CVUT v Prague, Faculty of Civil Engineering

Department of Steel and timber Structures

Steel Fibre Concrete in Fire

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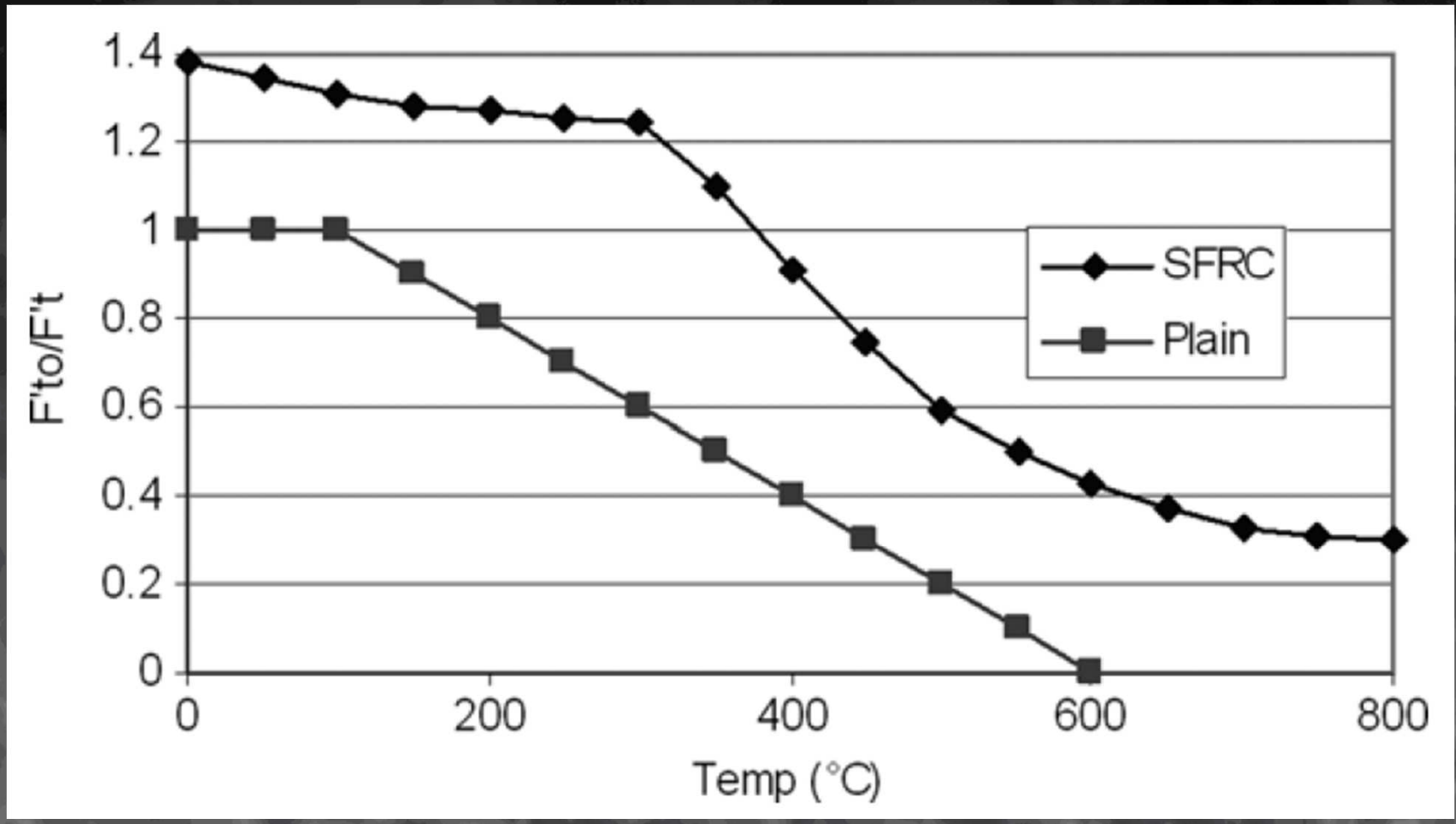
Proposal for improvement

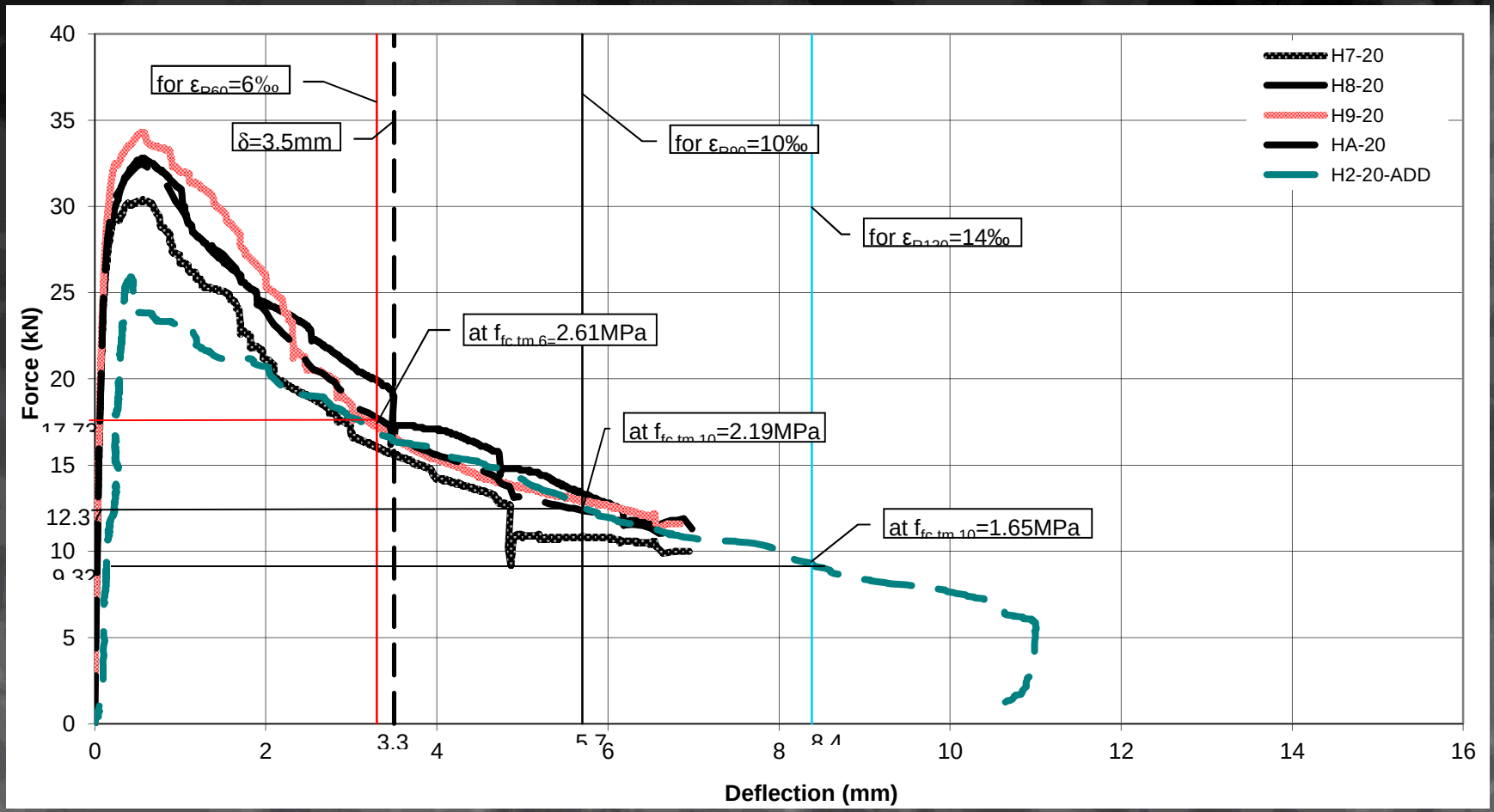
EN 1992-1-2

Subject	**Material properties of steel fibre-concrete at elevated temperature**
Proposed Changes	The description of the stress strain diagram of the fibre concrete and coefficients for change tensile strength and strain at elevated temperature.
References	BEDNÁŘ J., WALD F., VODIČKA J., KOHOUTKOVÁ A.; *"Experiments on membrane action of composite floors with steel fibre reinforced concrete slab exposed to fire"; Fire safety Journal; ELSEVERE; ISSN:* 0379-7112; VOLUME 59; July 2013; Pages 111-121. FIKE R., KODUR V.;"*Enhancing the fire resistance of composite floor assemblies through the use ofsteel fiber reinforced concrete"*; Engineering Structures; ELSEVERE; ISSN: 0141-0296; VOLUME 33; October 2011, Pages 2870-2878.

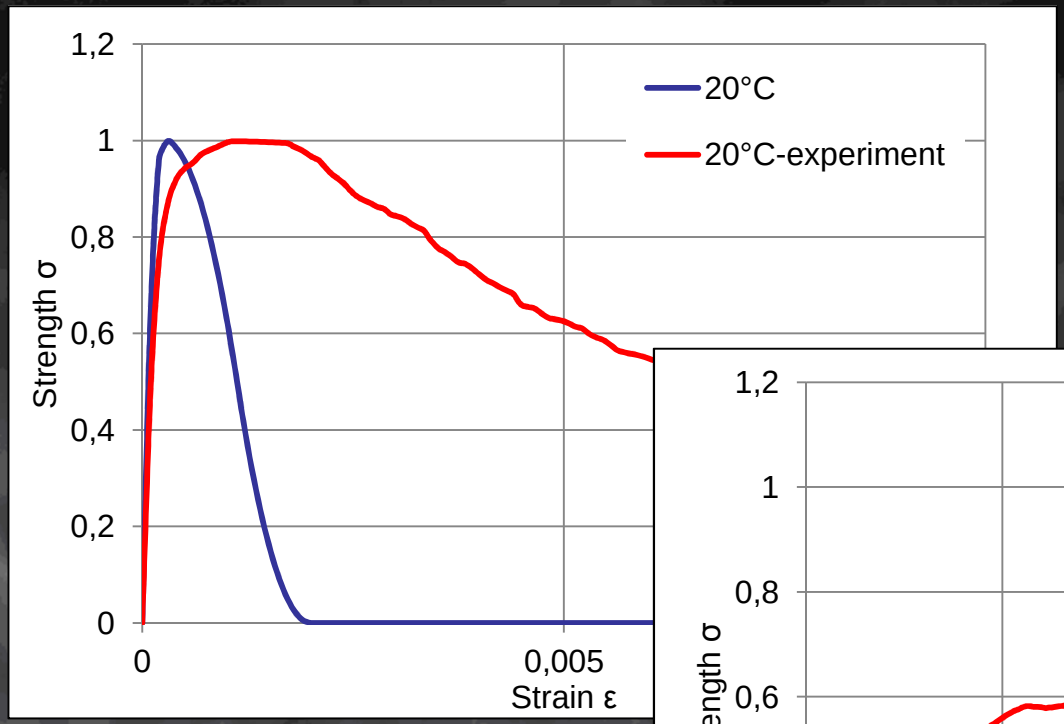
Tests in USA

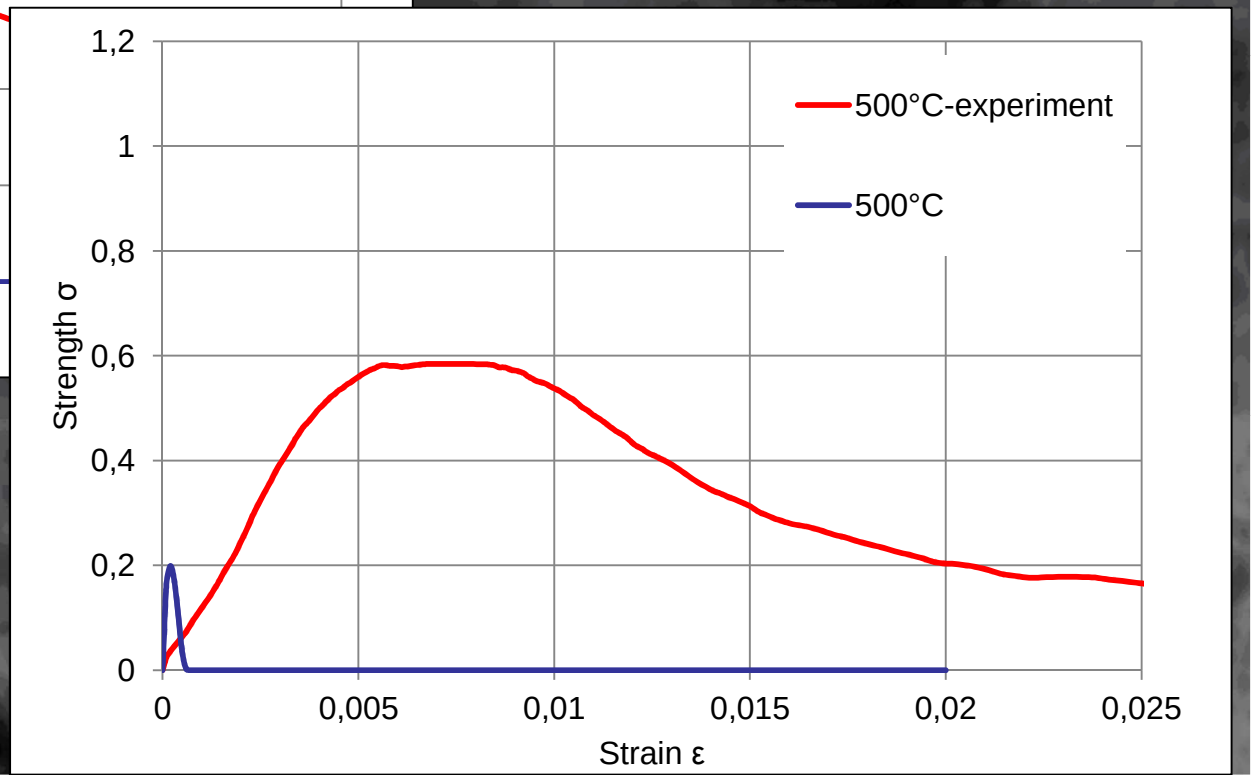


Force-Deflection Diagram

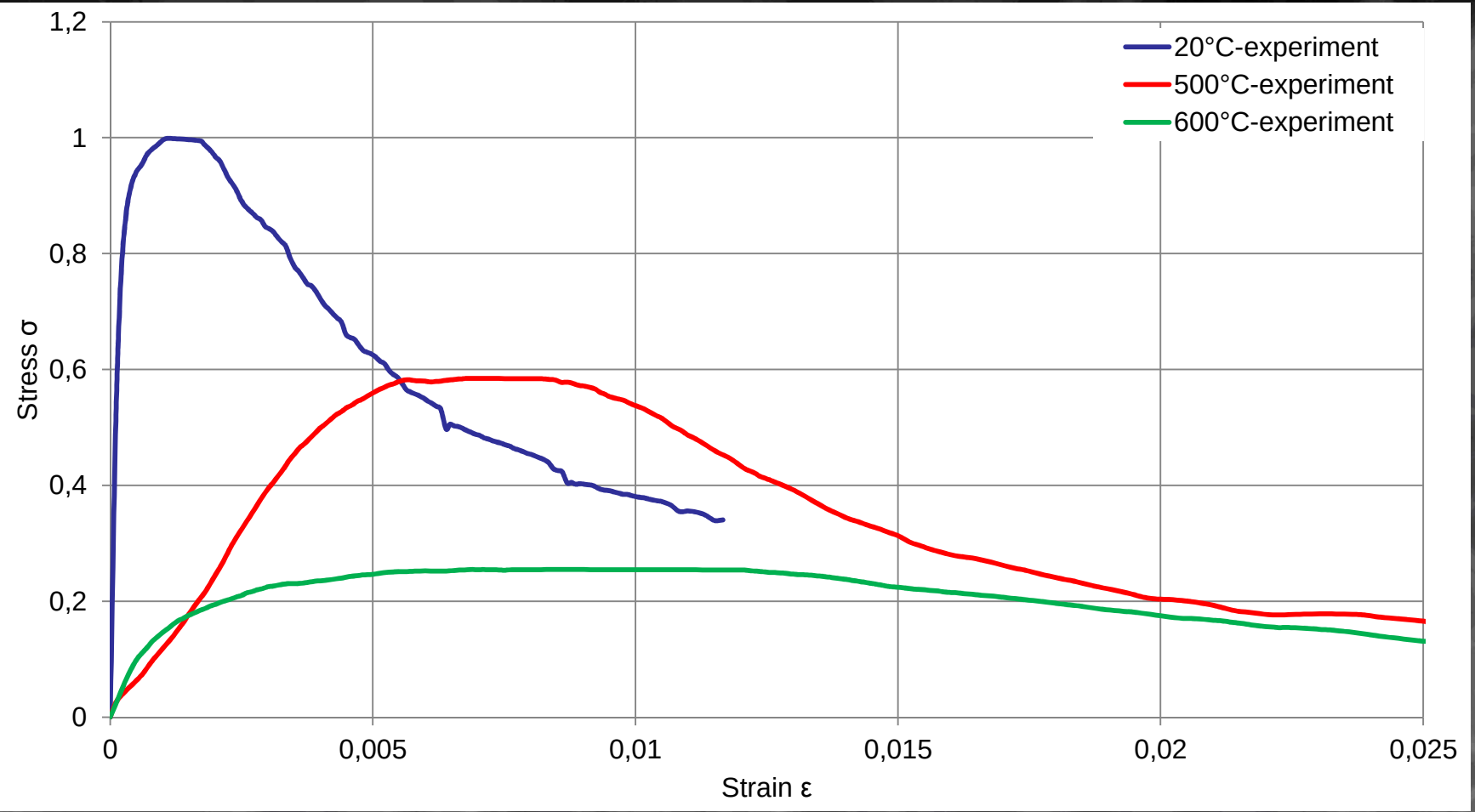


Comparison
Plain and Fibre Concrete





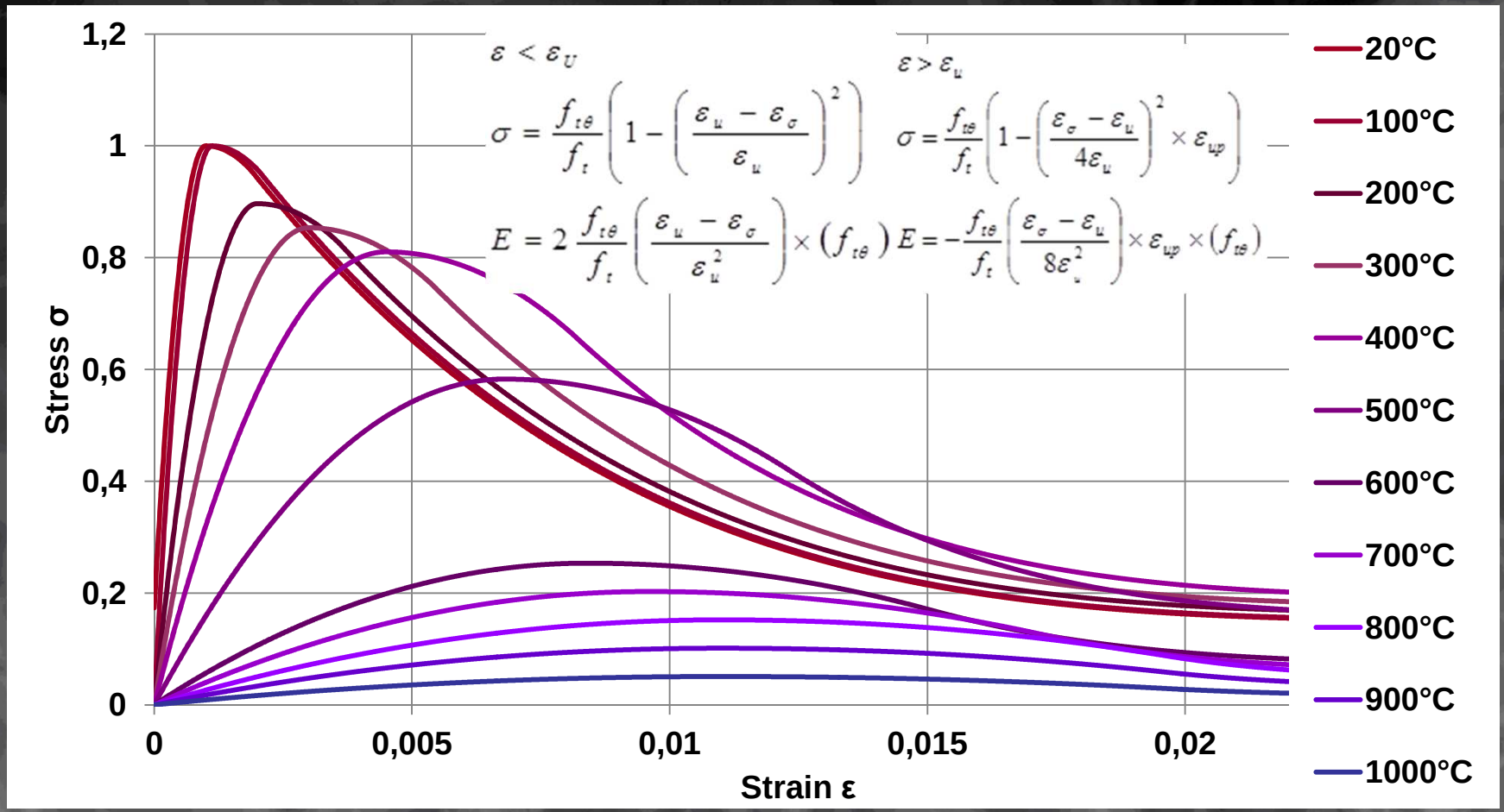
Results from Material tests



Comparison
Fibre Concrete and Steel

Temperature °C	Max tensile strength of fibre concrete at macrocracking (MPa)	Reduction factor k_{fc} relative to tensile strength of fiber concrete at 20°C	Reduction factor (relative to f_{yb}) for the design yield strength of cold formed
20	5.78	1.00	1.00
500	3.38	0.59	0.53
600	1.47	0.26	0.30

Material Model for Fibre Concrete




Thank you for attention