

# Mattek. Øving 5, Vegard G. Jørvell

• Oppg. 1)

$$\sigma_c(a) = \left( \frac{ZE\delta_s}{\pi a} \right)^{1/2}$$

$$\rightarrow \sigma_{c1} \sqrt{a_1} = \sigma_{c2} \sqrt{a_2}$$

$$\sigma_{c2}(a_2) = \sigma_{c1} \sqrt{\frac{a_1}{a_2}}$$

$$\sigma_{c2}(a_1) = 112 \text{ MPa} \sqrt{\frac{86 \text{ mm}}{6,0 \text{ mm}}}$$

$$\sigma_c(6,0 \text{ mm}) = 134 \text{ MPa}$$

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• Oppg. 2)

$$K_{IC} = Y \sigma \sqrt{\pi a}$$

$$a = \frac{1}{\pi} \left( \frac{K_{IC}}{Y \sigma} \right)^2$$

$$a = 0,076 \text{ m}$$

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Oppg. 3a) Se vedlagt plot

• Oppg. 3b) Omgang fra deltil til Sprø som  
Snitt av  $T_{max}$  og  $T_{min}$ :

$$\underline{T_{omgang} = \frac{T_{max} + T_{min}}{2} = -100^\circ\text{C}}$$

Oppg. 3c) Slagenergi  $\geq 50 \text{ J} \rightarrow T \geq -105^\circ\text{C}$

• 3d) Sprø bruddflater blankt, gjennit utseende