

ROAD MARKING MATERIALS

(Durability against abrasion: EN 13197:2011+A1:2014)

CERTIFICATE OF DURABILITY TEST	REF. 4569/P-R-I
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Client: SIGNATEKMA BOYA VE SINYALIZASYON SAN. ve TIC. AS.
 Bahçelievler Mahallesi, Bağimsizlik Cd. No:23
 35875 Torbalı/Izmir (TURKEY)

Issue date: July 09th, 2019



1.- TESTED ROAD MARKING SYSTEM

A) INFORMATION PROVIDED BY THE CUSTOMER

MATERIALS IDENTIFICATION, TRADE MARK NAME AND TYPE OF APPLICATION		MANUFACTURER(S)	Thickness (µm)	Dosage (g/m ²)
Nature: White alkylid paint	SIGNALINE (SB0-3000-10)	SIGNATEKMA A.Ş	-	720
Trade mark ¹ : Applied by: Spray				
Nature: Glass beads	ECHOSTAR 5 SBP	SOVITEC IBÉRICA S.A.		480
Trade mark ¹ : Applied by: Drop-on				
TYPE OF MATERIAL: White alkylid paint without premix glass beads applied by spray and with drop-on glass beads.				
CHARACTERISTIC OF THE ROAD MARKING: (in accordance with EN 1436:2018)			Not structured	

- The characteristics of identification of the material can be obtained from the own manufacturer or in this laboratory with his authorization.
- The tested material is identified by its **CE Declaration of Conformity** and their accompanying documents.

B) TEST RESULTS: on roughness (in accordance with EN 13197:2011+A1:2014)

RG2

REQUIREMENTS OF THE ROAD MARKING SYSTEM in accordance with EN 1436:2018			DURABILITY expressed in TRAFFIC CLASSES, in accordance with EN 13197:2011+A1:2014					
According to the intended use of the road marking system, not all requirements are necessary.			Expressed in	P0	P4	P5	P6	P7
Night-time visibility	Coefficient of retro reflected luminance R_L	dry	Class (R)	R3	R4	R4	R4	R4
Day-time visibility	Luminance coefficient in diffuse illumination Q_d		Class (Q)	Q5	Q5	Q5	Q5	Q5
	or luminance factor β		Class (B)	B5	B5	B5	B5	B5
	Chromaticity coordinates (x - y)		Pass / Not Pass	pass	pass	pass	pass	pass
Skid resistance	SRT units		Class (S)	S1	S1	S1	S1	S1
Type	Type road marking system		Type I / II	I				
NO PICKUP-TIME:	In accordance with EN 13197:2011+A1:2014		Class (T)	T3				

The TRAFFIC CLASSES have been assigned based on the measured mean values, without considering their measurement uncertainties.

Date of start of the test: **November 12th, 2018** Date of end of the test: **November 07th, 2018**

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	4569/P-R-I	July 09th, 2019	<i>[Signature]</i> D. Fernández J. Gilera	I-7-MC (E) Rev. 12

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2. TEST CONDITIONS:

in accordance with the specifications given in EN 13197:2011+A1:2014

Test plates:					
Conditions during application:	t° amb:	16°C	Roughness:	RG2	Size:
Materials applied, % deviation on requested:	Film maker materia:	5,97	HR:	30%	Material temperature (thermoplastic) °C:
	Antiskid aggregates:		Glass beads:	0,00	Others materials:
Test Tyres:			Mixture:	-	Premix:
Numer of wheels:	NEUMÁTICO COMERCIAL 205/60 R15				
Load on wheels (N):	4				
Tyre air pressure (Mpa):	3000 ± 300				
Support angle (degrees):	0,25 ± 0,02				
Steering angle (degrees):	0° ± 20°				
Room temperature:	alternating + 1° (± 10°) / - 1° (± 10°)				
Drying cycle:	between + 5°C y + 10°C				
Periodicity of measurements:	In accordance with EN 13197:2011+A1:2014				
Desviations:	0,01; 0,1; 0,2; 0,5; 1,0; 2,0; 3,0 and 4,0 x 10 ⁵ wheel passages				

3.- PASS/FAIL CRITERIA:

PERFORMANCE REQUIREMENTS OF THE ROAD MARKING ASSEMBLY in accordance with EN 1436:2018		
CARACTERISTIC	TECHNICAL CLASSES AND MINIMUM VALUES	
Night-time visibility under conditions: (mcd·m ⁻² ·lx ⁻¹)	R _L DRY	R2 (100) ¹ - R1 (80) ²
	R _L RAIN	RR1 (25)
	R _L WET	RW1 (25)
Day-time visibility	(x, y)	inside the relevant polygon
	β	B2 (0,3) ¹ - B1 (0,2) ²
Skid resistance	Qd (mcd·m ⁻² ·lx ⁻¹)	Q2 (100) ¹ - Q1 (80) ²
	SRT	S1 (45)

1) For white colour.
2) For yellow colour.

TRAFFIC CLASSES AND REQUIRED N° OF ROLL-OVERS in accordance with EN 13197:2011+A1:2014	
TRAFFIC CLASS	N° ROLL-OVERS x 10 ⁶
P0	<0,05
P1	0,05 (optional)
P2	0,1
P3	0,2
P4	0,5
P5	1,0
P6	2,0
P7	4,0

4.- TEST RESULTS: initial and retained values and their technical classes

in accordance with EN 1436:2018

CARACTERISTIC	value and for each number of roll-overs x 10 ⁶	value and for each number of roll-overs x 10 ⁶								Uncertainty
		0,01 (P0)	0,1 (P2)	0,2 (P3)	0,5 (P4)	1,0 (P5)	2,0 (P6)	3,0	4,0 (P7)	
Night-time visibility, R _L	dry (mcd·m ⁻² ·lx ⁻¹)	169	189	193	222	231	224	235	215	± 7 %
Day-time visibility	x	0,325	0,326	0,327	0,329	0,329	0,330	0,329	0,331	± 0,004
	y	0,345	0,347	0,349	0,352	0,350	0,353	0,350	0,353	± 0,004
	β	0,740	0,718	0,705	0,670	0,665	0,656	0,624	0,616	± 0,014
Skid resistance	Qd (mcd·m ⁻² ·lx ⁻¹)	275	272	268	256	252	249	246	226	± 9 %
	SRT coor.	47	46	45	45	45	45	45	45	± 5
	Temperature slider (°C)	14	13	13	14	13	11	10	10	± 2,8

5.- KEY WORDS FOR IDENTIFICATION OF ROAD MARKING ASSEMBLY:

There are three groups of key words:

A first key word to identify if is for permanent or for temporary purposes.

P For a permanent road marking assembly.
T For a temporary road marking assembly.

A second key to identify the retroreflective properties of the road marking assembly:

R For a road marking assembly retroreflective under dry conditions.
RW For a road marking assembly retroreflective under dry and wet conditions.
RR For a road marking assembly retroreflective under dry, wet and rain conditions.
NR For a road marking assembly not retroreflective.

A third key to identify the type of the road marking assembly:

I For a conventional road marking.
II For a road marking assembly with special properties to enhance the retroreflection on wet or/and rainy conditions.

6.- NOTE:

The results in this report relate only to the samples tested and cannot be extended to other manufacturer's production.

The results achieved by a road marking assembly on the durability test, shall not be interpreted as being a guarantee for working life in practice. The later depends on many factors beyond the materials such as design, location (type of road surface, weather conditions, etc) and application conditions.

CERTIFICATE OF DURABILITY TEST	Ref.	Issue date	Laboratory Manager	Document reference
This certificate is identical to the original against which it was issued.	4569/P-R-I	July 09th, 2019	<i>[Signature]</i>	7-MC (E) Rev. 12
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