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INSTITUTO EDUARDO TORROJA

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INSTITUTO DE CIENCIAS DE LA CONSTRUCCIÓN EDUARDO TORROJA

C/ Serrano Galvache 4. 28033 Madrid (Spain)
Tel: (+34) 91 302 0440. Fax: (+34) 91 302 0700
direccion.ietcc@csic.es. www.ietcc.csic.es

European Technical Assessment

ETA 10/0248 of 08/05/2017

English translation prepared by IETcc. Original version in Spanish language

General Part

Technical Assessment Body issuing the ETA:	Instituto de Ciencias de la Construcción Eduardo Torroja (IETcc)
Trade name of the construction product:	**Marcaline 1:1 Components A and B** **Code DCA-0492**
Product family to which the construction product belongs	ROAD MARKING PRODUCT
Manufacturer:	MARCAS VIALES, S.A. Vega del Tajo s/n Polígono Industrial n1 de Quer E-19209 QUER (Guadalajara) SPAIN
Manufacturing plant(s):	MARCAS VIALES, S.A. Vega del Tajo s/n Polígono Industrial n1 de Quer E-19209 QUER (Guadalajara) SPAIN
This European Technical Assessment contains	9 pages
This European Technical Assessment is issued in accordance with regulation (EU) No 305/2011, on the basis of	European Assessment Document (EAD) 230011-00-0106, edition February 2017

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SPECIFIC PARTS

1. Technical description of the product

Marcaline 1:1 Components A and B Code DCA-0492 is a cold plastic (as defined in EN 1871) used as a surface coating material for signalisation purposes when it is applied on the road requiring dropped-on materials. The cold plastic is put on the market with indications on types and proportions of dropped-on materials.

Trademark: Marcaline 1:1 Components A and B Code DCA-0492
Nature: Cold plastic
Colour: White
Producer: MARCAS VIALES, S.A,
Physical and chemical characteristics: see Table 1.1.

Table 1.1: Characteristics in accordance with EN 1871	
CHARACTERISTICS	DECLARED VALUE
Chromaticity co-ordinates (x, y)	**Inside white polygon**
Luminance factor, ß	**ß = 0.88**
Ageing UV-B	**Δß ≤ 0.05**
Alkali resistance	**no deterioration of the surface**

The product has to be considered as the basis of a family. It may be used in different combinations (proportions) or installation instructions in order to reach different intended uses. Each of these combinations is identified as a System of the same family.

Identification of the Systems

This ETA concerns the:

Marcaline 1:1 Components A and B Code DCA-0492 – System 1 defined by the installation instructions given in Table 1.2, together with the Certificate of Constancy of Performance number of the drop-on materials.

Table 1.2: Installation instructions of the **Marcaline 1:1 Components A and B Code DCA-0492 – System 1**		
Identification of materials and type of application		Dosage(s)
Surface coating material	Trademark: **Marcaline 1:1 Components A and B Code DCA-0492** Cold plastic without premix glass beads, applied by spray with drop-on material	1 200 g/m^2
Drop-on materials	Trademark: glass-beads **ECHOSTAR 20 BCP** Certificate of Constancy of Performance**: 0099-CPR-A72-0001**	500 g/m^2

Marcaline 1:1 Components A and B Code DCA-0492 – System 2 defined by the installation instructions given in Table 1.3, together with the Certificate of Constancy of Performance number of the drop-on materials.

Table 1.3: Installation instructions of the **Marcaline 1:1 Components A and B Code DCA-0492 – System 2**		
Identification of materials and type of application		Dosage(s)
Surface coating material	Trademark: **Marcaline 1:1 Components A and B Code DCA-0492** Cold plastic without premix glass beads, applied by spray with drop-on material	1.200 g/m^2
Drop-on materials	Trademark: **80%** glass-beads **ECHOSTAR 20 BCP** Certificate of Constancy of Performance: **0099-CPR-A72-0001** **20%** Antiskid aggregates **SILI12** Certificate of Constancy of Performance**: 1137-CPR-494-81**	500 g/m^2

Marcaline 1:1 Components A and B Code DCA-0492 – System 3 defined by the installation instructions given in table 1.4, together with the Certificate of Constancy of Performance number of the drop-on materials.

Table 1.4: Installation instructions of the **Marcaline 1:1 Components A and B Code DCA-0492 – System 3**		
Identification of materials and type of application		Dosage(s)
Surface coating material	Trademark: **Marcaline 1:1 Components A and B Code DCA-0492** Cold plastic without premix glass beads, applied by spray with drop-on material	950 g/m^2
Drop-on materials	Trademark: glass-beads **ECHOSTAR 5** Certificate of Constancy of Performance**: 0099-CPR-A72-0001**	500 g/m^2

NOTE: Other combination(s) than Systems 1; 2 and 3 must be assessed and it can give rise to an addendum to this ETA

2. Specification of the intended use in accordance with the applicable European Assessment Document (hereinafter EAD).

2.1 Assessed systems with Marcaline 1:1 Components A and B Code DCA-0492

2.1.1 System 1

- It is intended to be used for white permanent road markings in trafficked areas without presence of traffic with studded tyres.
- It is designed to give to the resulting road marking satisfactory day and night visibility on dry, wet and rainy conditions and skid resistance properties at initial and after 4 million roll-overs.
- The substrates on which it has provided satisfactory performances are bituminous asphalt and cement concrete with a maximum roughness of 0.9 mm (texture depth in accordance with EN 13036-1).
- It is intended to be used (not applied) at a temperature range from -40 °C to +70 °C for outside uses and from +5 °C to +70 °C for indoor uses. In addition, where relevant, the product has provided satisfactory performance for UV ageing.

2.1.2 System 2

- It is intended to be used for white permanent road markings in trafficked areas without presence of traffic with studded tyres.

- It is designed to give to the resulting road marking satisfactory day and night visibility on dry, wet and rainy conditions and skid resistance properties at initial and after 4 million roll-overs.
- The substrates on which it has provided satisfactory performances are bituminous asphalt and cement concrete with a maximum roughness of 0,9 mm (texture depth in accordance with EN 13036-1)
- It is intended to be used (not applied) at a temperature range from -40°C to +70°C for outside uses and from +5°C to +70°C for indoor uses. In addition, where relevant, the product has provided satisfactory performance for UV ageing.

2.1.3 System 3

- It is intended to be used for white permanent road markings in trafficked areas without presence of traffic with studded tyres.
- It is designed to give to the resulting road marking satisfactory day and night visibility on dry and wet conditions and skid resistance properties at initial and after 4 million roll-overs.
- The substrates on which it has provided satisfactory performances are bituminous asphalt and cement concrete with a maximum roughness of 0,9 mm (texture depth in accordance with EN 13036-1)
- It is intended to be used (not applied) at a temperature range from -40°C to +70°C for outside uses and from +5°C to +70°C for indoor uses. In addition, where relevant, the product has provided satisfactory performance for UV ageing.

2.2 Relevant general conditions for the use of the kits

The provisions made in this European Technical Assessment are based on an assumed working life of 1 year as minimum, according to EAD 230011-00-0106, provided that the conditions lay down for the installation, packaging, transport and storage as well as appropriate use, maintenance and repair are met. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right product in relation to the expected economically reasonable working life of the works.

Installation should be carried out according to the ETA holder's specifications and using the specific application instructions of the product manufactured by the ETA holder or by suppliers recognized by the ETA holder. Installation should be carried out by appropriately qualified staff and under the supervision of the technical responsible of the site.

3. Performance of the product and references to the methods used for its assessment

3.1. Essential characteristics of the product

The identification tests and the assessment for the intended use of this Road Marking Product according to the Basic Work Requirements (BWR) were carried out in compliance with the EAD 230011-00-0106 Road Marking Products.

The characteristics of Marcaline 1:1 Components A and B Code DCA-0492 – System 1 shall correspond to the respective values laid down in Table 2.1 of this ETA, checked by IETcc.

The characteristics of Marcaline 1:1 Components A and B Code DCA-0492 – System 2 shall correspond to the respective values laid down in Table 2.2 of this ETA, checked by IETcc.

The characteristics of Marcaline 1:1 Components A and B Code DCA-0492 – System 3 shall correspond to the respective values laid down in Table 2.3 of this ETA, checked by IETcc.

Methods of verification and of assessing and judging are listed afterwards.

3.1.1. **Mechanical resistance and stability (BWR 1)**

Not relevant

3.1.2 **Safety in case of fire (BWR 2)**

Not relevant

3.1.3 **Hygiene, Health and environment (BWR 3)**

Not relevant

3.1.4 **Safety in use: (BWR 4)**

For testing durability the manufacturer may choose either:

- method A: Road trial with an option according to EN 1824 (expressed as roll-over number) or
- method B: Wear simulator according to EN 13197 (expressed as traffic number).

For this ETA, the manufacturer has chosen for testing durability the method B “Wear simulator”. The option No Performance Assessed for method A “Road Trials” is used.

Table 2.1: Results for **Marcaline 1:1 Components A and B Code DCA-0492 – System 1**

Basic Works Requirement: Safety in use									
Durability			**Night and day visibility and skid resistance for each durability level**						
Test method used	Number of roll-over x 10^6		Night-time visibility			Day-time visibility			Skid resistance
			R_L in mcd·m^{-2}·lx^{-1} under conditions of			β luminance factor	Qd in mcd·m^{-2}·lx^{-1}	Chromaticity Co-ordinates CIE (x, y)	SRT units
			dry	wetness	rain				
Method B wear simulator EN 13197	Initial	0.01	**530**	**139**	**69**	**0.72**	**252**	(0.330; 0.349)	**48**
	Retained	0.1	**506**	**71**	**43**	**0.69**	**225**	always Inside white polygon (EN 1436)	**45**
		0.2	**443**	**75**	**40**	**0.68**	**247**		**45**
		0.5	**435**	**64**	**36**	**0.67**	**223**		**45**
		1.0	**422**	**60**	**33**	**0.67**	**226**		**45**
		2.0	**410**	**66**	**30**	**0.66**	**240**		**45**
		4.0	**376**	**55**	**28**	**0.66**	**233**		**46**

General aspects in relation to the intended use			
Retroreflection	Alkali resistance	Bleeding resistance	Test plates roughness
Type II	**PASS**	**Not applicable**	**0.8 mm**
Indentation	Colour	Softening point	ageing UV
Not applicable	**White**	**Not applicable**	**Δβ < 0.05**

Table 2.2: Results for **Marcaline 1:1 Components A and B Code DCA-0492 – System 2**									
Basic Works Requirement: Safety in use									
Durability			**Night and day visibility and skid resistance for each durability level**						
Test method used	Number of roll-over x 10^6		Night-time visibility			Day-time visibility			Skid resistance
			R_L in mcd·m^{-2}·lx^{-1} under conditions of			β luminance factor	Qd in mcd·m^{-2}·lx^{-1}	Chromaticity Co-ordinates CIE (x, y)	SRT units
			dry	wetness	rain				
Method B wear simulator EN 13197	Initial	0.01	**397**	**145**	**64**	**0.76**	**244**	(0.320; 0.341)	**51**
	Retained	0.1	**455**	**148**	**58**	**0.76**	**248**	always Inside white polygon (EN 1436)	**50**
		0.2	**434**	**133**	**54**	**0.75**	**240**		**48**
		0.5	**379**	**117**	**50**	**0.75**	**238**		**49**
		1.0	**335**	**91**	**39**	**0.74**	**243**		**48**
		2.0	**261**	**75**	**36**	**0.74**	**242**		**48**
		4.0	**201**	**44**	**26**	**0.72**	**235**		**46**
General aspects in relation to the intended use									
Retroreflection			Alkali resistance			Bleeding resistance		Test plates roughness	
Type II			**PASS**			**Not applicable**		**0.8 mm**	
Indentation			Colour			Softening point		ageing UV	
Not applicable			**White**			**Not applicable**		Δβ **< 0.05**	

Table 2.3: Results for **Marcaline 1:1 Components A and B Code DCA-0492 – System 3**									
Basic Works Requirement: Safety in use									
Durability			**Night and day visibility and skid resistance for each durability level**						
Test method used	Number of roll-over x 10^6		Night-time visibility			Day-time visibility			Skid resistance
			R_L in mcd·m^{-2}·lx^{-1} under conditions of			β luminance factor	Qd in mcd·m^{-2}·lx^{-1}	Chromaticity Co-ordinates CIE (x, y)	SRT units
			dry	wetness	rain				
Method B wear simulator EN 13197	Initial	0.01	**390**	**45**	**NPA**	**0.66**	**267**	(0.330; 0.353)	**49**
	Retained	0.1	**298**	**31**	**NPA**	**0.65**	**258**	always Inside white polygon (EN 1436)	**53**
		0.2	**273**	**34**	**NPA**	**0.65**	**259**		**48**
		0.5	**260**	**39**	**NPA**	**0.65**	**253**		**48**
		1.0	**234**	**46**	**NPA**	**0.64**	**256**		**48**
		2.0	**235**	**47**	**NPA**	**0.64**	**248**		**55**
		4.0	**221**	**36**	**NPA**	**0.63**	**250**		**58**
General aspects in relation to the intended use									
Retroreflection			Alkali resistance			Bleeding resistance		Test plates roughness	
Type II			**PASS**			**Not applicable**		**0.8 mm**	
Indentation			Colour			Softening point		ageing UV	
Not applicable			**White**			**Not applicable**		Δβ **< 0.05**	

3.1.5 **Protection against noise (BWR 5)**

Not relevant

3.1.6 **Energy economy and heat retention (BWR 6)**

Not relevant

3.1.7 **Sustainable use of natural resources (BWR 7)**

Not relevant

3.2 Methods of verification

The assessment for the intended use was carried out according to the Basic Work Requirements (BWR). The characteristics of the components shall correspond to the respective values laid down in Tables 2.1, 2.2 and 2.3 of this ETA, checked by IETcc.

3.2.1 **Retroreflectivity in dry conditions (R_L):** as coefficient of retroreflected luminance R_L (or retroreflectivity), according to the applicable part of EN 1436.

3.2.2 **Retroreflectivity in conditions of wetness (R_L):** as coefficient of retroreflected luminance **R_L** (or retroreflectivity), according to the applicable part of EN 1436.

3.2.3 **Retroreflectivity in conditions of rain (R_L):** as coefficient of retroreflected luminance R_L (or retroreflectivity), according to the applicable part of EN 1436.

3.2.4 **Chromaticity co-ordinates (x, y):** as chromaticity co-ordinates CIE (x, y), according to the applicable part of EN 1436.

3.2.5 **Luminance Factor (β):** according to the applicable part of EN 1436.

3.2.6 **Luminance coefficient under diffuse illumination (Qd):** according to the applicable part of EN 1436.

3.2.7 **Skid resistance (SRT):** according to the applicable part of EN 1436.

3.2.8 **Durability: f**or this ETA, the manufacturer has chosen for testing durability the method B “Wear simulator” according to the specifications given in EN 13197. Test plates roughness**:** measured according to EN 13036-1 and the results expressed as the texture depth.

3.2.9 **Bleed resistance (only for paints):** Not applicable.

3.2.10 **Alkali resistance:** according to the applicable part of EN 1871 and the result expressed as pass/fail.

3.2.11 **Indentation (only for thermoplastics):** Not applicable.

3.2.12 **Softening point (only for thermoplastics):** Not applicable.

3.2.13 **UVB ageing:** according to the applicable part of EN 1871.

4 Assessment and verification of constancy of performance (hereinafter AVCP) system applied, with reference to its legal base

4.1 System of assessment and verification of constancy of performance

According to the decision 96/579/EC of the European Commission[1], system 1 of assessment and verification of constancy of performance (see EC delegated regulation (EU) No 568/2014 amending Annex V to Regulation (EU) Nº 305/2011) applies.

5. Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

Technical details necessary for the implementation of the AVCP system are laid down in the control plan which is deposited at IETcc[2].

For type testing, the results of the tests performed as part of the assessment for the European Technical Assessment shall be used unless there are changes in the production line or plant. In such cases, the necessary type testing has to be agreed between IETcc and the notified body.

Instituto de Ciencias de la Construcción Eduardo Torroja
CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS

c/ Serrano Galvache nº 4. 28033 Madrid.
Tel: (+34) 91 302 04 40 Fax. (+34) 91 302 07 00
www.ietcc.csic.es

On behalf of Instituto de Ciencias de la Construcción Eduardo Torroja

Madrid, 8th May 2017

Marta Mª Castellote
Director

[1] Published in the Official Journal of the European Union (OJEU) L254 of 8.10.1996, p0052 -0055.
See www.new.eur-lex.europa.eu/oj/direct-access.html
[2] The Control Plan is a confidential part of the ETA and only handed over to the notified certification body involved in the assessment and verification of constancy of performance.