

Eurocode 011390 (single shot) - P560 & P230
 Eurocode 053953 (collated) - P560
 Eurocode 011391 (in tube) - P525L

Description

→ Cladding panels / roofing

Material properties

The HSBR 14 nails are composed of :

→ **Carbon steel shank**

- Ultimate tensile strength : 2300 N/mm²
- Yield strength : 1600 N/mm²
- Mechanical zinc plating, min zinc coating 10 µm

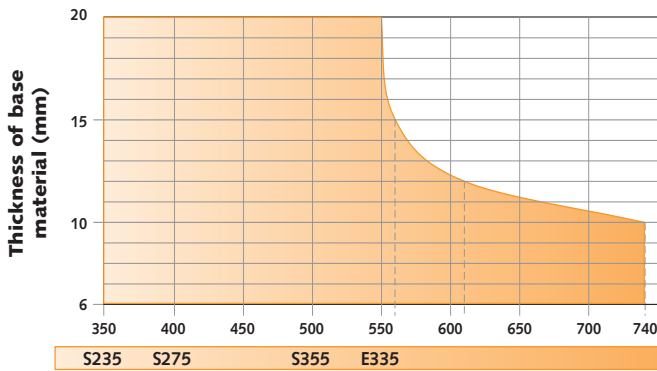
→ **Steel washer**

- Min zinc coating 8 µm
- Electrogalvanised
- The washer is designed to give effective clamping force

Tools

P560 - P230 - P525L

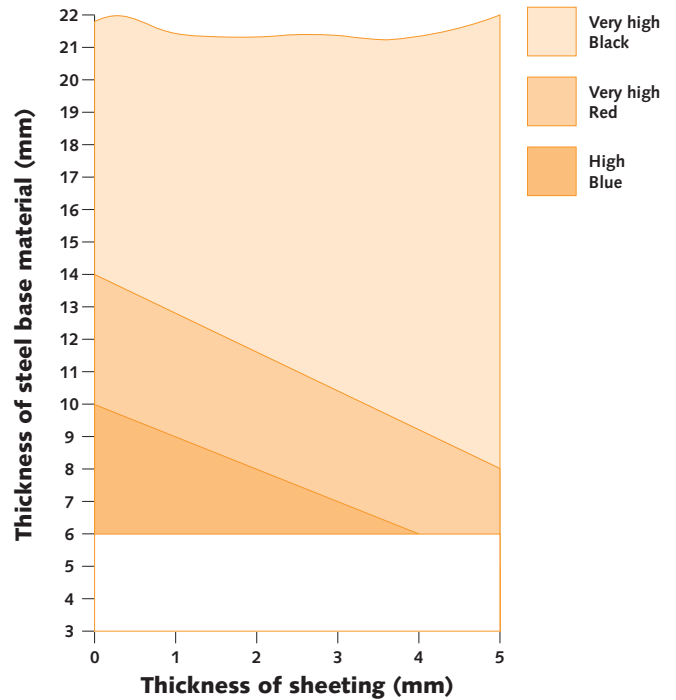
Application limit



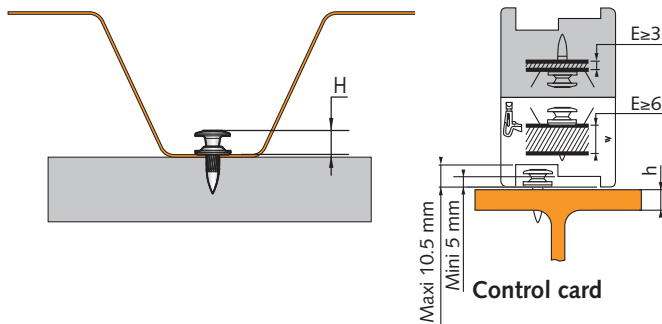
Designation according to European standard EN 10027-1

Ultimate tensile strength of base material (N/mm²)

Power setting



Fixing control



| Thickness of base material | H _{min} ⁽¹⁾ (mm) | H _{max} ⁽¹⁾ (mm) |
|----------------------------|--------------------------------------|--------------------------------------|
| h ≥ 6 mm | 5 | 10.5 |

⁽¹⁾ Values obtained with 0.75 mm steel sheet.



→ **Base material :**

Resistance of base material S235 and with a thickness higher than 6mm.

According to European Technical Approval ETA N° 08/0040

→ **Steel sheets and style of anchoring :**



1 Sheet



2 Sheets



2 Sheets



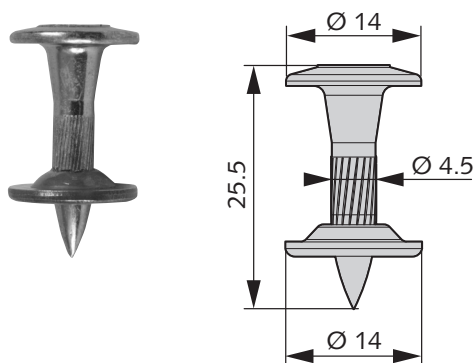
4 Sheets

| Sheet thickness (mm) | Characteristic loads [kN] | | Design loads [kN] | | Recommended loads [kN] | | Style of anchoring |
|----------------------|---------------------------|----------|-------------------|----------|------------------------|-----------|--------------------|
| | Shear | Tensile | Shear | Tensile | Shear | Tensile | |
| | V_{Rk} | N_{Rk} | V_{Rd} | N_{Rd} | V_{Rec} | N_{Rec} | |
| 0.63 | 4.2 | 5.3 | 3.4 | 4.2 | 2.2 | 2.8 | A B C D |
| 0.75 | 5.8 | 6.6 | 4.6 | 5.3 | 3.1 | 3.5 | A B C D |
| 0.88 | 7.7 | 7.7 | 6.2 | 6.2 | 4.1 | 4.1 | A B C D |
| 1.00 | 8.6 | 8.2 | 6.9 | 6.6 | 4.6 | 4.4 | A B C D |
| 1.13 | 9.1 | 9.1 | 7.3 | 7.3 | 4.9 | 4.9 | A |
| 1.25 | 9.5 | 9.5 | 7.6 | 7.6 | 5.1 | 5.1 | A |
| 1.50 | 10.0 | 10.1 | 8.0 | 8.1 | 5.3 | 5.4 | A |
| 1.75 | 10.0 | 10.3 | 8.0 | 8.2 | 5.3 | 5.5 | A |
| 2.00 | 10.0 | 10.4 | 8.0 | 8.3 | 5.3 | 5.5 | A |
| 2.50 | 10.0 | 10.5 | 8.0 | 8.4 | 5.3 | 5.6 | A |

$V_{Rd} = V_{Rk} / \gamma_M$: the design load is calculated from the characteristic load and a partial safety factor $\gamma_M = 1.25$.

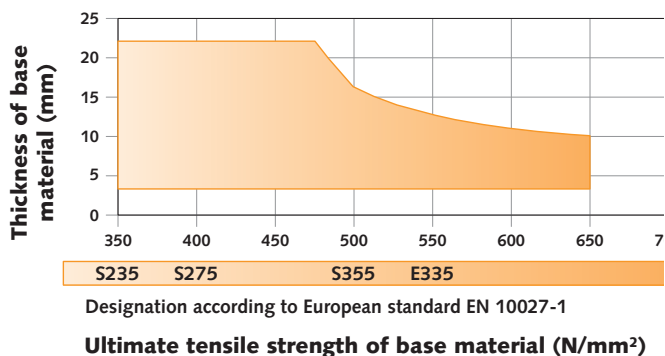
$N_{Rd} = \alpha_{cycl} \times N_{Rk} / \gamma_M$: the design load is calculated from the characteristic load and a partial safety factor $\gamma_M = 1.25$ and $\alpha_{cycl} = 1$.

For the calculation of the recommended load, we applied the partial safety factor $\gamma_F = 1.5$.

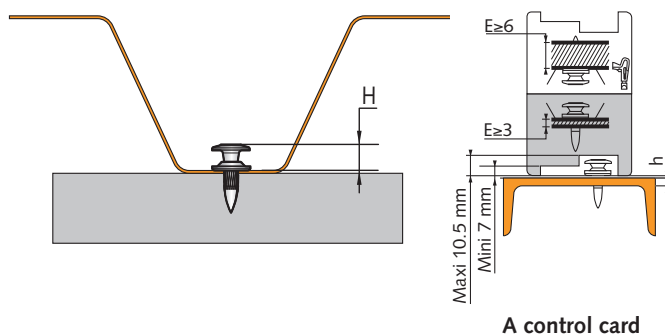


Eurocode 030750 (single shot) - P560 & P230
 Eurocode 053952 (collated) - P560
 Eurocode 030760 (in tube) - P525L

Application limit



Fixing control



| Thickness of base material | $H_{\min}^{(1)}$ (mm) | $H_{\max}^{(1)}$ (mm) |
|---------------------------------|-----------------------|-----------------------|
| $3 \leq h < 6 \text{ mm}^{(2)}$ | 7 | 10.5 |
| $h \geq 6 \text{ mm}$ | 5 | 10.5 |

⁽¹⁾ Values obtained with 0.75 mm steel sheet

⁽²⁾ French rules AT CSTB

Description

Cladding panels / roofing

Material properties

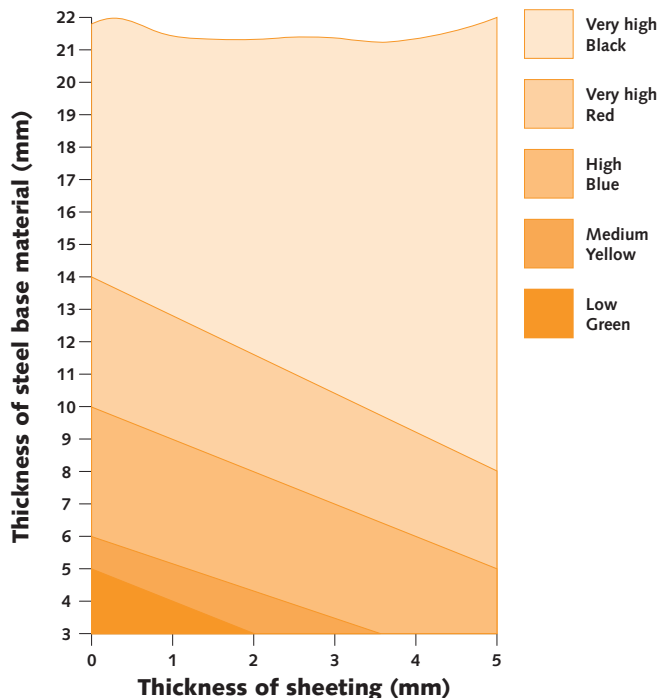
The SBR 14 nails are composed of :

- **Carbon steel shank**
 - Ultimate tensile strength : 2300 N/mm²
 - Yield strength : 1600 N/mm²
 - Electrogalvanised, min zinc coating 7 µm
- **Steel washer**
 - Min zinc coating 8 µm
 - Electrogalvanised
 - The washer is designed to give effective clamping force
- **Kesternitch test, 2 cycles exposure**

Tools

P560 - P230 - P525L

Power setting





According to French Rules (Technical Approval Issue from CSTB, n° 5/04-1775)

| Thickness of base material S235 quality | Characteristic load (kN), for connection of one sheet with thickness 0,75mm fuk > 400 N/mm ² (S280GD) N _{Rk} |
|---|--|
| 3 ≤ h < 6 mm | 3 |
| h ≥ 6 mm | 6 |

According to DIBT German Approval n° z-14.1-4

→ **Base material :**

Resistance of base material S235 and with a thickness higher than 6mm.

→ **Steel sheets and style of anchoring :**



1 Sheet



2 Sheets



2 Sheets



4 Sheets

| Sheeting thickness (mm) | Characteristic loads [kN] | | Design loads [kN] | | Recommended loads [kN] | | Style of anchoring |
|-------------------------|---------------------------|-----------------|-------------------|-----------------|------------------------|------------------|--------------------|
| | Shear | Tensile | Shear | Tensile | Shear | Tensile | |
| | V _{Rk} | N _{Rk} | V _{Rd} | N _{Rd} | V _{Rec} | N _{Rec} | |
| 0.63 | 3.4 | 2.4 | 2.5 | 1.8 | 1.7 | 1.2 | A B C D |
| 0.75 | 4.4 | 4.0 | 3.3 | 3.0 | 2.2 | 2.0 | A B C D |
| 0.88 | 5.6 | 5.2 | 4.2 | 3.9 | 2.8 | 2.6 | A B C D |
| 1.00 | 6.8 | 6.4 | 5.1 | 4.8 | 3.4 | 3.2 | A B C D |
| 1.13 | 8.2 | 7.8 | 6.1 | 5.9 | 4.1 | 3.9 | A |
| 1.25 | 9.4 | 9.4 | 7.1 | 7.1 | 4.7 | 4.7 | A |
| 1.50 | 9.4 | 9.4 | 7.1 | 7.1 | 4.7 | 4.7 | A |
| 1.75 | 9.4 | 9.4 | 7.1 | 7.1 | 4.7 | 4.7 | A |
| 2.00 | 9.4 | 9.4 | 7.1 | 7.1 | 4.7 | 4.7 | A |
| 2.50 | 9.4 | 9.4 | 7.1 | 7.1 | 4.7 | 4.7 | A |

$V_{Rd} = V_{Rk} / \gamma_M$: the design load is calculated from the characteristic load and a partial safety factor $\gamma_M = 1.33$.

$N_{Rd} = \alpha_{cycl} \times N_{Rk} / \gamma_M$: the design load is calculated from the characteristic load and a partial safety factor $\gamma_M = 1.33$ and $\alpha_{cycl} = 1$.

For the calculation of the recommended load, we applied the partial safety factor $\gamma_F = 1.5$.