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# Fibres Reinforce Concrete

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# Terminology

- ▶ NSC = Normal Strength Concrete
- ▶ FRC = Fibre Reinforced Concrete
- ▶ FC = Fibre Reinforced Concrete
- ▶ SFRC = Steel Fibre Reinforced Concrete
- ▶ SFRC = Synthetic Fibre Reinforced Concrete

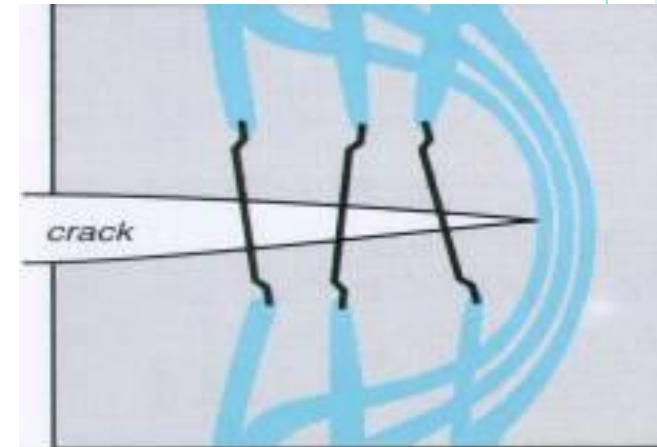
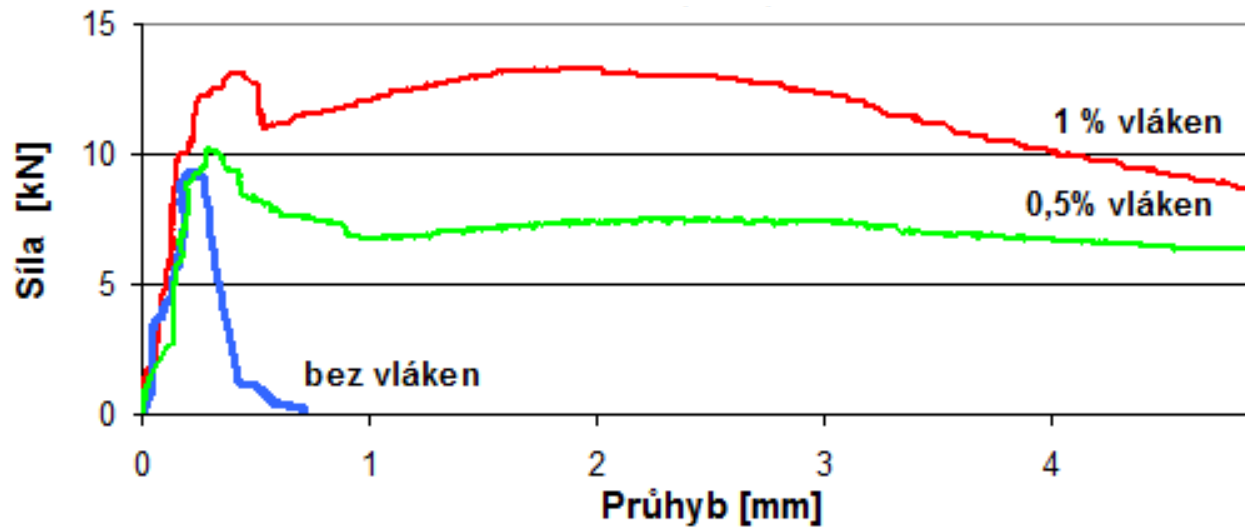
# Advantage

- ▶ Better durability
- ▶ Limitations contraction cracks
- ▶ Improvement of ductility
- ▶ Improvement tensile strength
- ▶ Better fire resistance

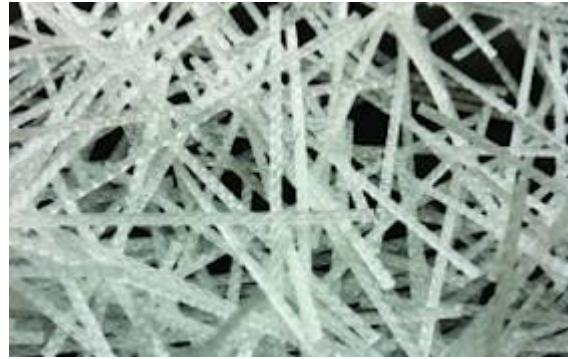
# Disadvantage

- ▶ Exacting of production technology
- ▶ Higher price (per cubic meter concrete)
- ▶ Higher specific gravity
- ▶ **Corrosion**

# Fibres Reinforce Concrete - mechanické vlastnosti



# Synthetic Fibre Reinforced Concrete



# Synthetic Fibre Reinforced Concrete

	Forta Fero	BeneSteel	Strax	PET
Material	Poly-propylene	mixture of Polypropylene and Polyethylene	Synthetic	Poly-ethylene-terephthalate
Type	Monofilament and polyfilament fibres	Mono-filament fibres	Mono-filament fibres	Mono-filament fibres
Specific gravity	910 kg/m <sup>3</sup>	920 kg/m <sup>3</sup>	920 kg/m <sup>3</sup>	1050 kg/m <sup>3</sup>
Tensile strength	700 N/mm <sup>2</sup>	660 N/mm <sup>2</sup>	620 N/mm <sup>2</sup>	not known
Length	54 mm	55 mm	40 mm	80 mm

# Steel Fibre Reinforced Concrete

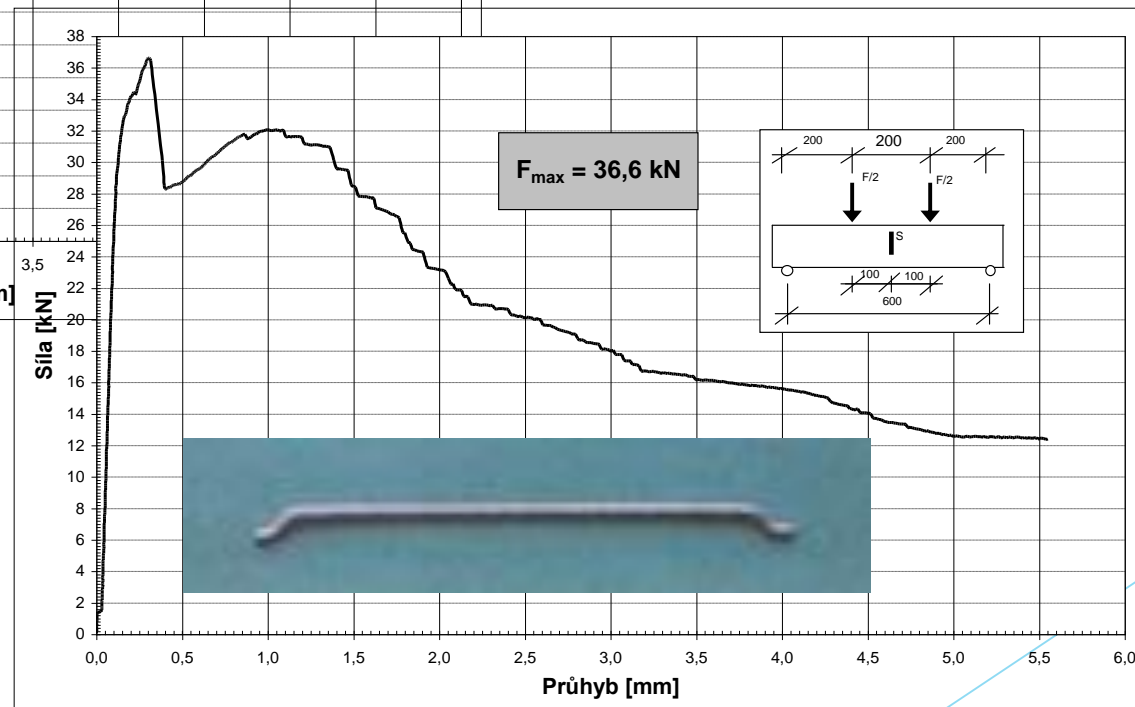
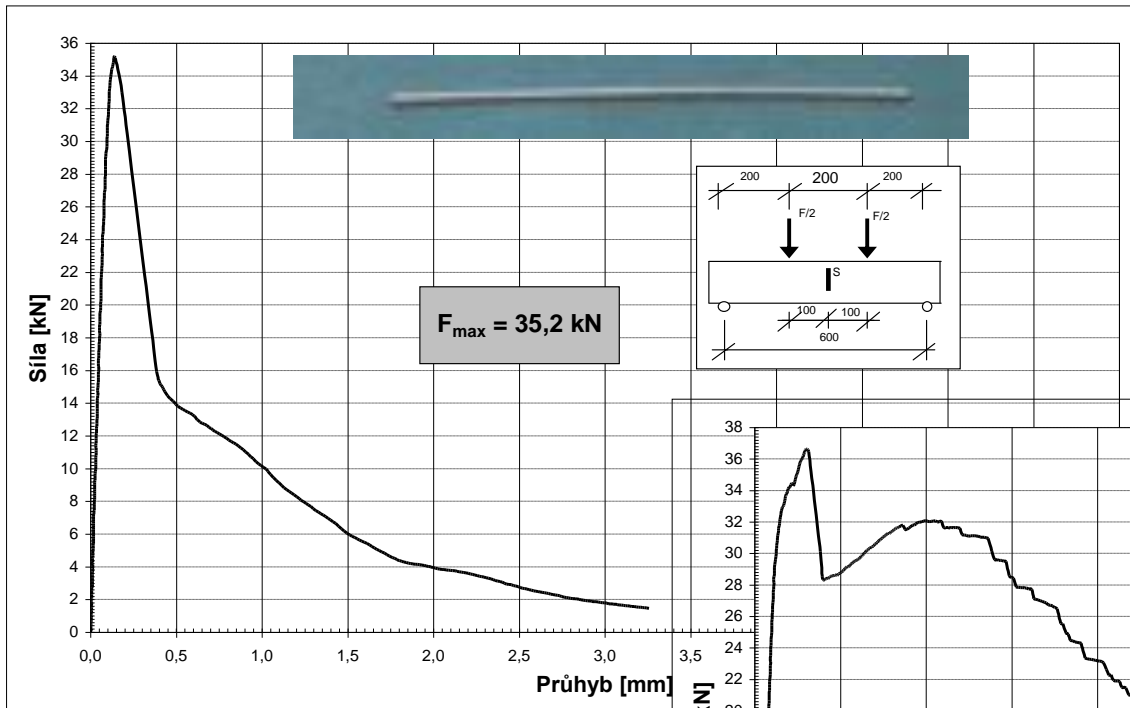




# Synthetic Fibre Reinforced Concrete

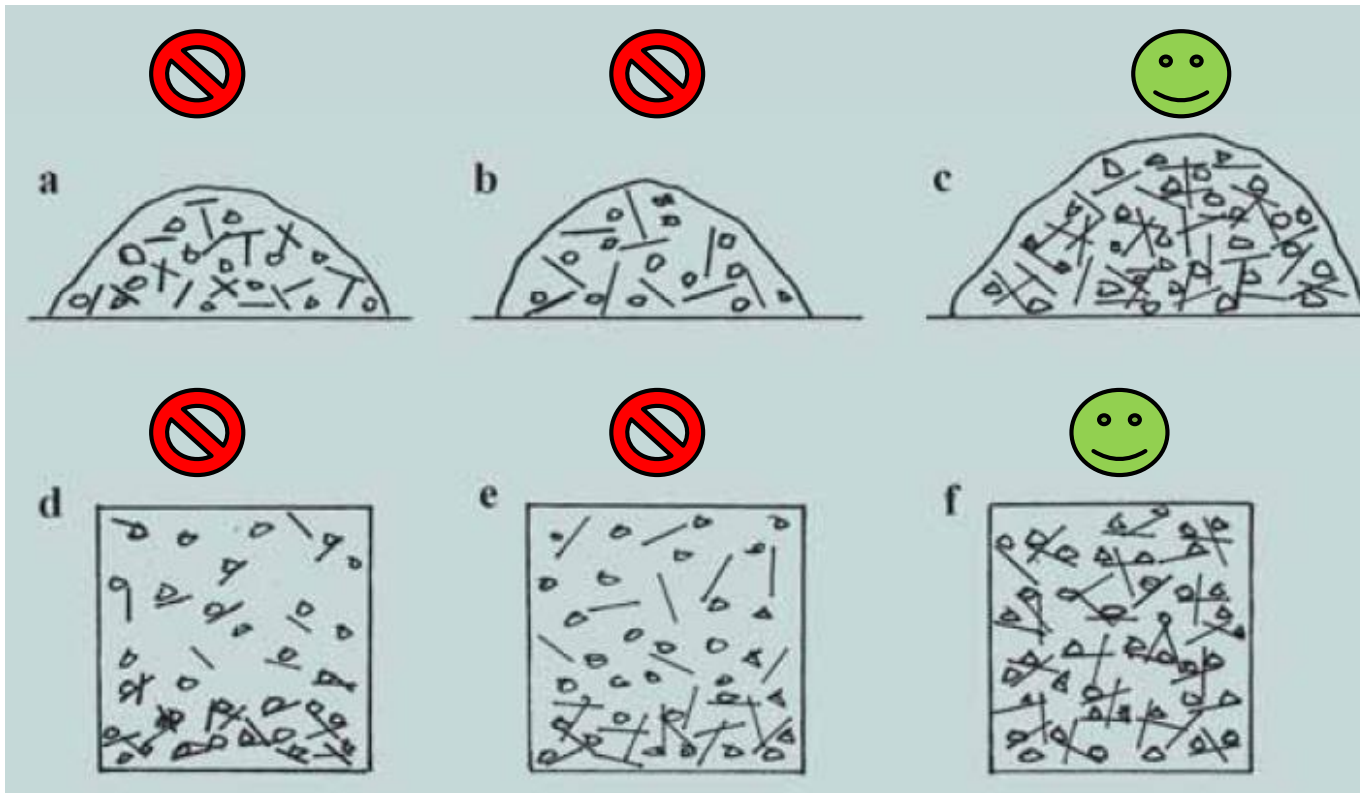
	Tritreg	Dramix	Strax	Fibrex
Material	Steel	Steel	Steel	Steel
Type				
Specific gravity	7850 kg/m <sup>3</sup>	7850 kg/m <sup>3</sup>	7850 kg/m <sup>3</sup>	7300 kg/m <sup>3</sup>
Tensile strength	1000 N/mm <sup>2</sup>	800 N/mm <sup>2</sup>	800 N/mm <sup>2</sup>	400 N/mm <sup>2</sup>
Length	50 mm	60 mm	60 mm	35 mm

# Vliv koncové úpravy drátků



# Mix Design -Aggregate

- ▶ Optimization grading curve (length and quantity of fibres)



- a) Short fibres
- b) Low dose of fiber
- c) Optimal design
- d) Segregation fibres
- e) Segregation aggregate
- f) Homogenous mixture

# Application



Fibre Concrete Cornice (Czech)



# Application

Floating Island (Czech)



# Application



Ostění tunelu, Brno (Czech)

# Application



Ostění tunelu metra, Praha  
(Czech)

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