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European Technical Assessment

**ETA 07/0228
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General Part

Technical Assessment Body issuing the ETA:

Instituto de Ciencias de la Construcción Eduardo Torroja (IETcc)

Trade name of the construction product:

AQUALINE 192 B (AQ-0300)

White acrylic waterborned paint without premix glass beads requiring drop-on materials to be used on trafficked areas.

Product family to which the construction product belongs

ROAD MARKING PRODUCT

Manufacturer:

MARCAS VIALES, S.A.
Vega del Tajo s/n
Polígono Industrial n.º 1 de Quer
19209 Quer, Guadalajara, SPAIN
www.marcasviales-sa.es

Manufacturing plant(s):

MARCAS VIALES, S.A.
Vega del Tajo s/n
Polígono Industrial n.º 1 de Quer
19209 Quer, Guadalajara, SPAIN

This European Technical Assessment contains

12 pages

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230011-00-0106
ROAD MARKING PRODUCTS

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Specific parts

1. Technical description of the product

AQUALINE 192 B (AQ-0300) is a road marking paint (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 paint is put on the market with indications on types and proportions of dropped-on materials.

Trademark: **AQUALINE 192 B (AQ-0300)**

Nature: Acrylic waterborned paint

Colour: White

Producer: MARCAS VIALES, S.A,

Physical and chemical characteristics: see Table 1.1.

CHARACTERISTICS	DECLARED VALUE
Luminance factor	$\beta = 0.90$
Chromaticity co-ordinates	Inside white polygon
Hiding power	$r_c = 0.95$
Ageing UV	$\Delta\beta \leq 0.05$
Stability to storage	≥ 4
Bleeding resistance	$\Delta\beta \leq 0.05$
Alkali resistance	no deterioration of the surface

The product must 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:

AQUALINE 192 B (AQ-0300) – System 1 defined by the installation instructions given in Table 1.2, together with the Certificate of Constancy of Performance of the drop-on materials.

Identification of materials and type of application		Dosage(s)
Surface coating material	Trademark: AQUALINE 192 B (AQ-0300) Paint without premix glass beads, applied by spray with drop-on material.	750 g/m ²
Drop-on materials	Trademark: glass-beads ECHOSTAR 5 WBP Certificate of Constancy of Performance: 0099-CPR-A72-0001	500 g/m ²

AQUALINE 192 B (AQ-0300) – System 2 defined by the installation instructions given in Table 1.3, together with the Certificate of Constancy of Performance of the drop-on materials.

Table 1.3: Installation instructions of the AQUALINE 192 B (AQ-0300) – System 2		
Identification of materials and type of application		Dosage(s)
Surface coating material	Trademark: AQUALINE 192 B (AQ-0300) Paint without premix glass beads, applied by spray with drop-on material.	720 g/m ²
Drop-on materials	Trademark: glass-beads ECHOSTAR 20 WBP Certificate of Constancy of Performance: 0099-CPR-A72-0001	480 g/m ²

AQUALINE 192 B (AQ-0300) – System 3 defined by the installation instructions given in Table 1.4, together with the Certificate of Constancy of Performance of the drop-on materials.

Table 1.4: Installation instructions of the AQUALINE 192 B (AQ-0300) – System 3		
Identification of materials and type of application		Dosage(s)
Surface coating material	Trademark: AQUALINE 192 B (AQ-0300) Paint without premix glass beads, applied by spray with drop-on material.	680 g/m ²
Drop-on materials	Trademark: glass-beads ECHOSTAR 10 Certificate of Constancy of Performance: 0099-CPR-A72-0001	500 g/m ²

AQUALINE 192 B (AQ-0300) – System 4 defined by the installation instructions given in Table 1.5, together with the Certificate of Constancy of Performance number of the drop-on materials.

Table 1.5: Installation instructions of the AQUALINE 192 B (AQ-0300) – System 4		
Identification of materials and type of application		Dosage(s)
Surface coating material	Trademark: AQUALINE 192 B (AQ-0300) Paint without premix glass beads, applied by spray with drop-on material.	760 g/m ²
Drop-on materials	Trademark: glass-beads ECHOSTAR 10 Certificate of Constancy of Performance: 0099-CPR-A72-0001	500 g/m ²

AQUALINE 192 B (AQ-0300) – System 5 defined by the installation instructions given in Table 1.5, together with the Certificate of Constancy of Performance number of the drop-on materials.

Table 1.6: Installation instructions of the AQUALINE 192 B (AQ-0300) – System 5		
Identification of materials and type of application		Dosage(s)
Surface coating material	Trademark: AQUALINE 192 B (AQ-0300) Paint without premix glass beads, applied by spray with drop-on material.	720 g/m ²
Drop-on materials	Trademark: glass-beads ECHOSTAR 10 Certificate of Constancy of Performance: 0099-CPR-A72-0001	480 g/m ²

NOTE: Other combination(s) than Systems 1, 2, 3, 4 and 5 must be assessed and it (they) can give rise to an addendum to this ETA

2. Specification of the intended use in accordance with the applicable EAD.

2.1 AQUALINE 192 B (AQ-0300), different systems

2.1.1 AQUALINE 192 B (AQ-0300) - 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 conditions) and skid resistance properties at initial and after 4 million roll-overs.
- It is also designed to give to the resulting road marking satisfactory day and night visibility (on wet conditions) and skid resistance properties at initial and after 1 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 AQUALINE 192 B (AQ-0300) - 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 and wet conditions) and skid resistance properties at initial and after 4 million roll-overs.
- It is also designed to give to the resulting road marking satisfactory day and night visibility (on rainy conditions) and skid resistance properties at initial and after 2 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 AQUALINE 192 B (AQ-0300) - 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.

2.1.4 AQUALINE 192 B (AQ-0300) - System 4

- 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 2 million roll-overs.
- The substrates on which it has provided satisfactory performances are bituminous asphalt and cement concrete with a maximum roughness of 1.2 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.

2.1.5 AQUALINE 192 WBP (AQ-0300) - System 5

- 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.

2.2 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 each system shall correspond to the respective values laid down in Tables 2.1, 2.2, 2.3, 2.4 and 2.5 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 and accessibility 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 AQUALINE 192 B (AQ-0300) – 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	Q _d 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	428	140	NPA	0.75	240	always inside white polygon (EN 1436)	52
	Retained	0.1	322	174	NPA	0.73	248		53
		0.2	319	135	NPA	0.70	236		52
		0.5	328	104	NPA	0.72	249		53
		1.0	257	55	NPA	0.67	210		52
		2.0	267	NPA	NPA	0.64	186		59
		4.0	146	NPA	NPA	0.59	143		61
General aspects in relation to the intended use									
Retroreflection		Alkali resistance			Bleeding resistance		Test plates roughness		
Type II		PASS			Δβ ≤ 0.05		0.8 mm		
Indentation		Colour			Softening point		ageing UV		
Not applicable		White			Not applicable		Δβ = 0.04		

Table 2.2: Results for AQUALINE 192 B (AQ-0300) – 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	Q _d 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	482	155	78	0.75	252	always inside white polygon (EN 1436)	53
	Retained	0.1	470	152	59	0.75	250		50
		0.2	423	131	52	0.74	242		49
		0.5	350	116	52	0.74	254		51
		1.0	309	90	45	0.73	249		49
		2.0	235	69	35	0.72	240		52
		4.0	177	26	NPA	0.59	246		50
General aspects in relation to the intended use									
Retroreflection		Alkali resistance			Bleeding resistance		Test plates roughness		
Type II		PASS			Δβ ≤ 0.05		0.8 mm		
Indentation		Colour			Softening point		ageing UV		
Not applicable		White			Not applicable		Δβ = 0.04		

Table 2.3: Results for AQUALINE 192 B (AQ-0300) – 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
			RL 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	387	84	NPA	0.74	230	always inside white polygon (EN 1436)	54
	Retained	0.1	340	90	NPA	0.74	235		53
		0.2	349	70	NPA	0.73	226		54
		0.5	322	46	NPA	0.72	227		53
		1.0	261	52	NPA	0.70	214		53
		2.0	236	45	NPA	0.67	206		55
		4.0	160	46	NPA	0.63	197		57
General aspects in relation to the intended use									
Retroreflection		Alkali resistance			Bleeding resistance		Test plates roughness		
Type II		PASS			Δβ ≤ 0.05		0.8 mm		
Indentation		Colour			Softening point		ageing UV		
Not applicable		White			Not applicable		Δβ = 0.04		

Table 2.4: Results for AQUALINE 192 B (AQ-0300) – System 4									
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
			RL 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	299	45	117	0.74	239	always inside white polygon (EN 1436)	54
	Retained	0.1	292	53	98	0.73	345		53
		0.2	248	40	77	0.73	239		54
		0.5	217	38	61	0.70	226		56
		1.0	158	37	47	0.67	209		53
		2.0	144	36	46	0.66	202		55
		General aspects in relation to the intended use							
Retroreflection		Alkali resistance			Bleeding resistance		Test plates roughness		
Type II		PASS			Δβ ≤ 0.05		1.0 mm		
Indentation		Colour			Softening point		ageing UV		
Not applicable		White			Not applicable		Δβ = 0.04		

Table 2.5 Results for AQUALINE 192 B (AQ-0300) – System 5									
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	Q _d 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	504	81	47	0.71	249	always Inside white polygon (EN 1436)	53
	Retained	0.1	427	61	39	0.70	240		54
		0.2	394	60	37	0.68	234		54
		0.5	341	50	35	0.68	232		59
		1.0	303	50	35	0.66	226		57
		2.0	262	41	28	0.64	223		57
		4.0	236	36	26	0.62	205		57
General aspects in relation to the intended use									
Retroreflection		Alkali resistance			Bleeding resistance		Test plates roughness		
Type II		PASS			Δβ ≤ 0.05		0.8 mm		
Indentation		Colour			Softening point		ageing UV		
Not applicable		White			Not applicable		Δβ = 0.04		

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, 2.3, 2.4 and 2.5 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 (Q_d)*

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:*

For 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)*

According to the applicable part of EN 1871, as variation on the values for luminance factor (β) and chromaticity co-ordinates.

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 *Ageing UV*

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 Commission¹, system 1 of assessment and verification of constancy of performance (see EC delegated regulation (EU) No 568/2014 amending Annex V to Regulation (EU) N° 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 IETcc².

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.

Issued in Madrid on 2021 February 05

By



Director

on behalf of Instituto de Ciencias de la Construcción Eduardo Torroja (IETcc – CSIC)

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.