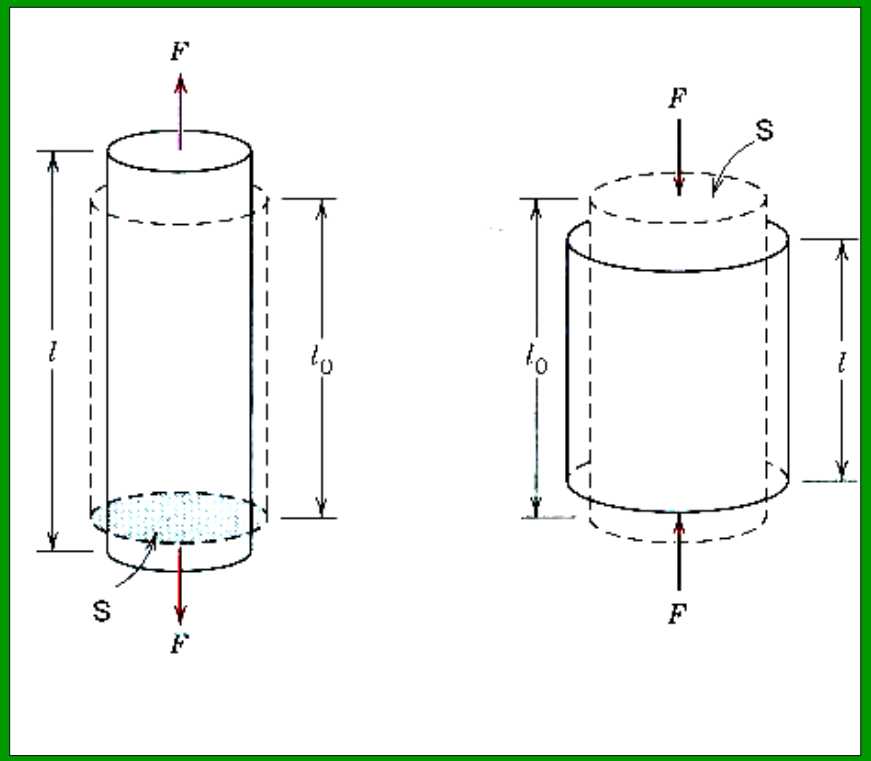
6. Mechanické vlastnosti kovů.

6.1. Pružné (elastické) vlastnosti kovů.

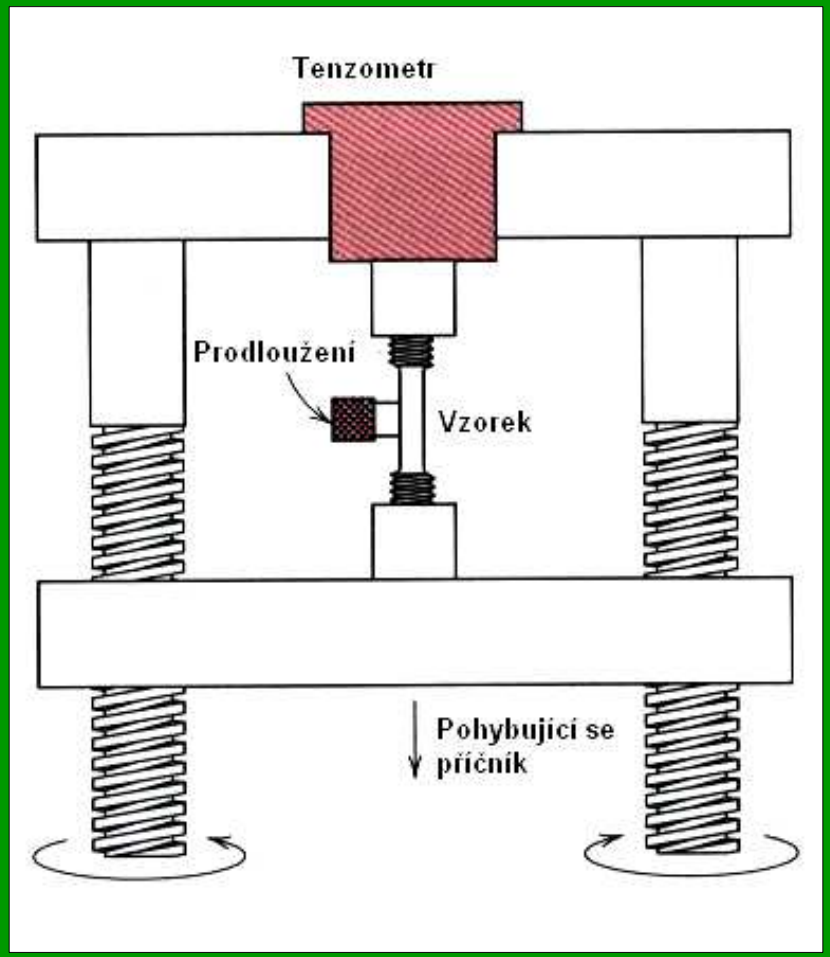
6.1.1. Deformace v tahu, nebo tlaku.

$$\varepsilon = \frac{\Delta l}{l_0} \qquad \sigma = \frac{F}{S_0}$$

$$\frac{\Delta l}{l_0} = \frac{1}{E}\frac{F}{S_0}, \quad tj. \quad \varepsilon = \frac{1}{E}\sigma$$

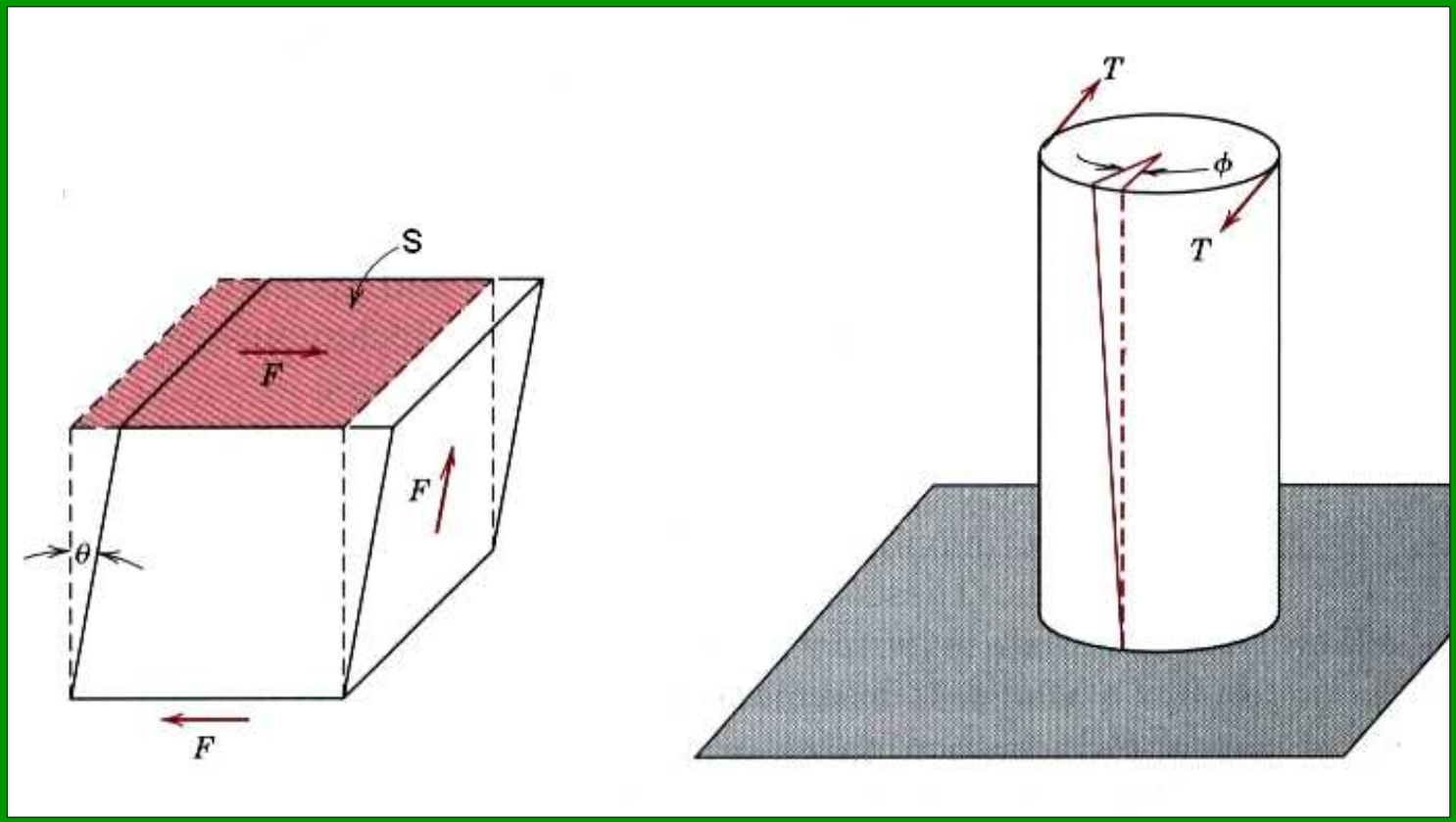


Deformační stroj (typ INSTRON)

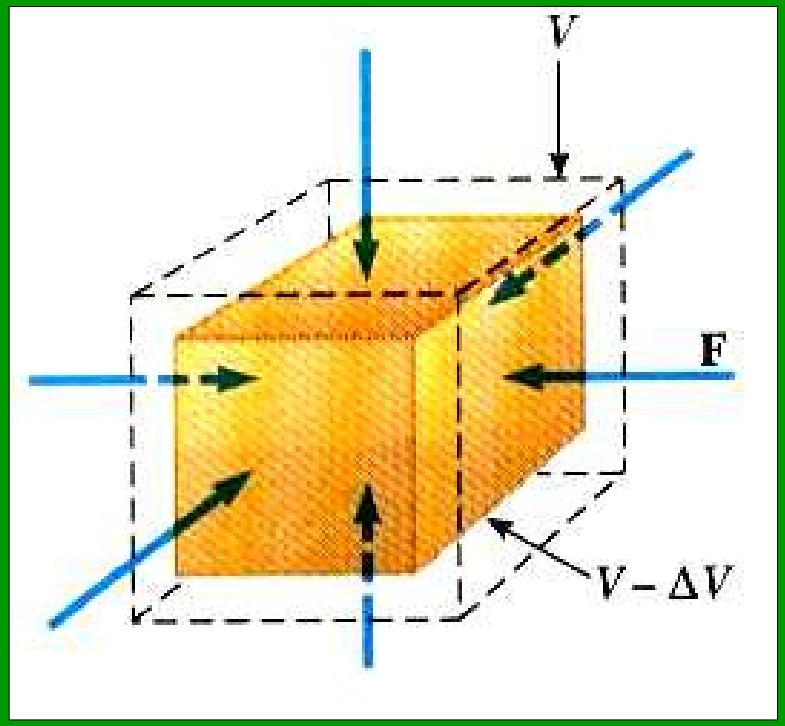


6.1.2. Deformace ve smyku.

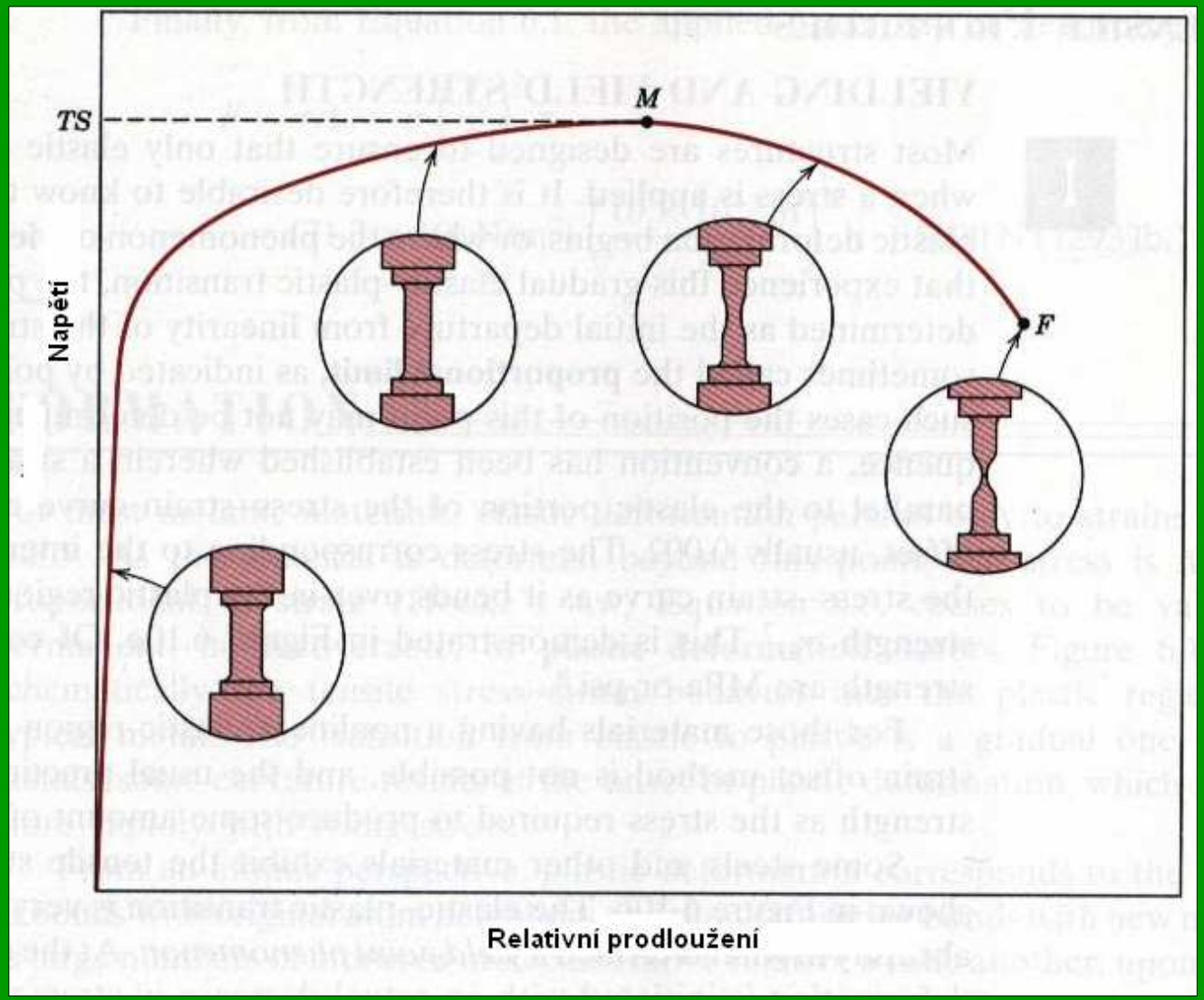
$$\gamma = \frac{x}{a} \qquad \tau = \frac{F}{S_0} \qquad \frac{x}{a} = \frac{1}{G}\frac{F}{S_0}, \quad tj. \quad \gamma = \frac{1}{G}\tau$$



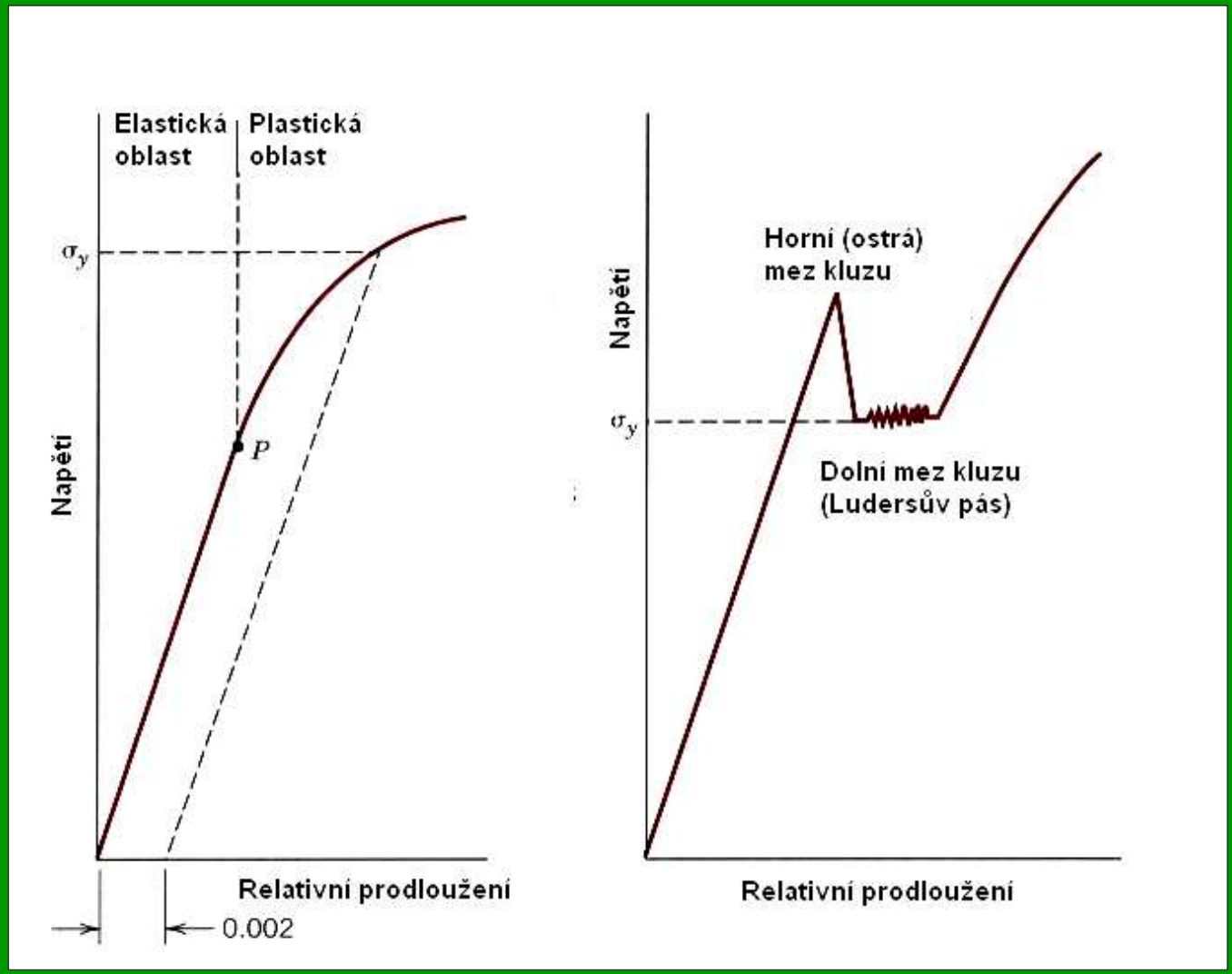
6.1.3. Všestranný tlak.

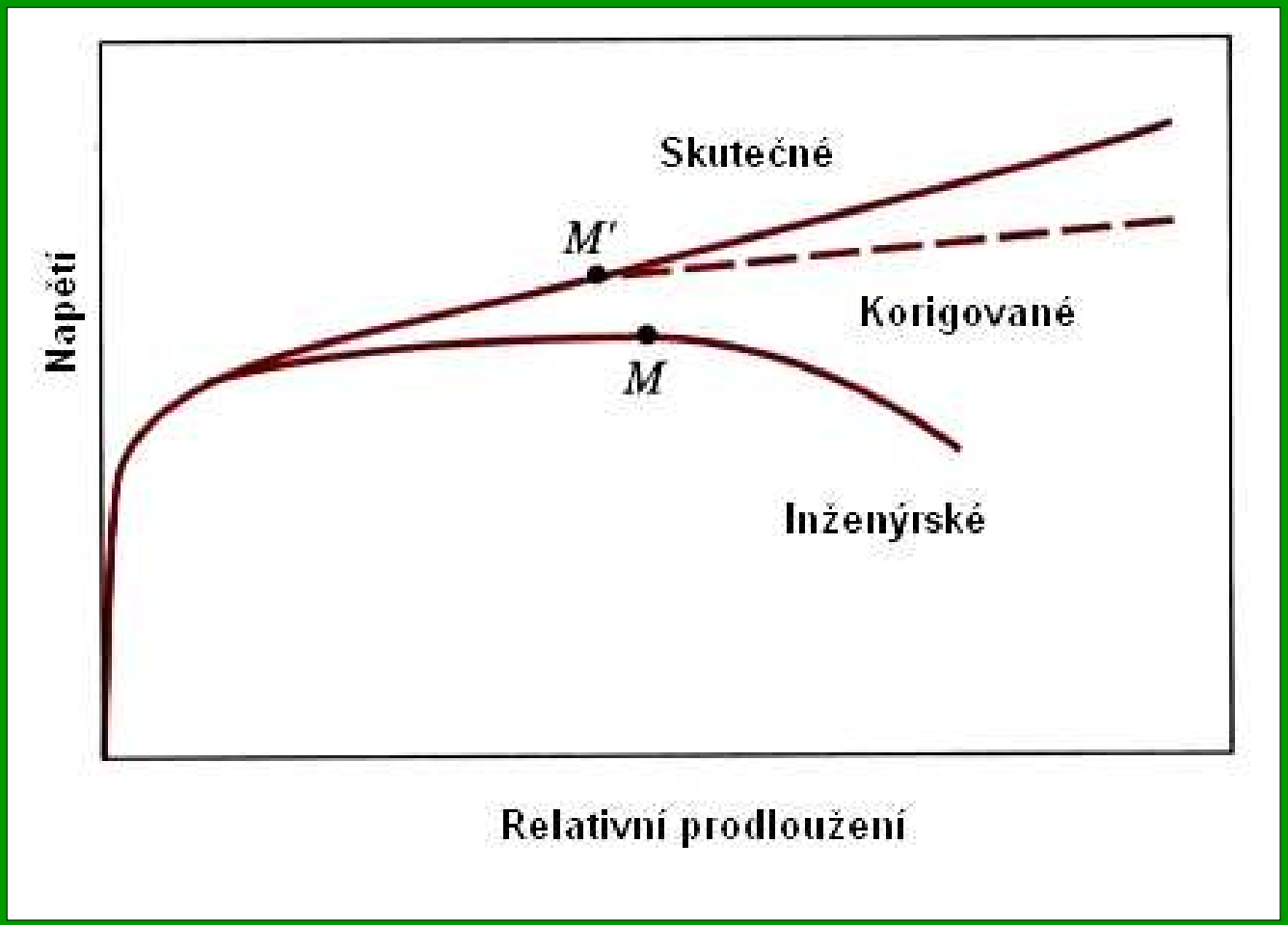


6.2. Plastické vlastnosti kovů.

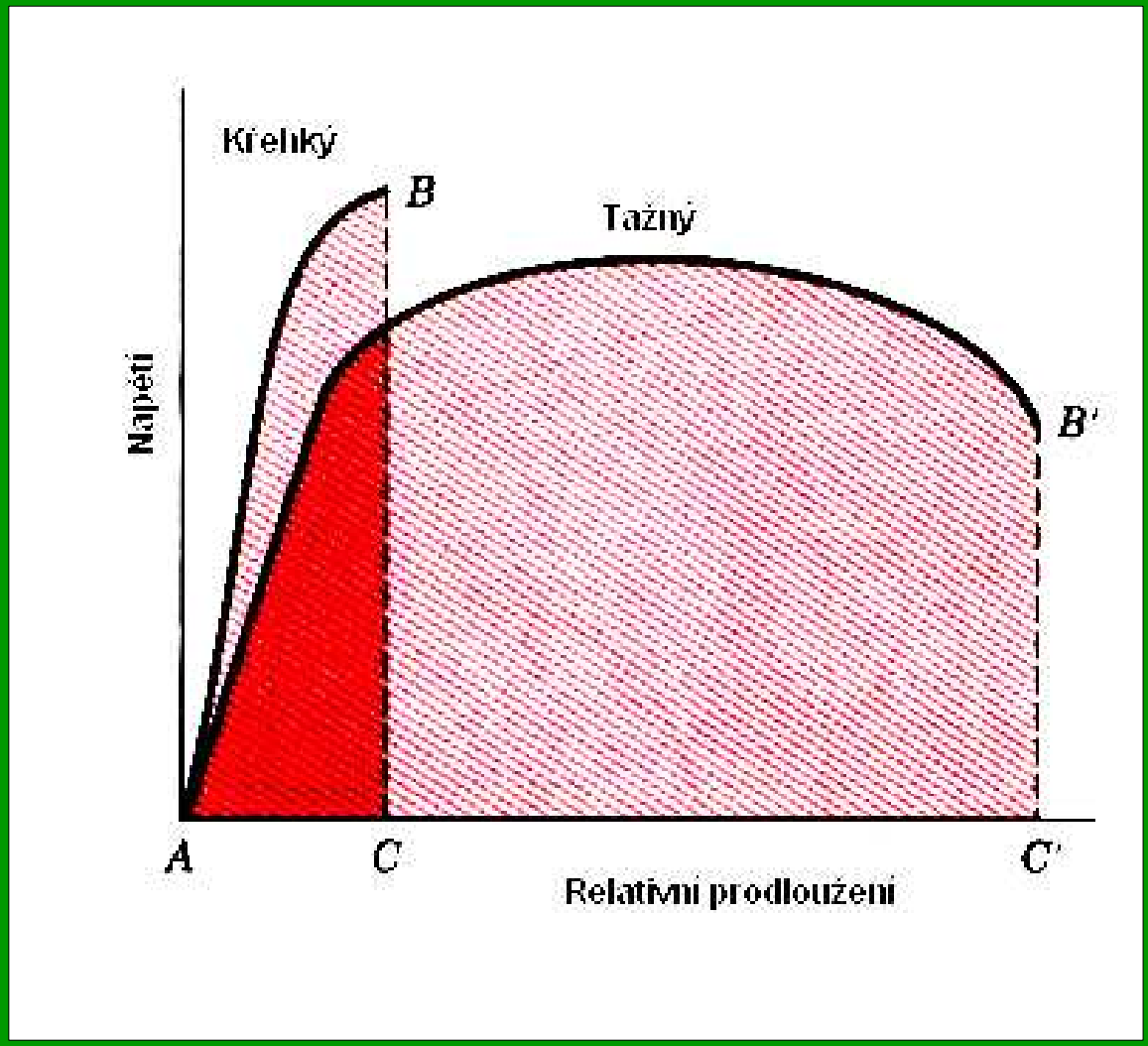


K určení meze kluzu.

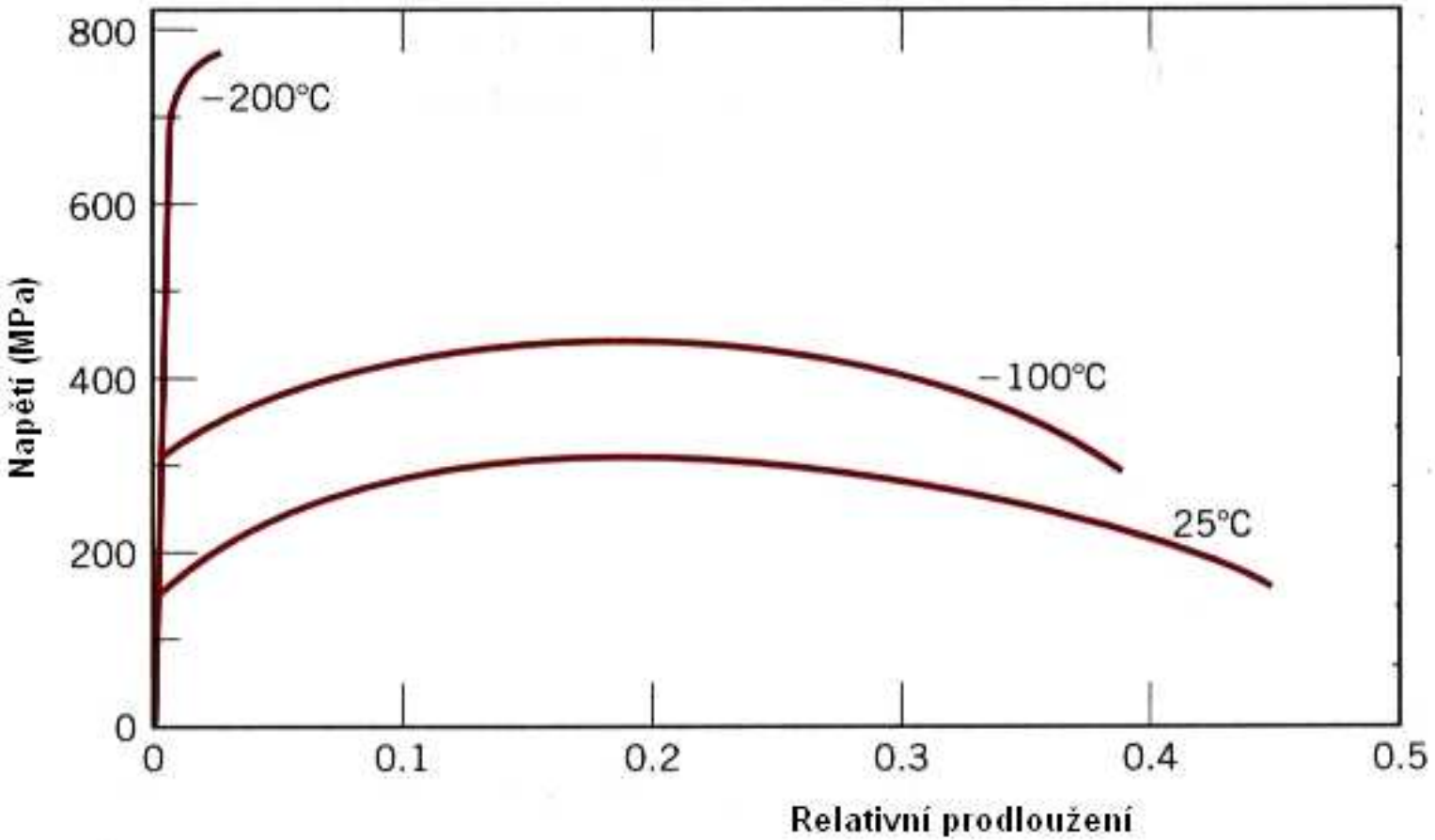




Oprava křivky σ = f(ε) na skutečný průřez vzorku.

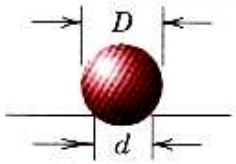
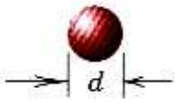
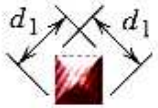
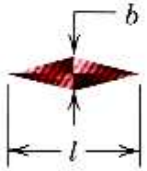
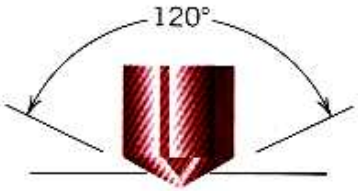


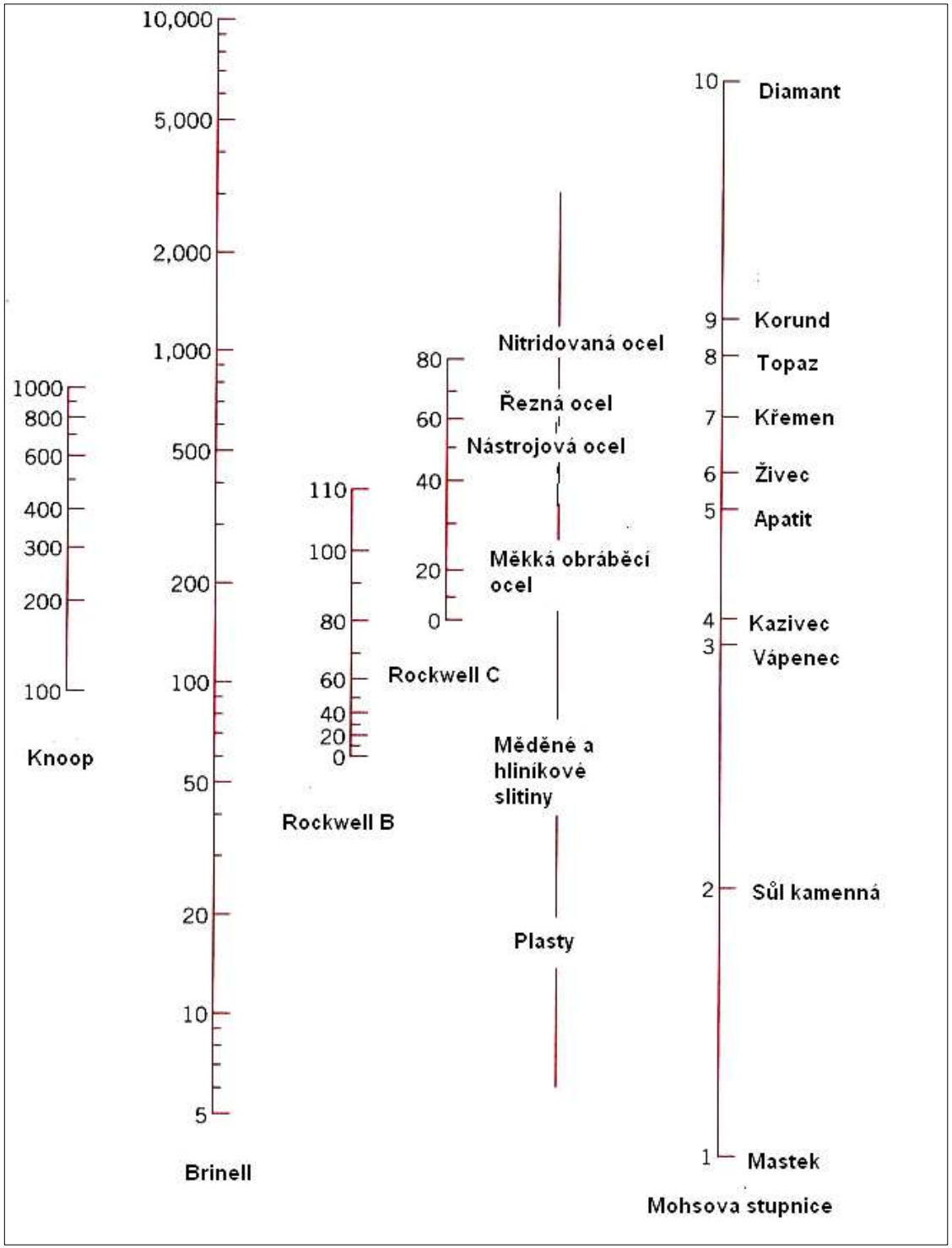
Křivka σ = f(ε) pro křehké a tažné materiály



Vliv teploty na tvar křivky σ = f(ε)

6.3. Tvrdost materiálu.

Zkouška podle	Indentor	Tvar vtisku	Vztah pro výpočet tvrdosti
Brinella			$HB = \frac{2P}{\pi D[D - \sqrt{D^2 - d^2}]}$
Vickerse			$HV = 1.854P/d_1^2$
Knoopa			$HK = 14.2P/l^2$
Rockwella			
			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Brinell
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200
100
Knoop
110
100
80
60
40
20
0
Rockwell B
80
60
40
20
0
Rockwell C
Nitridovaná ocel
Řezná ocel
Nástrojová ocel
Měkká obráběcí ocel
Měděné a hliníkové slitiny
Plasty
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9
8
7
6
5
4
3
2
1
Diamant
Korund
Topaz
Křemen
Živec
Apatit
Kazivec
Vápenec
Sůl kamenná
Mastek
Mohsova stupnice