CEMBRE

Doc. No.	Issued by:	Addressed to:	Date
7014/2023/LP	LPr (Frattini)	TD(Plotnikova). Copies to: DT(Barezzani), GSr(Job).	30/05/2023

TEST REPORT

OBJECT: Solar radiation through exposure to light source with xenon-arc lamp of the MG-ETF-PO in Polyolefin.

MATERIAL EXAMINED

-MG-ETF-PO (20x26 WH) tags in polyolefin granules, printed with Cembre Premium ribbon;
-MG-ETF-PO (15x60 WH) tags in polyolefin granules, printed with Cembre Premium ribbon.

TESTS CARRIED OUT

Solar radiation through exposure to light source with xenon-arc lamp. Method A, norm EN ISO 4892-2.

Tests executed by external laboratory IASELAB srl – Ferrara.

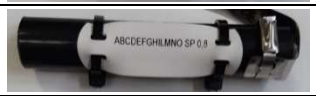
RESULTS

LABEL INTEGRITY – PRINTING INTEGRITY – COLOUR CHANGE:

1- GOOD AS NEW
2- SLIGHT VARIATION
3- MODERATE (ACCEPTABLE)
4- UNACCEPTABLE

LABEL INTEGRITY:

1- GOOD AS NEW
2- SLIGHT CRACKS
3- DEEP CRACKS
4- BREAKDOWN

E.U.T.			RATING AFTER 3000 H OF TESTING			
SAMPLE	**PHOTO AND TYPE**		**LABEL INTEGRITY**	**PRINTING INTEGRITY**	**COLOUR CHANGE**	**LABEL DEFORMATION**
1		MG-ETF 20x26	1	1	1	2
2 int		MG-ETF 15x60	1	1	1	2
2 est			1	1	1	1

CEMBRE

TEST REPORT

Below is the extract from the test executed by the extern al laboratory.

CEMBRE

1 General information

1.1 Customer

Name	:	CEMBRE S.p.A.
Address	:	Via Serenissima, 9 – 25135 Brescia BS - Italy
Phone	:	+39 030 36921
Fax	:	+39 030 3365766
Web Site	:	www.cembre.it
E-mail	:	info@cembre.com
Reference	:	Gianluca Cama

TEST REPORT

1.2 Addressee

Name	:	CEMBRE S.p.A.
Address	:	Via Serenissima, 9 – 25135 Brescia BS - Italy
Phone	:	+39 030 36921
Fax	:	+39 030 3365766
Web Site	:	www.cembre.it
E-mail	:	info@cembre.com
Reference	:	Gianluca Cama

1.3 E.U.T. Preparation

No special preparation has been done on the E.U.T. It has tested as delivered by the Customer.

1.4 E.U.T. Sampling method

The sample (E.U.T.) has been selected by the Customer.

1.5 Place of test

Tests are carried out at:
IASELAB Srl – società a socio unico – A Nemko company – Via Bèla Bartòk, 29/H - 44124 Ferrara (FE) –ITALY - Phone: +39 0532 740060 - Fax: +39 0532 746704 - URL: www.iaselab.com

CEMBRE

1.6 Type of test

Test - Solar radiation through exposure to light source with xenon-arc lamp			
EN ISO 4892-2:	Method A:	Cycle n° 4	**X**
	Cycle n° B1		
	Method B:	Cycle n° 5	
	Cycle n° 6 Cycle n° B2		
		Cycle n° B3	

TEST REPORT

1.7 Test standard – edition

Test - Solar radiation through exposure to light source with xenon-arc lamp	
Reference	**Title**
EN ISO 4892-2:2013/A1:2021+ISO 4582:2017 cap4.3	Variazioni visibili dell'aspetto dopo esposizione a lampada ad arco allo xeno/Visual change in appearance by exposing to light source with xenon-arc lamp.

1.8 Relevant laboratory test procedure

Cod	Title	Test type	Edition
PIP_3-8 REV 2	Procedura interna di Prova Prova di Irraggiamento Solare per LAB-062 e LAB-085	AMBIENTALE	Rev 2 del 18.03.2021

1.9 Test equipment

Equipment for the first 4 sessions				
Ref. Number	**DESCRIPTION**	**MANUFACTURER**	**Calib. Date**	**Expiry calib. Date**
LAB-112	Humidity logger GSP-6	Elitech	03-2022	03-2023
LAB-085	Q-SUN Xe-3 HSC	Q-LAB	08-2022	02-2023

Equipment for sessions 5 and 6				
Ref. Number	**DESCRIPTION**	**MANUFACTURER**	**Calib. Date**	**Expiry calib. Date**
LAB-112	Humidity logger GSP-6	Elitech	03-2023	03-2024
LAB-085	Q-SUN Xe-3 HSC	Q-LAB	02-2023	08-2023

1.10 Measurement uncertainty

Parameters	Uncertainty	Measurement range (m.r.)
Temperature/Humidity measurement on Air (LAB-112)		
Temperature (°C)	± 1,2 °C	-40,0 °C ÷ 85,0 °C
Humidity (% RH)	± 4,7% RH	10,0% RH ÷ 99,0% RH
Solar radiation testing (Using Q-SUN Xe-3 - LAB-085)		
Irradiance (W/m2)	± 5,5 W/m2	300 nm ÷ 400 nm
BP Temperature (°C)	± 2,4 °C	15 °C ÷ 70 °C
	± 2,5 °C	70 °C ÷ 110 °C
Chamber temperature (°C)	± 2,4 °C	16 °C ÷ 65 °C
Humidity (% RH)	± 4,0% RH	20% RH ÷ 95% RH

General NOTE: The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2 which has been derived from the assumed normal probability distribution with infinite degrees of freedom and for a coverage probability of 95%.

1.11 Evaluation criteria

1.12 Product description (Identification)

1.12.1 EUTs received on 30/09/2022 (3000 h of testing)

Sample 7			
Description	:	Nameplate	
Manufacturer	:	CEMBRE S.p.A.	
Model / Type	:	targhette MG-ETF 20x26	
Number of samples	:	3 (2 samples for testing and 1 sample for comparison)	
Serial Number	:	-	
Dimensions	:	20 x 26 x 0,8	mm
Mass of equipment	:	5	g
Other information	:	POLIOLEFINA (Material)	
		MG3–nastro premium (Print)	

E.U.T. technical data have been declared by the customer. The Laboratory disclaims all responsibility for informationreceived from the customer which may influence the test results.

Sample 11 int			
Description	:	Nameplate	
Manufacturer	:	CEMBRE S.p.A.	
Model / Type	:	new targhette MG-ETF 15x60	
Number of samples	:	3 (2 samples for testing and 1 sample for comparison)	
Serial Number	:	-	
Dimensions	:	15 x 60 x 0,8	mm
Mass of equipment	:	5	g
Other information	:	POLIOLEFINA (Material)	
		MG3–nastro premium (Print)	

E.U.T. technical data have been declared by the customer. The Laboratory disclaims all responsibility for informationreceived from the customer which may influence the test results.

Sample 11 est			
Description	:	Nameplate	
Manufacturer	:	CEMBRE S.p.A.	
Model / Type	:	new targhette MG-ETF 15x60)	
Number of samples	:	3 (2 samples for testing and 1 sample for comparison)	
Serial Number	:	-	
Dimensions	:	15 x 60 x 0,8	mm
Mass of equipment	:	5	g
Other information	:	POLIOLEFINA (Material)	
		MG3–nastro premium (Print)	

E.U.T. technical data have been declared by the customer. The Laboratory disclaims all responsibility for informationreceived from the customer which may influence the test results

1.13 Auxiliary equipment

The following Auxiliary Equipment, furnished by the Customer, have been used during the tests:

- none

2 Laboratory environmental conditions

Data	Temperature (°C)	Humidity (rH%)	Pressure (hPa)
From 30/09/22 to 06/04/2023	21,4 - 24,5	28,0 - 55,0	994 - 1033

3 Summary of test planning

Performed test	Data
First session of testing (up to first 500 h)	From 30/09/22 to 11/11/2022
Second session of testing (total 1000 h)	From 11/11/22 to 02/12/2022
Third session of testing (total 1500 h)	From 07/12/22 to 28/12/2022
Fourth session of testing (total 2000 h)	From 28/12/22 to 18/01/2023
Fifth session of testing (total 2500 h)	From 23/02/2023 to 16/03/2023
Sixth session of testing (total 3000 h)	From 16/03/2023 to 06/04/2023

4 Solar radiation through exposure to light source with xenon-arclamp

4.1 Test specification

4.1.1 Required and test severity

According to EN ISO 4892-2:2013						
Method A — Exposures using **daylight filters** (artificial weathering)						
Cycle n°	Exposure period	Irradiance		Black-Panel temperature °C	Chamber temperature °C	Relative humidity %
		Broadband (300 nm to 400 nm) W/m^2	Narrowband (340 nm) W/(m^2*nm)			
4	102 min dry	60 ± 2	0,51 ± 0,02	63 ± 3	38 ± 3	50 ± 10
	18 min water spray	60 ± 2	0,51 ± 0,02	-	-	-
Total Test time:	3000 h (6 sessions of 500 hours)					

4.1.2 Preparation of test specimens

The samples were exposed as prepared by the client

4.2 Procedure

4.2.1 Mounting / positioning the test specimens

Test specimens are positioned to specimen holder in the apparatus in such manner that the specimensare not subjected to any applied stress.

4.2.2 Observations during testing and action taken

None.

4.2.3 Determination of change in properties after exposure

The final examination was conducted by comparison with untested products as per the photographicdocumentation in paragraph 5 - Pictures.

4.3 Summary of test

Solar radiation through exposure to light source with xenon-arc lamp	
Start date of exposure:	19/09/2022
Stop date of exposure	06/04/2023
Exposure total test time:	3000 h (6 sessions of 500 h)
RESULT Sample 7):	see section 5 for comparison between tested and untested samples.
RESULT Sample 11 int):	see section 5 for comparison between tested and untested samples.
RESULT Sample 11 est):	see section 5 for comparison between tested and untested samples.

5 Pictures

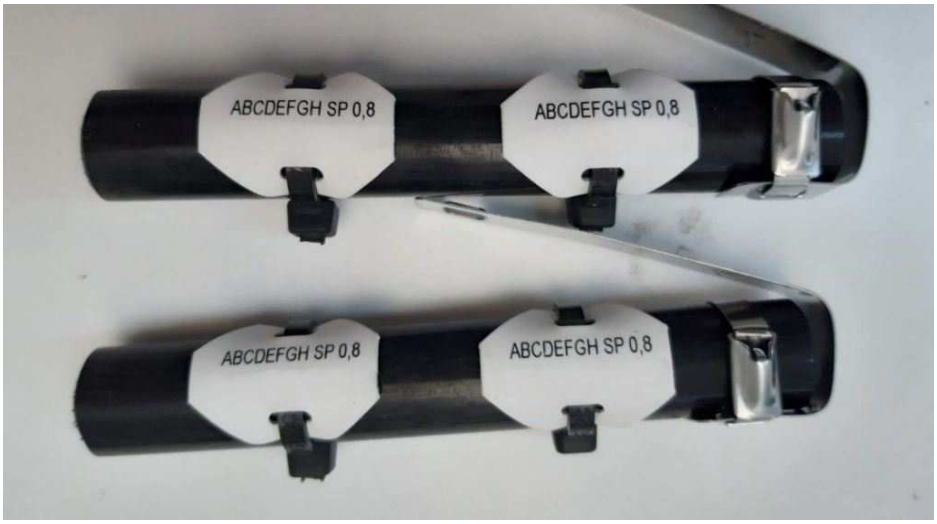
5.1 EUTs before test

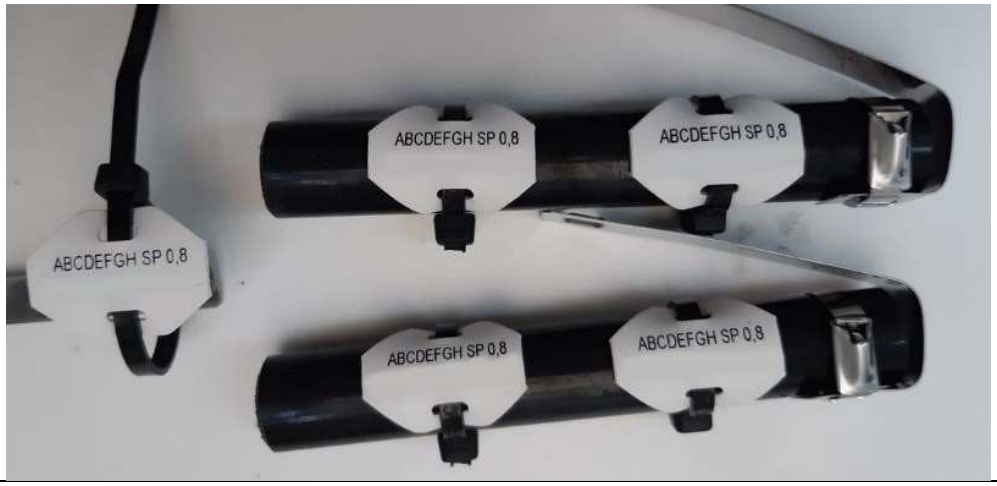
E.U.T. - Samples 7)


E.U.T. - Samples 11 est)

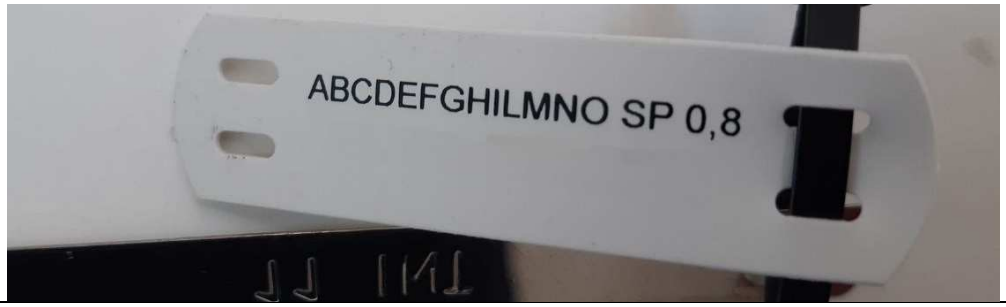

E.U.T. - Samples 11 est)


5.2 Comparison after the first test session (after 500 h)

E.U.T. - Samples 7)

Reference E.U.T.

Comparison after the first test session


E.U.T. - Samples 11 int)

Reference E.U.T.

Comparison after the first test session


E.U.T. - Samples 11 est)

Reference E.U.T.

Comparison after the first test session

5.3 Comparison after the second test session (after 1000 h)

E.U.T. - Samples 7)

Comparison after the second test session


E.U.T. - Samples 11 int)

Comparison after the second test session

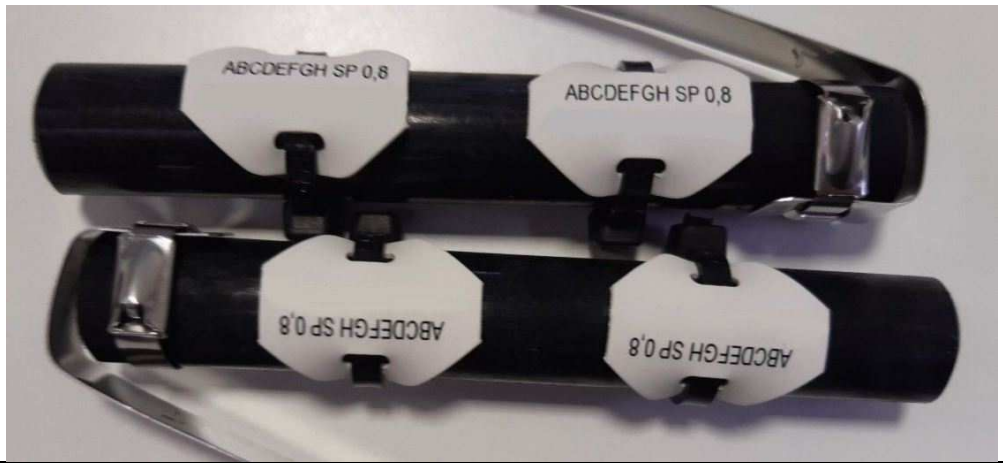
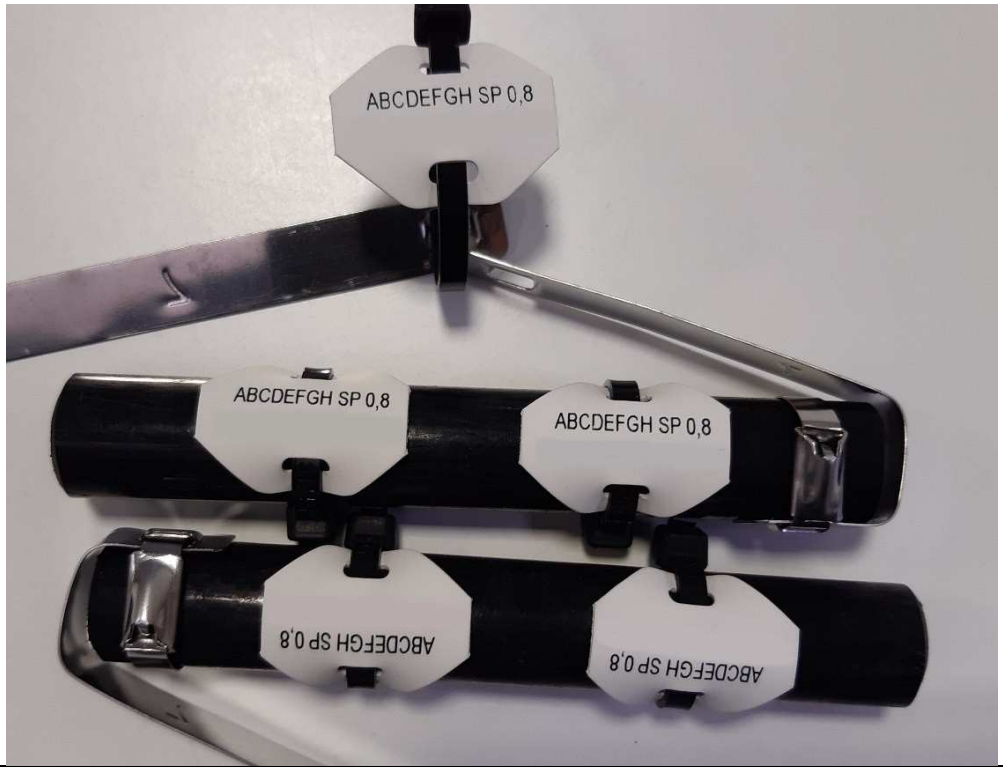

E.U.T. - Samples 11 est)

Comparison after the second test session


5.4 EUTs before the test and entered before the third test session

5.5 Comparison after the third test session (after 1500 hours)

5.6 Comparison after the fourth test session (after 2000 hours)

E.U.T. - Samples 7)

Comparison after the fourth test session


E.U.T. - Samples 11 int)

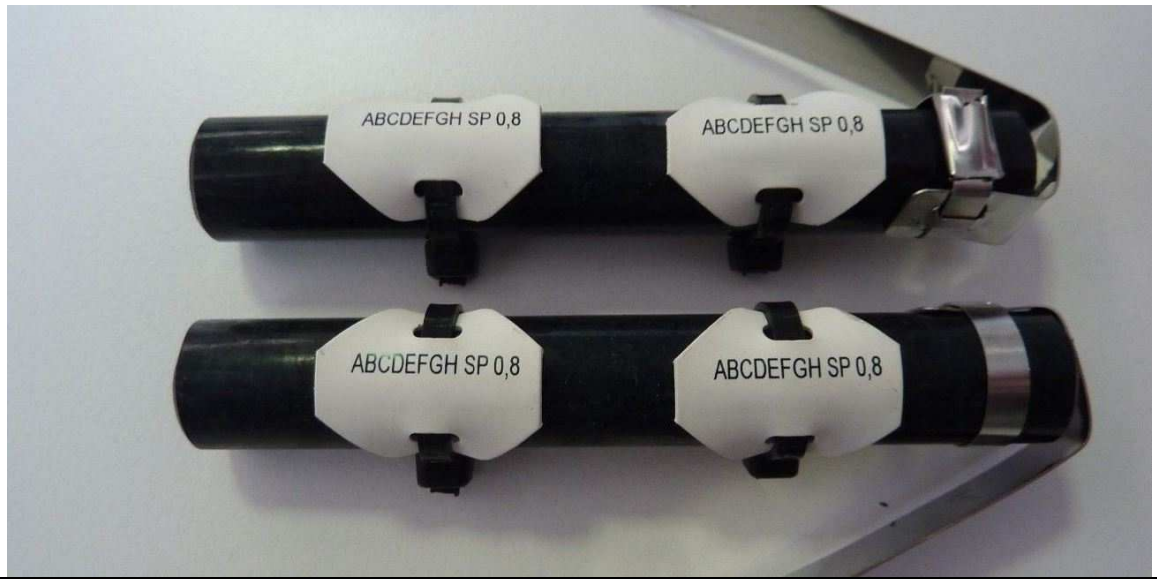
Comparison after the fourth test session


E.U.T. - Samples 11 est)

Comparison after the fourth test session


5.7 Comparison after the fifth test session (after 2500 hours)

5.8 Comparison after the sixth test session (after 3000 hours)

E.U.T. - Samples 7)

Comparison after the sixth test session


E.U.T. - Samples 11 int)

Comparison after the sixth test session


E.U.T. - Samples 11 est)

Comparison after the sixth test session