

ROAD MARKING MATERIALS

(Durability against abrasion: UNE-EN 13197:2012+A1:2014)

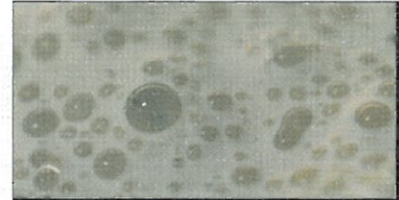
CERTIFICATE OF DURABILITY TEST

REF.

3253/P-R-I

Client: NIRLAT Ltd.
 Kibbutz Nir-Oz 85122
 ISRAEL

Issue date: Decembre 02nd, 2114



1.- TESTED ROAD MARKING SYSTEM

A) IDENTIFICATION

MATERIALS IDENTIFICATION, TRADE MARK NAME AND TYPE OF APPLICATION		MANUFACTURER(S)	Thickness (µm)	Dossage (g/m ²)
Nature:	White acrylic paint	NIRLAT Ltd.	500	750
Trade mark ¹ :	FORMULA 1 WHITE			
Applied by:	Spray	SOVITEC		400
Nature:	Glass beads			
Trade mark ² :	ECHOSTAR 5 SBP			
Applied by:	Drop-on			
TYPE OF MATERIAL: White acrylic paint without premix glass beads applied by spray and with drop-on glass beads.				
CHARACTERISTIC OF THE ROAD MARKING: (in accordance to UNE-EN 1436:2009+A1:2009)			Not structured	


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

B) TEST RESULTS: on roughness (in accordance to UNE-EN 13197:2012+A1:2014)

RG2

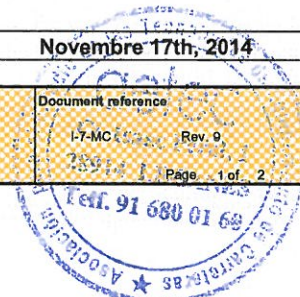
REQUIREMENTS OF THE ROAD MARKING SYSTEM in accordance to UNE-EN 1436:2009+A1:2009				DURABILITY expressed in TRAFFIC CLASSES, in accordance to UNE-EN 13197:2012+A1:2014				
According to the intended use of the road marking system, not all requirements are necessary			Expressed in	P0	P4	P5	P6	P7
Night-time visibility	Coefficient of retro reflected luminance R _L	dry	Class (R)	R5	R4	R4	R4	R3
Day-time visibility	Luminance coefficient in diffuse illumination Q _d		Class (Q)	Q5	Q5	Q5	Q5	Q5
	or luminance factor B		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)	S2	S1	S2	S2	S2
Type	Type road marking system		Type I / II	I				
NO PICKUP-TIME: In accordance with UNE-EN 13197:2012+A1:2014			Class (T)	T3				

Date of start of the test: **October 20th, 2014** Date of end the test: **Novembre 17th, 2014**

CERTIFICATE OF DURABILITY TEST	Ref.	Issue date	Technical Director	Document reference
This certificate is identical to the original spanish version.	3253/P-R-I	Decembre 02nd, 2114	 D. David Calavia	I-7-MC Rev. 9 Page 1 of 2

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2.- TEST CONDITIONS:

in accordance with the specifications given in UNE-EN 13197:2012+A1:2014

Test plates:	1	Roughness:	RG2	Size:	G
Conditions during application:	t ^a amb: 23°C	HR:	44%	Material temperature (thermoplastic) °C:	x
Materials applied, % deviation on requested:	Film maker material: -2,67	Glass beads:	0,00	Others materials:	x
	Antiskid aggregates: x	Mixture:	x	Premix:	x
Test Tyres:	NEUMÁTICO COMERCIAL 205/60 R15				
Numer of wheels:	4				
Load on wheels (N):	3000 ± 300				
Tyre air pressure (Mpa):	0,25 ± 0,02				
Support angle (degrees):	0° ± 20'				
Steering angle (degrees):	alternating + 1° (± 10') / - 1° (± 10')				
Room temperature:	between + 5°C y + 10°C				
Drying cycle:	In accordance to UNE-EN 13197:2012+A1:2014				
Periodicity of measurements:	0,01; 0,1; 0,2; 0,5; 1,0; 2,0; 3,0 and 4,0 x 10 ⁶ wheel passages				
Desviations:					

3.- PASS/FAIL CRITERIA:

PERFORMANCE REQUIREMENTS OF THE ROAD MARKING ASSEMBLY in accordance to UNE-EN 1436:2009+A1:2009		
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
	Qd (mcd·m ⁻² ·lx ⁻¹)	Q2 (100) ¹ - Q1 (80) ²
Skid resistance	SRT	S1 (45)

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

TRAFFIC CLASSES AND REQUIRED Nº OF ROLL-OVERS in accordance to UNE-EN 13197:2012+A1:2014	
TRAFFIC CLASS	Nº 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 to UNE-EN 1436:2009+A1:2009

CARACTERISTIC		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	dry	376	361	308	268	234	209	200	189	± 8 %
Day-time visibility	x	0,325	0,329	0,330	0,336	0,337	0,336	0,337	0,337	± 0,003
	y	0,346	0,351	0,353	0,359	0,359	0,358	0,358	0,358	± 0,003
	β	0,703	0,679	0,677	0,641	0,646	0,633	0,609	0,600	± 0,015
	Qd (mcd·m ⁻² ·lx ⁻¹)	251	244	248	238	234	228	230	231	± 10 %
Skid resistance	SRT	50	47	49	48	50	50	53	50	± 5
	Temperature water used in the test (°C)	21	19	19	18	17	15	14	15	± 1,2

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.

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