

Gunnebo cut nail in light weight concrete

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Cut nails used in light weight concrete have shown the best results compared to common nails. However, the holding power of cut nails depends on the way of nailing. Cross-nailing in at least two opposite directions will increase the holding power. Furthermore the con-

tact between wood and concrete surface must be tight, otherwise there is a risk that an earlier fixed nail will get loose. Wooden beams would be prepared by preboring before nailing. Fig 1 and 2 give examples of Gunnebo cut nails.

Fig 1. Gunnebo cut nails are supplied in galvanized steel as well as in aluminium.

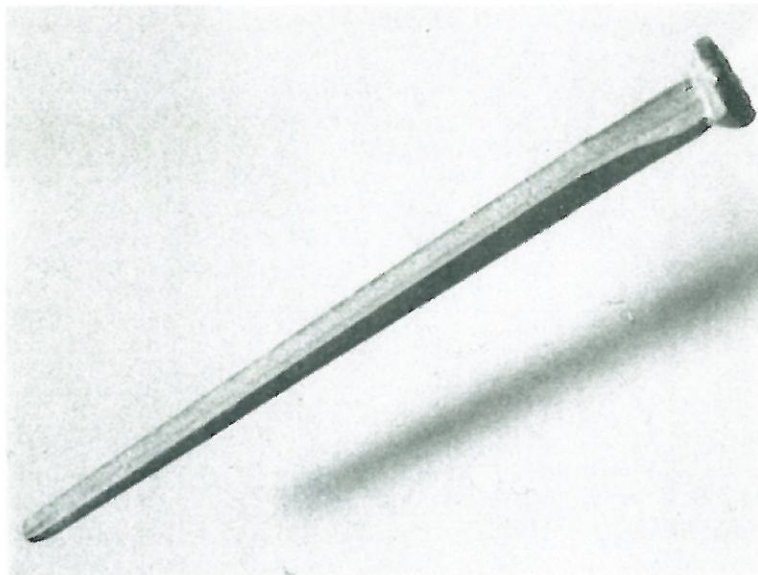
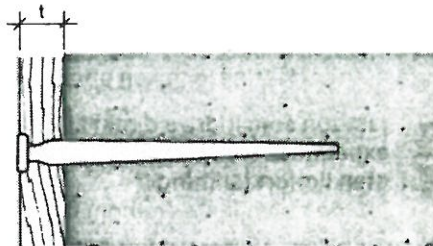
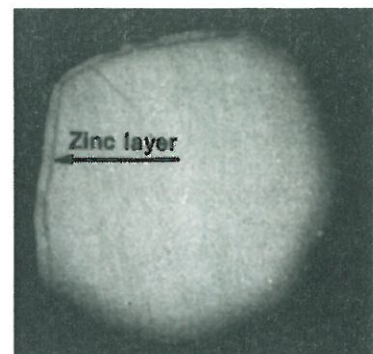


Fig 2. Hot dip galvanized steel. Thickness of zinc coating is in average 70 microns.



PERMITTED LOAD AND SECURITY LEVEL

Fig 3 and 4 are based upon tests by loading the nail parallel (T) and perpendicular (N) to the surface of the concrete block respectively. A "characteristic value" P_5 is calculated, Fig 3. Approximately this value can be defined as the load level having 5% of the test values below P_5 .

Permitted load levels N_p och T_p are calculated by dividing with a security value which is 3.0 and 2.5 for forces perpendicular and parallel to the concrete block surface respectively.

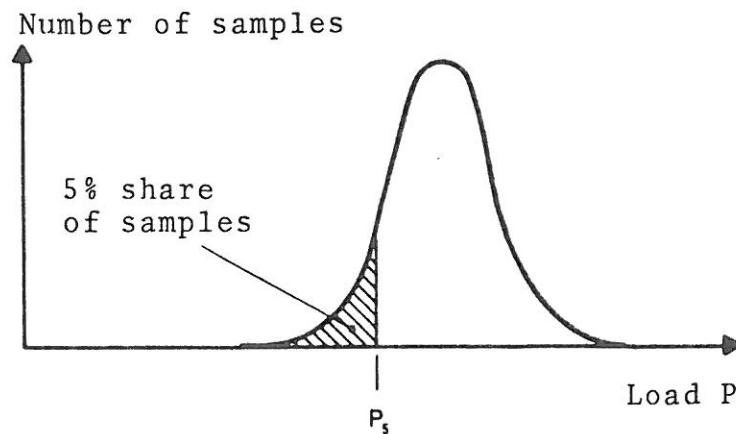


Fig 3. Definition of the characteristic value P_5 taken from a number of pull out or loading tests.

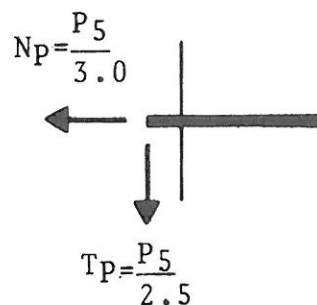
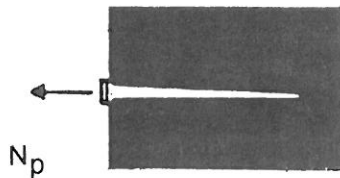


Fig 4. Definition of the permitted load N_p and T_p .

Table 1 and 2 show the permitted load levels of N_p and T_p according to fig 4. The values

have been evaluated from pull out and load tests in SIPOREX light weight concrete.

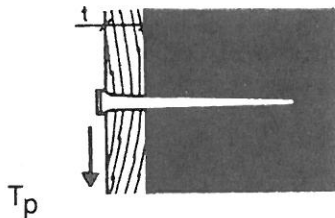
Table 1
Permitted load N_p (Newton)



Nail length mm	Nailing depth mm	Concrete grade			
		400	450	500	600
75	75	—	20	100	200
100	75	—	50	105	—
100	100	20	55	115	250
125	100	40	65	115	350
125	115	45	75	125	—
125	125	75	115	155	500
150	100	70	105	140	—
150	125	75	115	155	—
150	140	95	125	180	—
150	150	115	150	200	—
175	75	—	50	105	—
175	175	165	215	300	—

Security value = 3.0

Table 2
Permitted load T_p (Newton)



Nail length mm	Nailing depth mm	t mm	Concrete grade		
			400	450	500
75	75	0	150	180	240
100	75	25	150	180	240
100	100	0	225	270	320
125	100	25	225	270	320
125	115	10	235	290	340
125	125	0	385	440	500
150	100	50	225	270	340
150	125	25	290	330	400
150	140	10	290	330	400
150	150	0	505	610	660
175	175	0	640	740	790

Security value = 2.5

In fig 5 the average values of max pull out strength is presented. The results have been achieved from tests in SIPOREX light weight

concrete, grade 450, 500 and 600. The average values were evaluated from at least 10 pull out tests of each type of nail.

PULL OUT STRENGTH, NEWTON (IN= 0,10 kp)

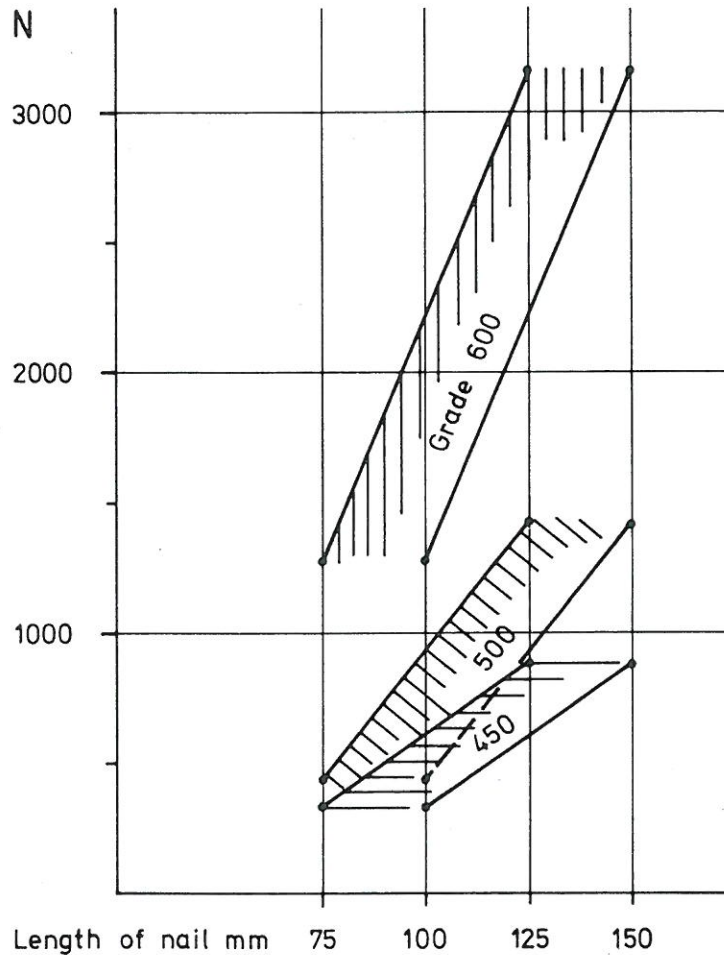


Fig 5. Average values of max pull out strength in different grades of light weight concrete.

Variations in density and pressure tensile strength between different producers may occur.

Grade
 450 = density 0.45
 500 = 0.50
 600 = 0.60

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