



$$k = A \cdot e^{\left(\frac{-E_A}{RT}\right)} \quad T_1 = 25^\circ\text{C} \quad k_2 = 2k_1 \\ T_2 = 34^\circ\text{C}$$

$$\ln k_1 = \ln A - \frac{E_A}{RT_1}$$

$$\ln k_2 = \ln A - \frac{E_A}{RT_2}$$

$$\ln k_1 + \frac{E_A}{RT_1} = \ln A$$

$$\ln k_2 + \frac{E_A}{RT_2} = \ln A$$

$$\ln k_1 + \frac{E_A}{RT_1} = \ln k_2 + \frac{E_A}{RT_2}$$

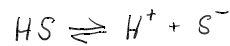
$$\ln k_1 - \ln k_2 = \frac{E_A}{RT_2} - \frac{E_A}{RT_1}$$

$$\ln \frac{k_1}{k_2} = \frac{E_A}{R} \left(\frac{1}{T_2} - \frac{1}{T_1} \right)$$

$$\frac{\ln \frac{k_1}{k_2} \cdot R}{\frac{1}{T_2} - \frac{1}{T_1}} = E_A = \frac{\ln \frac{k_1}{k_2} \cdot 8,314 \frac{\text{J}}{\text{mol K}}}{\frac{1}{307,15 \text{ K}} - \frac{1}{298,15 \text{ K}}} = 58,6 \cdot 10^3 \frac{\text{J}}{\text{mol}}$$

0,072 M Benzoesäurelösung.

$$\text{pH} = 2,68$$



(S: Benzoes.)

$$K_S = 2 \quad K_S = \frac{c(\text{H}^+) \cdot c(\text{S}^-)}{c(\text{HS})}$$

$$c(\text{H}^+) = 10^{-2,68} = 0,0021 \frac{\text{mol}}{\text{L}} = c(\text{S}^-)$$

$$c(\text{HB}) = 0,072 \frac{\text{mol}}{\text{L}} - 0,0021 \frac{\text{mol}}{\text{L}} = 0,0699 \frac{\text{mol}}{\text{L}}$$

$$K_S = \frac{(0,0021 \frac{\text{mol}}{\text{L}})^2}{0,0699 \frac{\text{mol}}{\text{L}}} = 6,31 \cdot 10^{-5} \frac{\text{mol}}{\text{L}}$$

0,01 $\frac{\text{mol}}{\text{L}}$ NaOH in Wasser

in 1 L smil 0,01 mol NaOH enthalten.

$$\text{enthaltenes Wasser: } n = \frac{m}{M} = \frac{1000 \text{ g}}{18 \text{ g/mol}} = 55,56 \text{ mol}$$

$$x_{\text{NaOH}} = \frac{0,01 \text{ mol}}{0,01 \text{ mol} + 55,56 \text{ mol}} = 1,8 \cdot 10^{-4}$$