

TEST FOR THE DURABILITY OF ROAD MARKING MATERIALS

(Durability test according to EN 13197:2012+A1:2014)

TEST REPORT	REF.	4.918
-------------	------	-------

Delivered to: **SOVITEC**
C/ Acústica, 10-12 (Pol. Ind. Santa Rita)
08755 CASTELLBISBAL (Barcelona) ESPAÑA

Issue date: **February 28th, 2020**

A) INFORMATION PROVIDED BY THE CUSTOMER

BASE MATERIAL

Trade mark:	MF 21 (SBT-1210-10)				
Nature:	White 2 components cold plastic				
Dosage:	2500	g/m ²	Thickness:	-	µm
Producer:	SIGNATEKMA				
Applied by:	Agglomerate				

DROP ON MATERIALS

	Glass beads	Antiskid aggregates	Glass beads - Antiskid aggregates
Trade mark:	ECHOSTAR 10 BCP	-	-
Nature:	Glass beads	-	-
Dosage g/m ² :	400	-	-
Producer:	SOVITEC	-	-
Applied by:	Drop-on	-	-

	PREMIXED MATERIALS	OTHER MATERIALS
Trade mark:	-	-
Nature:	-	-
Dosage g/m ² :	-	-
Producer:	-	-
Applied by:	-	-

Reference of test plate received

TYPE OF MATERIAL:	White cold plastic with premix antiskid aggregates applied as agglomerate with drop-on glass beads.
--------------------------	---

CHARACTERISTIC OF THE ROAD MARKING: (in accordance with EN 1436:2018)	Structured
--	------------

CLASS OF ROUGHNESS: (in accordance with EN 13197:2012+A1:2014)	RG2
---	-----

Roughness of the test plate on which the assembly has been tested

B) TEST RESULTS: initial and retained values and their technical classes, in accordance with EN 1436:2018

DURABILITY LEVEL		Traffic classes corresponding to each level of durability					
expressed in TRAFFIC CLASSES, in accordance with EN 13197:2012+A1:2014		in accordance with EN 1436:2018					
INITIAL	P0	dry R _L	rain RR	wet RW	β	Qd	SRT
RETAINED	P4	R5	RR4	RW5	B4	Q5	S4
	P5	R5	RR2	RW3	B4	Q5	S3
	P6	R5	RR2	RW3	B4	Q5	S2
	P7	R5	RR2	RW3	B2	Q5	S2
		R4	RR2	RW3	B4	Q5	S1
DRYING TIME (in accordance with EN 13197:2012+A1:2014)		T4					

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

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

Date of commencement of the test:	27 de enero de 2020	Date of end the test:	18 de febrero de 2020
-----------------------------------	---------------------	-----------------------	-----------------------

TEST FOR THE DURABILITY OF ROAD MARKING MATERIALS

(Durability test according to EN 13197:2012+A1:2014)

TEST REPORT	REF.	4.916
-------------	------	-------

Delivered to: **SOVITEC**
C/ Acústica, 10-12 (Pol. Ind. Santa Rita)
08755 CASTELLBISBAL (Barcelona) ESPAÑA

Issue date: **February 28th, 2020**

A) INFORMATION PROVIDED BY THE CUSTOMER

BASE MATERIAL

Trade mark:	MF 21 (SBT-1200-10)		
Nature:	White 2 components cold plastic		
Dosage:	4.000	g/m ²	Thickness: - µm
Producer:	SIGNATEKMA		
Applied by:	Screed Box		

DROP ON MATERIALS

	Glass beads	Antiskid aggregates	Glass beads - Antiskid aggregates
Trade mark:	-	-	ECHOSTAR 10 BCP SRT
Nature:	-	-	Glass beads and antiskid aggregates
Dosage g/m ² :	-	-	400
Producer:	-	-	SOVITEC
Applied by:	-	-	Drop-on

	PREMIXED MATERIALS	OTHER MATERIALS
Trade mark:	-	-
Nature:	-	-
Dosage g/m ² :	-	-
Producer:	-	-
Applied by:	-	-

Reference of test plate received

TYPE OF MATERIAL:	White cold plastic with premix glass beads applied by screed box with a mixture of drop-on glass beads and antiskid aggregates.
--------------------------	---

CHARACTERISTIC OF THE ROAD MARKING: (in accordance with EN 1436:2018)	No structured
--	---------------

CLASS OF ROUGHNESS: (in accordance with EN 13197:2012+A1:2014)	RG2
---	-----

Roughness of the test plate on which the assembly has been tested

B) TEST RESULTS: initial and retained values and their technical classes, in accordance with EN 1436:2018

DURABILITY LEVEL		Traffic classes corresponding to each level of durability					
expressed in TRAFFIC CLASSES, in accordance with EN 13197:2012+A1:2014		in accordance with EN 1436:2018					
INITIAL	P0	dry R _L	rain RR	wet RW	β	Qd	SRT
RETAINED	P4	R5	NPD	NPD	B5	Q5	S3
	P5	R5	NPD	NPD	B5	Q5	S1
	P6	R5	NPD	NPD	B5	Q5	S1
	P7	R5	NPD	NPD	B5	Q5	S1
	P7	R5	NPD	NPD	B5	Q5	S1
DRYING TIME (in accordance with EN 13197:2012+A1:2014)		T4					

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

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

Date of commencement of the test:	27 de enero de 2020	Date of end the test:	18 de febrero de 2020
-----------------------------------	---------------------	-----------------------	-----------------------

1.- Test conditions

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

Test plates:	1	Roughness:	RG2	Size:	G
Test plates orientation:	Parallel to the movement of the loading wheels				
Conditions during application:	t° amb: 12°C	HR:	49%	Material temperature (thermoplastic) °C:	-
Materials applied, % deviation on requested:	Film maker materie: 9,05	Glass beads:	-	Others materials:	-
	Antiskid aggregates:	Mixture:	0,00	Premix:	-
Test Tyres:	NEUMÁTICO COMERCIAL 205/60 R15				
Number 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 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:					

2.- Test results: initial and retained values and their technical classes

in accordance with EN 1436:2018

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 _n	dry (mcd·m ⁻² ·lx ⁻¹)	480	553	562	558	484	433	408	397	± 9 %
	rain (mcd·m ⁻² ·lx ⁻¹)	NPD	NPD	NPD	NPD	NPD	NPD	NPD	NPD	± 7 %
	wet (mcd·m ⁻² ·lx ⁻¹)	NPD	NPD	NPD	NPD	NPD	NPD	NPD	NPD	± 7 %
Day-time visibility	x	0,324	0,324	0,324	0,324	0,325	0,326	0,325	0,325	± 0,002
	y	0,342	0,342	0,343	0,343	0,344	0,344	0,344	0,344	± 0,002
	β	0,714	0,714	0,671	0,707	0,703	0,713	0,701	0,702	± 0,008
	Qd (mcd·m ⁻² ·lx ⁻¹)	241	237	237	242	233	233	267	226	± 8 %
Skid resistance	SRT coor.	55	50	49	49	48	48	46	45	± 5
	Temperature slider (°C)	10	10	11	11	13	12	12	11	± 3,0

3.- Tests covered by ENAC accreditation N°. 180 / LE444

TESTING	REFERENCE STANDARD	RESULTS				UNCERTAINTY		
Chromaticity co-ordinates and luminance factor	UNE-EN 1871:200 Anexo A - UNE-EN 1436:2009+A1:2009 Anexo C	x	0,3194	y	0,3375	β	0,83	U _x ±0,0025 U _y ±0,0025 U _β ±0,02
Density at 23°C	UNE-EN ISO 2811-1:2016		1,97					U _ρ ±0,006 g/cm ³
Solids content	UNE-EN 12802:2012 Anexo A		85,6					U _ρ ±0,6 %
Ash content	UNE-EN 12802:2012 Anexo H		60					U _ρ ±1 %
Blister content by 450°C combustion	Procedimiento interno MECYL 2.107		8,2					U _ρ ±0,6 %
Blister content by 450°C combustion	Procedimiento interno MECYL 2.107		7					U _ρ ±0,6 %
Blister content by extraction	UNE-EN 12802:2012 Anexo B		5,9					U _ρ ±0,6 %
Inorganic compounds content *	UNE-EN 12802:2012 Anexo C		78,6					U _ρ ±0,6 %
Organic compounds content	UNE-EN 12802:2012 Anexo B		21,4					U _ρ ±0,6 %
Krebs-Stormer viscosity	UNE 48076:1992		>100					U _ρ ±4 U.K.
Titanium dioxide content	Procedimiento interno MECYL 2.105		8,7					U _ρ ±0,04%
Content of Glass Beads *	UNE-EN 12802:2012 Anexo E		24					

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

4.- Key words for the identification of type of material, intended use and technical classes

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:

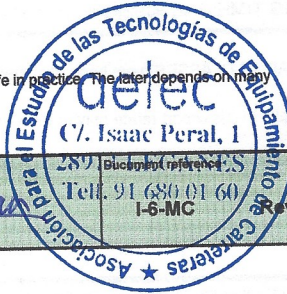
I For a conventional road marking.

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

5.- Interpretative 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 latter depends on many factors beyond the materials such as design, location (type of road surface, weather conditions, etc) and application conditions.

aetec	REF.	Issue date	Laboratory Manager	
	4.916	February 28th, 2020	Francisco J. Guerra	
Page 2 of 2				
This report is identical to the original spanish version.				