

Evaluation of creep behaviour of WPC-Decking according to EN 15534-4

Scope

Creep is the behaviour of a material to change the form under load as a function of time. Creep of decking boards made from WPC is evaluated according EN 15534-4 and EN 15534-1. The standard EN 15534-4 requires a maximum creep in a certain load-time set up.

Client

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Material:

Material is a WPC-decking board in form of a hollow profile. Product name from IDECK is "DURO".



Figure 1: Example of WPC decking profile DURO.

Methods:

Test is designed according EN 15534-4 chapter 4.5.3 for decking boards with a known maximum allowed span and carried out according EN 15534-1 chapter 7.4.1. General principle of load application is a 3-point-bending-apparatus. Length of boards is 500 mm. A distance between the supporters of 400 mm is used. Climate during creep test is 23°C and 50% relative humidity. Duration under load is 504 h (3 weeks). 3 replicates are used. Applied load is 1000 N.

Results:

Results are summarised in table 1. All replicates exhibited lower values as required from EN 15534-4. Therefore the material passes the test regarding deflection during load (Δ_S) and permanent deflection after load (Δ_{SR}).

Table 1: Results of WPC-deckings after creep testing at 23°C and 50% relative humidity for 3 weeks under a load of 1000 N and a supporter distance of 400 mm.

sample	Δ_S [mm]	Δ_{SR} [mm]	maximum Δ_S [mm]	maximum Δ_{SR} [mm]	evaluation
A	0,57	0,54	≤ 13	≤ 5	pass
B	0,58	0,63	≤ 13	≤ 5	pass
C	0,37	0,57	≤ 13	≤ 5	pass