

# Test Report

No. 14-003899-PR02  
(PB-E01-02-en-01)



**Date of report** 30.04.2015

**Client** ROLKA A.B.E.E.  
3 KM P.E.O. Katerinhs  
Thessalonikis T.TH. 148  
60100 Korinos Pierias  
Greece

**Order** Test of resistance to wind load under dynamic  
wind load

**Object** Roller shutter with built-in box, inspection from inside and  
foamed aluminium laths

**Type: RS POL943**

|                 |   |  |
|-----------------|---|--|
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## 1 Object

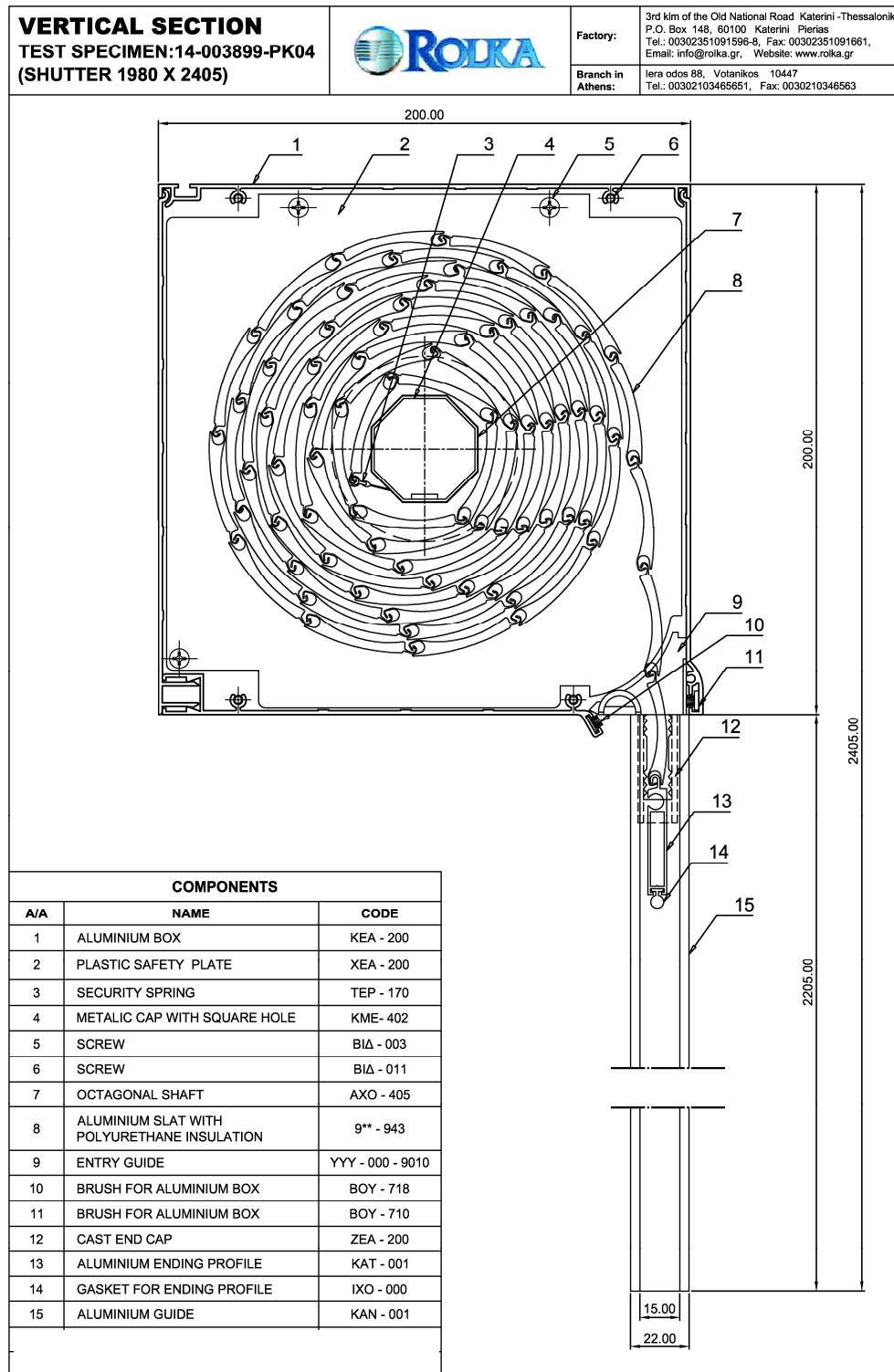
### 1.1 Description of test specimen type RS POL943

|  |  |
|--|--|
| <b>Manufacturer</b>                    | ROLKA A.B.E.E.                                 |
| Designation                            | RS POL943                                      |
|  | built-in roller shutter with manual operation  |
| Element size (W X H)                   | 1,980 mm x 2,405 mm                            |
| <b>Slatted roller blind housing</b>    |  |
| Material                               | aluminium, white coated                        |
| Dimensions (D x H)                     | 200 mm x 200 mm                                |
| Inspection opening                     | inside at front                                |
| <b>Shutter curtains</b>                |  |
| Material                               | aluminium, white coated, PU foamed             |
| Item No.                               | lath: 9-943                                    |
|  | bottom lath: KAT - 001 with gasket IXO - 000   |
| Wall thickness                         | 0.25 mm  |
| Number of bars                         | 51, on sides secured against displacement      |
| Profile cross section (W x T)          | lath: 48 mm x 8,7 mm                           |
|  | bottom lath: 45 mm x 7 mm                      |
| Edge cover of curtain in guide grooves | 2 x 20.5 mm                                    |
| Clearance of curtain in guide grooves  | 2 x 6.2 mm                                     |
| Dimensions                             |  |
| Lath width                             | 1,913 mm                                       |
| Visible size of curtain (W x H)        | 1,872 mm x 2,205 mm                            |
| <b>Guide rail</b>                      | 53 mm x 22 mm                                  |
| Material                               | aluminium, white coated                        |
| Item No.                               | KAN - 001                                      |
| Guide groove (D x W)                   | 26.7 mm x 20.2 mm                              |
| Silencing gasket                       | brush on both sides,<br>6.9 mm x 6 mm          |
| Fixing method                          | bolted all 600 mm                              |
| <b>Drive</b>                           | belt drive                                     |
| Exit position                          | horizontal at top (position 4 as per EN 13527) |
| Reduction ratio                        | 1 : 5  |
| Lever arm operation                    | --   |

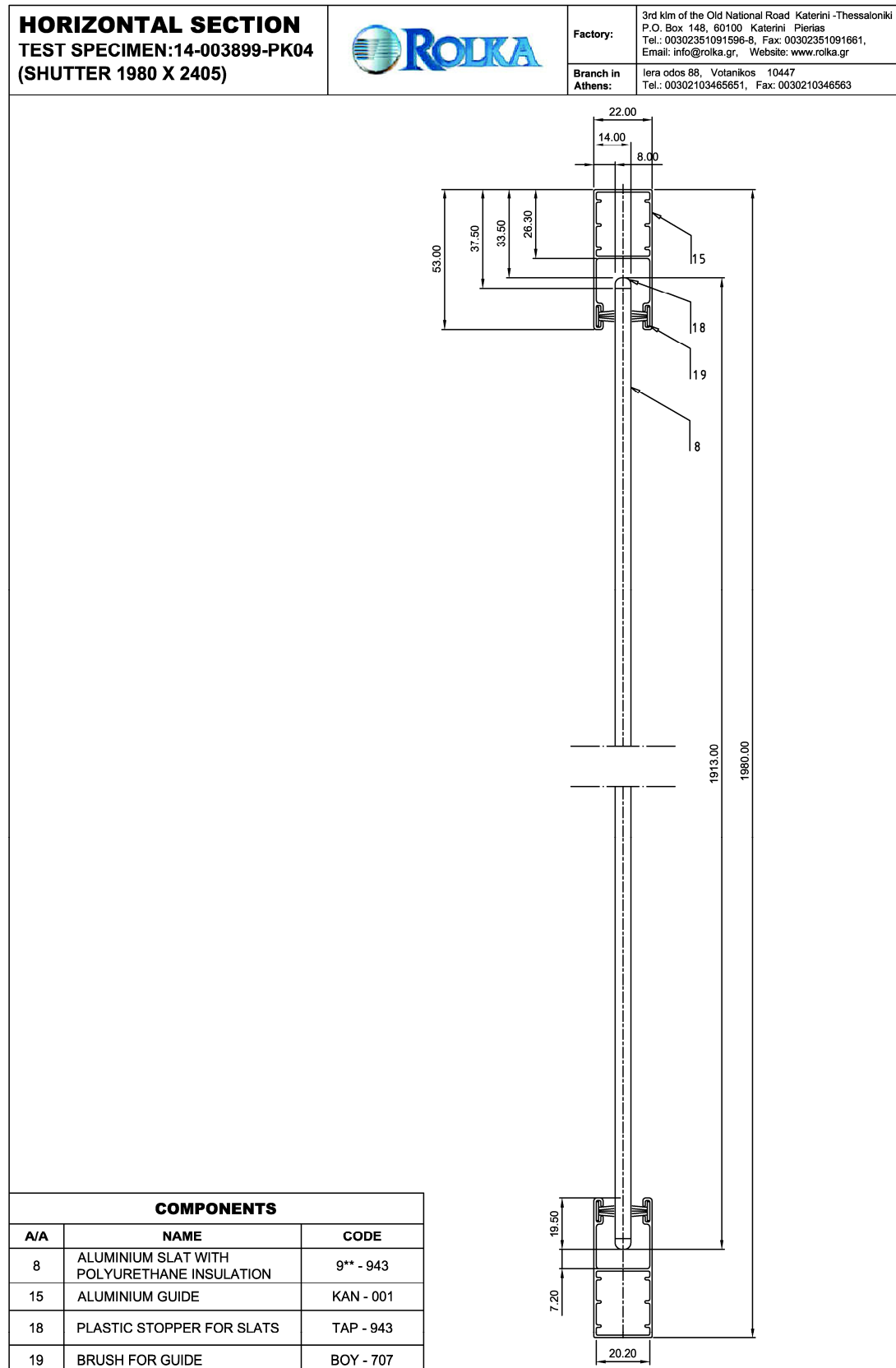
The description is based on inspection of the test specimen at the **ift**. Item designations/ numbers as well as material specifications were given by the client. The above specifications and details are retained with the testing body.

## 1.2 Representation of test specimen

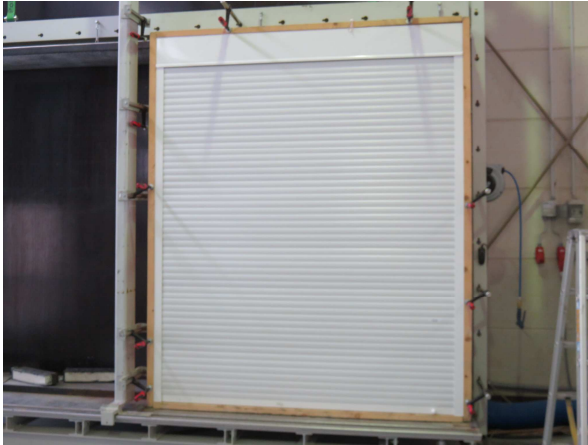
The constructional details were tested solely for the characteristics to be verified. The photographs were taken at the ift during testing. The drawings are based on unchanged documentation provided by the client.



**Figure 1** Vertical section



**Figure 2** Horizontal section



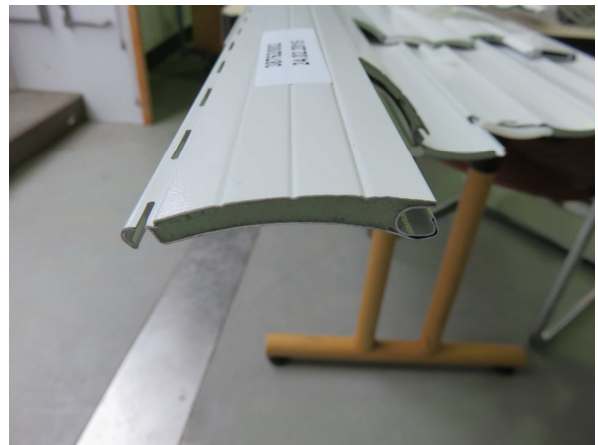
**Figure 3** Test specimen



**Figure 4** Bottom lath and guide rail



**Figure 5** Detail bottom lath



**Figure 6** Details of lath profile



**Figure 7** Detail bottom lath and lath profile with slider



**Figure 8** Detail aluminium guide rail

## 2 Procedure

### 2.1 Sampling

The test specimens were selected by the client:

|                           |                                |
|---------------------------|--------------------------------|
| Number                    | 1                              |
| Delivered on              | 24 February 2015 by the client |
| Specimen registration No. | WE 38762/002                   |
| Date of manufacture       | February 2015                  |

### 2.2 Test equipment

|                  |   |
|------------------|---|
| Wind generator 1 | Device No.: 22209   |
| Wind generator 2 | Device No.: 22210   |
| Vane anemometer  | Type TESTO 452 combined metering device:<br>Speed range. 0.4 to 60 m/s<br>Device No.: 22596 |

### 2.3 Testing

The test was witnessed by

|               |                               |
|---------------|-------------------------------|
| Date/Period   | 24 February 2015              |
| Attended by   | Mr. Gkekas<br>Mr. Papakostas  |
| Test engineer | Dipl.-Ing. (FH) Thomas Stefan |

## 2.4 Description of dynamic wind load test

The test specimen was exposed to dynamic wind load provided by two wind generators (rotor diameter Ø 1 m) arranged one above the other. The wind load was adjusted by setting the speed of the wind generators to different wind velocities, see Table 1.

**Table 1** Wind velocities measured at a distance of approx. 1 m in front of roller shutter

| Measuring position | Wind speed in m/s | Wind speed in km/h | Wind speed<br>Wind force in Bft |
|--------------------|-------------------|--------------------|---------------------------------|
| 1                  | 20.0              | 72                 | 8                               |
| 1                  | 25.0              | 90                 | 10                              |

The wind speeds generated were measured approx. 1.0 m respectively approx. 2.33 m above ground using a vane anemometer located at a distance of 1 m in front of the test specimen. The distance between the wind generators and the test specimen was 4.0 m.

## 2.5 Test sequence

The roller shutters were extended and retracted before application of the wind loads. The wind load was applied to the extended roller shutter. After completion of the wind load test an operational test was conducted with the roller shutter being extended and retracted again. This was followed by visual inspection of the test specimen.

The tests were performed in the sequence described in Table 2:

**Table 2** Test sequence

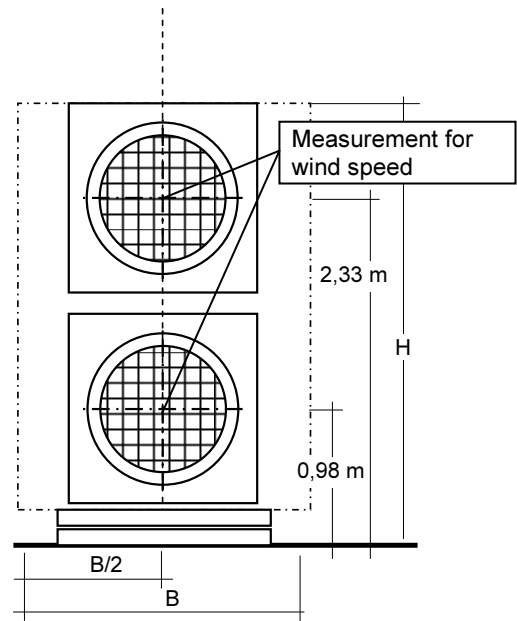
| No. | Wind speed<br>in m/s | Duration  | Test sequence  |
|-----|----------------------|---|--|
| 1   | 0                    | <i>Operational test prior to testing</i>  |  |
| 2   | 20.0                 | 5 min   | Extended position, measurement of maximum central deflection |
| 3   | 0                    | <i>Operational test</i><br><i>Visual inspection/assessment for occurrence of any damage</i>   |  |
| 4   | 25.0                 | 5 min   | Extended position, measurement of maximum central deflection |
| 5   | 0                    | <i>After completion of the wind load test an operational test was conducted with the roller shutter being retracted and extended once again.</i><br><i>This was followed by visual inspection of the test specimen.</i> |  |

Figures 9 to 12 show the schematic test arrangement and the measurement points.





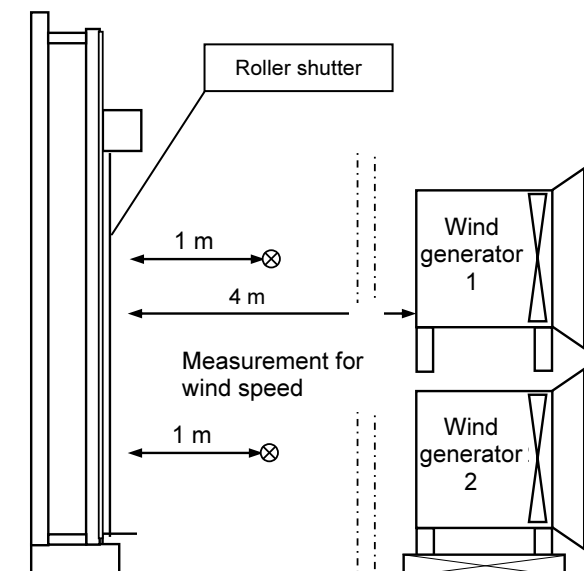
**Figure 9** Test wall



**Figure 10** Position of wind generators



**Figure 11** Layout of wind generators



**Figure 12** Test configuration for dynamic wind load

### 3 Results of dynamic wind load test

#### Test under dynamic wind load, ift In-house method

#### Roller shutter

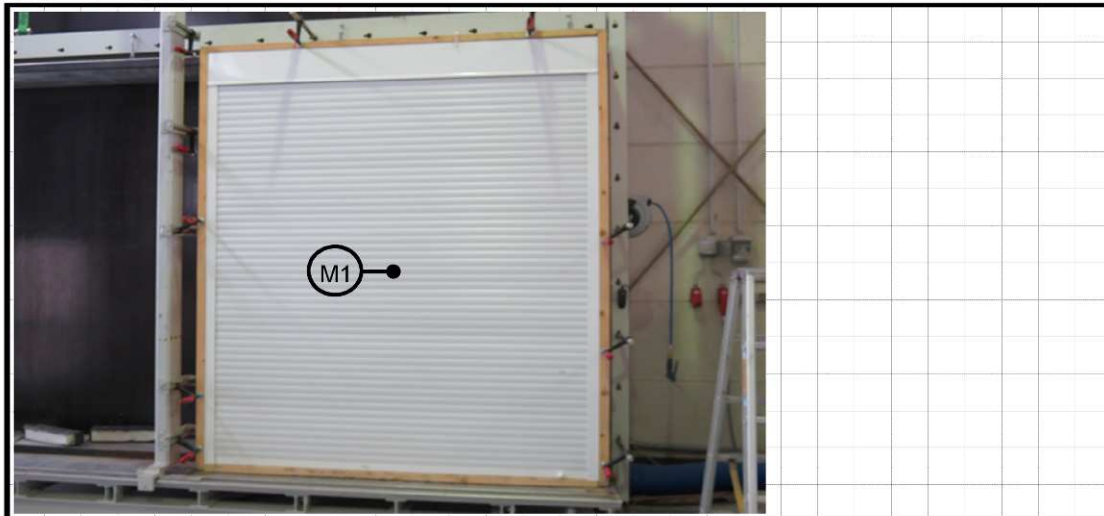
|                              |                            |
|------------------------------|----------------------------|
| Project No.                  | 14-003899-PR02             |
| Client / contact             | ROLKA A.B.E.E.             |
| Element                      | Roller shutter             |
| Manufacture of test specimen | February 2015              |
| Delivery of test specimen    | 24.02.2015                 |
| Date of test                 | 24.02.2015                 |
| Attended by                  | Mr. Gkekis, Mr. Papakostas |

|                 |                  |
|-----------------|------------------|
| System          | RS POL943        |
| Lamella         | Aluminium foamed |
| Element size    | 1980 x 2405 mm   |
| Clear           | 1972 x 2205 mm   |
| lath dimensions | 48 x 1914 mm     |

|               |               |
|---------------|---------------|
| Specimen No.  | 38762/002     |
| Test engineer | Thomas Stefan |

|              |         |
|--------------|---------|
| Temperature  | 20,4 °C |
| Air humidity | 40,4 %  |

Seen from outside



**Photo 1** Test specimen

Key

 Measurement point of deflection

## Test record, dynamic wind load

### 1. Roller shutter closed

Specimen No. WE 38762/002

Wind load wind pressuer, holding time each pressure step 5 minutes

Fan space to test specimen: 4 m

Curtain moved to right

| Wind speed *) |         | Deflection<br>mm | Observations                              |
|---------------|---------|------------------|---|
| 20.0 m/s      | 72 km/h | 31               | Slight rattling noise of box cover        |
| after load    |         | 0                | Operational test OK                       |
| 25.0 m/s      | 90 km/h | 58               | Sliding out at approaching the wind speed |
| after load    |         | 0                | defect                                    |

\*) Measurement at 1 m distance from unit in centre of unit (variation approx.  $\pm 1$  m/s)

ift Rosenheim  
24 February 2015

## 4 Evaluation

The measured results were obtained from the product in new condition. Thus they do not include any changes that are likely to be caused by the effects of weathering and/or ageing. The values mentioned in this test report refer solely to the objects described and tested under Section 1.

The test results obtained may be extrapolated for units of identical or smaller dimensions of the same design provided that consistent quality of workmanship is guaranteed by suitable control measures, and the material used as well as the make/details comply with the description of the present test report.

Table 3 can be used to analyse the test results.

**Table 3** Wind speed table in Beaufort

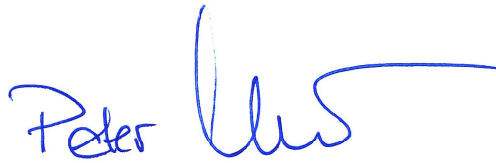
| Beaufort scale/<br>number | Description                      | Average wind speeds 10 m<br>above open ground |           | Typical effects of wind over inland areas   |
|---------------------------|----------------------------------|---|-----------|---|
|                           |                                  | m/s   | km/h      |   |
| 0                         | Calm                             | 0 – 0.2                                       | < 1       | Smoke rises vertically  |
| 1                         | Light air                        | 0.3 – 1.4                                     | 1 - 5     | Direction of wind shown by smoke drift  |
| 2                         | Light breeze                     | 1.5 – 3.4                                     | 6 - 12    | Wind felt on face; leaves rustle and wind vanes begin to move                                       |
| 3                         | Gentle breeze<br>gentle wind     | 3.5 – 5.4                                     | 13 – 19   | Small twigs in constant motion; light flags extended  |
| 4                         | Moderate breeze<br>Moderate wind | 5.5 – 7.4                                     | 20 – 27   | Twigs and small branches are moved, wind raises dust and loose paper                                |
| 5                         | Fresh breeze<br>Fresh wind       | 7.5 – 10.4                                    | 28 – 37   | Small trees in leaf begin to sway, crested wavelets form on inland waters                           |
| 6                         | Strong breeze                    | 10.5 – 13.4                                   | 38 – 48   | Large branches in motion; umbrellas used with difficulty; whistling heard in telegraph wires        |
| 7                         | Near gale                        | 13.5 – 17.4                                   | 49 – 62   | Inconvenience felt when walking against the wind; whole trees in motion;                            |
| 8                         | Gale                             | 17.5 – 20.4                                   | 63 – 73   | Twigs break off trees; wind generally impedes progress on foot                                      |
| 9                         | Strong gale                      | 20.5 – 24.4                                   | 74 – 87   | Branches break off trees, slight structural damage (slates and chimney pots removed from the roofs) |
| 10                        | Storm                            | 24.5 – 28.4                                   | 88 – 102  | Wind breaks off trees, considerable structural damage   |
| 11                        | Violent storm                    | 28.5 – 32.4                                   | 103 – 117 | Trees uprooted, widespread damage   |
| 12                        | Hurricane                        | above 32.5                                    | above 118 | Devastation   |

## 5 Notes on publication of ift test documents

The enclosed **ift** Guidance Sheet "Conditions and Guidance for the Use of **ift** Test Document" sets out the rules for using the test reports.

**ift** Rosenheim

30.04.2015

A handwritten signature in blue ink, appearing to read 'Peter Marquardt'.

Peter Marquardt, Dipl.-Ing. (FH)  
Deputy Head of Testing Department  
Construction Product Testing

A handwritten signature in blue ink, appearing to read 'Thomas Stefan'.

Thomas Stefan, Dipl.-Ing. (FH)  
Operating Testing Officer  
Construction Product Testing