# Info Sheet
# Green Roof Ballast

When calculating the structural loading capacity of a roof, the additional weight of a green roof, and specifically in a fully-saturated state, must be taken into consideration. Applicable legislation must be observed. Where a gravel or flagging covering is present, a green roof with the same or a smaller area load can be installed without the need for special verification. Experience has shown that areas can be found even on roofs with limited loading-carrying capacity (e.g. walls, uprights or beams) where a greater fill of substrate or mounds is possible. For example, taller perennials or small trees can be planted in such areas, increasing design possibilities. However, the additional weight cannot be ignored. The following table gives an overview of the weight of each individual layer. The decisive factor is the thickness of the substrate layer, as each centimetre in this case means an additional ballast of about 11–15 kg/m² (with mixed substrates even up to 19 kg/m²). These figures already take substrate settling into consideration.

| Load of each individual layer of a green roof | Build-up height | Weight (approx.) dry / saturated | | Notes |
|---|---|---|---|---|
| **Protective layer** | [mm] | [kg/m²] | [kg/m²] | |
| Slip Sheet TGF 20 | 0.2 | 0.2 | 0.2 | The values listed here refer to flat roofs only. The water storage capacity of pitched roofs, and in particular steep roofs, may vary. |
| Root Barrier WSF 40 | 0.4 | 0.4 | 0.4 | |
| Root Barrier WSB 100-PO | 1.1 | 1.1 | 1.1 | |
| Protection Mat TSM 32 | 3.0 | 0.3 | 3.3 | |
| Protection Mat SSM 45 | 5.0 | 0.5 | 5.5 | |
| Protection Mat BSM 64 | 7.0 | 0.7 | 7.7 | |
| Protection Mat WSM 150 | 17.0 | 1.5 | 13.5 | |
| Protection Mat ISM 50 | 6.0 | 0.9 | 4.9 | |
| Aquafleece AF 300 | 2.4 | 0.3 | 3.3 | |
| Elastosave ES 30 | 3.0 | 2.6 | 2.6 | |
| **Drainage layer** | [mm] | [kg/m²] | [kg/m²] | |
| Floradrain® FD 25-E | 25 | 1.6 | 4.6 | If the drainage layer is to be used as dam-up irrigation, which is sometimes the case with intensive green roofs, it should be taken into consideration when calculating the structural loading capacity of the roof. |
| Floradrain® FD 40-E | 40 | 1.9 | 6.9 | |
| Floradrain® FD 60 neo infilled with Zincolit® Plus (Additional water pounding 50 mm) | 60 | 30.0 | 40.0 (+ 35.0) | |
| Floraset® FS 50 studs downwards | 50 | 0.6 | 3.6 | |
| Floraset® FS 75 studs downwards | 75 | 1.0 | 4.0 | |
| Elastodrain® EL 202 | 19 | 19.0 | 19.0 | |
| Protectodrain® PD 250 | 25 | 5.0 | 5.0 | |
| Stabilodrain® SD 30 driveway / green roof | 32 | 3.0 | 5.0 / 11.0 | |
| SlopeTec® ST 45 | 45 | 2.0 | 14.0 | |
| Fixodrain® XD 20 | 20 | 1.0 | 4.0 | |
| Fixodrive® FX 50 | 20 | 1.8 | 4.8 | |
| Drainage Mat DBV 10 | 10 | 0.85 | 0.85 | |
| Retention Spacer RS 60 | 60 | 2.2 | till 57.2 | |
| Retention Spacer RSX 65 | 65 | 6.2 | till 66.2 | |
| Retention Spacer RSX 100 | 100 | 6.5 | till 101.5 | |
| **Vegetation support layer (compacted)** | [mm] | [kg/m²] | [kg/m²] | |
| Zincolit® | | 11.0 | 13.0 | These load values are considered to be reference values for structural calculations. A deviation of +/- 1.0 kg/m²/cm is possible! |
| Zincolit® Plus | 10 | 10.2 | 13.0 | |
| System Substrate “Sedum Carpet” | 10 | 11.2 | 14.0 | |
| System Substrate “Rockery Type Plants” | 10 | 10.0 | 14.0 | |
| System Substrate “Heather with Lavender” | 10 | 10.0 | 15.0 | |
| System Substrate “Lawn” | 10 | 9.5 | 14.0 | |
| System Substrate “Roof Garden” | 10 | 10.0 | 15.0 | |
| **Plant layer** | | [kg/m²] | | Given the additional tilting moments with wind pressure, increased point loads can be expected with large perennials and trees. Individual verification are to be provided.<br><br>* The detail refers to the area below the future crown. |
| Sedum-grass-herb green roofs, dry lawns | | 5–10 | | |
| Perennials and low-growing shrubs | | 10 | | |
| Lawn | | 5–10 | | |
| Perennials and shrubs up to a height of 1.5 m | | 20 | | |
| Shrubs up to a height of 3 m | | 30 | | |
| Large shrubs up to a height of 6 m | | 40 * | | |
| Small trees up to 10 m in height | | 60 * | | |
| Trees up to 15 m in height | | 150 * | | |

The above details refer to the individual load of each individual layer. Traffic and snow loads must be taken into consideration additionally.



**ZinCo GmbH**
Lise-Meitner-Strasse 2 · 72622 Nürtingen · Germany
Phone +49 7022 6003-0
info@zinco-greenroof.com · www.zinco-greenroof.com