

Supplementary materials

Table S1: list of the analysed samples.

Sample	Crack procedure	Treatment	Type application	of	Proof
ST1	Not cracked	Untreated	-		COL/UPV/ABS/SH
ST2	Not cracked	Untreated	-		COL/UPV/ABS/SH
ST3	Not cracked	Untreated	-		COL/UPV/ABS/SH
ST7	Cracked	Untreated	-		SH/OM
ST8	Cracked	Untreated	-		SH/OM/SEM
ST9	Cracked	Untreated	-		SH
PA1	Cracked	ALK1	AP1		COL/ABS/UPV
PA2	Cracked	ALK1	AP1		COL/ABS/UPV/OM
PA3	Cracked	ALK1	AP1		COL/ABS/UPV
PB1	Cracked	ALK2	AP1		COL/ABS/UPV/OM
PB2	Cracked	ALK2	AP1		COL/ABS/UPV
PB3	Cracked	ALK2	AP1		COL/ABS/UPV/OM
PC1	Cracked	CFW	AP1		COL/ABS/UPV
PC2	Cracked	CFW	AP1		COL/ABS/UPV
PC3	Cracked	CFW	AP1		COL/ABS/UPV
PD1	Cracked	ALK1	AP2		COL/ABS/UPV
PD2	Cracked	ALK1	AP2		COL/ABS/UPV
PD3	Cracked	ALK1	AP2		COL/ABS/UPV/OM/SEM
PE1	Cracked	ALK2	AP2		COL/ABS/UPV
PE2	Cracked	ALK2	AP2		COL/ABS/UPV
PE3	Cracked	ALK2	AP2		COL/ABS/UPV/OM/SEM
PF1	Cracked	CFW	AP2		COL/ABS/UPV/OM/SEM
PF2	Cracked	CFW	AP2		COL/ABS/UPV
PF3	Cracked	CFW	AP2		COL/ABS/UPV
PA4	Cracked	ALK1	AP1		SH
PA5	Cracked	ALK1	AP1		SH
PA6	Cracked	ALK1	AP1		SH
PB4	Cracked	ALK2	AP1		SH
PB5	Cracked	ALK2	AP1		SH
PB6	Cracked	ALK2	AP1		SH
PC4	Cracked	CFW	AP1		SH
PC5	Cracked	CFW	AP1		SH
PC6	Cracked	CFW	AP1		SH
PD4	Cracked	ALK1	AP2		SH
PD5	Cracked	ALK1	AP2		SH
PD6	Cracked	ALK1	AP2		SH
PE4	Cracked	ALK2	AP2		SH
PE5	Cracked	ALK2	AP2		SH

PE6	Cracked	ALK2	AP2	SH
PF4	Cracked	CFW	AP2	SH
PF5	Cracked	CFW	AP2	SH
PF6	Cracked	CFW	AP2	SH

ALK1: Ca(OTHF)₂ in ethanol; ALK2: Ca(OTHF)₂ in 2-buthanol; CFW: Ca(OAcAc)₂; AP1: brush till refuse; AP2: absorption through capillarity; ABS: absorption though capillarity; COL: colorimetric measurement; OM: Optical microscopy; SEM: scanning electron microscopy; SH: surface hardness; UPV: ultrasonic pulse velocity.

Table S2: legend of the used abbreviation concerning the used products, type of applications, samples and measurements.

Abbreviation	Type	Meaning
CFW	Product	Calcium acetoacetate Ca(OAcAc) ₂
ALK1	Product	Calcium tetrahydrofurfuryloxide Ca(OTHF) ₂ dissolved in ethanol
ALK2	Product	Calcium tetrahydrofurfuryloxide Ca(OTHF) ₂ dissolved in 2-buthanol
AP1	Application	Application by brush till refuse
AP2	Application	Application by absorption through capillarity
NT-NT	Sample	Uncracked-untreated samples
NT	Sample	Cracked-untreated samples
OM	Measurement	Optical microscopy
SEM	Measurement	Scanning electron microscopy
COL	Measurement	Colorimetry
ABS	Measurement	Water absorption through capillarity
UPV	Measurement	Ultrasonic pulse velocity
SH	Measurement	Surface hardness