

# Concrete characteristics according to Eurocode 2

Strength and deformation characteristics of concrete according to Eurocode 1992-1-1

Concrete 

C8/10

Filter

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Concrete class	f <sub>ck</sub> (MPa)	f <sub>ck,cube</sub> (MPa)	f <sub>cm</sub> (MPa)	f <sub>ctm</sub> (MPa)	f <sub>ctk,0.05</sub> (MPa)	f <sub>ctk,0.95</sub> (MPa)	E <sub>cm</sub> (MPa)	ε <sub>c1</sub> (‰)	ε <sub>cu1</sub> (‰)	ε <sub>c2</sub> (‰)	ε <sub>cu2</sub> (‰)	n	ε <sub>c3</sub> (‰)	ε <sub>cu3</sub> (‰)	V <sub>rdmax</sub> (MPa)	V <sub>ck</sub> (MPa)	f <sub>bd,good</sub> (MPa)	f <sub>bd,bad</sub> (MPa)	ξ <sub>MAX</sub> (MPa)	ω <sub>lim</sub> (MPa)
C8/10	8	10	16	1.2	0.8	1.5	25000	1.7	3.5	2	3.5	2	1.75	3.5	1	1.5	1	0.7	0.45	0.365
C12/15	12	15	20	1.6	1.1	2	27000	1.8	3.5	2	3.5	2	1.75	3.5	1.5	2.2	1.5	1	0.45	0.365
C16/20	16	20	24	1.9	1.3	2.5	29000	1.9	3.5	2	3.5	2	1.75	3.5	2	3	2	1.4	0.45	0.365
C20/25	20	25	28	2.2	1.5	2.9	30000	2	3.5	2	3.5	2	1.75	3.5	2.5	3.7	2.3	1.6	0.45	0.365
C25/30	25	30	33	2.6	1.8	3.3	31000	2.1	3.5	2	3.5	2	1.75	3.5	3.1	4.5	2.7	1.9	0.45	0.365
C28/35	28	35	36	2.8	1.9	3.6	32000	2.13	3.5	2	3.5	2	1.75	3.5	3.3	4.9	2.9	2	0.45	0.365
C30/37	30	37	38	2.9	2	3.8	33000	2.2	3.5	2	3.5	2	1.75	3.5	3.6	5.3	3	2.1	0.45	0.365
C32/40	32	40	40	3	2.1	3.9	33400	2.2	3.5	2	3.5	2	1.75	3.5	3.8	5.6	3.1	2.2	0.45	0.365
C35/45	35	45	43	3.2	2.2	4.2	34000	2.25	3.5	2	3.5	2	1.75	3.5	4.2	6	3.3	2.3	0.45	0.365
C40/50	40	50	48	3.5	2.5	4.6	35000	2.3	3.5	2	3.5	2	1.75	3.5	4.6	6.7	3.8	2.6	0.45	0.365
C45/55	45	55	53	3.8	2.7	4.9	36000	2.4	3.5	2	3.5	2	1.75	3.5	5.1	7.4	4.1	2.8	0.45	0.365
C50/60	50	60	58	4.1	2.9	5.3	37000	2.45	3.5	2	3.5	2	1.75	3.5	5.5	8	4.4	3	0.45	0.365
C55/67	55	67	63	4.2	3	5.5	38000	2.5	3.2	2.2	3.1	1.75	1.8	3.1	5.5	8	4.5	3.2	0.35	0.26
C60/75	60	75	68	4.4	3.1	5.7	39000	2.6	3	2.3	2.9	1.6	1.9	2.9	6.3	9.1	4.7	3.3	0.35	0.243
C70/85	70	85	78	4.6	3.2	6	41000	2.7	2.8	2.4	2.7	1.45	2	2.7	7	10.1	4.7	3.3	0.35	0.223
C80/95	80	95	88	4.8	3.4	6.3	42000	2.8	2.8	2.5	2.6	1.4	2.2	2.6	7.5	10.9	4.7	3.3	0.35	0.21
C90/105	90	105	98	5	3.5	6.6	44000	2.8	2.8	2.6	2.6	1.4	2.3	2.6	7.9	11.5	4.7	3.3	0.35	0.204
C100/115	100	115	108	5.2	3.7	6.8	45000	2.8	2.8	2.6	2.6	1.4	2.4	2.6	7.9	11.5	4.7	3.3	0.35	0.204

Formulas:

$f_{cm} = f_{ck} + 8 \text{ (MPa)}$

$f_{ctm} = 0,30 \cdot f_{ck}^{2/3} \text{ for } \leq C50/60$

$f_{ctm} = 2,12 \cdot \ln(1 + (f_{cm} / 10)) \text{ for } > C50/60$

$0,7 \cdot f_{ctk, 0.05} \text{ (5\% fractile)}$

$1,3 \cdot f_{ctk, 0.95} \text{ (95\% fractile)}$

$E_{cm} = 22000 \cdot (f_{cm} / 10)^{0,3}$

$\epsilon_{c1}(\text{‰}) = 0,7 \cdot f_{cm}^{0,31} < 2,8 \text{ for } f_{ck} \geq 50 \text{ MPa}$

$\epsilon_{cu1}(\text{‰}) = 2,8 + 27 \cdot [(98 - f_{cm}) / 100]^4$

$\epsilon_{c2}(\text{‰}) = 2,0 + 0,085 \cdot (f_{ck} - 50)^{0,53}$

$\epsilon_{cu2}(\text{‰}) = 2,6 + 35 \cdot [(90 - f_{ck}) / 100]^4$

$n = 1,4 + 23,4 \cdot [(90 - f_{ck}) / 100]^4$

$\epsilon_{c3}(\text{‰}) = 1,75 + 0,55 \cdot [(f_{ck} - 50) / 40]$

$\epsilon_{cu3}(\text{‰}) = 2,6 + 35 \cdot [(90 - f_{ck}) / 100]^4$

$f_{bd} = 2,5 \cdot \eta_1 \cdot \eta_2 \cdot f_{ctd}$

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