EN 13791:2007 (Europe)

NTC 08 – Circ. n. 617 02 febr 2009 (Italy)

Method

Bibliography (1 – 11a - 11b – 11c)

Assessment of in situ compressive strength directly from core tests : see § 7 of EN 13791.

Table 1 gives requirements for the minimum characteristic in-situ compressive strength with respect to the compressive strength classes according to EN 206

Table 1

Compressive strength class according to EN 206	Ratio of in-situ characteristic strength to characteristic strength of standard specimens	Minimum characteristic in-situ strength N/mm^2	
		$f_{ck,\,is,\,cyl}$	$f_{ck,\,is,\,cube}$
C8/10	0,85	7	9
C12/15	0,85	10	13
C16/20	0,85	14	17
C20/25	0,85	17	21
C25/30	0,85	21	26
C30/37	0,85	26	31
C35/45	0,85	30	38
C40/50	0,85	34	43
C45/55	0,85	38	47
C50/60	0,85	43	51
C55/67	0,85	47	57
C60/75	0,85	51	64
C70/85	0,85	60	72
C80/95	0,85	68	81
C90/105	0,85	77	89
C100/115	0,85	85	98

NOTE 1 The in-situ compressive strength may be less than that measured on standard test specimens taken from the same batch of concrete.

NOTE 2 The ratio 0,85 is part of γ_c in EN 1992-1-1: 2004.

Cores to be taken, examined and prepared in accordance with EN 12504-1 and tested in accordance with EN 12390.3.

In situ specified compressive strength is assessed using either approach A (§ 7.3.2) or approach B (§ 7.3.3)

Approach A : q.ty of cores $n \geq 15$

Approach B : q.ty of cores $3 \leq n \leq 14$

7.3.2 APPROACH A – n ≥ 15

The estimated in situ specified strength of the test region is the lower value of :

$$f_{situ,k} = f_{c,m} - k_2 * s$$

Or

$$f_{situ,k} = f_{ci,lowest} + 4$$

Where :

s : standard deviation of the test results or 2 N/mm^2, whichever is the higher value

k_2 : is given in national provisions or, if no value is given, taken as 1.48

Note : the estimate of specified strength using the lowest core result should reflect the confidence that the lowest core result represents the lowest strength in the structure or component under consideration

NTC 08 : $$f_{situ,k} = f_{c,m} - 1.48 * s$$

Linee Guida : same as EN 13791 Approach A

7.3.3 APPROACH B – 3 ≤ n ≤ 14

The estimated in situ specified strength of the test region is the lower value of :

$$f_{situ,k} = f_{c,m} - k$$

Or

$$f_{situ,k} = f_{ci,lowest} + 4$$

Where the margin **k** depends on the number **n** of test results and the appropriate value is selected from following table :

n	EN 13791 (N/mm^2)	Linee Guida (N/mm^2)
3	7	Only mean strength $f_{situ,m}$ § 10.3
4 – 6	7	6
7 – 9	6	5
10 – 14	5	4

$f_{situ,k}$: in situ equivalent specified strength of concrete (N/mm^2)

$f_{ci,m}$: in situ mean strength (N/mm^2)

$f_{ci,lowest}$: in situ lowest core strength (N/mm^2)

NTC 08 : $$f_{situ,k} = f_{c,m} - 8$$

Linee Guida : The estimated in situ specified strength of the test region is the lower value of :

$$f_{situ,k} = f_{c,m} - k$$

Or

$$f_{situ,k} = f_{ci,lowest} + 4$$

Where the margin **k** depends on the number **n** of test results and the appropriate value is selected from previous table.