



**INSTITUTO DE CIENCIAS  
DE LA CONSTRUCCIÓN  
EDUARDO TORROJA**

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

**European Technical  
Assessment**

**ETA 18/0550  
of 07/01/2025**

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:**

**F-2001 Thermospray white basic 20 %**  
White thermoplastic with premix glass beads, applied  
by spray, with drop-on material.

**Product family to which the  
construction product belongs**

ROAD MARKING PRODUCT

**Manufacturer:**

Fabricación y Aplicación de Pinturas Especiales, S.A.  
Calle Paloma, 13, P.I. Los Gallegos  
28946 Fuenlabrada (Madrid), Spain

**Manufacturing plant(s):**

Calle Paloma, 13, P.I. Los Gallegos  
28946 Fuenlabrada (Madrid), Spain

**This European Technical  
Assessment contains**

10 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  
ROAD MARKING PRODUCTS

**This version replaces**

ETA 18/0550 issued on 26/08/2024

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

Communication of this European Technical Assessment, including transmission by electronic means, shall be in full (excepted confidential(s) Annex(es) referred to above. However, partial reproduction may be made, with the written consent of the issuing Technical Assessment Body. Any partial reproduction must be identified as such.

Código seguro de Verificación : GEN-482d-ee9a-5b4e-3c5f-7354-9388-5268-424d | Puede verificar la integridad de este documento en la siguiente dirección :  
<https://sede.administracion.gob.es/pagSedeFront/servicios/consultaCSV.htm>

CSV : GEN-482d-ee9a-5b4e-3c5f-7354-9388-5268-424d

DIRECCIÓN DE VALIDACIÓN : <https://sede.administracion.gob.es/pagSedeFront/servicios/consultaCSV.htm>

FIRMANTE(1) : ANGEL CASTILLO TALAVERA | FECHA : 13/01/2025 11:02 | Sin acción específica



## Table of contents

|                                                                                                                                            |           |
|--------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>SPECIFIC PARTS.....</b>                                                                                                                 | <b>3</b>  |
| <b>1. Technical description of the product .....</b>                                                                                       | <b>3</b>  |
| <b>2. Specification of the intended use in accordance with the applicable EAD.....</b>                                                     | <b>5</b>  |
| <b>2.1 F-2001 Thermospray white basic 20 % – Systems 1, 2, 3 and 4 .....</b>                                                               | <b>5</b>  |
| <b>2.2 Relevant general conditions for the use of the kits .....</b>                                                                       | <b>5</b>  |
| <b>3. Performance of the product and references to the methods used for its assessment .....</b>                                           | <b>5</b>  |
| <b>3.1 Essential characteristics of the product .....</b>                                                                                  | <b>5</b>  |
| 3.1.1 Mechanical resistance and stability (BWR 1).....                                                                                     | 5         |
| 3.1.2 Safety in case of fire (BWR 2).....                                                                                                  | 6         |
| 3.1.3 Hygiene, health and environment (BWR 3).....                                                                                         | 6         |
| 3.1.4 Safety and accessibility in use: (BWR 4).....                                                                                        | 6         |
| 3.1.5 Protection against noise (BWR 5).....                                                                                                | 8         |
| 3.1.6 Energy economy and heat retention (BWR 6).....                                                                                       | 8         |
| 3.1.7 Sustainable use of natural resources (BWR 7).....                                                                                    | 8         |
| <b>3.2 Methods of verification .....</b>                                                                                                   | <b>8</b>  |
| 3.2.1 Retroreflectivity in dry conditions ( $R_L$ ).....                                                                                   | 8         |
| 3.2.2 Retroreflectivity in conditions of wetness ( $R_L$ ).....                                                                            | 8         |
| 3.2.3 Retroreflectivity in conditions of rain ( $R_L$ ).....                                                                               | 9         |
| 3.2.4 Chromaticity co-ordinates (x, y).....                                                                                                | 9         |
| 3.2.5 Luminance Factor ( $\beta$ ).....                                                                                                    | 9         |
| 3.2.6 Luminance coefficient under diffuse illumination ( $Q_d$ ).....                                                                      | 9         |
| 3.2.7 Skid resistance (SRT).....                                                                                                           | 9         |
| 3.2.8 Durability.....                                                                                                                      | 9         |
| 3.2.9 Bleed resistance (only for paints).....                                                                                              | 9         |
| 3.2.10 Alkali resistance.....                                                                                                              | 9         |
| 3.2.11 Indentation (only for thermoplastics).....                                                                                          | 9         |
| 3.2.12 Softening point (only for thermoplastics).....                                                                                      | 9         |
| 3.2.13 UV ageing.....                                                                                                                      | 9         |
| <b>4. Assessment and verification of constancy of performance (hereinafter AVCP) system applied, with reference to its legal base.....</b> | <b>10</b> |
| <b>4.1 System of assessment and verification of constancy of performance .....</b>                                                         | <b>10</b> |
| <b>5. Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD .....</b>               | <b>10</b> |



## SPECIFIC PARTS

### 1. Technical description of the product

**F-2001 Thermospray white basic 20 %** is a road marking thermoplastic (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 thermoplastic is put on the market with indications on types and proportions of dropped-on materials.

Trademark: **F-2001 Thermospray white basic 20 %**  
Nature: Hot applied (spray) thermoplastic  
Colour: White  
Producer: Fabricación y Aplicación de Pinturas Especiales, S.A. (FAPLISA)

Physical and chemical characteristics: see Table 1.1.

| Table 1.1: Characteristics in accordance with EN 1871 |                         |
|-------------------------------------------------------|-------------------------|
| CHARACTERISTICS                                       | DECLARED VALUE          |
| Luminance factor                                      | 0.82                    |
| Chromaticity co-ordinates                             | Inside white polygon    |
| Ageing UV                                             | $\Delta\beta \leq 0.05$ |
| Heat stability ( $\Delta\beta$ )                      | $\Delta\beta \leq 0.1$  |
| Softening point                                       | $\geq 110$ °C           |

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:

**F-2001 Thermospray white basic 20 % – 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.

| Table 1.2: Installation instructions of the <b>F-2001 Thermospray white basic 20 % – System 1</b> |                                                                                                                                              |                        |
|---------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| Identification material and type of application                                                   |                                                                                                                                              | Dosage(s)              |
| Surface coating material                                                                          | Trademark: <b>F-2001 Thermospray white basic 20 %</b><br>White thermoplastic with premix glass beads, applied by spray with drop-on material | 3 000 g/m <sup>2</sup> |
| Drop-on materials                                                                                 | Trademark: glass-beads <b>ECHOSTAR 10</b> [DoP 31]<br>Certificate of Constancy of Performance: <b>0099-CPR-A72-0001</b>                      | 500 g/m <sup>2</sup>   |



**F-2001 Thermospray white basic 20 % – 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 <b>F-2001 Thermospray white basic 20 % – System 2</b> |                                                                                                                                              |                        |
|---------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| Identification material and type of application                                                   |                                                                                                                                              | Dosage(s)              |
| Surface coating material                                                                          | Trademark: <b>F-2001 Thermospray white basic 20 %</b><br>White thermoplastic with premix glass beads, applied by spray with drop-on material | 2 000 g/m <sup>2</sup> |
| Drop-on materials                                                                                 | Trademark: glass-beads <b>ECHOSTAR 10</b> [DoP 31]<br>Certificate of Constancy of Performance: <b>0099-CPR-A72-0001</b>                      | 450 g/m <sup>2</sup>   |

**F-2001 Thermospray white basic 20 % – 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 <b>F-2001 Thermospray white basic 20 % – System 3</b> |                                                                                                                                                               |                        |
|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| Identification material and type of application                                                   |                                                                                                                                                               | Dosage(s)              |
| Surface coating material                                                                          | Trademark: <b>F-2001 Thermospray white basic 20 %</b><br>White thermoplastic with premix glass beads, applied by spray with drop-on material                  | 2 500 g/m <sup>2</sup> |
| Drop-on materials                                                                                 | Trademark: glass-beads <b>Spherastek 125 – 850</b> [Twinreflect Performance – DoP 2016-1]<br>Certificate of Constancy of Performance: <b>0913-CPR-2015/02</b> | 500 g/m <sup>2</sup>   |

**F-2001 Thermospray white basic 20 % – System 4** defined by the installation instructions given in Table 1.5, together with the Certificate of Constancy of Performance of the drop-on materials.

| Table 1.5: Installation instructions of the <b>F-2001 Thermospray white basic 20 % – System 4</b> |                                                                                                                                              |                        |
|---------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| Identification material and type of application                                                   |                                                                                                                                              | Dosage(s)              |
| Surface coating material                                                                          | Trademark: <b>F-2001 Thermospray white basic 20 %</b><br>White thermoplastic with premix glass beads, applied by spray with drop-on material | 2 000 g/m <sup>2</sup> |
| Drop-on materials                                                                                 | Trademark: glass-beads <b>SWARCOFLEX 200 – 800</b> [T14 – DoP 100/1]<br>Certificate of Constancy of Performance: <b>1085-CPR-0625</b>        | 450 g/m <sup>2</sup>   |

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



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

### 2.1 F-2001 Thermospray white basic 20 % – Systems 1, 2, 3 and 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 4 million roll-overs.
- The substrate on which the RPM has provided satisfactory performances, in accordance with EN 1871, is bituminous asphalt.
- The maximum roughness of the test plate on which the RMP has been assessed for durability performance, in accordance with EN 13197, is 0.9 mm (roughness measured as texture depth in accordance with EN 13036-1).
- It is intended to be used (not applied) at a temperature range from -20 °C to +50 °C for outside uses and from +5 °C to +50 °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 and 2.4 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 <b>F-2001 Thermospray white basic 20 % - System 1</b> |                                                 |                   |                                                                             |            |                     |                     |                                             |                                       |                 |
|------------------------------------------------------------------------------|-------------------------------------------------|-------------------|-----------------------------------------------------------------------------|------------|---------------------|---------------------|---------------------------------------------|---------------------------------------|-----------------|
| 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 <sup>6</sup>           |                   | Night-time visibility                                                       |            |                     | Day-time visibility |                                             |                                       | Skid resistance |
|                                                                              |                                                 |                   | R <sub>L</sub> in mcd·m <sup>-2</sup> ·lx <sup>-1</sup> under conditions of |            |                     | β luminance factor  | Qd in mcd·m <sup>-2</sup> ·lx <sup>-1</sup> | Chromaticity Co-ordinates CIE (x, y)  | SRT units       |
|                                                                              |                                                 |                   | dry                                                                         | wetness    | rain                |                     |                                             |                                       |                 |
| <b>Method B wear simulator</b><br><br><b>EN 13197</b>                        | Initial                                         | 0.01              | <b>408</b>                                                                  | <b>134</b> | <b>38</b>           | <b>0.71</b>         | <b>267</b>                                  | always inside white polygon (EN 1436) | <b>58</b>       |
|                                                                              | Retained                                        | 0.1               | <b>391</b>                                                                  | <b>64</b>  | <b>27</b>           | <b>0.74</b>         | <b>268</b>                                  |                                       | <b>58</b>       |
|                                                                              |                                                 | 0.2               | <b>359</b>                                                                  | <b>50</b>  | <b>17</b>           | <b>0.74</b>         | <b>274</b>                                  |                                       | <b>55</b>       |
|                                                                              |                                                 | 0.5               | <b>354</b>                                                                  | <b>51</b>  | <b>19</b>           | <b>0.74</b>         | <b>272</b>                                  |                                       | <b>53</b>       |
|                                                                              |                                                 | 1.0               | <b>300</b>                                                                  | <b>55</b>  | <b>22</b>           | <b>0.75</b>         | <b>263</b>                                  |                                       | <b>50</b>       |
|                                                                              |                                                 | 2.0               | <b>229</b>                                                                  | <b>41</b>  | <b>19</b>           | <b>0.75</b>         | <b>268</b>                                  |                                       | <b>50</b>       |
|                                                                              |                                                 | 4.0               | <b>213</b>                                                                  | <b>42</b>  | <b>22</b>           | <b>0.75</b>         | <b>264</b>                                  |                                       | <b>48</b>       |
|                                                                              | General aspects in relation to the intended use |                   |                                                                             |            |                     |                     |                                             |                                       |                 |
| Retroreflection                                                              |                                                 | Alkali resistance |                                                                             |            | Bleeding resistance |                     | Test plates roughness                       |                                       |                 |
| Type II                                                                      |                                                 | NPA               |                                                                             |            | Not applicable      |                     | 0.8 mm                                      |                                       |                 |
| Indentation                                                                  |                                                 | Colour            |                                                                             |            | Softening point     |                     | ageing UV                                   |                                       |                 |
| NPA                                                                          |                                                 | White             |                                                                             |            | 122 °C              |                     | Δβ = 0.01                                   |                                       |                 |



| Table 2.2: Results for <b>F-2001 Thermospray white basic 20 % - System 2</b> |                                                 |                   |                                                                             |           |                     |                     |                                             |                                       |                 |
|------------------------------------------------------------------------------|-------------------------------------------------|-------------------|-----------------------------------------------------------------------------|-----------|---------------------|---------------------|---------------------------------------------|---------------------------------------|-----------------|
| 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 <sup>6</sup>           |                   | Night-time visibility                                                       |           |                     | Day-time visibility |                                             |                                       | Skid resistance |
|                                                                              |                                                 |                   | R <sub>L</sub> in mcd·m <sup>-2</sup> ·lx <sup>-1</sup> under conditions of |           |                     | β luminance factor  | Qd in mcd·m <sup>-2</sup> ·lx <sup>-1</sup> | Chromaticity Co-ordinates CIE (x, y)  | SRT units       |
|                                                                              |                                                 |                   | dry                                                                         | wetness   | rain                |                     |                                             |                                       |                 |
| <b>Method B wear simulator</b><br><br><b>EN 13197</b>                        | Initial                                         | 0.01              | <b>412</b>                                                                  | <b>80</b> | <b>38</b>           | <b>0.68</b>         | <b>269</b>                                  | always inside white polygon (EN 1436) | <b>56</b>       |
|                                                                              | Retained                                        | 0.1               | <b>344</b>                                                                  | <b>60</b> | <b>37</b>           | <b>0.69</b>         | <b>258</b>                                  |                                       | <b>55</b>       |
|                                                                              |                                                 | 0.2               | <b>349</b>                                                                  | <b>63</b> | <b>35</b>           | <b>0.69</b>         | <b>265</b>                                  |                                       | <b>55</b>       |
|                                                                              |                                                 | 0.5               | <b>262</b>                                                                  | <b>57</b> | <b>30</b>           | <b>0.69</b>         | <b>264</b>                                  |                                       | <b>49</b>       |
|                                                                              |                                                 | 1.0               | <b>230</b>                                                                  | <b>61</b> | <b>29</b>           | <b>0.69</b>         | <b>264</b>                                  |                                       | <b>48</b>       |
|                                                                              |                                                 | 2.0               | <b>188</b>                                                                  | <b>52</b> | <b>28</b>           | <b>0.68</b>         | <b>256</b>                                  |                                       | <b>45</b>       |
|                                                                              |                                                 | 4.0               | <b>176</b>                                                                  | <b>42</b> | <b>28</b>           | <b>0.65</b>         | <b>252</b>                                  |                                       | <b>45</b>       |
|                                                                              | General aspects in relation to the intended use |                   |                                                                             |           |                     |                     |                                             |                                       |                 |
| Retroreflection                                                              |                                                 | Alkali resistance |                                                                             |           | Bleeding resistance |                     | Test plates roughness                       |                                       |                 |
| Type II                                                                      |                                                 | NPA               |                                                                             |           | Not applicable      |                     | 0.8 mm                                      |                                       |                 |
| Indentation                                                                  |                                                 | Colour            |                                                                             |           | Softening point     |                     | ageing UV                                   |                                       |                 |
| NPA                                                                          |                                                 | White             |                                                                             |           | 122 °C              |                     | Δβ = 0.01                                   |                                       |                 |

| Table 2.3: Results for <b>F-2001 Thermospray white basic 20 % - System 3</b> |                                                 |                   |                                                                             |           |                     |                     |                                             |                                       |                 |
|------------------------------------------------------------------------------|-------------------------------------------------|-------------------|-----------------------------------------------------------------------------|-----------|---------------------|---------------------|---------------------------------------------|---------------------------------------|-----------------|
| 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 <sup>6</sup>           |                   | Night-time visibility                                                       |           |                     | Day-time visibility |                                             |                                       | Skid resistance |
|                                                                              |                                                 |                   | R <sub>L</sub> in mcd·m <sup>-2</sup> ·lx <sup>-1</sup> under conditions of |           |                     | β luminance factor  | Qd in mcd·m <sup>-2</sup> ·lx <sup>-1</sup> | Chromaticity Co-ordinates CIE (x, y)  | SRT units       |
|                                                                              |                                                 |                   | dry                                                                         | wetness   | rain                |                     |                                             |                                       |                 |
| <b>Method B wear simulator</b><br><br><b>EN 13197</b>                        | Initial                                         | 0.01              | <b>348</b>                                                                  | <b>81</b> | <b>37</b>           | <b>0.68</b>         | <b>235</b>                                  | always inside white polygon (EN 1436) | <b>57</b>       |
|                                                                              | Retained                                        | 0.1               | <b>289</b>                                                                  | <b>51</b> | <b>25</b>           | <b>0.70</b>         | <b>242</b>                                  |                                       | <b>53</b>       |
|                                                                              |                                                 | 0.2               | <b>253</b>                                                                  | <b>45</b> | <b>25</b>           | <b>0.70</b>         | <b>241</b>                                  |                                       | <b>53</b>       |
|                                                                              |                                                 | 0.5               | <b>224</b>                                                                  | <b>42</b> | <b>25</b>           | <b>0.70</b>         | <b>243</b>                                  |                                       | <b>47</b>       |
|                                                                              |                                                 | 1.0               | <b>161</b>                                                                  | <b>40</b> | <b>27</b>           | <b>0.70</b>         | <b>239</b>                                  |                                       | <b>47</b>       |
|                                                                              |                                                 | 2.0               | <b>157</b>                                                                  | <b>35</b> | <b>26</b>           | <b>0.69</b>         | <b>233</b>                                  |                                       | <b>45</b>       |
|                                                                              |                                                 | 4.0               | <b>167</b>                                                                  | <b>36</b> | <b>27</b>           | <b>0.64</b>         | <b>237</b>                                  |                                       | <b>45</b>       |
|                                                                              | General aspects in relation to the intended use |                   |                                                                             |           |                     |                     |                                             |                                       |                 |
| Retroreflection                                                              |                                                 | Alkali resistance |                                                                             |           | Bleeding resistance |                     | Test plates roughness                       |                                       |                 |
| Type II                                                                      |                                                 | NPA               |                                                                             |           | Not applicable      |                     | 0.8 mm                                      |                                       |                 |
| Indentation                                                                  |                                                 | Colour            |                                                                             |           | Softening point     |                     | ageing UV                                   |                                       |                 |
| NPA                                                                          |                                                 | White             |                                                                             |           | 126.3 °C            |                     | Δβ = 0.01                                   |                                       |                 |



| Table 2.4: Results for <b>F-2001 Thermospray white basic 20 % - System 4</b> |                                                 |                   |                                                                                |            |                     |                       |                                                            |                                              |                 |
|------------------------------------------------------------------------------|-------------------------------------------------|-------------------|--------------------------------------------------------------------------------|------------|---------------------|-----------------------|------------------------------------------------------------|----------------------------------------------|-----------------|
| 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<br>x 10 <sup>6</sup>        |                   | Night-time visibility                                                          |            |                     | Day-time visibility   |                                                            |                                              | Skid resistance |
|                                                                              |                                                 |                   | R <sub>L</sub> in mcd·m <sup>-2</sup> ·lx <sup>-1</sup><br>under conditions of |            |                     | β<br>luminance factor | Q <sub>d</sub> in<br>mcd·m <sup>-2</sup> ·lx <sup>-1</sup> | Chromaticity<br>Co-ordinates<br>CIE (x, y)   | SRT<br>units    |
|                                                                              |                                                 |                   | dry                                                                            | wetness    | rain                |                       |                                                            |                                              |                 |
| <b>Method B wear simulator</b><br><br><b>EN 13197</b>                        | Initial                                         | 0.01              | <b>356</b>                                                                     | <b>95</b>  | <b>42</b>           | <b>0.69</b>           | <b>241</b>                                                 | <b>always inside white polygon (EN 1436)</b> | <b>64</b>       |
|                                                                              | Retained                                        | 0.1               | <b>279</b>                                                                     | <b>116</b> | <b>55</b>           | <b>0.70</b>           | <b>237</b>                                                 |                                              | <b>60</b>       |
|                                                                              |                                                 | 0.2               | <b>254</b>                                                                     | <b>112</b> | <b>63</b>           | <b>0.68</b>           | <b>237</b>                                                 |                                              | <b>59</b>       |
|                                                                              |                                                 | 0.5               | <b>209</b>                                                                     | <b>101</b> | <b>47</b>           | <b>0.69</b>           | <b>237</b>                                                 |                                              | <b>56</b>       |
|                                                                              |                                                 | 1.0               | <b>180</b>                                                                     | <b>86</b>  | <b>27</b>           | <b>0.68</b>           | <b>239</b>                                                 |                                              | <b>54</b>       |
|                                                                              |                                                 | 2.0               | <b>170</b>                                                                     | <b>81</b>  | <b>31</b>           | <b>0.68</b>           | <b>234</b>                                                 |                                              | <b>55</b>       |
|                                                                              |                                                 | 4.0               | <b>156</b>                                                                     | <b>75</b>  | <b>26</b>           | <b>0.63</b>           | <b>222</b>                                                 |                                              | <b>55</b>       |
|                                                                              | General aspects in relation to the intended use |                   |                                                                                |            |                     |                       |                                                            |                                              |                 |
| Retroreflection                                                              |                                                 | Alkali resistance |                                                                                |            | Bleeding resistance |                       | Test plates roughness                                      |                                              |                 |
| Type II                                                                      |                                                 | NPA               |                                                                                |            | Not applicable      |                       | 0.8 mm                                                     |                                              |                 |
| Indentation                                                                  |                                                 | Colour            |                                                                                |            | Softening point     |                       | ageing UV                                                  |                                              |                 |
| NPA                                                                          |                                                 | White             |                                                                                |            | 126.2 °C            |                       | Δβ = 0.01                                                  |                                              |                 |

### 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 each system shall correspond to the respective values laid down in Tables 2.1, 2.2, 2.3 and 2.4 of this ETA, checked by IETcc.

### 3.2.1 Retroreflectivity in dry conditions (R<sub>L</sub>)

As coefficient of retroreflected luminance R<sub>L</sub> (or retroreflectivity), according to the applicable part of EN 1436.

### 3.2.2 Retroreflectivity in conditions of wetness (R<sub>L</sub>)

As coefficient of retroreflected luminance R<sub>L</sub> (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 ( $\beta$ )*

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)*

Not applicable.

### 3.2.10 *Alkali resistance*

No Performance Assessed.

### 3.2.11 *Indentation (only for thermoplastics)*

No Performance Assessed.

### 3.2.12 *Softening point (only for thermoplastics)*

According to the applicable part of EN 1871.

### 3.2.13 *UV 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<sup>1</sup>, system 1 of assessment and verification of constancy of performance (see EC delegated regulation (EU) N.º 568/2014 amending Annex V to Regulation (EU) N.º 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<sup>2</sup>.

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.

Prepared by: Iván Tejero  
Innovative Products Assessment Unit IETcc-CSIC

Issued in Madrid on 2025 January 07

By  
**Ángel Castillo Talavera**  
Director  
on behalf of Instituto de Ciencias de la Construcción Eduardo Torroja (IETcc – CSIC)

<sup>1</sup> 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](http://www.new.eur-lex.europa.eu/oj/direct-access.html)

<sup>2</sup> 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.

