frontiers

Supplementary Material

Supplementary Table S1: Chemical composition of two MgO-rich slags, named Slag A and Slag R, measured by XRF (OTH=other minor oxides, LOI=loss on ignition at 950 °C).

Elements (wt. %)	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	Na_2O	K_2O	Cr_2O_3	MnO	LOI	OTH
Slag A	21.05	8.54	11.37	20.87	14.87	0.13	0.17	3.76	2.24	14.15	2.80
Slag R	13.69	5.20	4.64	27.85	23.25	0.28	0.14	0.18	0.62	20.47	4.43

Supplementary Table S2: Chemical composition of CaO-rich slags, named BOF and De-S slag, and stone wool measured by XRF. (OTH=other minor oxides, LOI=loss on ignition at 950 °C).

	CaO	Al_2O_3	SiO_2	MgO	SO_3	Fe_2O_3	Na_2O and K_2O	LOI	OTH
BOF slag	54.6	1.2	12.3	1.9	0.2	21.4	-	2.6	8.4
De-S slag	55.4	2.2	15.2	1.6	5.0	16.1	-	8.7	4.5
Stone wool	18.3	15.4	38.9	11.6	-	11.1	1.7	1.7	3.0

Supplementary Table S3: Physical properties of cellulose and basalt fiber used in this investigation

Type	Length (mm)	Diameter (µm)	Young's modulus (GPa)	Tensile strength (MPa)	Density (g/cm^3)
Cellulose fiber	3	15	8.5	750	1.10
Basalt fiber	6	17	100	4500	2.63

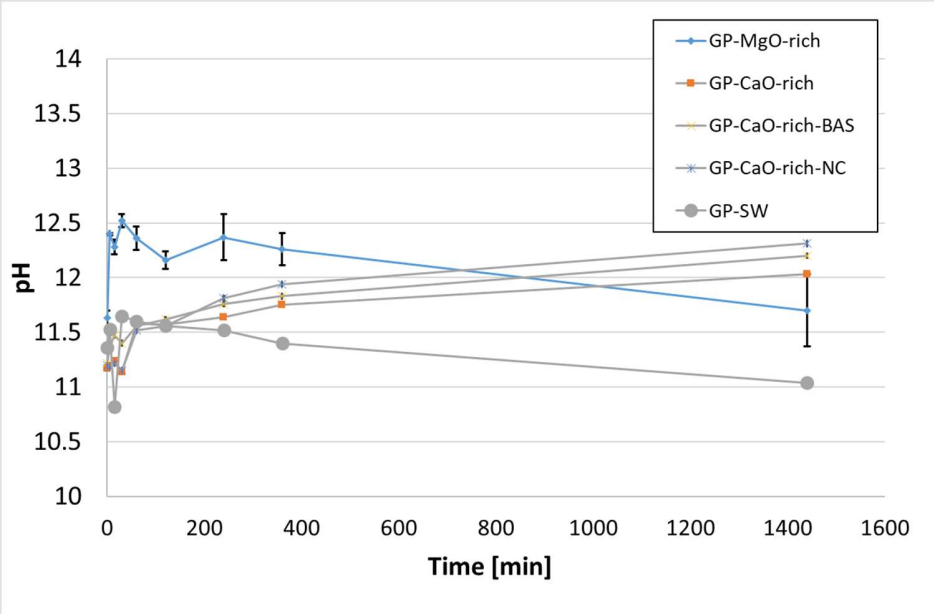


FIGURE S1. Monitoring the pH of water where a piece of sample (S/L=1:10) of each formulation of alkali activated materials was immersed @room temperature. Error bars are reported only for one sample to avoid confusion and overlapping.

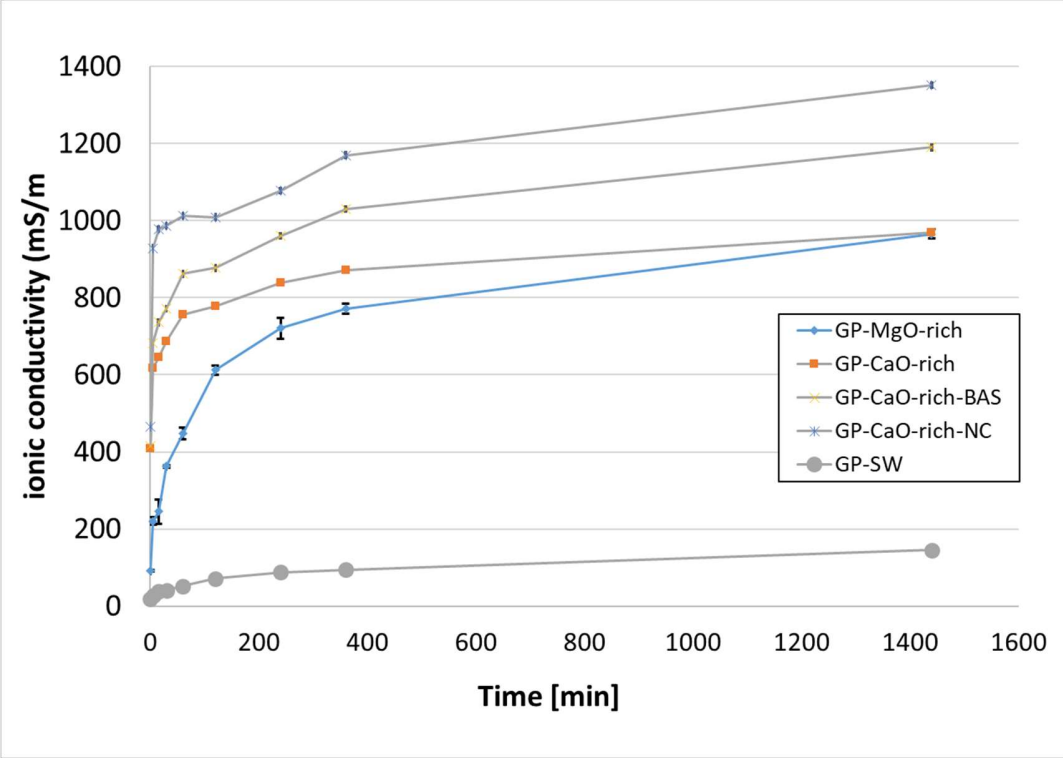
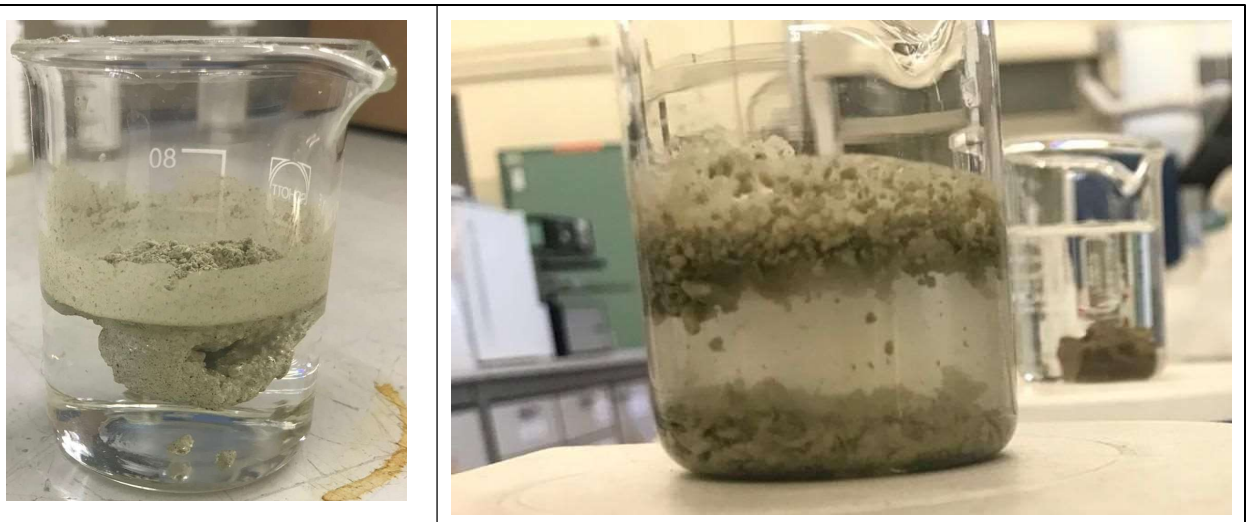


FIGURE S2. Monitoring the ionic conductivity (mS/m) of water where a piece of sample (S/L=1:10) of each formulation of alkali activated materials was immersed @room temperature. Error bars are reported only for one sample to avoid confusion and overlapping.



a	b

FIGURE S3. Picture of the as stone wool powder floating on water before the leaching tests (a) and after the test (b).

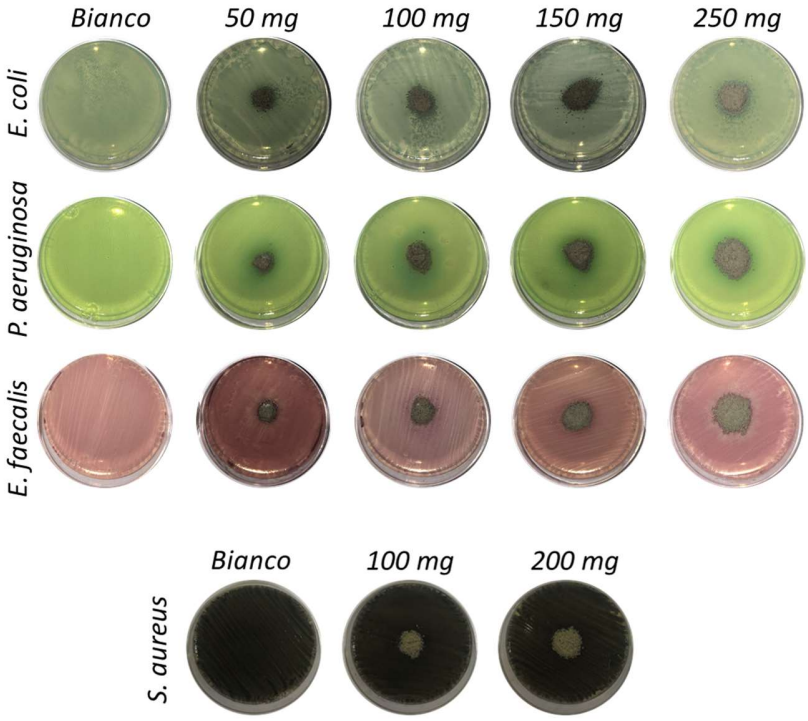


FIGURE S4. Images of bacterial (*E. coli*, *P. aeruginosa*, *E. faecalis, S. aureus*) culture plates showing the absence of inhibition halo in presence of different amounts of ordinary Portland cement**.**