

# WB6

Self-tapping screw for fastening of flat roof thermal insulation and waterproofing to be used with with KD steel washers pp. 36-37



**NEW!**

### Description

Self-tapping screw for fastening of flat roof thermal insulation and waterproofing systems to concrete.

### Technical data

|                             |  |
|-----------------------------|--|
| Substrate                   | concrete C12/15, C20/C25, thin wall concrete panel |
| Corrosion protection        | ceramic coating                                    |
| Concrete drill bit diameter | 5.0 mm   |

### Material

Carbon steel

### Features and advantages of the product



**SW-8**

Flanged hex head



**Ceramic coating**

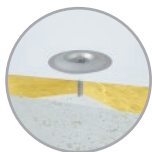
Highest corrosion protection



**Double thread**

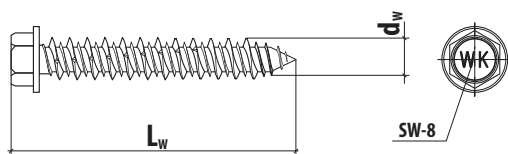
Facilitates direct installation in concrete

Substrate: by ETAG 006





Substrate: concrete C12/15, C20/25, thin wall concrete panel

**WB6** Self-tapping screw for fastening of flat roof thermal insulation and waterproofing to be used with with KD steel washers pp. 36-37



Product marking

|              |           |            |                 |
|--------------|-----------|------------|-----------------|
| <b>WB6-C</b> | <b>63</b> | <b>045</b> | <b>D</b>        |
| Type         | Diameter  | Length     | Type of coating |

|             | Code          | $d_w \times L_w$ [mm] | SW-8  | Pcs  |
|-------------|---------------|-----------------------|---|---|
| <b>ø6,3</b> | WB6-C-63035-D | 6.3 x 35              | SW-8  | 250   |
|             | WB6-C-63045-D | 6.3 x 45              | SW-8  | 250   |

Packing



WB6 screws are supplied in sturdy cardboard boxes

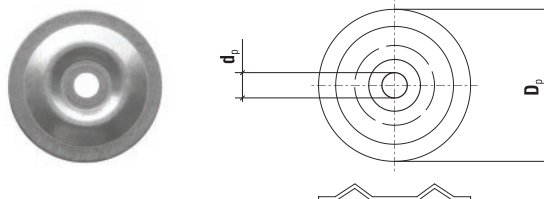
**KD** Steel washers for fixing of flat roof thermal insulation and waterproofing systems to be used with WDB, WSR, WBSW, WB6 screws and SMN expansion anchors



**KD-04-W5**  
**STEEL WASHER - ROUND RAISED**

Technical data

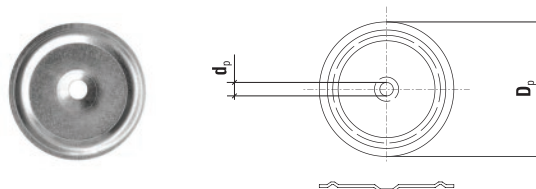
|             |          |
|-------------|----------|
| Material    | steel    |
| Screw types | WDB, WSR |



**KD-05**  
**STEEL WASHER - ROUND, FLAT**

Technical data

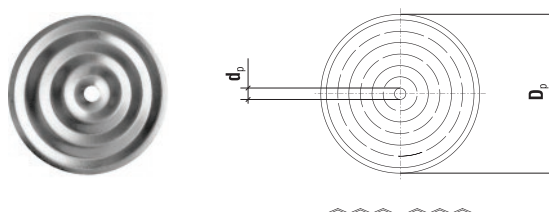
|             |          |
|-------------|----------|
| Material    | steel    |
| Screw types | WDB, WSR |



**KD-01**  
**STEEL WASHER - ROUND, FLAT**

Technical data

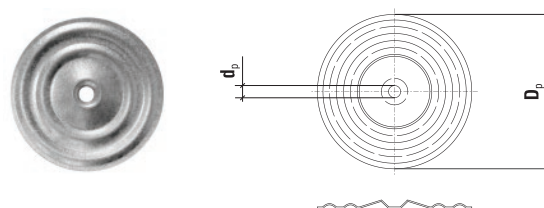
|             |          |
|-------------|----------|
| Material    | steel    |
| Screw types | WDB, WSR |



**KD-02-W-5,5**  
**STEEL WASHER - ROUND, RAISED**

Technical data

|             |          |
|-------------|----------|
| Material    | steel    |
| Screw types | WDB, WSR |



|            | Code              | $D_p$ [mm] | $d_p$ [mm] | $h_p$ [mm] | Pcs |
|------------|-------------------|------------|------------|------------|-----|
| <b>ø40</b> | KD-04-W5(X200)    | 40         | 5.0        | 1.0        | 200 |
| <b>ø50</b> | KD-05(X200)       | 50         | 5.0        | 1.0        | 200 |
| <b>ø70</b> | KD-01(X200)       | 70         | 5.0        | 0.6        | 200 |
|            | KD-02-W-5.5(X200) | 70         | 5.5        | 0.6        | 200 |

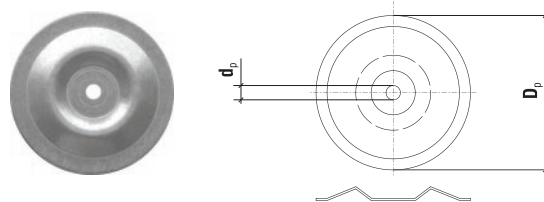
**KD** Steel washers for fixing of flat roof thermal insulation and waterproofing systems to be used with WDB, WSR, WBSW, WB6 screws and SMN expansion anchors



**KD-07-WW**  
**STEEL WASHER - ROUND, DOUBLE RAISED PROFILE**

Technical data

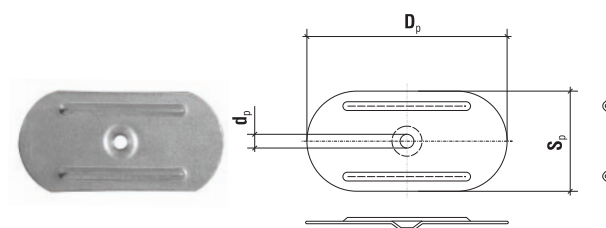
|             |                                    |
|-------------|------------------------------------|
| Material    | steel                              |
| Screw types | WDB, WSR, WBSW, WB6-C - 6.3, SMN-6 |



**KD-03-P**  
**STEEL WASHER - OVAL, FLAT**

Technical data

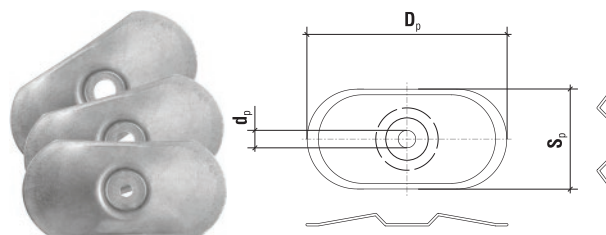
|             |          |
|-------------|----------|
| Material    | steel    |
| Screw types | WDB, WSR |



**KD-03-W**  
**STEEL WASHER - OVAL, RAISED**

Technical data

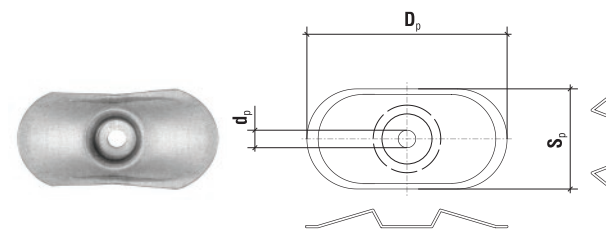
|             |  |
|-------------|--|
| Material    | steel  |
| Screw types | KD-03-W5: WDB, WSR<br>KD-03-W7: WBSW, WB6-C-6.3; SMN-6<br>KD-03-W9: WBSW, WB6-C-6.3; SMN-8 |



**KD-03-WW7**  
**STEEL WASHER - OVAL DOUBLE RAISED PROFILE**

Technical data

|             |                                  |
|-------------|----------------------------------|
| Material    | steel                            |
| Screw types | WDB, WSR, WBSW, WB6-C-6.3; SMN-6 |



|               | Code                   | D <sub>p</sub> [mm] | D <sub>p</sub> x S <sub>p</sub> [mm] | d <sub>p</sub> [mm] | h <sub>p</sub> [mm] | Pcs |
|---------------|------------------------|---------------------|--------------------------------------|---------------------|---------------------|-----|
| <b>ø70</b>    | <b>KD-07-WW(X200)</b>  | 70                  | -                                    | 6.5                 | 0.9                 | 200 |
| <b>ø80x40</b> | <b>KD-03-P(X200)</b>   | -                   | 80 x 40                              | 5.5                 | 1.0                 | 200 |
|               | <b>KD-03-W5(X200)</b>  | -                   | 80 x 40                              | 5.0                 | 1.0                 | 200 |
|               | <b>KD-03-W7(X200)</b>  | -                   | 80 x 40                              | 7.0                 | 1.0                 | 200 |
|               | <b>KD-03-W9(X200)</b>  | -                   | 80 x 40                              | 9.0                 | 1.0                 | 200 |
|               | <b>KD-03-WW7(X200)</b> | -                   | 80 x 40                              | 7.0                 | 1.0                 | 200 |



ETA-15/0578

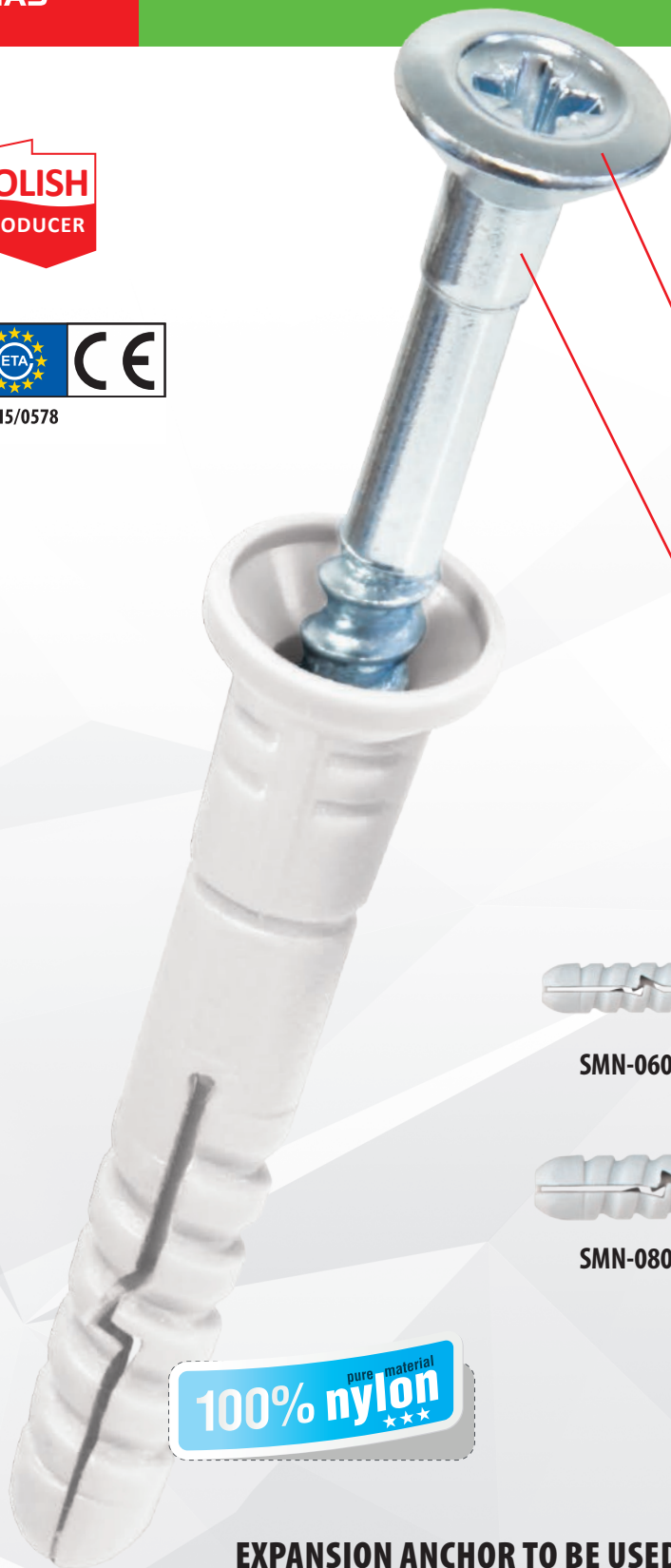
# SMN6 SMN8

## BETTER HOLDING POWER

Increased head diameter ensures much better holding power of the elements being installed!

## SECURE FIXING

Countersunk head is more solid with special underhead strengthening!



pure material  
**100% nylon** \*\*\*

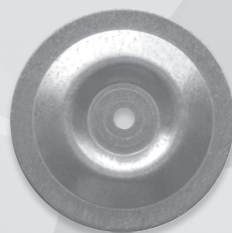


SMN-06050



SMN-08060

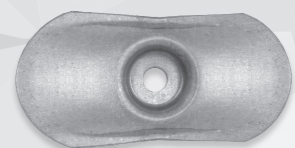
### EXPANSION ANCHOR TO BE USED WITH KD STEEL WASHERS



KD-07-WW



KD-03-WW7



KD-03-W7, KD-03-W9

# SMN

Expansion anchor to be used with KD steel washers - pp. 36-37



ETA-15/0578



**Nylon**

## Description

For fixing of flat roof waterproofing systems directly to concrete using KD-07-WW, KD-03-WW7, KD-03-W7 for SMN-06050, KD-03-W9 for SMN-08060 washers

## Technical data

Plug diameter 6, 8 mm

## Material



## Features and advantages of the product



### Better Holding Power

Increased head diameter ensures much better holding power of the elements being installed!



### Secure Fixing

Screw countersunk head is more solid with special underhead strengthening!

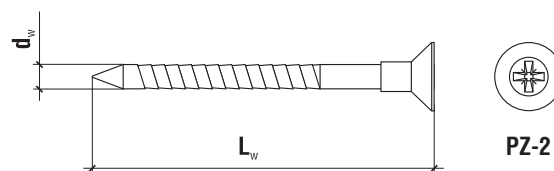
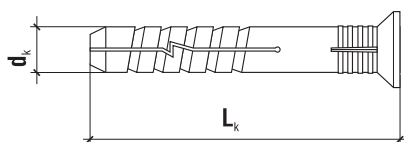
Substrate: by ETAG 006



Substrate: concrete C12/15, C20/25

## Product marking

|            |           |            |
|------------|-----------|------------|
| <b>SMN</b> | <b>06</b> | <b>050</b> |
| Type       | Diameter  | Length     |



|           | Code      | $d_k \times L_k$ [mm] | Hole diameter $d_o$ [mm] | Type of steel washer              | PZ   | Pcs |
|-----------|-----------|-----------------------|--------------------------|-----------------------------------|------|-----|
| <b>ø6</b> | SMN-06050 | 6 x 50                | 6                        | KD-07-WW<br>KD-03-WW7<br>KD-03-W7 | PZ-2 | 200 |
| <b>ø8</b> | SMN-08060 | 8 x 60                | 8                        | KD-03-W9                          | PZ-2 | 100 |

Minimum anchorage depth:  
SMN - 6 x 50  $h_{eff}=50$  mm  
SMN - 8 x 60  $h_{eff}=60$  mm

**KNX**

**Expansion sleeve plug to be used with LINO and WDB-4.8/WDB-T-4.8 screw and KD steel washers**  
- pp. 36-37



**Nylon**

Description

For fixing of flat roof thermal insulation and waterproofing systems to concrete substrate using LINO sleeve and WDB screw

Technical data

Plug diameter 8 mm

Material



Features and advantages of the product



**Gripped firmly in place**

During the first stage of installation the plug is held firmly in place as the expansion lugs on its outside prevent it from turning once it has been placed in the hole



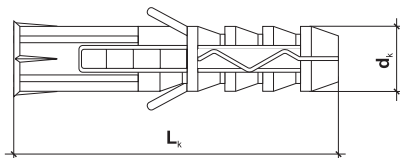
**Widened rim**

Its widened rim prevents the plug from sinking too deep into the drill hole

Substrate: by ETAG 006



Substrate: concrete C12/15, C20/25 for WDB/WDB-T fastener



Product marking

|            |           |            |
|------------|-----------|------------|
| <b>KNX</b> | <b>08</b> | <b>050</b> |
| Type       | Diameter  | Length     |

|           | Code             | $d_k \times L_k$ [mm] | Hole diameter $d_o$ [mm] | Pcs |
|-----------|------------------|-----------------------|--------------------------|-----|
| <b>ø8</b> | <b>KNX-08050</b> | 8 x 50                | 8                        | 400 |

Minimum anchorage depth  $h_{eff}=50\text{mm}$

# FBZ-250 Vapour barrier

CE



## Description

To make water vapour barrier in roof structures

## Technical data

|  |   |
|--|---|
| Thickness  | 0.20 mm ± 20%   |
| Width x length                                     | 2 m x 50 m  |
| Water vapour diffusion resistance coefficient      | 593432 μ ± 10%  |
| (Nail) tear resistance - average value             | ≥45 N (longitudinally)<br>≥50 N (crosswise)             |
| (Nail) tear resistance - average value             |   |
| Maximum tensile strength average value             | ≥80 N/50 mm (longitudinally)<br>≥60 N/50 mm (crosswise) |
| Elongation at break                                | ≥150 % (longitudinally)<br>≥190 % (crosswise)           |
| Impact strength                                    | ≥200 mm (A method)                                      |
| Vapour diffusion resistance after artificial aging | A change no greater than +/- 50%                        |
| Rectilinearity                                     | Deflection of 75 mm/10 m or lower                       |
| Visible flaws                                      | No visible flaws  |
| Reaction to fire                                   | E   |



# INSTALLATION ACCESSORIES

## DRIVER BITS

TYPE PH-2, TX-20, TX-30



| Code        | Type  | Lino size            | Screw type |
|-------------|-------|----------------------|------------|
| PH-S2-02110 | PH-2  | 35, 55, 85           | WDB, WSR   |
| PH-S2-02160 | PH-2  | 105, 135             | WDB, WSR   |
| PH-S2-02250 | PH-2  | 155, 185             | WDB, WSR   |
| PH-S2-02350 | PH-2  | 235, 285             | WDB, WSR   |
| TX-20S2-160 | TX-20 | 35, 55, 85, 105, 135 | WDB, WSR   |
| TX-20S2-250 | TX-20 | 155, 185             | WDB, WSR   |
| TX-20S2-350 | TX-20 | 235, 285             | WDB, WSR   |
| TX-30S2-160 | TX-30 | 35, 55, 85, 105, 135 | WBSW       |
| TX-30S2-250 | TX-30 | 155, 185             | WBSW       |
| TX-30S2-350 | TX-30 | 235, 285             | WBSW       |

## DRILL BITS FOR CONCRETE TYPE SDS - 5.0 mm

FOR WBSW AND WB6-C SCREWS



| Code      | Dimensions | Effective length [mm] |
|-----------|------------|-----------------------|
| H-A782404 | 5.0 x 110  | 60                    |
| H-A782406 | 5.0 x 160  | 110                   |
| H-A782407 | 5.0 x 210  | 160                   |
| H-A782408 | 5.0 x 260  | 210                   |
| H-A782409 | 5.0 x 310  | 260                   |

## COUNTERSINK DRILL FOR DWS-500 EXTENSION - 5.0 MM

FOR WBSW AND WB6-C SCREWS



| Code       | Dimensions | Effective length [mm] |
|------------|------------|-----------------------|
| WSDP-05100 | 5.0 x 100  | 50                    |

## WSDP DRILL EXTENSION WITH WEDGE

FOR WSDP-05100 DRILL



| Code    | Effective length [mm] |
|---------|-----------------------|
| DWS-500 | 500                   |

**Wkręt-met®**

**KLIMAS**

## TECHNICAL DATA

Introduction

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## Introduction

### Fastening of flat roof thermal insulation and waterproofing systems

#### I. Basic information

Roof slopes are exposed to weathering including:

- wind load – wind-induced suction, shearing force, bending force
- exposure to rain – rainfall
- snow load
- exposure to the sun – UV radiation

To prevent damage which is likely to occur on flat roofs it is essential that membrane and layers of thermal insulation materials be installed correctly.

Correct installation of thermal insulation and waterproofing materials for flat roofs requires suitable fixings to be used on a given roof surface. It is also very important to apply appropriate fastener number and spacing in particular roof zones.

#### II. Flat roof zones

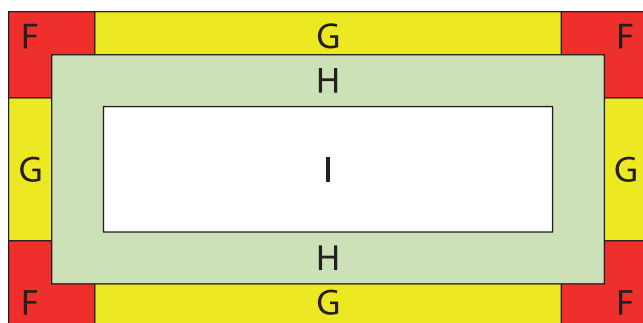
It is essential to use the appropriate number of fixings for particular roof zones of a structure, which always depends on the wind zone, structure's height and surroundings.

Roof slope can be divided into four zones:

- corner zone
- outer and inner edge zones
- central zone.

The appropriate number of fixings for particular zones will ensure fault-free and reliable roofing. Using too few fixings might result in the waterproofing membrane being damaged or even blown off.

The appropriate number of fixings should be calculated according to the wind actions standard PN-EN-1991-1-4:2008 (based on Eurocode 1)



- Corner zone F
- Outer edge zone G
- Inner edge zone H
- Central zone I

Fig. 1 Flat roof zones



#### III. Requirements for fasteners

According to the guidelines provided by ETAG 006 for fasteners for mechanical fixing of flat roof thermal insulation and waterproofing systems, fasteners must meet the following conditions:

- pull-out resistance,
- resistance to self-unscrewing of the fastener from the decking made from profiled roof sheets,
- resistance to corrosion according to Kesternich test (min. 15 cycles, DIN 500 2.0 S standard),
- fastener impact resistance.

According to guidelines the following fixing methods with roof fasteners can be applied:

- telescopic fixing (plastic sleeve + self-drilling or self-tapping screw) – for flat roofs with thermal insulation systems,
- rigid fixing (steel washer + screw) – for flat roofs without thermal insulation (for waterproofing systems only).

#### IV. Flat roof substrates

Guidelines for the use of roof fasteners provide for testing of the following substrates:

- profiled sheeting with thickness of 0.75 – 0.9 mm
- profiled sheeting with thickness of over 0.9 mm – 2 x 1.5 mm,
- concrete decking (concrete, lightweight concrete slabs),
- timber boarding (timber, plywood, OSB).

Resistance parameters for roof decking are specified in technical approvals or guidelines provided by manufacturer.

Application of fasteners that meet all the above-listed requirements and conditions will allow for long-lasting and reliable serviceability of a structure.

#### V. Installation recommendations

In order to correctly install fasteners it is important to choose appropriate power tools with an adjustable clutch, drills and driver bits of a suitable diameter.

### VI. Calculation methods for flat roof loads

Correct calculation of the loads acting on particular zones of the flat roof should be based on relevant standards and regulations. All the necessary information on wind-induced suction values is provided in the PN-EN 199-1-4:2008 standard „wind actions..” – the standard divides the area of Poland into three wind zones. One of the coefficients necessary for the calculations is the basic wind speed, whose values will vary for different locations of a structure within a given zone.

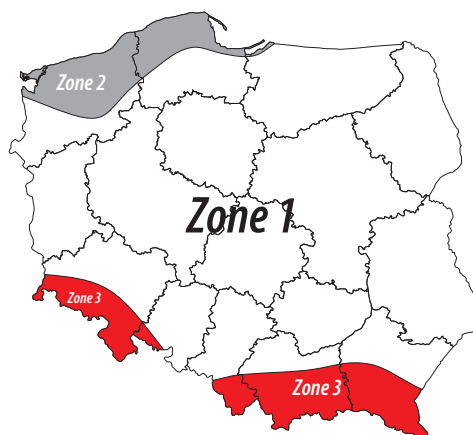


Table 1. Basic wind speed

| Zone | $v_{b,0}$<br>[m/s] | $v_{b,0}$<br>[m/s]                 | $q_{b,0}$<br>[kN/m <sup>2</sup> ] | $q_{b,0}$<br>[kN/m <sup>2</sup> ]  |
|------|--------------------|------------------------------------|-----------------------------------|--|
|      | A ≤ 300 m          | A > 300 m                          | A ≤ 300 m                         | A > 300 m  |
| 1    | 22                 | $22 \times [1 + 0.0006 (A - 300)]$ | 0.30                              | $0.30 \times [1 + 0.0006 (A - 300)]^2$   |
| 2    | 26                 | 26                                 | 0.42                              | 0.42   |
| 3    | 22                 | $22 \times [1 + 0.0006 (A - 300)]$ | 0.30                              | $0.30 \times [1 + 0.0006 (A - 300)]^2 \times \left[ \frac{20000 - A}{20000 + A} \right]^2$ |

Fig. 2. Map of wind zones in Poland

$v_{b,0}$  – basic wind speed (m)  
 $q_{b,0}$  – fundamental value of wind speed pressure (m)  
 Note: A – height above sea level (m)

Tab 2. Terrain categories

| Terrain categories and parameters |   |
|-----------------------------------|---|
|                                   | <b>TERRAIN CATEGORY 0</b><br>Sea, costal area exposed to the sea  |
|                                   | <b>TERRAIN CATEGORY I</b><br>Lakes or areas with negligible vegetation and no obstacles   |
|                                   | <b>TERRAIN CATEGORY II</b><br>Terrain with low vegetation, such as grass, and isolated obstacles (trees, buildings) spaced at least 20 times their height                                   |
|                                   | <b>TERRAIN CATEGORY III</b><br>Terrain covered with regular vegetation or buildings or with isolated obstacles spaced no more than 20 times their height (rural, suburban and wooded areas) |
|                                   | <b>TERRAIN CATEGORY IV</b><br>Terrain in which at least 15% of the surface is covered with buildings of average height exceeding 15 m   |