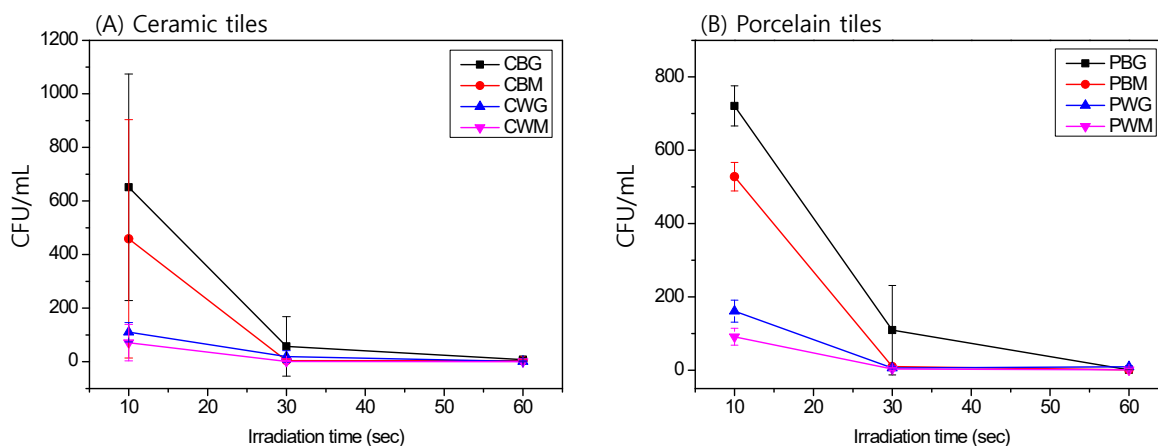
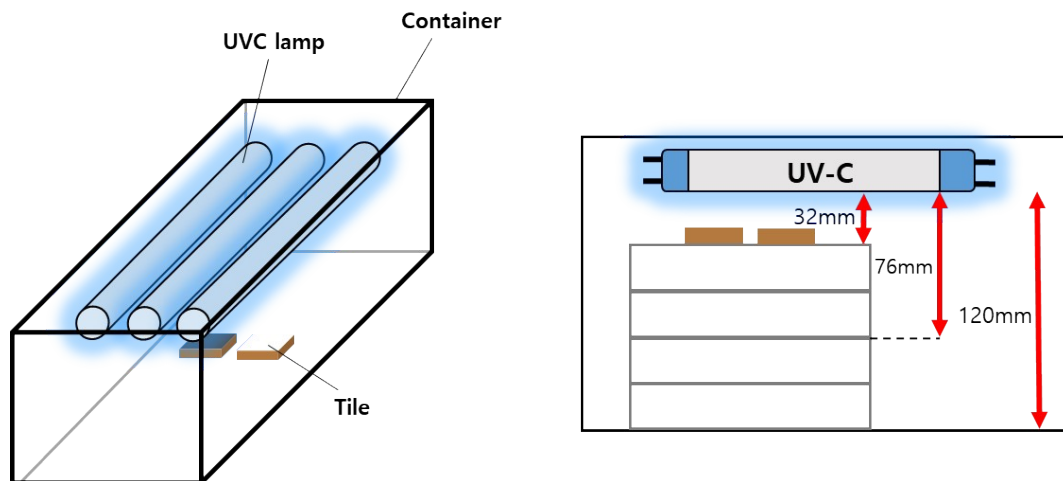


## Supplementary Information



**Figure S1** Changes in CFU/mL as a function of UV irradiation time on (A) ceramic tiles and (B) porcelain tiles. The distance between the UVC light-emitting lamp and the tiles with spores adsorbed was 120 mm. CBG, CBM, CWG, CWM, PBG, PBM, PWG, and PWM stand for ceramic black glossy, ceramic black matte, ceramic white glossy, ceramic white matte, porcelain white glossy, porcelain white matte, porcelain black glossy, and porcelain black matte, respectively. Four different sample preparations were performed per each condition. The error bars represent standard deviation.



**Figure S2.** The diagram of homemade UVC lamp system

**Table S1.** Water absorption of tiles

Tile type		Water absorption (%) <sup>a)</sup>
Ceramic	White matte	11.67±0.129
	White glossy	11.21±0.198
	Black matte	12.82±0.084
	Black glossy	10.08±0.345
Porcelain	White matte	2.96±1.685
	White glossy	0.60±0.088
	Black matte	0.31±0.010
	Black glossy	0.17±0.026

<sup>a)</sup>Each tile involves three identical tile samples, providing replication for the experiment; (mean ± standard deviation)

**Table S2.** Number of colonies on (A) ceramic tiles and (B) porcelain tiles as a function of UV irradiation time at 120 mm lamp-to-tile distance

Tile type		Irradiation time (sec) <sup>a)</sup>			
		0 <sup>b)</sup>	10	30	60
(A) Ceramic	White matte	15,750	71±68	1±2	0±0
	White glossy	23,000	110±36	19±22	1±2
	Black matte	30,000	459±445	4±6	4±3
	Black glossy	15,000	651±423	57±111	8±7
(B) Porcelain	White matte	59,000	18±5	1±1	0±1
	White glossy	52,000	32±6	1±1	2±1
	Black matte	69,000	106±8	2±0	0±1
	Black glossy	90,000	144±11	27±31	0±1

<sup>a)</sup>Each condition involves four identical tile samples, providing replication for the experiment; (mean ± standard deviation)

<sup>b)</sup>0 sec means positive control. The positive control was not replicated.

**Table S3.** Survival fraction of *Bacillus atrophaeus* spores on (A) ceramic tiles and (B) porcelain tiles as a function of UV irradiation time at 120 mm lamp-to-tile distance

Tile type		Irradiation time (sec) <sup>a)</sup>			
		0 <sup>b)</sup>	10	30	60
(A) Ceramic	White matte	100	0.45±0.431	0.01±0.013	0±0
	White glossy	100	0.48±0.157	0.08±0.096	0±0.009
	Black matte	100	1.53±1.482	0.01±0.019	0.01±0.011
	Black glossy	100	4.34±2.818	0.38±0.742	0.05±0.049
(B) Porcelain	White matte	100	0.03±0.008	0±0.001	0±0.001
	White glossy	100	0.06±0.012	0±0.001	0±0.001
	Black matte	100	0.15±0.011	0±0	0±0.001
	Black glossy	100	0.16±0.012	0.03±0.034	0±0.001

<sup>a)</sup> Each condition involves four identical tile samples, providing replication for the experiment; (mean ± standard deviation)

<sup>b)</sup> 0 sec means positive control. The positive control was not replicated.

**Table S4.** Number of colonies on porcelain tiles according to distance between tile and UVC lamp with UV irradiation time of 10 sec

Tile type		Distance (mm) <sup>a)</sup>		
		32	72	120
Porcelain	White matte	0±0	100±41	913±232
	White glossy	0±0	100±41	1613±301
	Black matte	0±0	475±104	5275±393
	Black glossy	0±0	588±315	7213±554

<sup>a)</sup> Each condition involves four identical tile samples, providing replication for the experiment; (mean ± standard deviation)