

**APPENDIX D.****DOSAGE****DOSAGE**

As explained in chapter 3, the dosage for the cement paste was constant during the whole study, the water:powder ratio being the only variable. Its variation depended on the amount of added filler, which was added according to the following equation:

$$W_{filler} = \alpha \cdot W_{cement} \cdot \frac{\rho_{filler}}{\rho_{cement}}$$

, where  $\alpha = 0.1, 0.2, 0.3, 0.4$  and  $\rho_{cement} = 3.1 \frac{g}{cm^3}$ .

$W_{cement}$  was determined by calculating the amount of cement in 2 dl of cement paste using the following expression:

$$W_{cement} = \frac{(200cm^3)_{paste}}{Total\ volume\ of\ paste} \cdot Total\ weigh\ of\ cement$$

The total weigh of cement equals 1000g and the total volume of paste is calculated by means of the following equation:

$$Total\ volume\ of\ paste = \frac{(1000g)_{cement}}{\rho_{cement}} + \frac{(450g)_{water}}{\rho_{water}} = 772.58\ cm^3$$

, where  $\rho_{water} = 1 \frac{g}{cm^3}$ .

The following tables give the amount of filler for every mix:

Only 10%	W filler (g)
K101	22,46
K102	22,13
K103	24,63
K104	21,80
K105	22,71
K106	22,96
K107	22,21
K108	22,13
K109	22,71

Table 1. Added amount of filler for the 10% attempt.

Only 20%	W filler (g)
K101	44,93
K102	44,26
K103	49,27
K104	43,59
K105	45,43
K106	45,93
K107	44,43
K108	44,26
K109	45,43

Table 2. Added amount of filler for the 20% attempt.

Only 30%	W filler (g)		
K101	67,39	K113	67,64
K102	66,39	K114	66,64
K103	73,90	K115	67,39
K104	65,39	K116	74,65
K105	68,14	K117	66,89
K106	68,89	K118	67,14
K107	66,64	K119	67,39
K108	66,39	K120	71,40
K109	68,14	K121	71,40
K110	66,89	K122	67,89
K111	68,14	K123	67,89
K112	67,39	K124	67,64
		K125	71,40
		K126	67,64
		K127	67,14

Table 3. Added amount of filler for the 30% attempt.

Only 40%	W filler (g)		
K101	89,85	K113	90,19
K102	88,52	K114	88,85
K103	98,54	K115	89,85
K104	87,18	K116	99,54
K105	90,86	K117	89,18
K106	91,86	K118	89,52
K107	88,85	K119	89,85
K108	88,52	K120	95,20
K109	90,86	K121	95,20
K110	89,18	K122	90,52
K111	90,86	K123	90,52
K112	89,85	K124	90,19
		K125	95,20
		K126	90,19
		K127	89,52

Table 4. Added amount of filler for the 40% attempt.

