

Bundesanstalt für Strassenwesen (Federal Institution for roads)

Test and notification place for roads  
Notification number 0760

## **TEST REPORT**

over the

**photometric characteristics of road markers**

**Test report No. V4 – 108/2004 from September 23th 2004**

**Translation of the German report**

This test report covers 7 pages and may be only completely passed on or published.  
Passing on or publication requires the written agreement of the «Bundesanstalt für Strassenwesen».

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**Test report No. V4 – 108/2004  
from September 23th 2004**

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**photometric characteristics of road markers**

**REQUEST**

Applicant : Seih-Ying (Europe) Ltd.  
Bächliweg 39  
FL-9495 Triesen

Request of: July 7th 2004

Request thing : Measurement of the photometric characteristics of road markers in accordance with DIN EN 1463-1 "Retroreflecting road markers, part 1: Requirements when new; Edition October 1997

**EXAMINED MATERIAL**

Designation : according to data of the applicant:  
Road marker Siglite 360<sup>0</sup>  
Test No. 108/2004-01 to 108/2004-10 ;  
Type white, dome hight 19 mm, diameter 100 mm.  
Test No. 108/2004-13 to 108/2004-22 ;  
Type white, dome hight 25 mm, diameter 100 mm.

Series number : none

Condition : new, no weathering, no roll over

**MEASURING METHOD**

Measuring instrument : Optronik retroreflection measuring instrument RMS 10 GSE:  
Photo Research Spectra Scan 650 for the measurement of the color of the reflected light.

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## RESULTS OF MEASUREMENT

### 1. Classification

in accordance with section 4 of the DIN EN 1463-1:

|                  |                                  |        |
|------------------|----------------------------------|--------|
| Purpose of use : | permanent use of road markers    | Type P |
| Réflecteur :     | Glass                            | Type 1 |
| Construction :   | Plots de marquage non enfonçable | Type A |

### 2. Conception

in accordance with section 5.1 of the DIN EN 1463-1:

The test specimens do not exhibit sharp edges

### 3. Dimensions

in accordance with section 5.2 of the DIN EN 1463-1:

| Test No.    | Hight<br>above the road surface | Diameter |
|-------------|---------------------------------|----------|
| 108/2004-01 | 18,7                            | 101,4    |
| 108/2004-02 | 18,6                            | 101,7    |
| 108/2004-03 | 17,9                            | 101,9    |
| 108/2004-04 | 18,1                            | 101,8    |
| 108/2004-05 | 18,1                            | 101,6    |
| 108/2004-06 | 17,4                            | 101,8    |
| 108/2004-07 | 18,7                            | 101,8    |
| 108/2004-08 | 18,4                            | 101,8    |
| 108/2004-09 | 16,4                            | 101,8    |
| 108/2004-10 | 18,7                            | 101,8    |

Table 1 : Dimensions of the test specimens « Siglite, dome hight 19 mm » in mm

| Test No     | Hight<br>above the road surface | Diameter |
|-------------|---------------------------------|----------|
| 108/2004-13 | 22,9                            | 100,5    |
| 108/2004-14 | 23,2                            | 100,9    |
| 108/2004-15 | 23,4                            | 100,6    |
| 108/2004-16 | 22,6                            | 100,8    |
| 108/2004-17 | 23,4                            | 100,9    |
| 108/2004-18 | 23,1                            | 100,6    |
| 108/2004-19 | 22,6                            | 100,5    |
| 108/2004-20 | 23,7                            | 100,6    |
| 108/2004-21 | 23,0                            | 100,6    |
| 108/2004-22 | 23,9                            | 100,5    |

Table 2 : Dimensions of the test specimens « Siglite, dome hight 25 mm » in mm

#### 4. Night visibility

in accordance with section 5.3 of the DIN EN 1463-1

##### 4.1 Reflection values

| Observation angle $\alpha$ | 0,3°       |            | 1°          |             | 2°          |             |
|----------------------------|------------|------------|-------------|-------------|-------------|-------------|
|                            | +5°<br>(d) | -5°<br>(g) | +10°<br>(d) | -10°<br>(g) | +15°<br>(d) | -15°<br>(g) |
| 108/2004-01                | 67         | 61         | 21          | 27          | 6,0         | 5,4         |
| 108/2004-02                | 76         | 66         | 32          | 46          | 13,7        | 8,5         |
| 108/2004-03                | 51         | 53         | 22          | 48          | 17,4        | 24          |
| 108/2004-04                | 116        | 101        | 65          | 58          | 26          | 21          |
| 108/2004-05                | 116        | 101        | 65          | 59          | 25          | 19,6        |
| 108/2004-06                | 53         | 48         | 61          | 51          | 24          | 84          |
| 108/2004-07                | 41         | 40         | 24          | 35          | 12,6        | 14,5        |
| 108/2004-08                | 50         | 66         | 39          | 42          | 16,9        | 8,6         |
| 108/2004-09                | 41         | 41         | 37          | 40          | 16,7        | 11,7        |
| 108/2004-10                | 29         | 58         | 26          | 17,7        | 5,3         | 6,1         |
| <b>Mean value</b>          | <b>64</b>  | <b>64</b>  | <b>39</b>   | <b>42</b>   | <b>16,4</b> | <b>20</b>   |

Table 3 : Reflection values of the test specimens « Siglite, dome hight 19 mm » en mcd/lx

| Observation angle $\alpha$ | $0,3^\circ$       |                   | $1^\circ$          |                    | $2^\circ$          |                    |
|----------------------------|-------------------|-------------------|--------------------|--------------------|--------------------|--------------------|
|                            | $+5^\circ$<br>(d) | $-5^\circ$<br>(g) | $+10^\circ$<br>(d) | $-10^\circ$<br>(g) | $+15^\circ$<br>(d) | $-15^\circ$<br>(g) |
| 108/2004-13                | 78                | 67                | 29                 | 71                 | 40                 | 39                 |
| 108/2004-14                | 64                | 129               | 47                 | 81                 | 6,6                | 15,7               |
| 108/2004-15                | 83                | 56                | 34                 | 123                | 26                 | 120                |
| 108/2004-16                | 24                | 29                | 22                 | 26                 | 10,0               | 23                 |
| 108/2004-17                | 82                | 44                | 124                | 41                 | 43                 | 17,5               |
| 108/2004-18                | 162               | 150               | 69                 | 51                 | 7,6                | 12,6               |
| 108/2004-19                | 76                | 98                | 16,4               | 72                 | 18,7               | 30                 |
| 108/2004-20                | 37                | 57                | 32                 | 79                 | 12,9               | 83                 |
| 108/2004-21                | 62                | 66                | 93                 | 33                 | 30                 | 26                 |
| 108/2004-22                | 21                | 22                | 23                 | 7,0                | 7,4                | 9,9                |
| <b>Mean value</b>          | <b>69</b>         | <b>72</b>         | <b>49</b>          | <b>58</b>          | <b>20</b>          | <b>38</b>          |

Table 4 : Reflection values of the test specimens « Siglite, dome height 25 mm » en mcd/lx

#### 4.2 Color of the reflected light

Observation angle  $\alpha=0,3^\circ$

Entrance angle  $\beta_v=0^\circ$ ,  $\beta_H=5^\circ$

|             | Color | x     | y     |
|-------------|-------|-------|-------|
| 108/2004-01 | white | 0,413 | 0,407 |
| 108/2004-02 | white | 0,456 | 0,420 |
| 108/2004-03 | white | 0,439 | 0,415 |
| 108/2004-04 | white | 0,442 | 0,424 |
| 108/2004-05 | white | 0,439 | 0,426 |
| 108/2004-06 | white | 0,414 | 0,418 |
| 108/2004-07 | white | 0,433 | 0,415 |
| 108/2004-08 | white | 0,449 | 0,416 |
| 108/2004-09 | white | 0,442 | 0,424 |
| 108/2004-10 | white | 0,443 | 0,416 |

Table 5: Color of the reflected light of the test specimens « Siglite, dome height 19 mm »

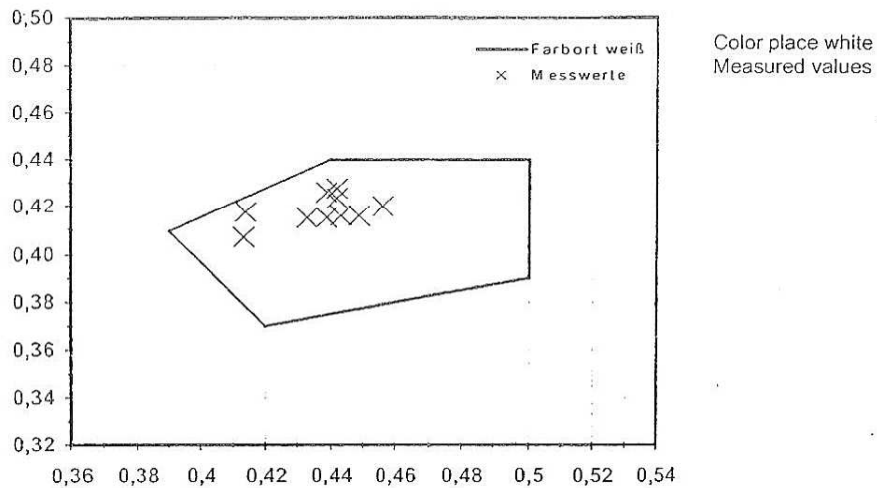


Illustration 1 : Color place of the reflected light in accordance with EN 1463-1 and measured values of the color of the reflected light of the test specimens « Siglite, dome hight 19 mm »

|             | Color | x     | y     |
|-------------|-------|-------|-------|
| 108/2004-13 | white | 0,440 | 0,415 |
| 108/2004-14 | white | 0,478 | 0,439 |
| 108/2004-15 | white | 0,436 | 0,419 |
| 108/2004-16 | white | 0,436 | 0,426 |
| 108/2004-17 | white | 0,432 | 0,426 |
| 108/2004-18 | white | 0,410 | 0,418 |
| 108/2004-19 | white | 0,439 | 0,426 |
| 108/2004-20 | white | 0,405 | 0,410 |
| 108/2004-21 | white | 0,421 | 0,408 |
| 108/2004-22 | white | 0,457 | 0,430 |

Table 6: Color of the reflected light of the test specimens « Siglite, dome hight 25 mm

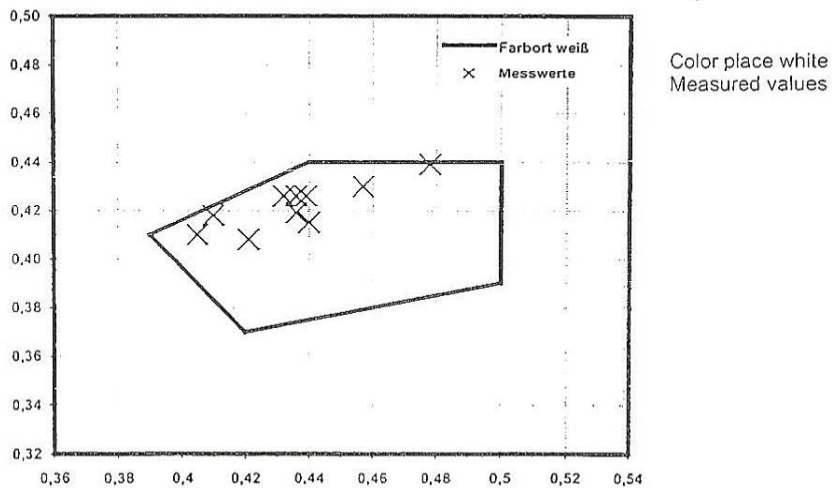


Illustration 2: Color place of the reflected light in accordance with EN 1463-1 and measured values of the color of the reflected light of the test specimens « Siglite, dome hight 25 mm ».

## EVALUATION

The examined road markers « Siglite, type white, dome hight 19 mm, diameter 100 mm (Test No. 108/2004-01 to 108/2004-10) fulfill the requirements concerning the dimensions and requirements of the classes H2, HD1 et HDT2.

The examined road markers « Siglite, type white, dome hight 25 mm, diameter 100 mm (Test No. 108/2004-13 to 108/2004-22) fulfill the requirements concerning the dimensions and requirements of the classes H3, HD1 et HDT2.

The examined road markers achieve the minimum reflection values demanded in DIN EN 1463-1 for road markers of the type 1.

The color of the reflected light of the test specimens is within the range for the new condition according to table 9 DIN EN 1463-1.

The examined road markers fulfill the photometric requirements of the DIN EN 1463-1 for the new condition.

(Dr. rer. Nat. H.-H. Meseberg)  
Director of government

(Dipl.-Phys. D. Heuzeroth)  
Upper government advice

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