



## Prime Water Electrodes

# DURABILITY

## PRIME WATER ELECTRODES Internal Durability Test Conducted

According to the analysis of the test results:

The tests were performed according to standard test methodology.

After each test was taken according to the different flow rates and comparing the analysis to a range of standards, even when not using the standard amounts, water cell life was ten years

- TEST conditions: H<sub>2</sub>SO<sub>4</sub> 0.5mol / l on the electrolyte solution 40 °C, 2A / d m<sup>2</sup> is current, 240hr electrolysis
- TEST Quantity: 3 varieties [Heat 1, Heat 2 times, Brazing products]
- TEST Date: 1/10 08:00
- TEST End Date: 20.01 08:00
- TEST progress results: 240hr after all

n=	1 Pt 1 =	0.22
n=	2 Pt 1 =	0.18
n=	3 Pt 1 =	0.20
n=	4 Pt 1 =	0.19
n=	5 Pt 1 =	0.14
n=	6 Pt 1 =	0.18
n=	7 Pt 1 =	0.21
n=	8 Pt 1 =	0.20
n=	9 Pt 1 =	0.21



Mean	0.190
Standard deviation	0.024
C.O.V. (%)	12.85
Range	0.08
Number of readings	9.0
Min. reading	0.14
Max. reading	0.14
Measuring time	0.22
Operator:	20

# Prime Water Electrodes Durability and Performance testing

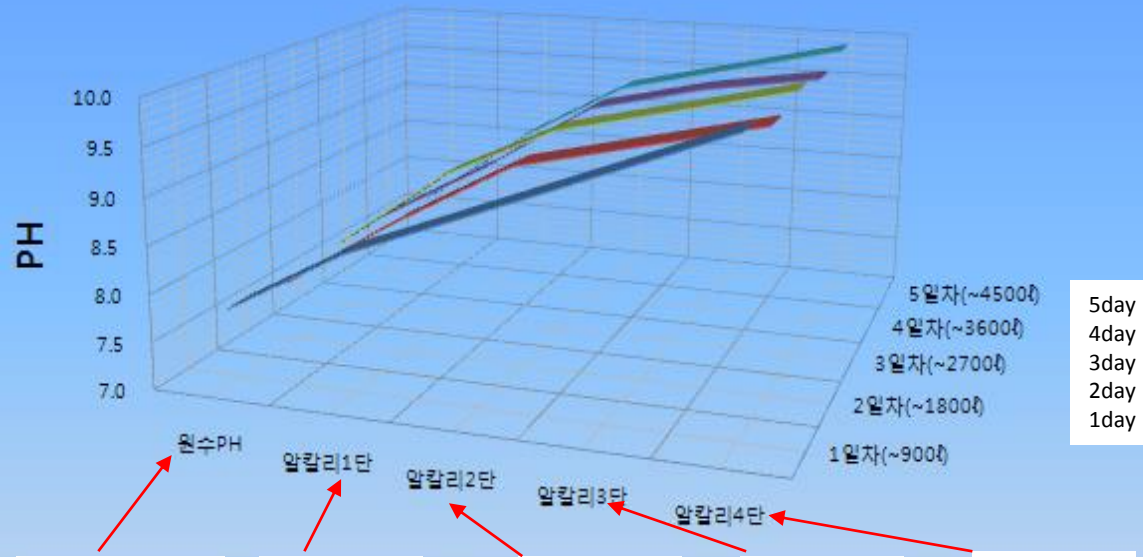
NO	Data	Descriptions	Comments
1	Product	Electrolytic Alkaline Water Generator (Prime 1301 – 13Plates)	
2	Test Period	40 days	Daily Journal kept
3	Total Discharge	36,000 liters (Four people using 10 L per day on average: about 10 years worth)	Standard - 365 day year
4	Basis of usage life	At least 10 years over	
5	Water pressure	2.5 Kg/cm <sup>2</sup>	Water pressure from unit
6	Water flow rate	2.5 l/min	Alkaline water:1.5l/min Acidic water:1.0l/min
7	This method	Every day five samples were taken to test pH and the average was taken down.	
8	This started cleaning method	The machine was used for 30 min. to produce alkaline water after which the machine went into cleaning cycle then tested.	
9	Testing machine	pH-meter Model:HM-20P Jejo Co.: TOA(Japan)	

According to the analysis of the test results:

The tests were performed according to standard test methodology. After each test was taken according to the different flow rates and comparing the analysis to a range of standards, even when not using the standard amounts, water cell life was at least ten years over

# Prime Water Electrodes Durability and Performance testing

1~5 days test (0~4,500L)

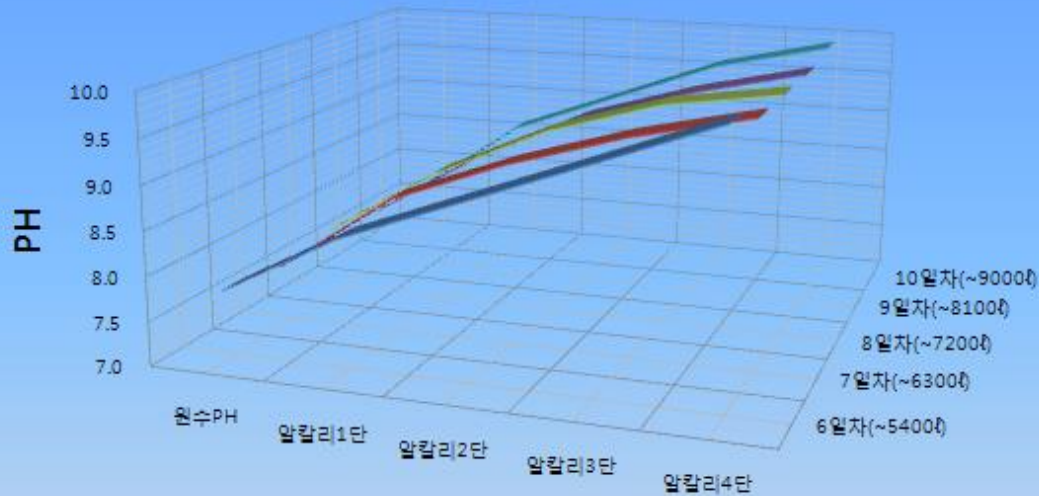


	원수PH	알칼리1단	알칼리2단	알칼리3단	알칼리4단
	Tap Water pH	Alkaline-1	Alkaline-2	Alkaline-3	Alkaline-4
1day	7.8	8.5	9.0	9.5	10.0
2day	7.7	8.5	9.2	9.5	9.8
3day	7.8	8.7	9.3	9.6	9.9
4day	7.8	8.5	9.3	9.6	9.8
5day	7.7	8.6	9.3	9.6	9.9

- pH측정값은 5회씩 측정하여 나온 평균값으로 기재함.

# Prime Water Electrodes Durability and Performance testing

6~10 days test (4,500~9,000L)

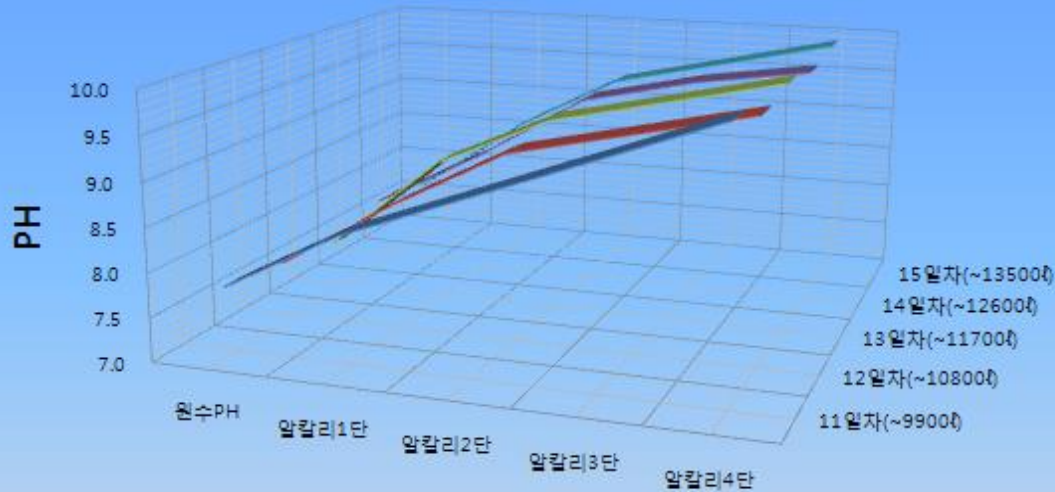


	Tap Water pH	Alkaline-1	Alkaline-2	Alkaline-3	Alkaline-4
6일자(~5400ℓ)	7.8	8.5	9.0	9.5	10.0
7일자(~6300ℓ)	7.7	8.6	9.1	9.5	9.8
8일자(~7200ℓ)	7.8	8.6	9.2	9.6	9.8
9일자(~8100ℓ)	7.7	8.5	9.1	9.5	9.8
10일자(~9000ℓ)	7.7	8.6	9.1	9.6	9.9

- pH측정값은 5회를 실측정하여 나온 평균값으로 기재함.

# Prime Water Electrodes Durability and Performance testing

11~15 days test (9,000~13,500L)

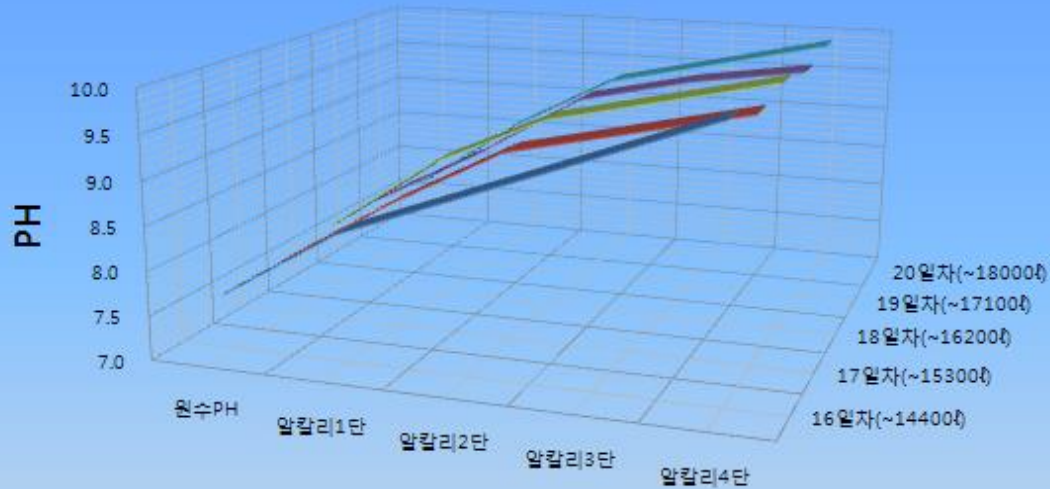


	Tap Water pH	Alkaline-1	Alkaline-2	Alkaline-3	Alkaline-4
11일자(~9900ℓ)	7.8	8.5	9.0	9.5	10.0
12일자(~10800ℓ)	7.7	8.5	9.2	9.5	9.8
13일자(~11700ℓ)	7.6	8.7	9.3	9.6	9.9
14일자(~12600ℓ)	7.8	8.5	9.3	9.6	9.8
15일자(~13500ℓ)	7.7	8.6	9.3	9.6	9.9

- pH측정값은 5회를 실측정하여 나온 평균값으로 기재함.

# Prime Water Electrodes Durability and Performance testing

16~20 days test (13,500~18,000L)

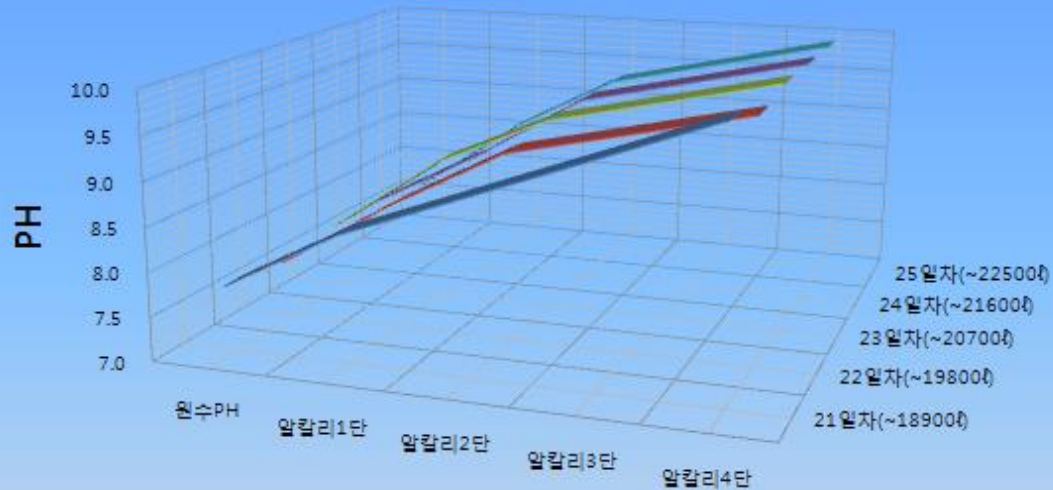


	Tap Water pH	Alkaline-1	Alkaline-2	Alkaline-3	Alkaline-4
16일차(~14400ℓ)	7.7	8.5	9.0	9.5	10.0
17일차(~15300ℓ)	7.7	8.5	9.2	9.5	9.8
18일차(~16200ℓ)	7.8	8.7	9.3	9.6	9.9
19일차(~17100ℓ)	7.8	8.5	9.3	9.6	9.8
20일차(~18000ℓ)	7.7	8.6	9.3	9.6	9.9

- pH측정값은 5회를 실측정하여 나온 평균값으로 기재함.

# Prime Water Electrodes Durability and Performance testing

21~25 days test (18,000~22,500L)

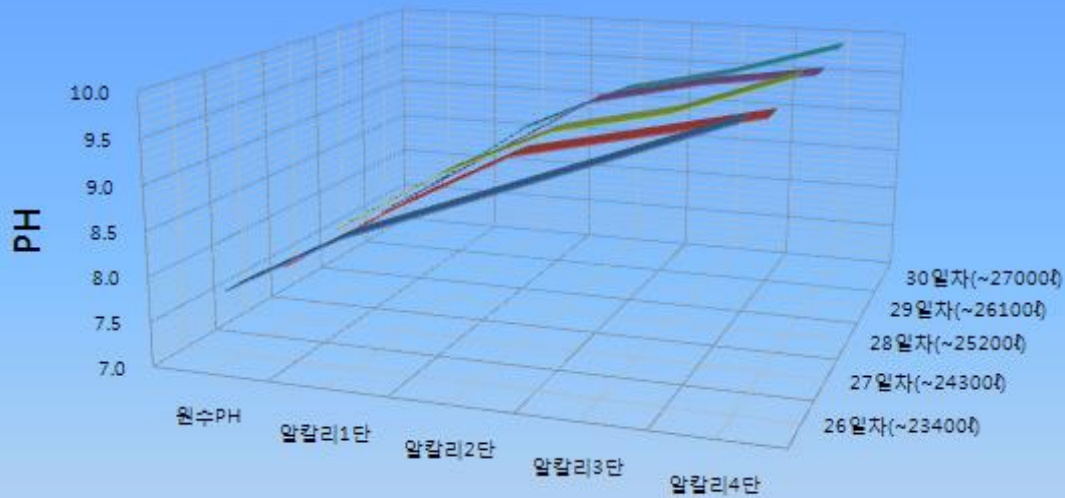


	Tap Water pH	Alkaline-1	Alkaline-2	Alkaline-3	Alkaline-4
21일자(~18900L)	7.8	8.5	9.0	9.5	10.0
22일자(~19800L)	7.7	8.5	9.2	9.5	9.8
23일자(~20700L)	7.8	8.7	9.3	9.6	9.9
24일자(~21600L)	7.8	8.5	9.3	9.6	9.9
25일자(~22500L)	7.7	8.6	9.3	9.6	9.9

- pH측정값은 5회를 실측정하여 나온 평균값으로 기재함.

# Prime Water Electrodes Durability and Performance testing

26~30 days test (22,500~27,000L)



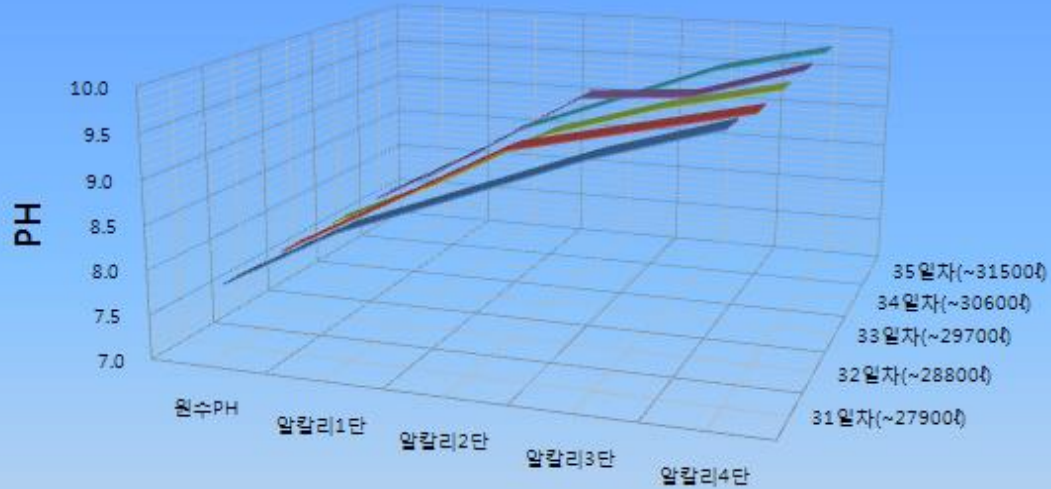
	Tap Water pH	Alkaline-1	Alkaline-2	Alkaline-3	Alkaline-4
■ 26일차(~23400ℓ)	7.8	8.5	9.0	9.5	10.0
■ 27일차(~24300ℓ)	7.7	8.5	9.2	9.5	9.8
■ 28일차(~25200ℓ)	7.8	8.6	9.2	9.5	9.98
■ 29일차(~26100ℓ)	7.7	8.5	9.3	9.6	9.8
■ 30일차(~27000ℓ)	7.7	8.6	9.2	9.5	9.9

- pH측정값은 5회를 실측정하여 나온 평균값으로 기재함.



# Prime Water Electrodes Durability and Performance testing

31~35 days test (27,900~31,500L)

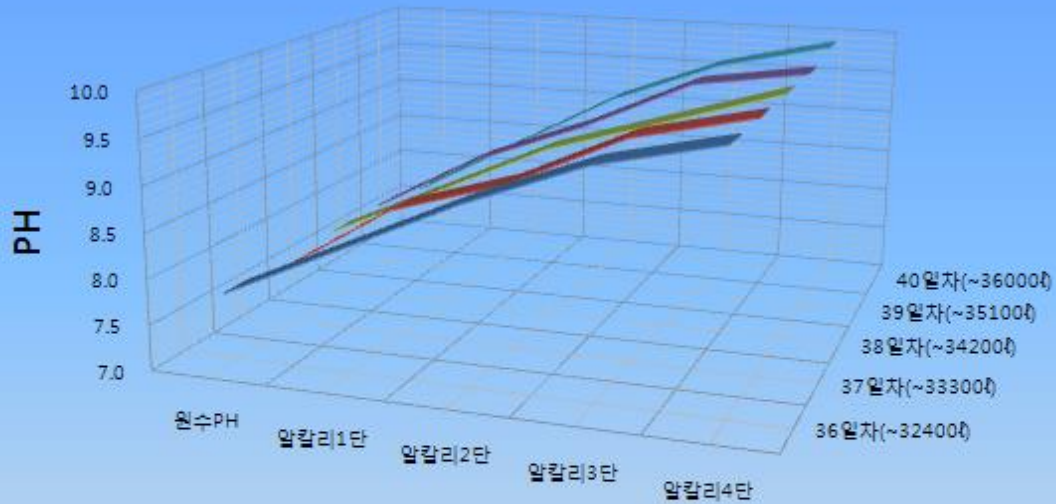


	Tap Water pH	Alkaline-1	Alkaline-2	Alkaline-3	Alkaline-4
31일자(~27900L)	7.8	8.5	9.0	9.5	9.9
32일자(~28800L)	7.8	8.5	9.2	9.5	9.8
33일자(~29700L)	7.8	8.4	9.1	9.5	9.8
34일자(~30600L)	7.8	8.5	9.3	9.4	9.8
35일자(~31500L)	7.7	8.5	9.0	9.5	9.8

- pH측정값은 5회를 실측정하여 나온 평균값으로 기재함.

# Prime Water Electrodes Durability and Performance testing

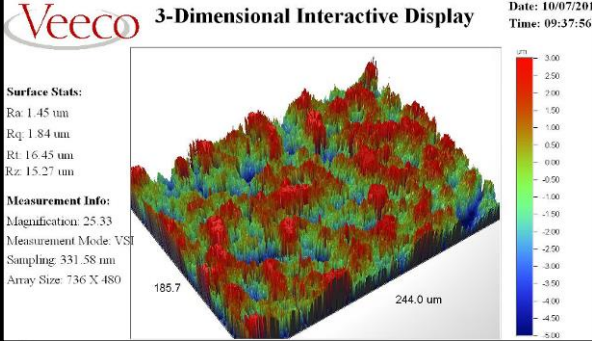
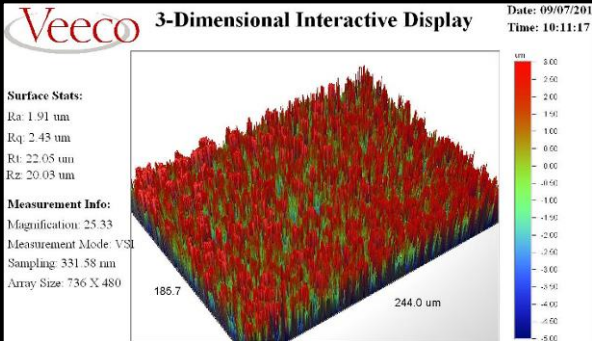
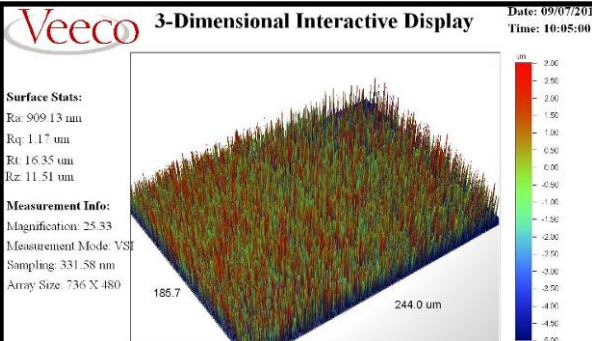
36~40 days test (31,500~36,000L)



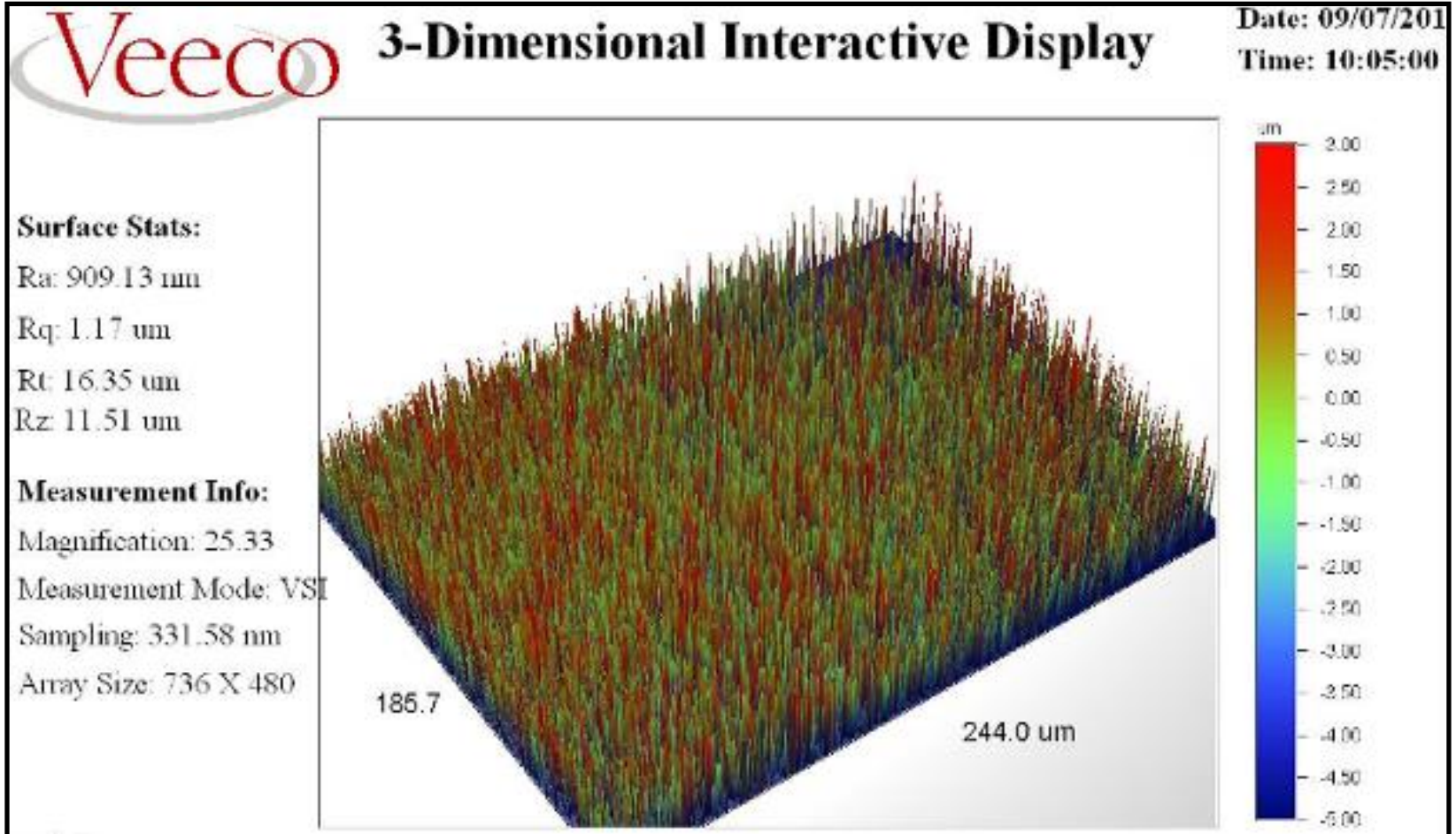
	Tap Water pH	Alkaline-1	Alkaline-2	Alkaline-3	Alkaline-4
36일자(~32400)	7.8	8.4	9.0	9.5	9.8
37일자(~33300)	7.7	8.5	8.9	9.5	9.8
38일자(~34200)	7.8	8.4	9.0	9.4	9.8
39일자(~35100)	7.8	8.5	9.0	9.6	9.8
40일자(~36000)	7.7	8.4	9.1	9.6	9.9

- pH측정값은 5회를 실험정하여, 나온 평균값으로 기재함.

# Prime Water Electrodes Durability and Performance testing

Company	3D Surface roughness measure	Result
<p style="text-align: center;"><b>CHINA PLATES</b></p>	 <p><b>Veeco 3-Dimensional Interactive Display</b> Date: 10/07/201 Time: 09:37:56</p> <p><b>Surface Stats:</b>  Ra: 1.45 um  Rq: 1.84 um  Rt: 16.45 um  Rz: 15.27 um</p> <p><b>Measurement Info:</b>  Magnification: 25.33  Measurement Mode: VSI  Sampling: 331.58 nm  Array Size: 736 X 480</p>	<p style="text-align: center;"><b>Surface roughness : rough</b></p>
<p style="text-align: center;"><b>KOREA "A" COMPANY PLATES</b></p>	 <p><b>Veeco 3-Dimensional Interactive Display</b> Date: 09/07/201 Time: 10:11:17</p> <p><b>Surface Stats:</b>  Ra: 1.91 um  Rq: 2.43 um  Rt: 22.05 um  Rz: 20.03 um</p> <p><b>Measurement Info:</b>  Magnification: 25.33  Measurement Mode: VSI  Sampling: 331.58 nm  Array Size: 736 X 480</p>	<p style="text-align: center;"><b>Surface roughness : rough</b></p>
<p style="text-align: center;"><b>PRIME WATER PLATES</b></p>	 <p><b>Veeco 3-Dimensional Interactive Display</b> Date: 09/07/201 Time: 10:05:00</p> <p><b>Surface Stats:</b>  Ra: 909.13 um  Rq: 1.17 um  Rt: 16.35 um  Rz: 11.51 um</p> <p><b>Measurement Info:</b>  Magnification: 25.33  Measurement Mode: VSI  Sampling: 331.58 nm  Array Size: 736 X 480</p>	<p style="text-align: center;"><b>Surface roughness :Good surface</b></p>

# Prime Water Electrodes Surface



## ■ Platinum Plating Process



### Press

Titanium shape processing in the press



### Electrode machining

Electrode cutting and rolling process



### Washing

Removal of oil and grease from media and cut pieces



### Spot Welding

Welding of the metal terminal to the electrode.



### Sanding

Sand blasting process to improve plating adhesion



### Racking

Titanium electrodes loaded onto plating jig



**Packing/Shipping**

### **Skimmer**

Removal of any surface grease or oil

### **Etching**

Removal of oxidation from titanium surface

### **Activator**

Surface of titanium activated to improve plating adhesion

### **Platinum Plating**

Titanium plated with platinum

### **Drying**

Water is removed from the surface of the platinum

### **Heat Treatment**

Heat treated in furnace to strengthen adhesion of platinum  
To titanium.

### **Shipping Inspection**

Reliability and appearance inspection /  
Certificate of Inspection issued