

ROAD MARKING MATERIALS

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

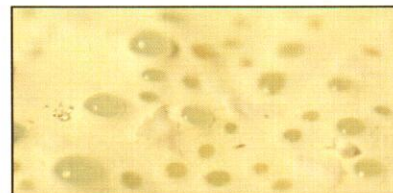
CERTIFICATE OF DURABILITY TEST

REF.

4254/P-RR-II

Client: **SWARCO VICAS**
Soseaua Gaesti 8
130087 TARGOVISTE - Romania

Issue date: July 3rd, 2017



1.- TESTED ROAD MARKING SYSTEM

A) IDENTIFICATION

MATERIALS IDENTIFICATION, TRADE MARK NAME AND TYPE OF APPLICATION		MANUFACTURER(S)	Thickness (µm)	Dosage (g/m²)
Nature:	White 2 components cold plastic			
Trade mark¹:	LIMBOPLAST KSP 120	SWARCO VICAS	800	1.270
Applied by:	Spray			
Nature:	Glass beads and antiskid aggregates			
Trade mark²:	MEGALUX (600-1400) T18 M20	M. SWAROVSKI GmbH		550
Applied by:	Drop-on			
TYPE OF MATERIAL: White cold plastic without premix glass beads applied by spray and with a mixture of drop-on glass beads and antiskid aggregates.				
CHARACTERISTIC OF THE ROAD MARKING: (in accordance with 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 with UNE-EN 13197:2012+A1:2014)

RG2

REQUIREMENTS OF THE ROAD MARKING SYSTEM in accordance with UNE-EN 1436:2009+A1:2009				DURABILITY expressed in TRAFFIC CLASSES, in accordance with UNE-EN 13197:2012+A1:2014					
According to the intended use of the road marking system, not all requirements are necessities				Expressed in	P0	P4	P5	P6	P7
Night-time visibility	Coefficient of retro reflected luminance R_L	dry	Class (R)	R5	R5	R5	R4	R4	
		rain	Class (RR)	RR3	RR2	RR2	RR2	RR2	
		wet	Class (RW)	RW5	RW5	RW5	RW4	RW4	
Day-time visibility	Luminance coeficient in diffuse illumination Q_d		Class (Q)	Q5	Q5	Q5	Q5	Q5	
	or luminance factor β		Class (B)	B5	B5	B5	B5	B5	
	Chromatcity coordinates (x - y)		Pass / Not Pass	pass	pass	pass	pass	pass	
Skid resistance	SRT units		Class (S)	S3	S2	S1	S1	S1	
Wear	Percentage of wear (remaining road marking)		%	100	100	100	100	100	
Type	Type road marking system		Type I / II	II					
NO PICKUP-TIME: In accordance with UNE-EN 13197:2012+A1:2014			Class (T)	T2					

Date of start of the test: **May 8th, 2017**

Date of end the test: **June 13rd, 2017**

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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° amb: 20°C	HR:	25%	Material temperature (thermoplastic) °C:	-
Materials applied, % deviation on requested:	Film maker material: -2,20	Glass beads:	-	Others materials:	-
	Antiskid aggregates:	Mixture:	0,00	Premix:	-
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 with 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				
Deviations:					

3.- PASS/FAIL CRITERIA:

PERFORMANCE REQUIREMENTS OF THE ROAD MARKING ASSEMBLY in accordance with UNE-EN 1436:2009+A1:2009		
CHARACTERISTIC		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 (mod·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 N° OF ROLL-OVERS in accordance with UNE-EN 13197:2012+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 UNE-EN 1436:2009+A1:2009

CHARACTERISTIC		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 (mcd·m ⁻² ·lx ⁻¹)	dry	304	317	309	312	307	261	263	251	± 6 %
	rain	50	53	46	46	41	43	40	43	± 7 %
	wet	109	109	104	104	109	98	90	85	± 7 %
Day-time visibility	x	0,323	0,324	0,324	0,324	0,325	0,325	0,324	0,324	± 0,004
	y	0,342	0,343	0,344	0,343	0,344	0,344	0,343	0,343	± 0,005
	β	0,806	0,812	0,804	0,804	0,798	0,798	0,796	0,796	± 0,016
	Qd (mod·m ⁻² ·lx ⁻¹)	280	278	267	266	261	263	264	269	± 8 %
Skid resistance	SRT	58	55	52	53	48	47	45	48	± 5
	Temperature water used in the test (°C)	19	19	19	17	21	20	23	24	± 0,2
Percentage of wear (remaining road marking)	%	100	100	100	100	100	100	100	100	± 5 %

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 spanish version.	4254/P-RR-II	July 3rd, 2017	Francisco J. Guerra	I-7-MC (E) Rev. 9 Page 2 of 2

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