

pH NSF Calibration

Lumiso Pools

PRODUCT SUPPORT INFORMATION

A Halma company

01/2022

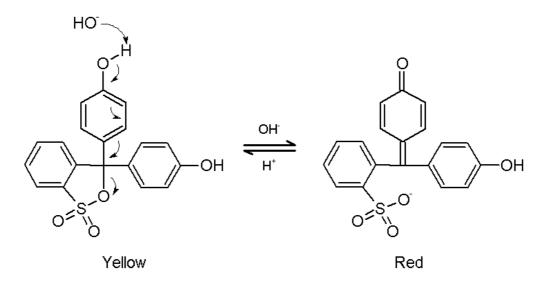
Lumiso Pools NSF Calibration: pH v1.0



Palintest Lumiso pool photometers have a pH calibration which has been complied using solutions specified by NSF (see NSF/ANSI/CAN/50-2019) to mimic pool water as accurately as possible. The pH calibration on the legacy Palintest pool photometers was compiled using pool surrogate solutions containing calcium and alkalinity. Calibrations specified by the NSF have compositions closer to real swimming pool water, containing calcium, alkalinity, magnesium, and chlorine, and therefore we have chosen to adopt this method for the Lumiso instruments.

Typically, the solutions contain 220 mg/L calcium hardness, 80 mg/L magnesium hardness, 2 mg/L chlorine and 100mg/L alkalinity. The solutions are also measured at 27 and 39 °C to represent the temperature of a swimming pool or spa respectively.

Phenol Red is used to determine the pH of aqueous solutions because it exists in equilibrium between a yellow and red compound. The pH of the solution determines the amount of yellow and red components and therefore the colour of the solution when a phenol red reagent is added.



This equilibrium is also influenced by the composition of the solution, which is why the calibration between the legacy photometers and Lumiso photometers report slightly different results on the pH test.

pH was measured across the range of the test at room temperature, 27°C and 39°C using a pH probe to compare the results of the legacy pool photometer. The results are shown in the table below.

nU probo	Legacy Photometer		
pH probe	Room temp.	27°C	39°C
7.1	7.24	7.33	7.42
7.3	7.49	7.49	7.53
7.5	7.67	7.72	7.70



7.9	8.05	8.02	8.04
8.3	8.40	8.38	8.33

The results show that the legacy photometer reads 0.1–0.2 higher than the pH probe, increasing slightly at higher temperatures.

The pH was also measured across the range comparing the results of a Lumiso photometer to a pH probe. The results are shown in the table below.

nH probo	Lumiso Photometer		
pH probe	27°C	39°C	
6.79	6.70	6.80	
7.00	6.94	6.97	
7.29	7.28	7.29	
7.50	7.40	7.65	
7.90	7.88	7.88	
7.99	8.03	8.13	
8.39	8.37	8.40	

The Lumiso pH calibration aligns very well with the pH probe at 27°C and 39°C.