

How is the temperature considered when calculating pH in DASGIP Control?

Nernst equation:
$$\Delta E = \Delta E^0 + \frac{R \cdot T}{n \cdot F} \ln \prod_{i=1}^k \{a_i\}^{v_i}$$

$$E(H^+ / H^2) = E^0(H^+ / H^2) + \frac{R \cdot T}{n \cdot F} \ln \prod_{i=1}^k \{H_i\}^{v_i}$$

$$E(H^+ / H^2) = E^0(H^+ / H^2) + \frac{R \cdot T}{n \cdot F} \ln[H^+]$$

$$E(H^+ / H^2) = E^0(H^+ / H^2) + 2,303 \cdot \frac{R \cdot T}{n \cdot F} \log[H^+]$$

$$E(H^+ / H^2) = E^0(H^+ / H^2) + 1,984 \cdot 10^{-4} \cdot T \cdot \log[H^+]$$

$$E(H^+ / H^2) = 0 + 1,984 \cdot 10^{-4} \cdot T \cdot \log[H^+]$$

$$\Delta E_{outside/inside} = 1,984 \cdot 10^{-4} \frac{V}{K} \cdot T \cdot \log\left[\frac{H^+_{outside}}{H^+_{inside}}\right]$$

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Temperatur t	absolute Temperatur T	natürlicher Faktor $R T / F$	Nernst-Faktor für $z_e = +1$ $\ln(10) R T / F$
0°C	273,15 K	23,54 mV	54,20 mV
2°C	275,15 K	23,71 mV	54,60 mV
4°C	277,15 K	23,88 mV	54,99 mV
6°C	279,15 K	24,06 mV	55,39 mV
8°C	281,15 K	24,23 mV	55,79 mV
10°C	283,15 K	24,40 mV	56,18 mV
11°C	284,15 K	24,49 mV	56,38 mV
12°C	285,15 K	24,57 mV	56,58 mV
13°C	286,15 K	24,66 mV	56,78 mV
14°C	287,15 K	24,74 mV	56,98 mV
15°C	288,15 K	24,83 mV	57,18 mV
16°C	289,15 K	24,92 mV	57,37 mV
17°C	290,15 K	25,00 mV	57,57 mV
18°C	291,15 K	25,09 mV	57,77 mV
19°C	292,15 K	25,18 mV	57,97 mV
20°C	293,15 K	25,26 mV	58,17 mV
21°C	294,15 K	25,35 mV	58,37 mV
22°C	295,15 K	25,43 mV	58,56 mV
23°C	296,15 K	25,52 mV	58,76 mV
24°C	297,15 K	25,61 mV	58,96 mV
25°C	298,15 K	25,69 mV	59,16 mV

DASGIP - Parallel Bioreactor Systems for Unparalleled Results.

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Temperatur t	absolute Temperatur T	natürlicher Faktor $R T / F$	Nernst-Faktor für $z_e = +1$ $\ln(10) R T / F$
25°C	298,15 K	25,69 mV	59,16 mV
26°C	299,15 K	25,78 mV	59,36 mV
27°C	300,15 K	25,86 mV	59,56 mV
28°C	301,15 K	25,95 mV	59,75 mV
29°C	302,15 K	26,04 mV	59,95 mV
30°C	303,15 K	26,12 mV	60,15 mV
31°C	304,15 K	26,21 mV	60,35 mV
32°C	305,15 K	26,30 mV	60,55 mV
33°C	306,15 K	26,38 mV	60,75 mV
34°C	307,15 K	26,47 mV	60,95 mV
35°C	308,15 K	26,55 mV	61,14 mV
36°C	309,15 K	26,64 mV	61,34 mV
37°C	310,15 K	26,73 mV	61,54 mV

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Temperatur t	absolute Temperatur T	natürlicher Faktor $R T / F$	Nernst-Faktor für $z_e = +1$ $\ln(10) R T / F$
37°C	310,15 K	26,73 mV	61,54 mV
38°C	311,15 K	26,81 mV	61,74 mV
39°C	312,15 K	26,90 mV	61,94 mV
40°C	313,15 K	26,99 mV	62,14 mV
45°C	318,15 K	27,42 mV	63,13 mV
50°C	323,15 K	27,85 mV	64,12 mV
55°C	328,15 K	28,28 mV	65,11 mV
60°C	333,15 K	28,71 mV	66,10 mV
65°C	338,15 K	29,14 mV	67,10 mV
70°C	343,15 K	29,57 mV	68,09 mV
75°C	348,15 K	30,00 mV	69,08 mV
80°C	353,15 K	30,43 mV	70,07 mV
85°C	358,15 K	30,86 mV	71,06 mV
90°C	363,15 K	31,29 mV	72,06 mV
95°C	368,15 K	31,72 mV	73,05 mV
100°C	373,15 K	32,16 mV	74,04 mV

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