



LABORATÓRIO NACIONAL
DE ENGENHARIA CIVIL

LABORATÓRIO NACIONAL DE ENGENHARIA CIVIL, I. P.
Av. do Brasil 101 • 1700-066 LISBOA • PORTUGAL
phone: (351) 21 844 30 00 • fax: (351) 21 844 30 11
e-mail: lnecc@lnecc.pt • www.lnecc.pt



Member of



www.eota.eu

European Technical Assessment

ETA 16/0871
of 20/12/2018

English translation prepared by LNEC; original version in Portuguese language

ISSN 2183-3362

Trade name of the construction product

Designação comercial do produto de construção

Product family to which the construction product belongs

Família de produtos a que o produto de construção pertence

Manufacturer

Fabricante

Manufacturing plant(s)

Instalações de fabrico

This European Technical Assessment contains

A presente Avaliação Técnica Europeia contém

This European Technical Assessment is issued in accordance with Regulation (EU) No. 305/2011, on the basis of

A presente Avaliação Técnica Europeia é emitida ao abrigo do Regulamento (UE) n.º 305/2011, com base no

This European Technical Assessment

A presente Avaliação Técnica Europeia

LUSO SPRAY BRANCO

Road marking product

White thermoplastic with premix glass beads requiring drop-on materials to be used on traffic areas

Product to be used on asphalt surfaces

Produto para marcação rodoviária

Termoplástico branco com pérolas de vidro incorporadas e projeção simultânea de pérolas de vidro para aplicação em áreas de tráfego

Produto para ser usado em pavimentos betuminosos

VOUGACOR – Produtos de Sinalização Rodoviária, Lda.

Zona Industrial de Oiã, Lote B17

3770-066 Oiã

Aveiro

Portugal

www.vougacor.com

Zona Industrial de Oiã, Lote B17

3770-066 Oiã

Aveiro

Portugal

6 pages

6 páginas

European Assessment Document (EAD) No. 230011-00-0106

Road Marking Products

Documento de Avaliação Europeu (EAD) n.º 230011-00-0106 Road Marking Products

Replaces ETA 16/0871 issued on 31/01/2017

Substitui a ETA 16/0871 emitida em 31/01/2017

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

Communication of this European Technical Assessment, including transmission by electronic means, shall be in full. However, partial reproduction may be made, with the written consent of the issuing Technical Assessment Body. Any partial reproduction has to be identified as such.

This European Technical Assessment may be withdrawn by the issuing Technical Assessment Body, in particular pursuant to information by the Commission according to Article 25, Paragraph 3, of Regulation (EU) No. 305/2011.

1. Technical description of the product

This European Technical Assessment applies to the road marking product LUSO SPRAY BRANCO. The product is a hot spray-applied thermoplastic (as defined in EN 1871), of white colour, used for signalization purposes when it is applied on the road with or without antiskid aggregates and with dropped-on glass beads. It is put on the market with indications on types and proportions of dropped-on glass beads and/or antiskid aggregates.

Physical and chemical characteristics: See Table 1.

TABLE 1
Declared values for the product LUSO SPRAY BRANCO according to EN 1871 and EN 12802

| Characteristics | Declared values |
|----------------------------------|---|
| Luminance factor, β | ≥ 0.80 |
| Chromaticity co-ordinates (x, y) | White Within the polygon (x, y): (0.355; 0.355) (0.305; 0.305) (0.285; 0.325) (0.335; 0.375) |
| Softening point | ≥ 95 °C |
| Density | 1.98 (± 0.1) g/cm ³ |
| Ash content | 80.4 (± 3) % |

The product, considered as the basis of a family, may be used in different combinations (proportions) and/or application instructions in order to reach different intended uses. Each of these combinations is identified as a system of the same family.

This ETA concerns the LUSO SPRAY BRANCO defined by the manufacturer and specified in Tables 2 and 3 for two systems, called respectively System 1 and System 2, together with the Certificate of Constancy of Performance number of the drop-on materials. Future systems of the same family may be added being identified with a correlative number of system.

TABLE 2
Composition of the LUSO SPRAY BRANCO – System 1

| | Material identification and type of application | Dosages |
|--------------------------|---|-----------------------|
| Surface coating material | Trademark: Luso Spray Branco Thermoplastic with premix glass beads, applied by spray with drop-on material | 3000 g/m ² |
| Drop-on materials | Trademark: Glass beads 850-125 AC90 (Potters Europe) Certificate of Constancy of Performance: 1137-CPR-0472/81 | 500 g/m ² |

TABLE 3
Composition of the LUSO SPRAY BRANCO – System 2

| | Material identification and type of application | Dosages |
|--------------------------|---|-----------------------|
| Surface coating material | Trademark: Luso Spray Branco Thermoplastic with premix glass beads, applied by spray with drop-on material | 3000 g/m ² |
| Drop-on materials | Trademark: Glass beads EHOSTAR 20 TRM (Sovitec Ibérica S.A.) Certificate of Constancy of Performance: 0099/CPR/A72/001 | 500 g/m ² |

Note: Other combinations than Systems 1 and 2 shall be assessed and may give rise to an addendum to this ETA.

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

The LUSO SPRAY BRANCO – System 1:

- is intended to be used for white permanent road marking in trafficked areas without presence of traffic with studded tyres;
- is designed to give to the resulting road marking satisfactory day and night visibility and skid resistance properties at initial conditions and after 4 million rollovers;
- is a road marking of type I, according to EN 1436:2018, that does not necessarily have special properties intended to enhance the retroreflection in wet and rainy conditions;
- 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, the product presents satisfactory performance for UV ageing.

The LUSO SPRAY BRANCO – System 2:

- is intended to be used for white permanent road marking in trafficked areas without presence of traffic with studded tyres;
- is designed to give to the resulting road marking satisfactory day and night visibility and skid resistance properties at initial conditions and after 4 million rollovers;
- is a road marking of type II, according to EN 1436:2018, that has special properties intended to enhance the retroreflection in wet and rainy conditions;
- 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, the product presents satisfactory performance for UV ageing.

The substrates on which it has provided satisfactory performance are bituminous material with a maximum roughness of 0.90 mm (texture depth according to EN 13036-1).

The provisions made in this European Technical Assessment are based on an assumed working life of one year as minimum, according to EAD No. 230011-00-0106, provided that the conditions laid 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 manufacturer by the ETA holder or by the 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

Sampling, conditioning, testing and the assessment for the intended use of this road marking product according to the Basic Requirements were carried out in compliance with the European Assessment Document (EAD) No. 230011-00-0106 – *Road Marking Products*.

Table 4 presents the relevant performance of the product and the corresponding methods used in its assessment, and is complemented with Tables 5 and 6, where test results for durability, night and day visibility and skid resistance of System 1 and System 2 are synthesized respectively.

TABLE 4

Performance of the product and methods used for its assessment

| Basic Requirement | | Essential characteristic | | Assessment method | Type of expression of product performance (level, class, description) | |
|--|-------------------------------------|-------------------------------------|-------------------------------------|---|---|--------------------|
| BWR 4 Safety and accessibility in use | Night visibility | Retroreflectivity (R _L) | in dry conditions | EN 1436 | See Tables 5 and 6 | |
| | | | in conditions of wetness | | See Tables 5 and 6 | |
| | | | in conditions of rain | | See Tables 5 and 6 | |
| | Day visibility | Chromaticity co-ordinates (x, y) | | EN 1436 | See Tables 5 and 6 | |
| | | | Luminance | Luminance factor (β) | EN 1436 | See Tables 5 and 6 |
| | | | | Luminance coefficient under diffuse illumination (Qd) | EN 1436 | See Tables 5 and 6 |
| | | Skid resistance (SRT) | | EN 1436 | See Tables 5 and 6 | |
| | Relating to durability | | Number of roll-over (method A) | EN 1824 | – | |
| | | | Number of wheel passages (method B) | EN 13197 | See Tables 5 and 6 | |
| | Relating to the nature of substrate | Bituminous | Luminance factor (β) | EN 1871 | Not applicable | |
| Chromaticity co-ordinates (x, y) | | | | | | |
| Relating to climatic conditions | Cement | Alkali resistance | EN 1871 | Performance not assessed | | |
| | | Indentation | | Performance not assessed | | |
| | | Softening point | EN 1871 | 106 °C | | |
| | | UVB ageing | | Δβ ≤ 0.05 | | |

TABLE 5

Test results for durability, night and day visibility and skid resistance of LUSO SPRAY BRANCO – System 1

| Durability | | | Night and day visibility and skid resistance for each durability level | | | | | |
|--|---------------------------------------|---|--|--------------------------|---------------------|---|---------------------------------------|-----------|
| Test method | Number of roll-over × 10 ⁶ | Night-time visibility | | | Day-time visibility | | Skid resistance | |
| | | R _L in mcd·m ⁻² ·lx ⁻¹ under conditions of | | | β | Qd in mcd·m ⁻² ·lx ⁻¹ | (x, y) | SRT units |
| | | Dry | Wetness | Rain | | | | |
| EN 13197 Method B wear simulator ^(*) | Initial | 0.01 | 268 | | 0.687 | 246 | 55 | |
| | | 0.1 | 299 | | 0.657 | 250 | 50 | |
| | Retained | 0.2 | 296 | | 0.662 | 246 | 49 | |
| | | 0.5 | 275 | Performance not assessed | 0.655 | 248 | Always inside white polygon (EN 1436) | 50 |
| | | 1.0 | 255 | | 0.669 | 245 | | 53 |
| | | 2.0 | 223 | | 0.646 | 228 | | 55 |
| | | 3.0 | 200 | | 0.640 | 223 | | 54 |
| | | 4.0 | 186 | | 0.621 | 214 | | 55 |

(*) The roughness of the test plate was determined according to EN 13036-1 and is within one of the ranges specified in EN 13197 (> 0.60 and ≤ 0.90).

TABLE 6

Test results for durability, night and day visibility and skid resistance of LUSO SPRAY BRANCO – System 2

| Durability | | | Night and day visibility and skid resistance for each durability level | | | | | | |
|--|-----------------------------------|------|--|---------|------|---------------------|---|-----------------|-----------|
| Test method | Number of roll-over $\times 10^6$ | | Night-time visibility | | | Day-time visibility | | Skid resistance | |
| | | | R_L in $\text{mcd}\cdot\text{m}^{-2}\cdot\text{lx}^{-1}$ under conditions of | | | β | Qd in $\text{mcd}\cdot\text{m}^{-2}\cdot\text{lx}^{-1}$ | (x, y) | SRT units |
| | | | Dry | Wetness | Rain | | | | |
| EN 13197 Method B wear simulator ^(*) | Initial | 0.01 | 425 | 120 | 31 | 0.757 | 266 | 50 | |
| | | 0.1 | 433 | 63 | 28 | 0.743 | 268 | 50 | |
| | Retained | 0.2 | 433 | 56 | 25 | 0.756 | 272 | 50 | |
| | | 0.5 | 404 | 56 | 25 | 0,764 | 280 | 50 | |
| | | 1.0 | 409 | 51 | 26 | 0.752 | 270 | 50 | |
| | | 2.0 | 393 | 51 | 25 | 0.676 | 254 | 51 | |
| | | 3.0 | 359 | 50 | 25 | 0.657 | 238 | 50 | |
| | | 4.0 | 302 | 51 | 26 | 0.651 | 220 | 51 | |

(*) The roughness of the test plate was determined according to EN 13036-1 and is within one of the ranges specified in EN 13197 (> 0.60 and ≤ 0.90).

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

According to the decision 96/579/EC of the European Commission¹ the system of assessment and verification of constancy of performance 1 applies.

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

5.1 General

The ETA is issued for the product on the basis of agreed data/information, deposited with LNEC, which identifies the product that has been assessed and judged.

Changes to the product or production process should be notified to LNEC before the changes are introduced. LNEC will decide whether or not such changes affect the ETA and if so whether further assessment or alterations to the ETA shall be necessary.

5.2 Tasks for the manufacturer

Factory production control

The manufacturer shall exercise permanent internal control of production. All elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures, including records of results performed.

This production control system shall insure that the product is in conformity with this ETA.

The manufacturer may only use initial/raw/constituent materials (as relevant) stated in the Manufacturer's Technical Dossier.

The factory production control shall be in accordance with the Control Plan² which is part of the Technical Documentation of this ETA. The control plan has been agreed between the manufacturer and LNEC and is laid down in the context of the factory production control system operated by the manufacturer and is deposited within LNEC. The results of the factory production control shall be recorded and evaluated in accordance with the provisions of the control plan.

¹ Published in the Official Journal of the European Union (OJEU) L254 of 8.10.1996, p. 0052-0055.

² The Control Plan is a confidential part of this European Technical Assessment and is only handed over to the notified body involved in the procedure of assessment and verification of constancy of performance. See section 5.3.

Other tasks for the manufacturer

The manufacturer shall, on the basis of a contract, involve a product certification body (bodies) notified to carry out constancy of performance certification in order to undertake the respective actions. For this purpose, the control plan shall be handed over by the manufacturer to the notified body (bodies) involved.

For assessing the product the results of the tests performed as part of the assessment for the ETA shall be used unless there are changes in the production line or plant. In such cases the necessary testing has to be agreed with LNEC.

The declaration of performance of the product to be drawn up by the manufacturer following the issuing of the ETA shall include its reference number and issuing date.

Changes to the product or its production process should be notified to LNEC before the changes are introduced. LNEC will decide whether or not such changes affect the ETA and if so whether further assessment or alterations to the ETA shall be necessary.

5.3 Tasks for the notified body (bodies)

Within the scope of the initial inspection of factory and of factory production control, the notified body (bodies) shall ascertain that, in accordance with the Control Plan, mentioned in 5.2, the factory (in particular the employees and the equipment) and the factory production control are suitable to ensure continuous and orderly manufacturing according to the specifications mentioned in this ETA.

Within the scope of continuous surveillance, assessment and evaluation of factory production control, the notified body (bodies) shall visit the factory at least once a year for surveillance. It has to be verified that the factory production control is maintained in suitable conditions.

These tasks shall be performed in accordance with the provisions laid down in the control plan.

The notified body (bodies) shall retain the essential points of its (their) actions referred above and state the results obtained and conclusions drawn in a written report.

The notified body involved by the manufacturer shall issue a certificate of conformity of the factory production control stating the conformity with the provisions of this ETA.

In cases where the provisions of the ETA and its control plan are no longer fulfilled, the notified body shall withdraw the certificate of conformity and inform LNEC without delay.

Issued in Lisbon on 20/12/2018

By

Laboratório Nacional de Engenharia Civil (LNEC)

The Board of Directors



Carlos Pina
President

CDU
ISSN

625.745.6(4)
2183-3362

Descriptors: Road marking / Asphalt surface / Thermoplastic material / Europe
Descritores: Marca rodoviária / Pavimento betuminoso / Termoplástico / Europa

ISSN 2183-3362



Divisão de Divulgação Científica e Técnica - LNEC

60871