	Test report	
LGAI Technological Center S.A. (APPLUS) Campus UAB Ronda de la Font del Carme, s/n. 08193-Bellaterra (Barcelona)	25/36601574	Date 21/07/25

Neutral salt fog test according to UNE-EN ISO 9227:2023

Test date	09/05/25 - 21/06/25	**Date of receipt**	22/04/2025
Nº File	25/36601574	**Order**	5810209430_12_679183

Petitioner

Petitioner:	**TECNOPOL SISTEMAS, S.L.** Finlandia, 33 08520 – Les Franqueses del vallès Barcelona
Att.:	David Pont

SAMPLE INFORMATION AND TEST

material received	Three (3) panels of approximate dimensions of 30cm x 20cm referenced by the petitioner as "Tecnocoat P-2049" with a thickness of 2mm and with internal number of Applus 32864
Test requested	Salt spray ageing and visual assessment of defects after 1000 h
The standard applied	**UNE-EN ISO 9227:2023** ["Corrosion tests in artificial atmospheres - Salt spray tests"] **UNE-EN ISO 4628-2:2016** ["Paints and varnishes - Evaluation of degradation of coatings - Designation of quantity and size of defects, and of intensity of uniform changes in appearance - Part 2: Assessment of degree of blistering"] **UNE-EN ISO 4628-3:2016** ["Paints and varnishes - Evaluation of degradation of coatings - Designation of quantity and size of defects, and of intensity of uniform changes in appearance - Part 3: Assessment of degree of rusting"] **UNE-EN ISO 4628-4:2016** ["Paints and varnishes - Evaluation of degradation of coatings - Designation of quantity and size of defects, and of intensity of uniform changes in appearance - Part 4: Assessment of degree of cracking."] **UNE-EN ISO 4628-5:2023** ["P aints and varnishes - Corrosion protection of steel structures by protective paint systems - Part 6: Laboratory performance test methods"] **UNE-EN ISO 12944-6:2018** ["Paints and varnishes – Evaluation of quantity and size of defects, and of intensity of uniform changes in appearance – Part 5: Assessment of degree of flaking"]
acceptance criterion	N/A

Change record

It is the responsibility of the petitioner to replace the original and copies

Revision No.	Date	Section	Motive changed

ENSAYO ISO 17025 Nº9 / LE1680

Las actividades o resultados marcados con (*) no están cubiertos por la acreditación ENAC

ACCREDITATION SCOPE

The ENAC accreditation **Nº9/LE1680** of LGAI Technological Center, S.A. (APPLUS) includes those tests/works referenced in the standards described in the following table. Other standards not listed in this table are excluded from this accreditation, as well as works and comments/conclusions resulting from the different tests/examinations carried out (see marks [*]).

Standard	Title
UNE-EN ISO 9227:2023	Corrosion tests in artificial atmospheres – Salt spray tests
UNE-EN ISO 4628-2:2016	Paints and varnishes – Evaluation of degradation of coatings – Designation of quantity and size of defects, and of intensity of uniform changes in appearance – Part 2: Assessment of degree of blistering
UNE-EN ISO 4628-3:2016	Paints and varnishes – Evaluation of degradation of coatings – Designation of quantity and size of defects, and of intensity of uniform changes in appearance – Part 3: Assessment of degree of rusting
UNE-EN ISO 4628-4:2016	Paints and varnishes – Evaluation of degradation of coatings – Designation of quantity and size of defects, and of intensity of uniform changes in appearance – Part 4: Assessment of degree of cracking
UNE-EN ISO 4628-5:2023	Paints and varnishes – Evaluation of quantity and size of defects, and of intensity of uniform changes in appearance – Part 5: Assessment of degree of flaking

LGAI Technological Center, S.A. (APPLUS) **NADCAP** accreditation includes those tests/works referenced in the standards described in the following table.

Standard	Title
UNE-EN ISO 9227:2023	Corrosion tests in artificial atmospheres – Salt spray tests
UNE-EN ISO 4628-2:2016	Paints and varnishes – Evaluation of degradation of coatings – Designation of quantity and size of defects, and of intensity of uniform changes in appearance – Part 2: Assessment of degree of blistering
UNE-EN ISO 4628-3:2016	Paints and varnishes – Evaluation of degradation of coatings – Designation of quantity and size of defects, and of intensity of uniform changes in appearance – Part 3: Assessment of degree of rusting
UNE-EN ISO 4628-4:2016	Paints and varnishes – Evaluation of degradation of coatings – Designation of quantity and size of defects, and of intensity of uniform changes in appearance – Part 4: Assessment of degree of cracking
UNE-EN ISO 4628-5:2023	Paints and varnishes – Evaluation of quantity and size of defects, and of intensity of uniform changes in appearance – Part 5: Assessment of degree of flaking

TEST CONDITIONS

Chamber used:	Brand **RSI**, model **TL1000** (inventory number **119133**)			
Calibration date	November 2024	**Next calibration**	November 2025	
Pycnometer	Brand GLASSCO, model GAY-LUSSAC 25ml (inventory number **CL110960**)			
pHmeter/conductivity	Bench top metter HANNA INSTRUMENTS, model HI-5521 (inventory number CL110947)			
pH tampon calibration	4.01 / 7,01 / 10,01.	**Conductivity tampon calibration**	84 µS / 1413 µS.	
Conditions of salt solution:	Requirements of **UNE-EN ISO 9227:2023**	**Reagent used:**	According to ASTM B117-19 and **UNE-EN ISO 9227:2023**	
pH adjustment	Neutral salt solution shall conform the requirements of UNE-EN ISO 9227:2023 / UNE-EN IEC 60068-2-11:2021			
Deionised water conductivity	8,9µS/cm	**Temperature**	35ºC	
pH rate	Entrance solution: 6,9	Test solution: 7,1		
Specific gravity	Entrance solution: 1,030 g/cm^3	Test solution: 1,036 g/cm^3		
Collection Rate	Collector 1: 1,4 mL/h	Collector 2: 1,3 mL/h		
Duration test:	1000 hours			
Test beginning	09/05/2025	**Test End**	21/06/2025	
Samples position	The product is supported on a plastic frame that is angled at 20° with the front side facing upwards (see figure 1).			
Initial cleaning of samples	N/A	**Final cleaning of samples**	Cleaning of sample has been done by washing under tap water at a <30ºC and drying by compressed air.	

EVALUACIÓN DE LAS MUESTRAS

The evaluation of the results has been carried out at the end of the test, both by visual examination of the sample and by evaluating the degradation of the applied coating system and according to the methods specified in the UNE-EN ISO 4628-2:2016 standards (blister), UNE-EN ISO 4628-3:2016 (corrosion), UNE-EN ISO 4628-4:2016 (cracking), UNE-EN ISO 4628-5:2023 (scaling) and the incision is evaluated by calculation according to UNE-EN ISO 12944-6:2018 [*]

RESULTS:

Table 1. Visual assessment after the NSS UNE-EN ISO 9227:2023 test [1]

Test date	Sample	Symptoms of alteration [2]	Appearance	Location
0-1000h	**32864-00001**	No apparent signs of deterioration and/or significant signs of corrosion of the material compared to the receiving state. (ver figura 2 Anexo 2)		
0-1000H	**32864-00002**	No apparent signs of deterioration and/or significant signs of corrosion of the material compared to the receiving state. (ver figura 2 Anexo 2)		

NOTAS:

[1] The table does not include the obvious variations in intensity, which, from their first appearance, the various corrosion/alteration symptoms reported during the test suffer.

[2] The information on materials listed in the column "Symptoms of alteration" is based both on the information submitted by the applicant and on consideration of our experience and the final external appearance of the tested samples.

Table 2. Visual assessment according to UNE-EN ISO 4628-2:2016 (blistering), UNE-EN ISO 4628-3:2016 (corrosion), UNE-EN ISO 4628-4:2016 (cracking), UNE-EN ISO 4628-5:2023 (scaling) after 1000h of NSS test

Sample	Results visual assessment			
	Blistering UNE-EN ISO 4628-2:2016	Corrosion UNE-EN ISO 4628-3:2016	Cracking UNE-EN ISO 4628-4:2016	Peeling UNE-EN ISO 4628-5:2023
32864-00001	0 (S0)	R_i 0	0 (S0)	0 (S0)
32864-00002	0 (S0)	R_i 0	0 (S0)	0 (S0)

Table 3. Assessment of the degree of delamination and corrosion from an incision or other defect according to UNE-EN ISO 4628-8:2013 after 1000h of NSS testing.

Sample	Corrosion from the incision (mm)
32864-00001	0,32
32864-00002	0,14

ABRIL CORTES LIMON

Digitally signed by ABRIL CORTES LIMON
Date: 2025.07.21 16:12:00 +02'00'

Test Leader

Polymers' Laboratory
LGAI Technological Center S. A.

ALEJANDRO BELMEZ LLEDO

Firmado digitalmente por ALEJANDRO BELMEZ LLEDO
Fecha: 2025.07.21 14:10:02 +02'00'

Technical responsible

Polymers' Laboratory
LGAI Technological Center S. A.

Los resultados se refieren exclusivamente a la muestra, producto o material recibido en el laboratorio, tal y como se indica en el apartado correspondiente a la descripción del material recibido, y ensayado en las condiciones descritas en este informe de ensayo.

Los resultados se aplican a la muestra tal y como se recibe

El laboratorio es responsable de toda la información proporcionada en el informe, EXCEPTO cuando la información sea proporcionada por el cliente, que no esté amparada por la acreditación. El laboratorio no es responsable cuando la información sea proporcionada por el cliente y pueda afectar a la validez de los resultados.

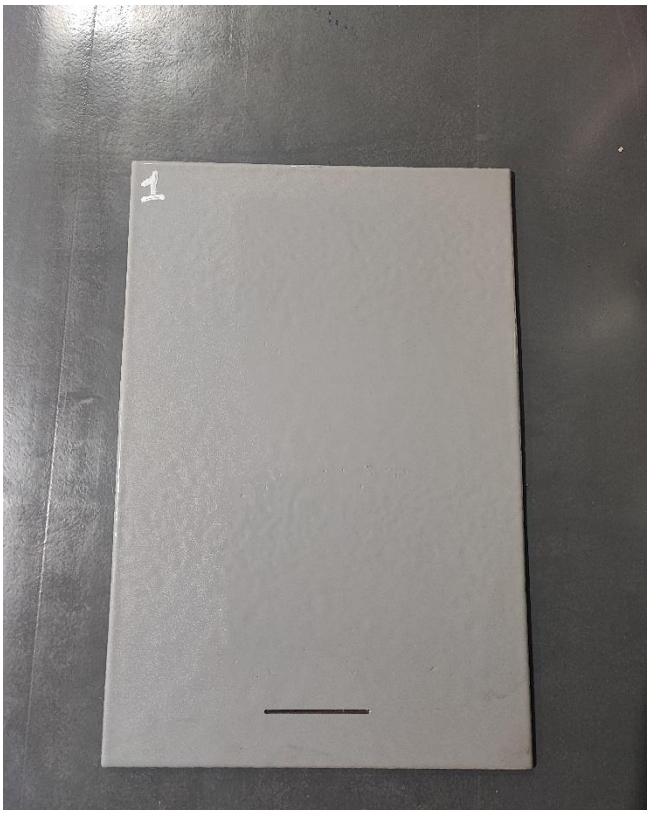
Cuando la norma o especificación de ensayo aplicable no incluya ningún criterio para la regla de decisión, Applus+ proporcionará una declaración de conformidad aplicando una regla de decisión simple, indicando el valor de incertidumbre. Se puede acordar otra regla de decisión si el cliente lo requiere

Aseguramiento de la Calidad de Servicio

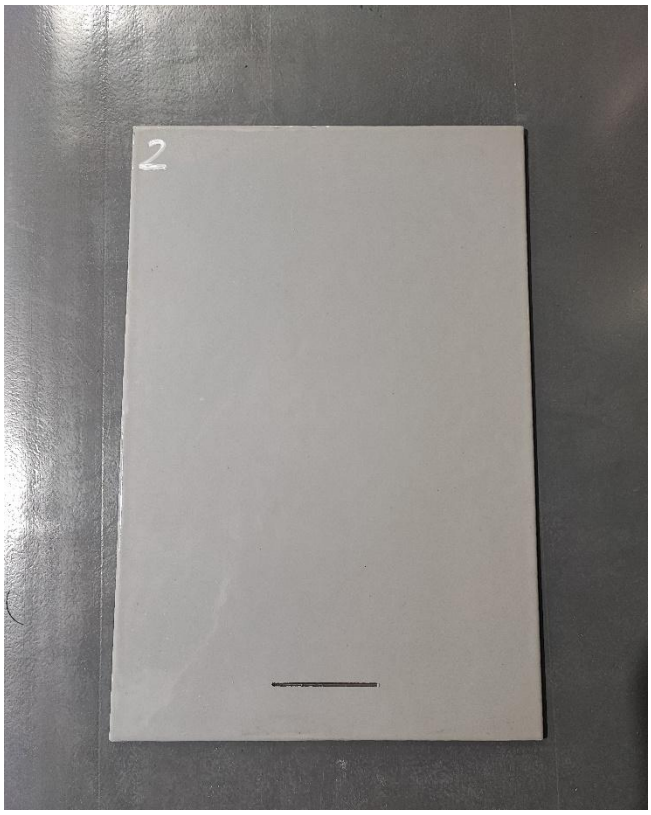
Applus+, garantiza que este trabajo se ha realizado conforme a nuestro Sistema de Calidad y Sostenibilidad, cumpliendo las condiciones contractuales y las normas legales.

Dentro de nuestro programa de mejora le agradeceríamos que nos hiciera llegar cualquier comentario que considere oportuno, al responsable que firma este documento, o al Responsable de Calidad de Applus+, en la siguiente dirección de correo electrónico: satisfaccion.cliente@applus.com

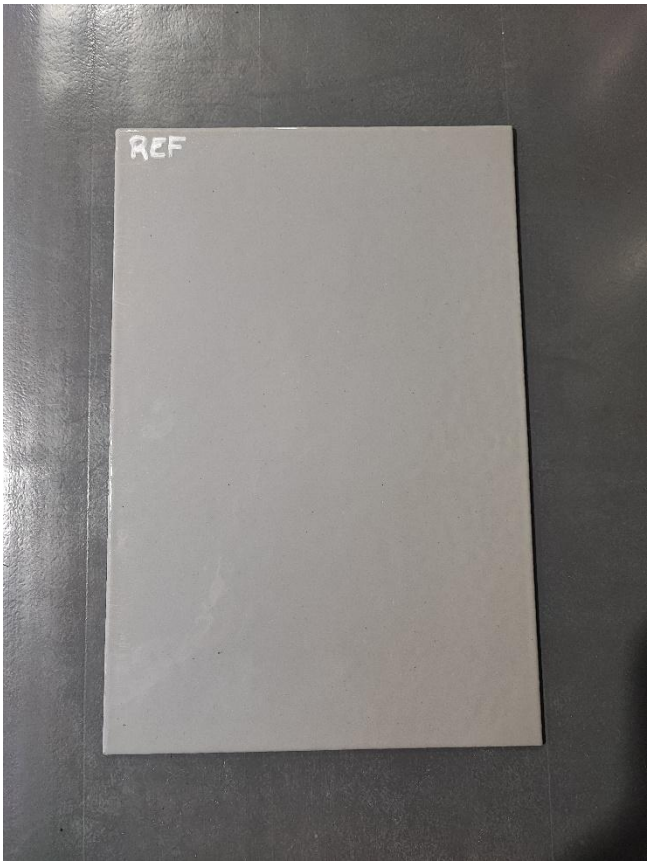
ANNEX 1: INITIAL IMAGES



a) Front side shows 32864-00001



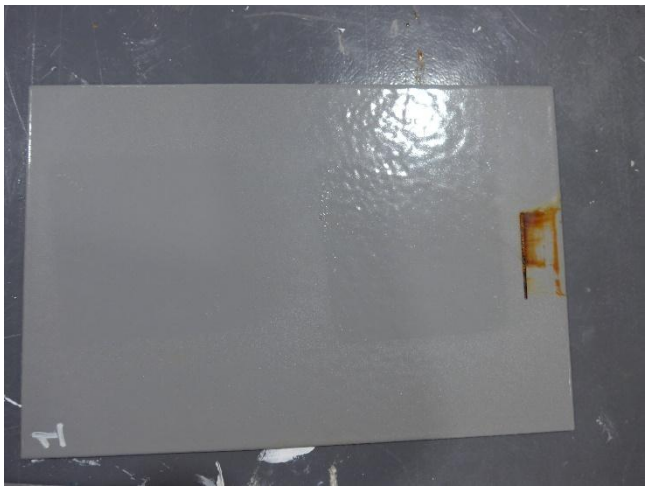
b) Front side shows 32864-00002



c) Reference sample

Figure 1. Samples in initial state

ANNEXO 2: PHOTOS OF THE ENSAYO ROUTES OF NSS DURANTE 1000h



Front side shows 32864-00001

Lower side shows 32864-00001

Front side shows 32864-00002

Lower side shows 32864-00002

Figure 2. Sample after test

ANNEX 3: PHOTOS AFTER INCISION EVALUATION

Front side shows 32864-00001

Sample incision 32864-00001

Front side shows 32864-00002

Sample incision 32864-00002

Figure 3. Sample after incision evaluation