

EFFECT OF DIFFERENT TYPES OF FIBERS ON SHRINKAGE IN HIGH PERFORMANCE CEMENTITIOUS COMPOSITES. APPLICATION IN LAMINAR ELEMENTS FOR MANUFACTURED HOUSES

Academic year 2014/2015 Civil Engineering Degree

Mix	Dossage									
	Cement	Slag	Aggregate	Water	Additive	Steel	Sisal	Eucalyptus	Nanopulp	Powder
I	600	500	1000	200	33					
II	600	500	983	200	40	100				
III.a	600	500	983	200	40		14,1			
III.b	600	500	983	200	40		14,1			
IV	600	500	983	200	40			21,4		
V	600	500	983	13	40				186	
VI	600	500	983	200	45					17,8
VII.a	600	500	983	200	40	50	7,05			
VII.b	600	500	983	200	40	50	7,05			
VII	600	500	983	200	40	50		10,7		
IX	600	500	983	107	40	50			93	
X	600	500	983	200	50	50				8,9
XI	600	500	983	200	40		7,05	10,7		
XII	600	500	983	107	40				93	
XIII	600	500	983	200	50		7,05			8,9

Mix for the shrinkage campaign

Process	Activity	Velocity	Time
Phase 1	Mix cement with slag	50 rpm	1 min
Phase 2	Add water and additive	50 rpm	1 min
Phase 3	Mix cement paste	50 rpm	5 min
Phase 4	Add the mixed fine particles	50 rpm	2 min
Phase 5	Mortar mix	100 rpm	5 min
Phase 6	Add the fibers	50 rpm	2,5 min
Phase 7	Mix high-strength concrete	100 rpm	5 min
TOTAL			21,5 min

Outline of the process



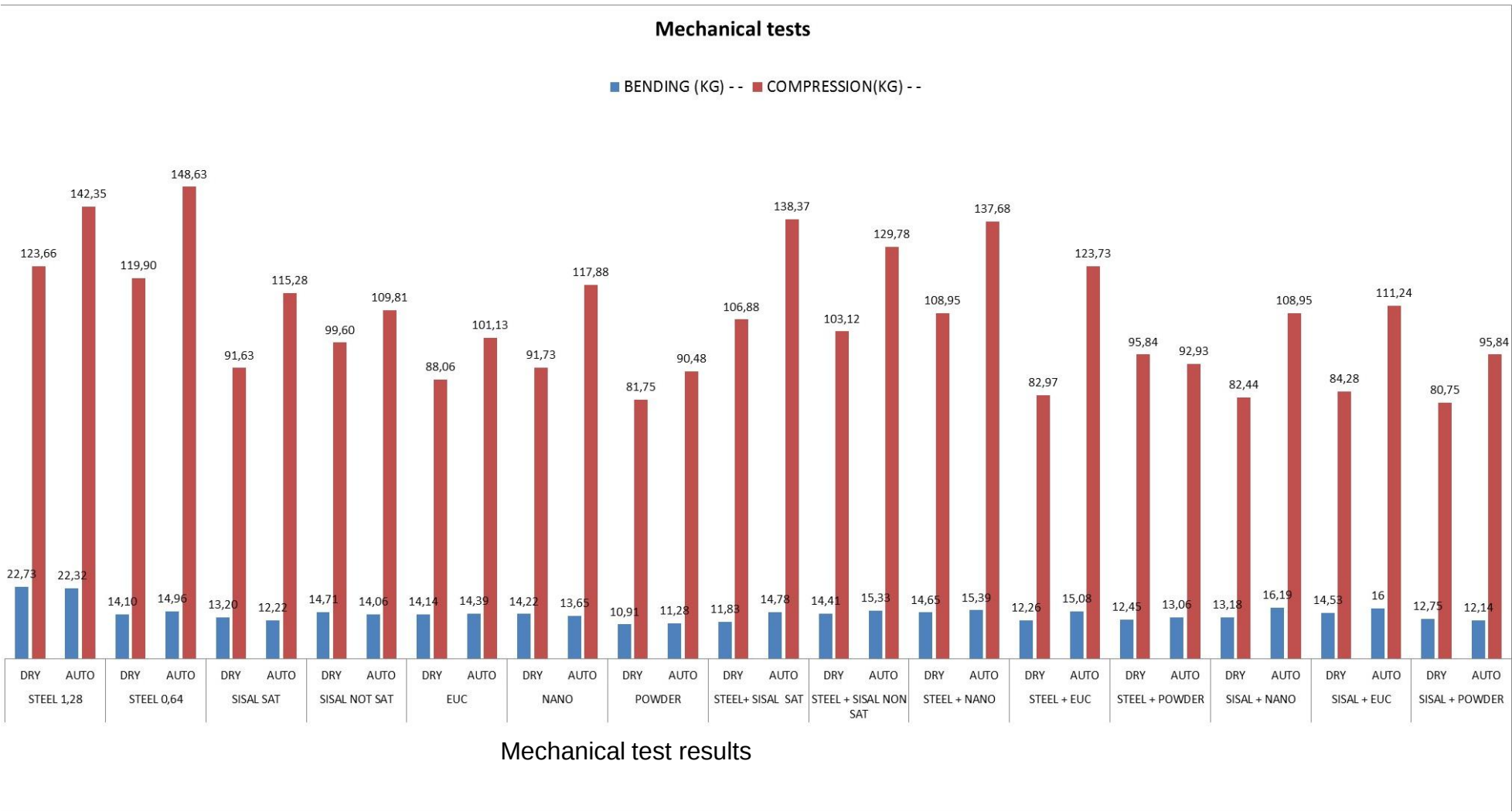
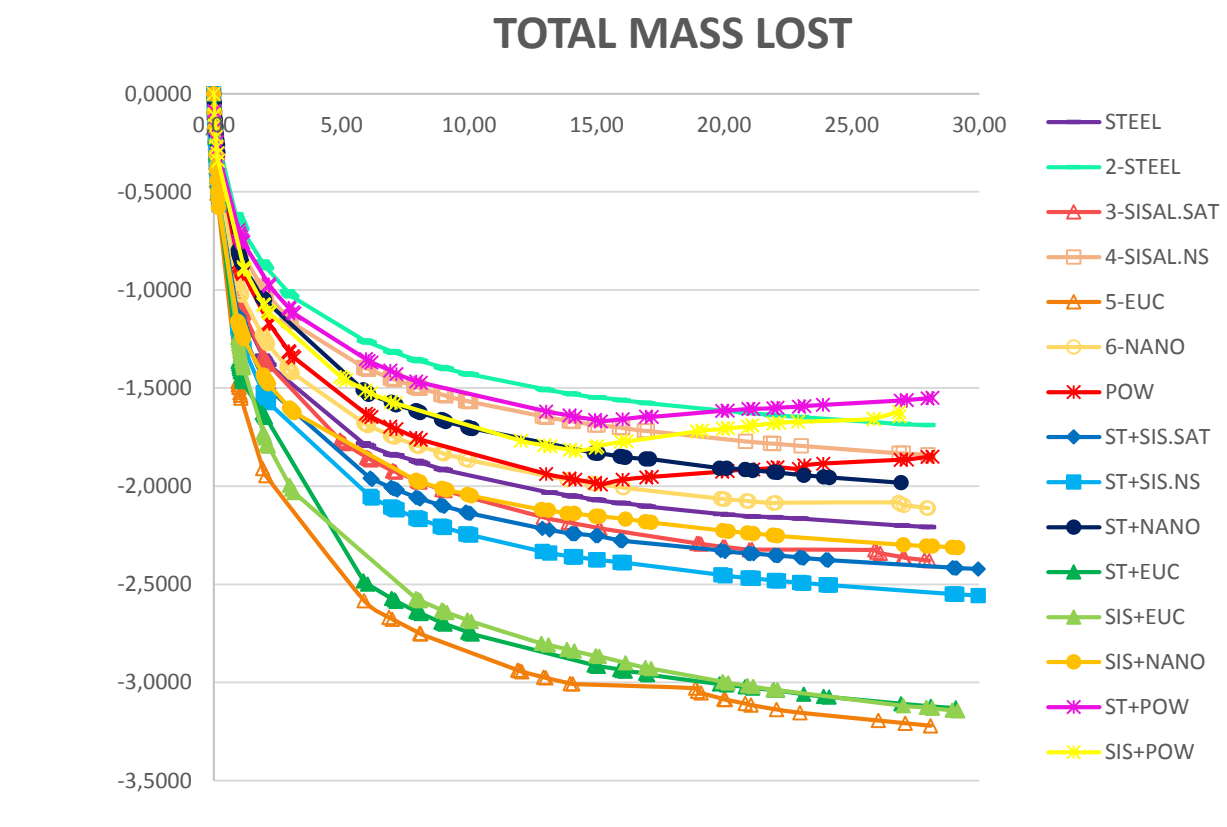
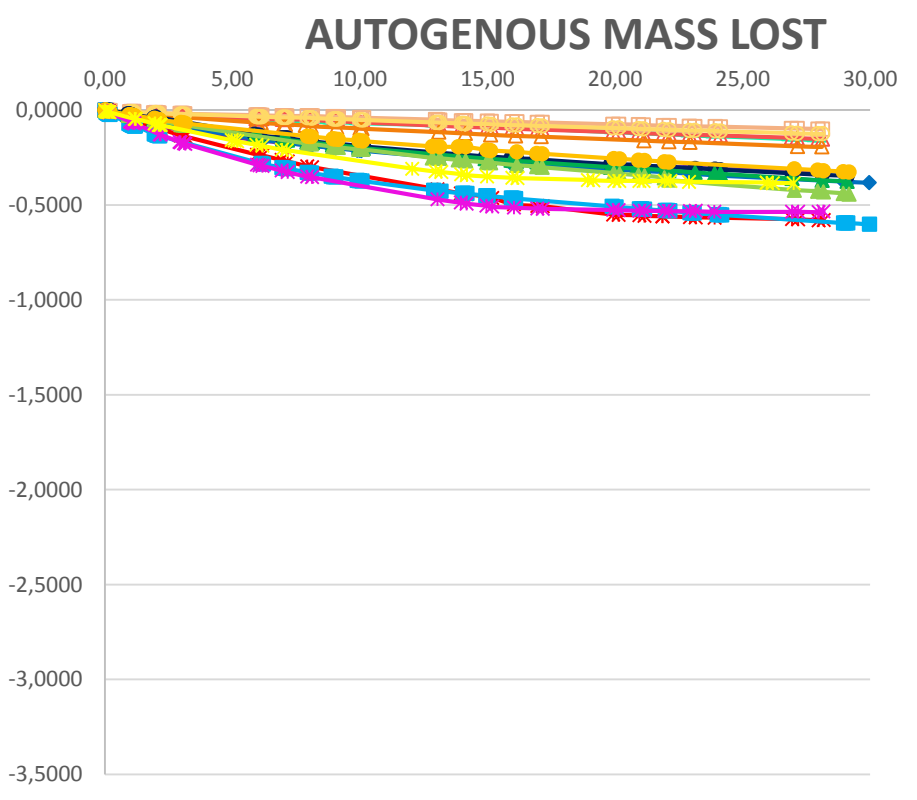
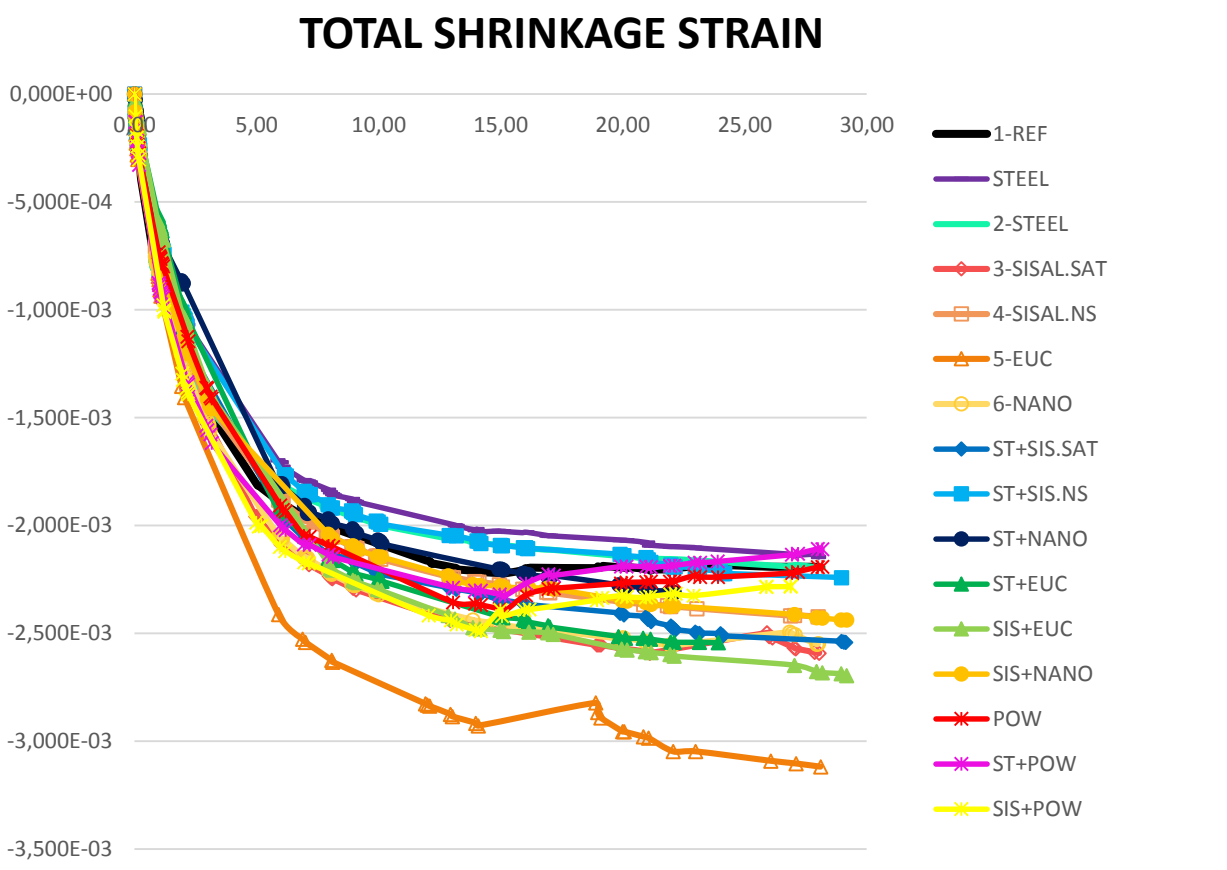
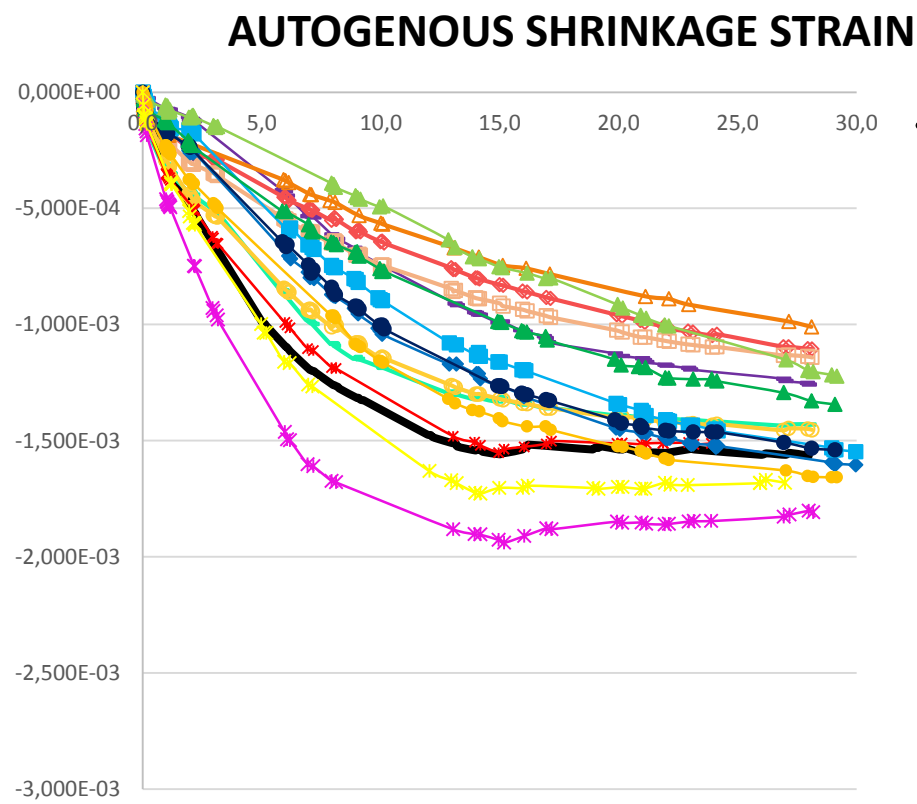
Mixer Controls



Precision Balance



Extensometer



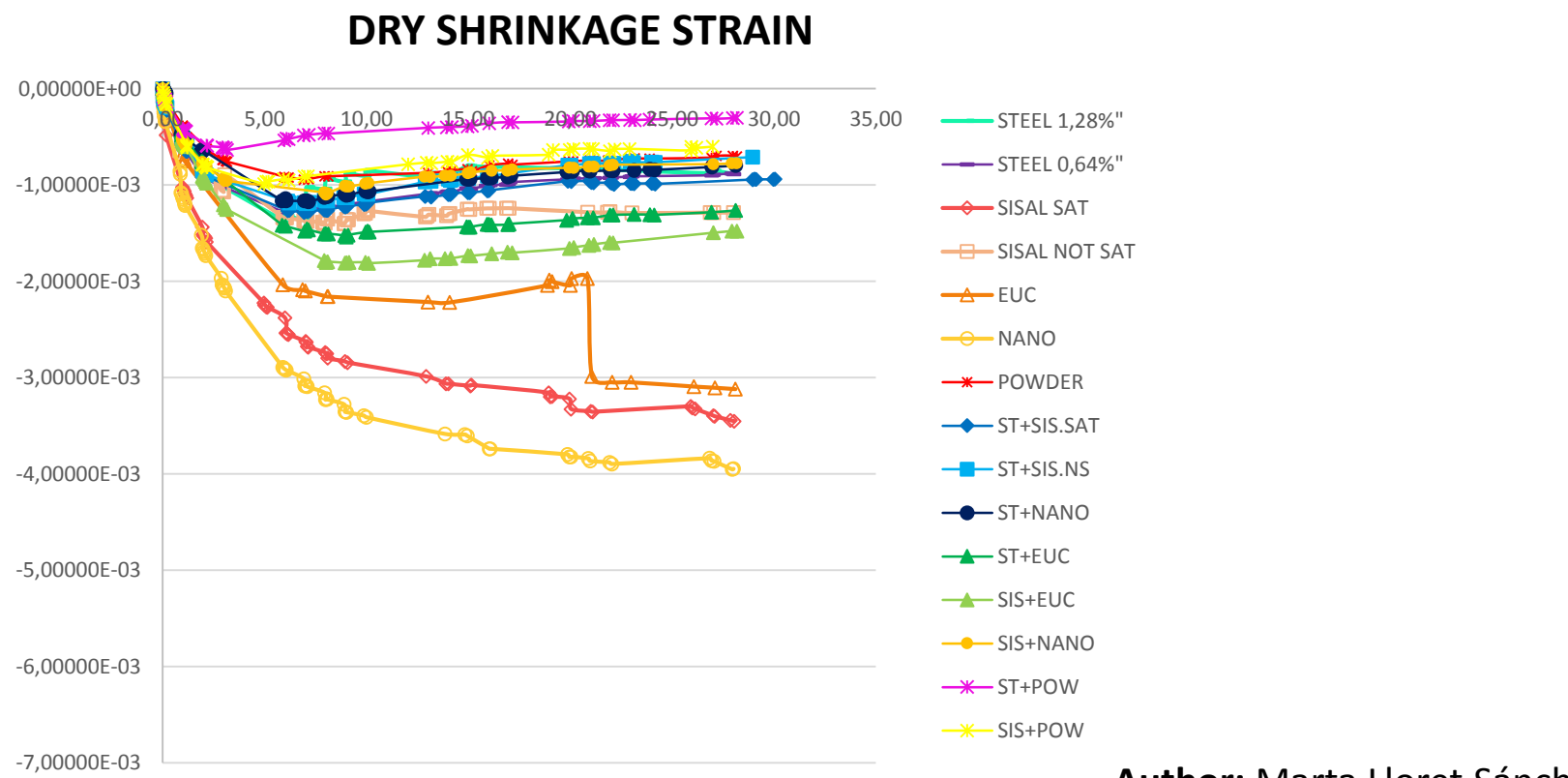
Mechanical test results



3 Point bending test



Compression test



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