

Potentials of the Hydrogen-pH-Electrode pHDrunionio at 25°C

Measuring voltage and pH are related as follows:

$$E = \frac{2,303 \cdot R \cdot T}{F} \cdot (\text{pH}_{\text{inside}} - \text{pH})$$

The measuring voltage can be converted by conversion to the pH value.

$$\text{pH} = \frac{-E \cdot F}{2,303 \cdot R \cdot T} + \text{pH}_{\text{inside}}$$

E = measured voltage in volt

R = General Gas constant 8,314 J mol⁻¹ K⁻¹

F = Faraday constant 96485 C mol⁻¹

T = Temperature in Kelvin K

pH_{inside} = 7

Simplified, the equation for converting the measured voltage is U to pH

$$\text{pH} = \frac{-E}{273,15 + T} \cdot 5039,1 + 7$$

pH	Voltage in Volt
0	0.4142
1	0.3550
2	0.2958
3	0.2367
4	0.1775
5	0.1183
6	0.0592
7	0.0000
8	-0.0592
9	-0.1183
10	-0.1775
11	-0.2367
12	-0.2958
13	-0.3550
14	-0.4142