

POZNAN UNIVERSITY OF TECHNOLOGY INSTITUTE OF BUILDING ENGINEERING DIVISION OF BUILDING AND BUILDING MATERIALS



NON-DESTRUCTIVE CONCRETE TESTS

Ultrasonic pulse velocity test – Measurement Report

Type of construction

Date

Probe type

Name of element

Age of concrete

Relative humidity of concrete

Position	Length of wave	Travel time T	Velocity of wave propagation $V_i = \frac{L}{T}$	$V_i - \overline{V}$	$(V_i - \overline{V})^2$	Comment
	mm	μs	km/s			
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

Arithmetic mean \overline{V} =

Standard deviation $s_V =$

Coefficient of variation $v_V =$

Mean compressive strength of concrete $f_{cm} = MPa$

Final compressive strength of concrete $f'_{cm} = MPa$



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Arithmetic mean \overline{V}	$\overline{V} = \frac{\sum_{i=1}^{n} V_i}{n}$
Standard deviation s _V	$s_V = \sqrt{\frac{1}{n-1}\sum_{i=1}^n (V_i - \overline{V})^2}$
Coefficient of variation v _l	$v_V = \frac{S_V}{V}$
Regression analysis – according to The Building Research Institute (ITB) instruction N^0 209	$f_{cm} = \overline{V} \times 1,08 \times \left[2,75 \times \overline{V} \times \left(v_{V}^{2} + 1\right) - 8,12 + \frac{4,83}{\overline{V}}\right]$
Correction coefficient C	$C = C_1 \times C_2 \times C_3 \times C_4 \times C_5 \times C_6 \times C_7$
Final compressive strength of concrete f'_{cm}	$f'_{cm} = f_{cm} \times C$

CORRECTION COEFFICIENT

i		Ci	
		1,0	0,88
1	Water/cement ratio	2,0	1,00
		3,0	1,21
2		60	1,20
	Aggregate content by volume (in percentage)	70	1,00
		80	0,81
3 A		good	0,84
	Aggregate quality	mediocre	1,00
		bad	1,22
	The section of Constant of Indiana in the sector of the Constant of the sector of the sector of the sector of t	up	1,10
	Location of grain size distribution curve in the field of "good distribution" according to PN-88/B-06250	middle	1,00
		down	0,92
5	Cement	32,5	1,00
5		42,5	1,04
		7	0,91
6		14-20	1,00
	Age (days)	28	1,06
		90	1,13
		>360	1,19
7		dry	1,10
	Relative humidity	air-dry	1,00
		full water	0,90