERALE CARLO ALBERTO DALLA CHIESA 18 – 24020 SCANZOROSCIATE (BG) ITALY

GENERAL PRODUCT INFORMATION:

Insulating material for empty enclosures for low-voltage switchgear and controlgear assemblies type insulating material tested:

MAKROLON UV WHITE 2150 (POLYCARBONATE) and POLYNT SMC LS 3023 R18 7035 (POLYESTER).

SUMMARY OF TEST:

POSSIBLE TEST CASE VERDICTS:	
Test object does meet the requirement	P(ass)
Test object does not meet the requirement	F(ail)
Test case does not apply to the test object	N.A.
Test object has not been checked	N.C.

TEST PERFORMED	CLAUSE	ITEM NUMBER
Resistance to ultra-violet (UV) radiation	9.12	-

GENERAL REMARKS:

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

Unless otherwise stated the uncertainties for the tests and measurements are evaluated in according to IMQ Operational Instruction IO-LAB-001 and IO-LAB-004.

The uncertainties evaluation has been carried out in accordance with IEC Guide 115 “Application of Uncertainty of measurement’s to Conformity Assessment Activity in the Electrotechnical Sector” and IECCE OD 5014.

Internal Procedure PG-037 ensure that the requirements for traceability of calibrations, of all test equipment requiring calibration, and calibration intervals are met.

The ability or reliability of this product to perform its intended function in a particular application has not been investigated.

Unless otherwise specified, warnings, installation instruction and/or user manual provided with the sample have been checked in Italian or English version only.

IMQ declines any responsibility derived from missing or wrong information provided aside by the applicant.

REQUIREMENTS AND TESTS:

9.12	Resistance to ultra-violet (UV) radiation		
	This test applies only to enclosures and external parts of enclosures intended to be installed outdoors and which are constructed of insulating materials or metals that are entirely coated by synthetic material. Representative samples of such parts shall be subjected to the following test		
	UV test according to ISO 4892-2 method A, cycle 1 with a total test period of 500 h		P
	Five specimens for each type insulating material are submitted a UV test, in according to ISO 4892-2 Method A cycle 1 providing a total test period of 500 h. Five specimens for each type insulating material are left room temperature. After the test specimens are tested of flexural strength (according to standard ISO 178) and Charpy impact (according to standard SO 179)		P
	For enclosures constructed of insulating materials compliance is checked by verification		
	- flexural strength (according to ISO 178) of insulating materials have 70% min. retention	See table 1	P
	- charpy impact (according to ISO / EN ISO 179) of insulating materials have 70% min. retention	See table 2	P

TABLES:

Tab 1 : TEST RESULTS: Flexural Strength

(A) Material : MAKROLON UV WHITE 2150 (POLYCARBONATE)

MAKROLON UV WHITE 2150			MAKROLON UV WHITE 2150		
To the supply state			After UV exposure		
N° specimens	Width/ Thickness (mm)	Flexural strength (Mpa)	N° specimens	Width/ Thickness (mm)	Flexural strength (Mpa)
1	10,18x3,84	90,81	1	10,20x3,83	90,28
2	10,15x3,84	91,79	2	10,20x3,82	92,55
3	10,16x3,82	89,23	3	10,21x3,80	91,55
4	10,19x3,82	90,06	4	10,20x3,81	88,11
5	10,19x3,84	91,11	5	10,19x3,81	88,20
6	10,18x3,82	88,02	6	10,18x3,80	87,90
7	10,17x3,81	87,20	7	10,19x3,81	87,10
8	10,16x3,82	86,05	8	10,19x3,82	85,61
9	10,22x3,82	86,64	9	10,23x3,82	89,52
10	10,17x3,84	82,90	10	10,19x3,82	90,58
Average		88,38	Retention		100,86 %
			Average		89,14

the pressure applied to the non exposed surface

(B) Material : POLYNT SMC LS 3023 R18 7035 (POLYESTER)

POLYNT SMC LS 3023 R18 7035			POLYNT SMC LS 3023 R18 7035		
To the supply state			After UV exposure		
N° specimens	Width/ Thickness (mm)	Flexural strength (Mpa)	N° specimens	Width/ Thickness (mm)	Flexural strength (Mpa)
1	10,35x3,94	86,22	1	10,47x4,04	108,87
2	10,44x4,05	123,84	2	10,41x4,01	125,02
3	10,50x3,97	109,06	3	10,28x3,97	117,08
4	10,40x3,93	114,21	4	10,32x4,01	95,45
5	10,52x4,03	84,51	5	10,30x3,93	138,01
6	10,45x4,05	118,12	6	10,32x3,90	134,55
7	10,48x3,87	127,34	7	10,40x3,99	120,54
8	10,34x3,93	120,41	8	10,30x3,95	111,71
9	10,30x3,93	103,67	9	10,28x3,97	109,56
10	10,30x3,92	79,58	10	10,31x3,87	96,80
Average		106,70	Retention		108,5 %
			Average		115,76

the pressure applied to the non exposed surface

Tab 2: TEST RESULTS: Charpy impact

(A) Material : MAKROLON UV WHITE 2150 (POLYCARBONATE)

MAKROLON UV WHITE 2150			MAKROLON UV WHITE 2150		
To the supply state			After UV exposure		
N° specimens	Impact energy (J)	Impact strength (kJ/m ²)	N° specimens	Impact energy (J)	Impact strength (kJ/m ²)
1	3,78	96,60	1	4,03	102,66
2	4,05	103,40	2	3,81	97,59
3	4,06	104,51	3	3,97	101,99
4	4,11	105,90	4	4,00	102,73
5	4,19	106,70	5	3,97	102,90
6	4,45	114,43	6	3,98	102,25
7	4,10	105,26	7	3,98	99,37
8	4,06	104,23	8	4,00	101,92
9	4,31	111,23	9	4,12	104,54
10	4,19	108,14	10	3,91	111,34
Average		106,04	Retention		96,88 %
			Average		102,73

impact shall be applied to the exposed surface

(B) Material : POLYNT SMC LS 3023 R18 7035 (POLYESTER))

POLYNT SMC LS 3023 R18 7035			POLYNT SMC LS 3023 R18 7035		
To the supply state			After UV exposure		
N° specimens	Impact energy (J)	Impact strength (kJ/m ²)	N° specimens	Impact energy (J)	Impact strength (kJ/m ²)
1	1,68	41,48	1	1,63	41,16
2	1,61	40,76	2	1,52	38,48
3	1,86	46,62	3	1,95	48,39
4	1,53	38,64	4	0,95	24,42
5	1,15	28,67	5	1,71	43,96
6	1,41	36,06	6	1,70	42,71
7	1,26	32,31	7	1,98	50,00
8	1,63	41,48	8	1,82	45,84
9	1,75	43,53	9	1,61	40,55
10	1,93	48,01	10	1,60	40,25
Average		39,76	Retention		104,58 %
			Average		41,58

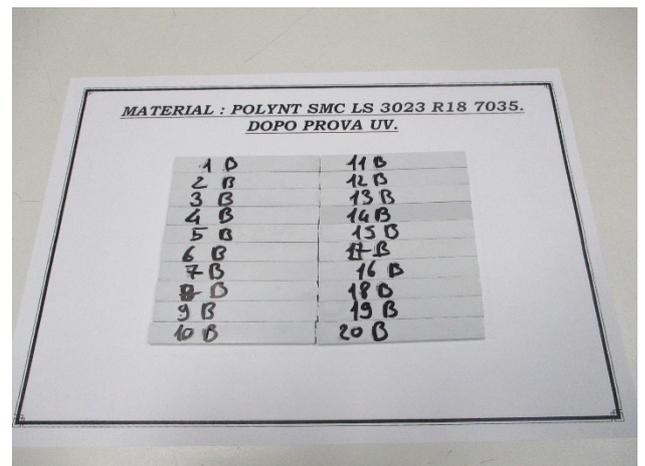
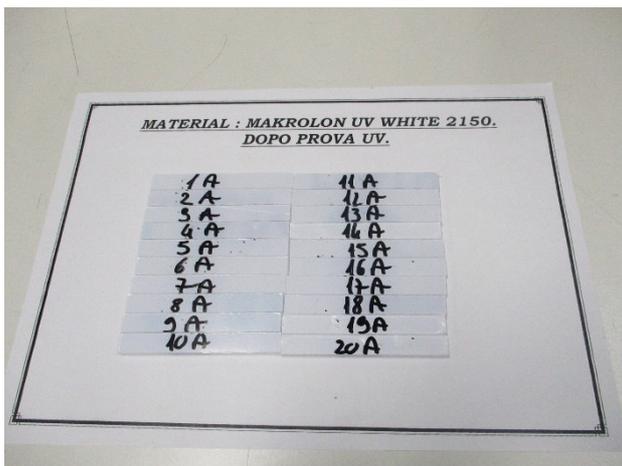
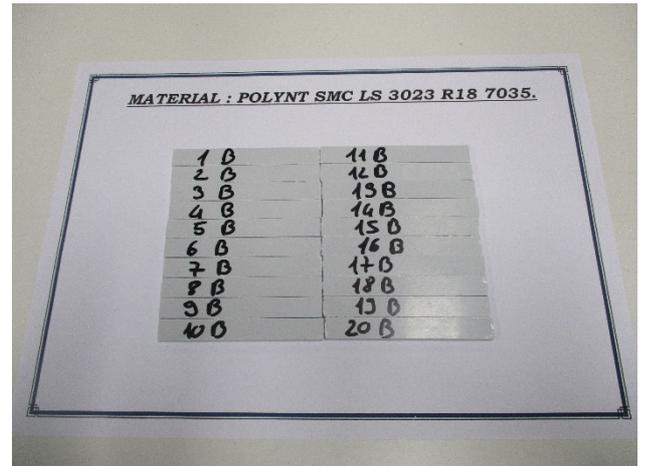
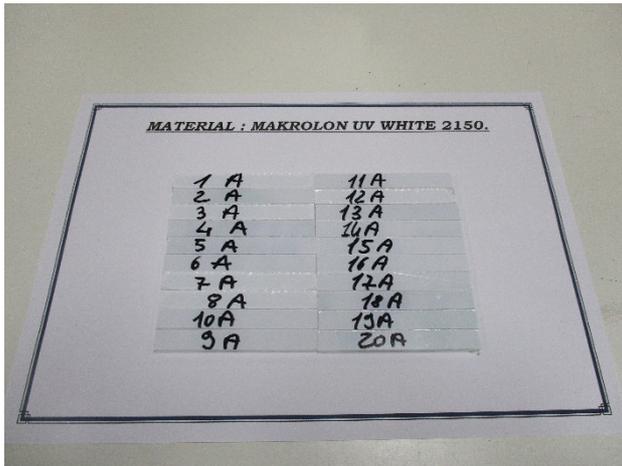
impact shall be applied to the exposed surface

MEASUREMENT EQUIPMENT AND INSTRUMENTATION

Instrument	Manufacturer	Model	IMQ Ref.	calibration date	Calibration due date
Xeno test	Atlas	Alpha	P-02627 + S07808	09-2021	09/2024
Flexion test equipment	Instron	3001	P-00703	05-2022	05/2023
Charpy impact test equipment	AMSE	XJF-50J	P-02926	02/2022	02/2025
Digital Caliper	Mitutoyo	Absolute	S-04318	09/2022	09/2023

PHOTOGRAPHS:

EUT IDENTIFICATION



EQUIPEMENT



Figure 1
Charpy impact test equipment (IMQ ref.P-02926)

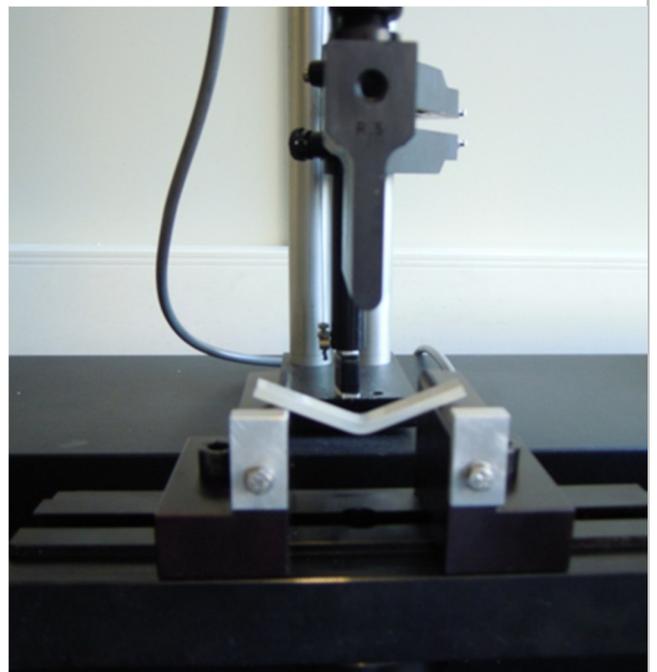


Figure 2
Flexion test equipment (IMQ ref.P-00470)



Figure 3
Xeno test equipment (IMQ ref. P-02627)

END OF TEST REPORT