

Bij 0°C is de K_w van water $1,2 \cdot 10^{-15}$. Hoe groot is de pH van neutraal water bij deze temperatuur?

Oplossing

$$K_w = [\text{H}^+] \cdot [\text{OH}^-] = 1,2 \cdot 10^{-15}$$

$$[\text{H}^+] = [\text{OH}^-]$$

$$\rightarrow [\text{H}^+]^2 = [\text{OH}^-]^2 = 1,2 \cdot 10^{-15}$$

$$\rightarrow [\text{H}^+] = [\text{OH}^-] = \sqrt{1,2 \cdot 10^{-15}} = 3,46 \cdot 10^{-8} \frac{\text{mol}}{\text{L}}$$

$$\text{pH} = -\log[\text{H}^+] = -\log 3,46 \cdot 10^{-8} = \mathbf{7,46}$$