

Supplementary Materials:

Figure s1 shows that the cumulative particle size distribution curves of eggshell powder and cement are similar, and the average particle size of eggshell powder is slightly larger than that of cement [24]. Table s1 shows that the ignition loss of eggshell powder is much higher than that of cement, which is mainly because the main component of eggshell powder is calcium carbonate, which will decompose at high temperature [24].

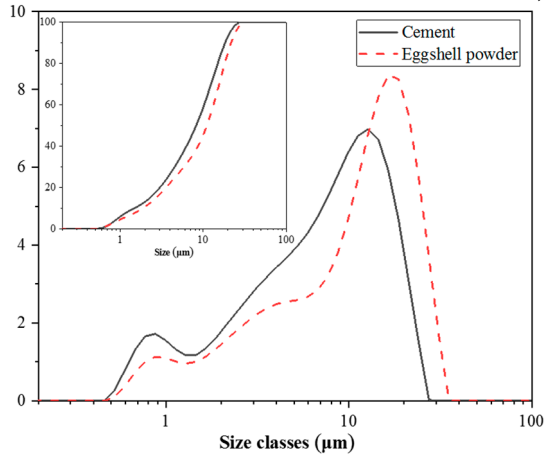


Figure s1. Particle size distributions of cement, and eggshell powder [24].

Table s1. Chemical compositions of cement and eggshell powder [24].

Identification	SiO ₂	Al ₂ O ₃	CaO	Fe ₂ O ₃	MgO	Na ₂ O	K ₂ O	ZnO	TiO ₂	SO ₃	LOI x
Cement	19.40	4.46	64.20	3.00	2.29	0.12	0.98	0.06	0.23	3.83	1.43
Eggshell powder	0.02	0.02	74.2	-	0.69	0.14	0.07	-	-	0.34	24.52

Experimental details are shown as follows: the main component of eggshell powder is calcium carbonate (Figure s2) [24]. As the amount of eggshell powder replaced increases (Table s2) [24], the compressive strength and surface electrical resistivity at the ages of 1,3,7, and 28 days both decrease (Figure s3 and Figure s4) [24], but the decrease in compressive strength is more obvious than that in surface electrical resistivity. In addition, as the amount of eggshell powder replaced increases, the content of chemically bound water and calcium hydroxide at the ages of 1,3,7, and 28 days both decrease (Figure s5, Figure s6, and Table s3) [24].

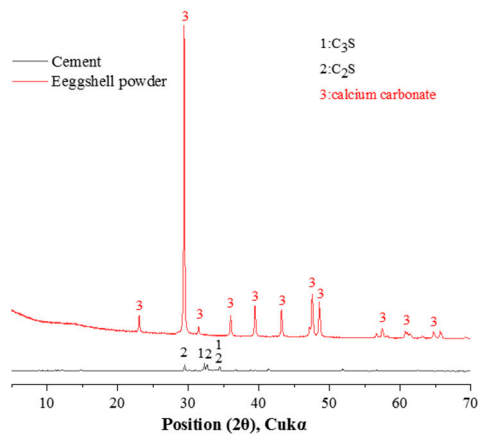
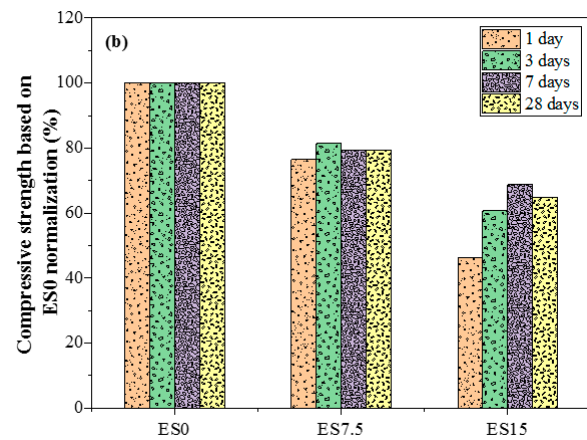
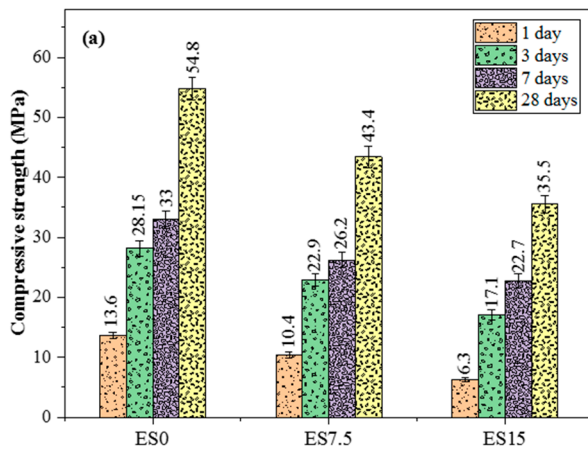


Figure s2. XRD patterns of cement, and eggshell powder [24].

Table s2. Mixtures of samples [24].

	Group	OPC	Eggshell powder	Sand	Water	Water / Binder
Paste	ES0	100	0	-	50	0.5
	ES7.5	92.5	7.5	-	50	0.5
	ES15	85	15	-	50	0.5
Mortar	ES0	100	0	200	50	0.5
	ES7.5	92.5	7.5	200	50	0.5
	ES15	85	15	200	50	0.5



(a) Compressive strength results of ES0, ES7.5, and ES15 at different ages

(b) Compressive strength based on ES0 normalization.

Figure s3. Test results of compressive strength [24].

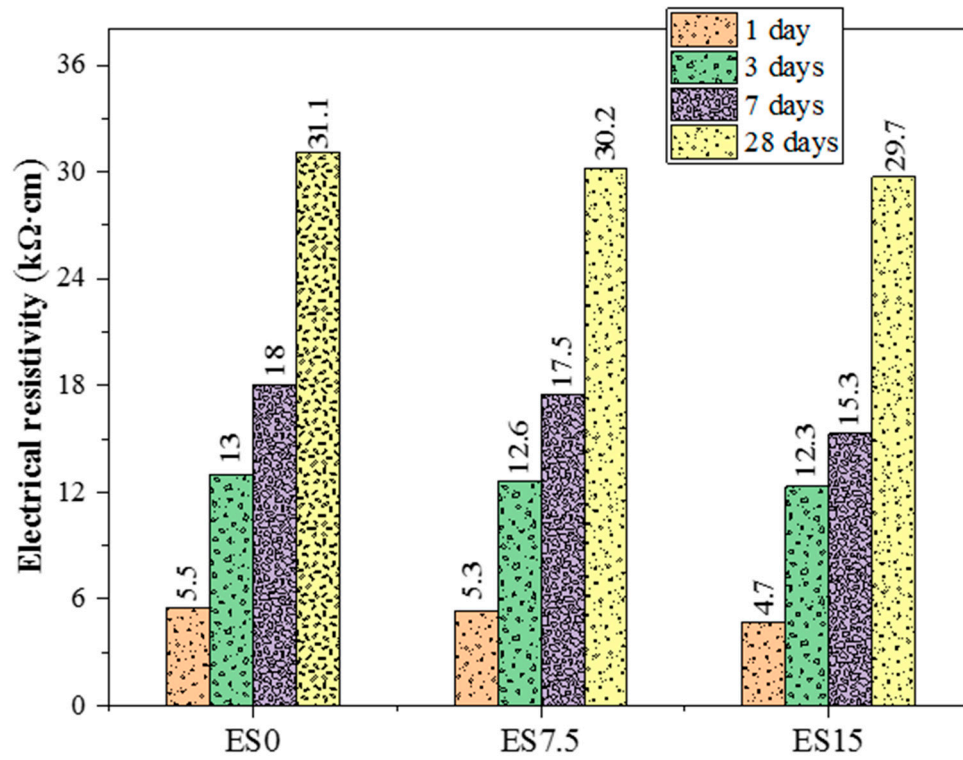


Figure s4. Resistivity test results of ES0, ES7.5, and ES15 [24].

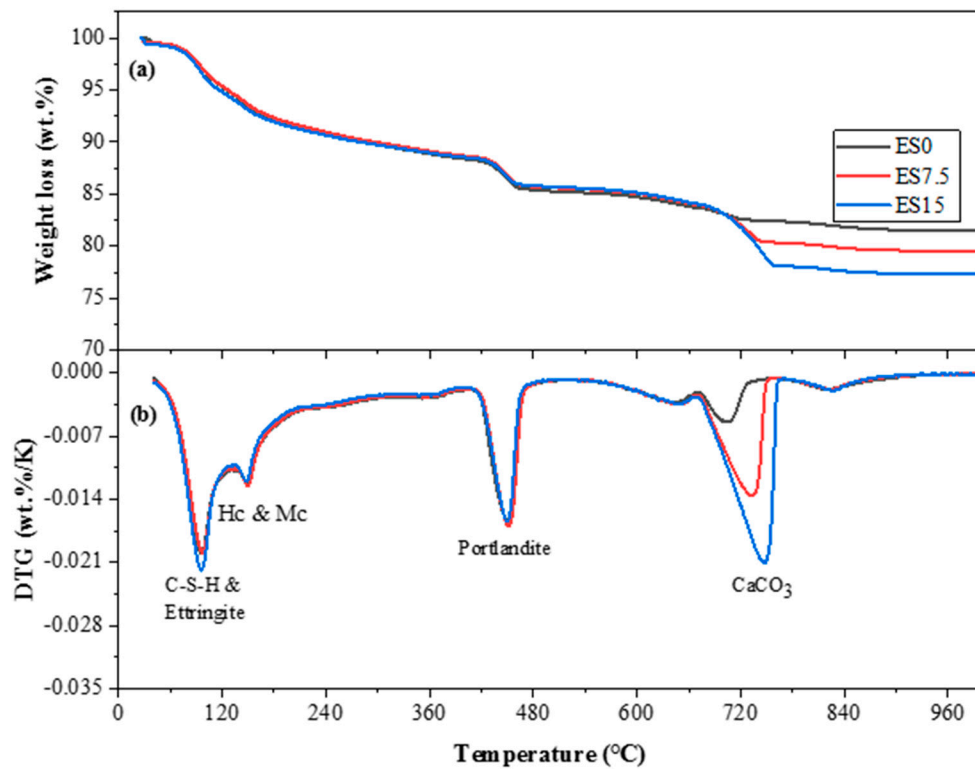


Figure s5. Curves of ES0, ES7.5, and ES15 for 1 days. (a) TGA; (b) DTG [24].

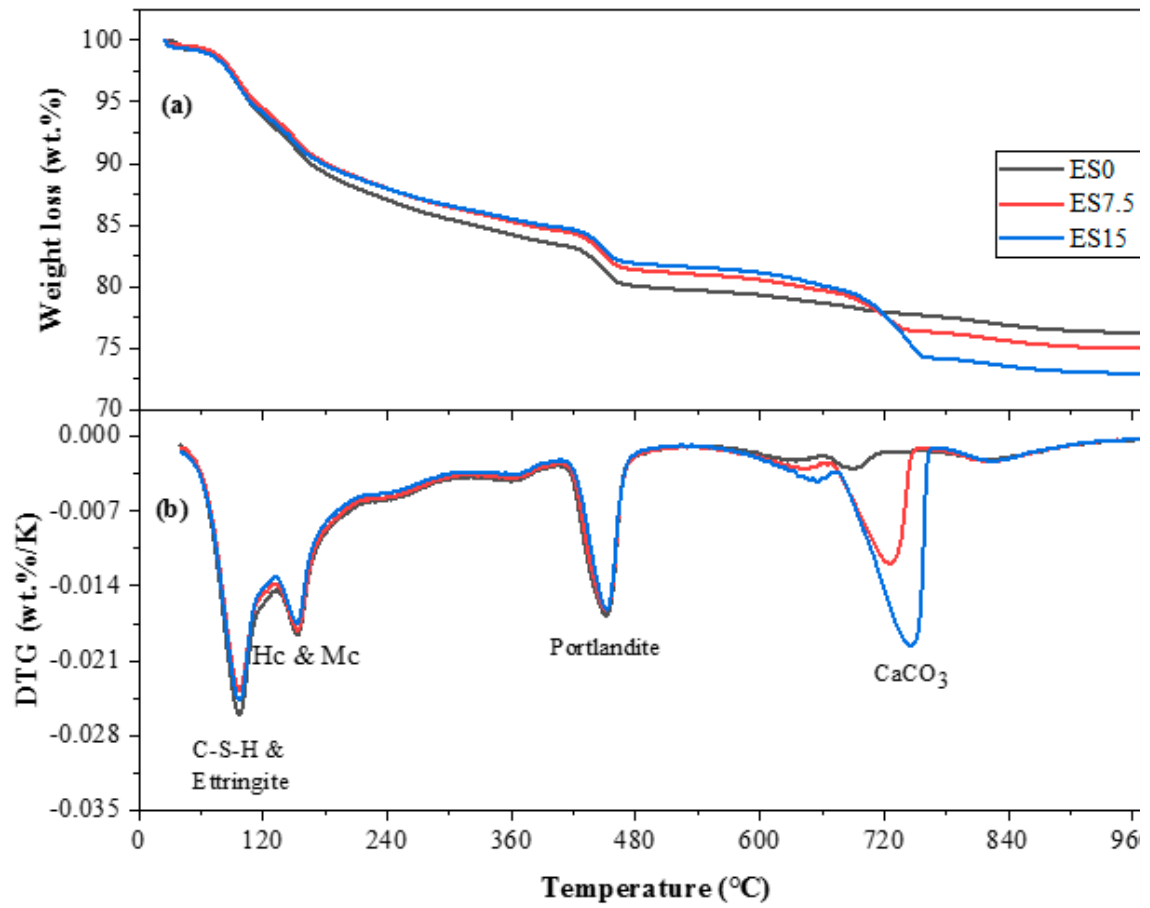


Figure s6. Curves of ES0, ES7.5, and ES15 for 28 days. (a) TGA; (b) DTG [24].

Table s3. Combined water and portlandite of ES0, ES7.5, and ES15 for 1 day and 28 days [24].

wt%	ES0	ES7.5	ES15
Combined water (1 day)	13.15	12.76	11.99
Portlandite (1 day)	14.80	14.59	13.57
Combined water (28 days)	19.55	18.29	16.91
Portlandite(28 days)	18.48	17.18	15.68