

Supplementary material

Table S1. Composition of the studied ceramic mixtures

Sample	Clay (%)	WS (%)	FSD (%)
Laboratory trial with Ci=C1, C2 and C3 clays			
LCi	100	0	0
LCiW40F0	60	40	0
LCiW20F0	80	20	0
LCiW0F20	80	0	20
LCiW0F40	60	0	40
LCiW20F20	60	20	20
LCiW26F6	66.6	26.66	6.66
LCiW6F6	86.6	6.66	6.66
LCiW6F26	66.6	6.66	26.66
LCiW13F13	73.33	13.33	13.33
Semi-industrial trial with C1 clay and 8% of wood pulp			
SC1	92	0	0
SC1W10	82	10	0
SC1 W20	72	20	0
SC1W25	67	25	0
SC1W30	62	30	0
SC1W35	57	35	0
SC1W40	52	40	0
SC1W5F15	72	5	15
SC1W10F10	72	10	10
SC1W15F5	72	15	5
SC1W5F25	62	5	25
SC1W10F20	62	10	20
SC1 W15F15	62	15	15
SC1W20F10	62	20	10
SC1W25F5	62	25	5
SC1W5F35	52	5	35
SC1W10F30	52	10	30
SC1 W15F25	52	15	25
SC1W20F20	52	20	20
SC1W25F15	52	25	15
SC1W30F10	52	30	10
SC1W35F5	52	35	5
Industrial trial of Ceramic Blocks with C4 clay			
IC4	100	0	0
IC4W20	80	20	0
Industrial trial of lightweight bricks with C1 clay and 8% of wood pulp			
IC1	92	0	0
IC1W30	62	30	0

Table S2. Results of the 14 analysed variables obtained in the 30 samples of laboratory pieces. The Inert landfill and the non-hazardous landfill limits from the European Waste Landfill Council Decision are included at the bottom.

Property	Technical properties						Release at equilibrium leaching tests, L/S=10							
	WA	MOR	OP	LFS	WL	D	As	Ba	Cd	Cr	Cu	Mo	Ni	Zn
Sample	(%)	(MPa)	(%)	(%)	(%)	(g/cm ³)	----- (mg/kg) -----							
LC1W40F0	13.63	9.03	28.99	-1.69	8.13	2.28	0.023	1.28	0.012	10.85	0.025	12.47	0.013	0.096
LC1W20F0	12.72	11.36	24.99	-0.58	10.87	2.13	0.027	1.25	0.011	7.69	0.014	8.39	0.013	0.12
LC1	13.75	11.29	18.62	0.28	13.97	1.96	0.021	1.13	0.019	3.19	0.023	0.56	0.016	0.098
LC1W0F20	13.81	9.84	29.96	0.48	17.17	1.82	0.013	0.75	0.006	2.24	0.024	0.44	0.016	0.13
LC1W0F40	17.09	6.45	33.06	0.88	18.90	1.70	0.017	0.67	0.008	1.57	0.014	0.37	0.019	0.22
LC1W20F20	13.63	10.4	31.09	0.03	13.44	2.01	0.021	1.18	0.001	6.12	0.016	7.9	0.015	0.12
LC1W26F6	12.11	11.26	28.45	-0.72	11.26	2.11	0.021	1.71	0.008	7.07	0.022	8.25	0.022	0.15
LC1W6F6	12.93	12.46	22.77	0.17	14.32	1.96	0.003	1.08	0.001	4.19	0.014	3.03	0.027	0.11
LC1W6F26	15.05	9.21	25.11	0.44	16.45	1.85	0.002	1.21	0.001	3.64	0.016	2.7	0.011	0.093
LC1W13F13	13.72	10.62	24.48	0.17	13.97	1.98	0.012	1.27	0.013	4.89	0.016	4.69	0.014	0.13
LC2W40F0	10.20	9.75	23.99	-1.13	4.85	2.32	0.029	1.44	0.013	9.31	0.021	17.88	0.015	0.23
LC2W20F0	8.84	14.14	21.03	0.55	6.75	2.27	0.10	1.55	0.011	1.92	0.017	14.88	0.017	0.16
LC2	8.33	15.59	17.47	2.17	9.65	2.16	0.13	0.83	0.011	0.035	0.017	0.31	0.014	0.13
LC2W0F20	8.25	14.40	22.48	2.70	12.62	2.02	0.30	0.11	0.001	0.038	0.015	0.27	0.014	0.26
LC2W0F40	11.45	6.76	27.79	2.98	15.91	1.87	0.451	0.10	0.001	0.0224	0.023	0.23	0.018	0.13
LC2W20F20	10.61	10.95	25.87	0.73	10.85	2.10	0.13	1.40	0.009	1.13	0.019	13.1	0.024	0.14
LC2W26F6	10.19	11.07	25.01	0.24	7.14	2.23	0.074	1.38	0.009	3.78	0.021	14.67	0.018	0.20
LC2W6F6	8.39	15.38	21.04	2.24	10.30	2.17	0.19	0.68	0.001	0.35	0.020	3.92	0.016	0.14
LC2W6F26	10.55	11.75	26.83	2.19	13.54	1.98	0.17	0.75	0.018	0.72	0.017	4.37	0.027	0.15
LC2W13F13	9.79	12.90	24.05	1.47	10.10	2.10	0.14	1.17	0.005	1.75	0.019	8.09	0.037	0.15
LC3W40F0	6.64	10.09	22.37	-0.91	4.14	2.40	0.063	1.24	0.016	1.38	0.032	17.13	0.016	0.22
LC3W20F0	6.72	11.31	18.61	-0.18	5.24	2.31	0.16	1.67	0.025	1.07	0.022	13.9	0.017	0.28
LC3	8.02	10.57	14.62	0.65	6.21	2.21	0.39	0.14	0.031	0.046	0.025	0.43	0.014	0.24
LC3W0F20	7.22	9.72	19.28	1.65	10.73	2.04	0.33	0.12	0.007	0.036	0.028	0.27	0.015	0.24
LC3W0F40	10.13	6.56	25.25	1.66	15.03	1.83	0.29	0.12	0.034	0.033	0.026	0.32	0.016	0.24
LC3W20F20	8.36	10.54	25.10	0.25	9.69	2.10	0.14	1.53	0.013	0.95	0.020	14.26	0.015	0.12
LC3W26F6	7.17	11.65	23.63	-0.19	5.88	2.31	0.10	1.38	0.020	1.08	0.029	15.26	0.018	0.16
LC3W6F6	6.11	11.81	16.82	1.12	6.99	2.25	0.24	0.70	0.025	0.62	0.022	9.08	0.029	0.21
LC3W6F26	7.25	12.22	22.16	0.73	7.55	2.20	0.24	0.77	0.021	0.49	0.023	9.49	0.016	0.18
LC3W13F13	7.43	11.22	22.05	0.29	8.54	2.15	0.15	1.35	0.016	0.65	0.028	6.01	0.017	0.24
Inert landfill							0.5	20	0.04	0.5	2	0.5	0.4	4
Waste Landfill Criteria (EU, 2003)							Non-hazardous landfill							
							2	100	1	10	50	10	10	50

Table S3. Results of the 14 analysed variables obtained in the 22 samples of semi-industrial prototypes. The Inert landfill and the non-hazardous landfill limits from the European Waste Landfill Council Decision are included at the bottom.

Property Sample	Technical properties						Equilibrium leaching tests, L/S ratio = 2				Equilibrium leaching tests, L/S ratio = 10			
	WA	MOR	OP	LFS	WL	D	As2	Ba2	Cr2	Mo2	As10	Ba10	Cr10	Mo10
	(%)	(MPa)	(%)	(%)	(%)	(g/cm ³)	(mg/kg)							
SC1	16.60	7.2	41.75	3.16	8.01	1.38	0.0004	0.40	1.34	0.04	0.002	1.42	2.3	0.20
SC1W10	15.71	4.77	37.33	1.8	13.53	1.51	0.0004	0.06	1.41	1.31	0.08	0.02	2.14	0.20
SC1 W20	13.42	5.89	35.32	2.12	10.98	1.63	0.0004	0.11	0.39	2.23	0.06	0.52	0.66	0.20
SC1W25	9.91	7.09	34.71	1.88	6.03	1.75	0.0004	0.17	0.82	4.09	0.05	0.81	1.29	7.91
SC1W30	12.14	5.85	32.32	1.59	8.51	1.75	0.01	0.21	0.67	5.27	0.002	0.86	1.33	10.04
SC1W35	10.53	4.27	36.86	2.28	6.58	1.78	0.0004	0.29	1.66	7.71	0.002	1.75	3.82	17.67
SC1W40	12.67	4.27	38.92	1.96	7.23	1.77	0.01	0.29	2.38	13.28	0.002	1.87	3.88	16.76
SC1W5F15	12.42	6.24	30.61	2.48	10.37	1.65	0.01	0.13	1.53	3.69	0.07	0.64	2.94	7.82
SC1W10F10	10.64	6.19	34.62	2.40	8.06	1.67	0.01	0.16	1.26	3.22	0.06	0.52	2.02	6.20
SC1W15F5	11.95	7.12	34.56	2.44	10.37	1.68	0.01	0.15	1.07	3.66	0.06	0.66	1.58	8.55
SC1W5F25	9.71	5.77	29.89	2.79	6.37	1.74	0.01	0.13	0.55	1.75	0.10	0.46	0.77	0.20
SC1W10F20	12.57	6.24	31.67	2.68	9.40	1.66	0.0004	0.17	0.56	2.8	0.002	0.63	1.01	6.01
SC1 W15F15	12.45	7.76	30.61	2.24	9.16	1.68	0.0004	0.16	1.04	3.14	0.002	0.67	1.69	6.45
SC1W20F10	10.31	5.85	34.47	2.36	5.96	1.74	0.0004	0.14	1.68	3.76	0.002	0.68	2.62	7.90
SC1W25F5	11.83	6.42	34.26	1.96	7.44	1.72	0.0004	0.17	1.04	4.71	0.07	0.90	1.72	8.66
SC1W5F35	10.13	3.61	28.66	2.56	6.99	1.71	0.01	0.08	0.62	1.24	0.06	0.24	0.61	0.20
SC1W10F30	10.25	4.77	29.01	2.56	6.44	1.75	0.0004	0.09	0.41	2.05	0.002	0.33	0.68	0.20
SC1 W15F25	11.30	5.86	32.14	2.12	5.34	1.74	0.01	0.10	0.86	2.75	0.04	0.24	1.12	0.20
SC1W20F20	12.82	4.79	32.11	2.44	8.47	1.67	0.01	0.16	0.41	3.90	0.06	0.61	0.90	7.38
SC1W25F15	10.96	4.86	33.67	2.44	6.48	1.72	0.01	0.23	1.10	6.14	0.06	0.85	1.85	10.91
SC1W30F10	10.01	5.03	32.85	2.32	4.14	1.77	0.01	0.22	1.32	5.33	0.05	1.26	2.36	11.57
SC1W35F5	8.12	4.98	33.41	1.76	4.65	1.99	0.01	0.17	3.02	5.84	0.05	0.99	4.18	13.57
Waste Landfill Criteria (EU, 2003)						Inert landfill	0.1	7	0.2	0.3	0.5	20	0.5	0.5
						Non-hazardous landfill	0.4	30	4	5	2	100	10	10

Table S4. Results of the 12 analysed variables obtained in the 4 samples of industrial products. The Inert landfill and the non-hazardous landfill limits from the European Waste Landfill Council Decision are included at the bottom.

Property Sample	Technical properties				Equilibrium leaching tests, L/S ratio = 2				Equilibrium leaching tests, L/S ratio = 10			
	WA	MOR	OP	D	As2	Ba2	Cr2	Mo2	As10	Ba10	Cr10	Mo10
	(%)	(MPa)	(%)	(g/cm ³)	(mg/kg)							
IC4	12.80	16.2	32.74	1.78	0.0004	0.26	0.32	0.04	0.002	0.04	0.024	0.20
IC4W20	9.81	16.5	32.40	1.88	0.0004	0.26	0.42	1.38	0.002	1.10	0.024	6.0
IC1	12.72	8.4	30.29	1.69	0.0004	0.24	1.72	0.04	0.002	1.10	2.90	0.20
IC1W30	14.10	9.5	35.86	1.96	0.0004	0.24	3.94	4.66	0.002	1.10	5.60	10.0
Waste Landfill Criteria (EU, 2003)				Inert landfill	0.1	7	0.2	0.3	0.5	20	0.5	0.5
				Non-hazardous landfill	0.4	30	4	5	2	100	10	10