



Annex 2

Performance of Guardian Fastening system on different substrates

Characteristic values are calculated from the following formula:

$$R_k: \alpha (X_m - (k \times s))$$

where: R_k = characteristic y values of axial load resistance

α = corr. factor for tested substrate spec. compared with nominal substrate spec.

X_m = mean axial pull-out load for 10 specimens

$k = 1,92$ (according to Table D1 in EN-1990:2002)

s = standard deviation

Table 2: Concrete substrate ¹⁾

| Fastener | Substrate | Washer | R _k : Characteristic values of axial load resistance (kN) |
|-----------------------------------|-----------|--------|--|
| GUARDIAN CS 6.1 / ACS-6.1 | C25-C30 | SP 50 | 4.28 |
| GUARDIAN B NRF 5.5 | C25-C30 | SP-50 | 1.79 |
| GUARDIAN BN 5.6 | C25-C30 | SP 50 | 1.92 |
| GUARDIAN CP & CPN (Polypropylene) | C25-C30 | - | 1.57 |
| GUARDIAN HD 6.1 | C25-C30 | SP 50 | 4.83 |
| GUARDIAN LBS 6.0 | C20-C25 | SP 50 | 2.92 |
| GUARDIAN LBS 6.0 | C25-C30 | SP 50 | 3.26 |
| GUARDIAN CS-S 6.1 | C25-C30 | - | 2.92 |
| GUARDIAN CS-S 6.1 | C32-C40 | - | 3.29 |
| GUARDIAN CS-S 6.1 | C40-C50 | - | 3.69 |

¹⁾ See clause 2 regarding hole diameter and drill depth

Table 3: Light weight concrete substrate ²⁾

| Fastener | Substrate | Washer | R _k : Characteristic values of axial load resistance (kN) |
|--------------------|-------------------------------|-----------|--|
| GUARDIAN LBS 6.0 | Density 600 kg/m ³ | SP 50 | 2.07 |
| GUARDIAN LBS 8.0 | Density 450 kg/m ³ | SP-40-LBS | 0.93 |
| GUARDIAN LBS 8.0 | Density 550 kg/m ³ | SP-40-LBS | 1.44 |
| GUARDIAN HD 6.1 | Density 600 kg/m ³ | SP 50 | 1.36 |
| GUARDIAN LBS-S 6.0 | Density 450 kg/m ³ | SP 50 | 1.34 |

²⁾ Autoclaved aerated concrete units according to EN 12602:2016