Temperature influence on Neutral Anolyte, Anolyte and Catholyte

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Introduction

As clients use Anolyte to disinfect aqueous solutions in applications where Anolyte is subject to increased temperatures, we conducted some experiments to analyse and confirm the bactericidal properties of Anolyte expressed in mV (ORP) and in mg/l (C.ac) even at high temperatures.

At the same time, experiments were executed to determine the corrosive effect of Anolyte when Anolyte or Anolyte diluted in water is heated.

Determination of ORP when Neutral Anolyte is heated:

Fresh Anolyte with the following parameters was prepared:
pH: 7.6
ORP: 838mV
C.ac: ± 500mg/l
Temperature: 17°C.

No.	T, °C.	ORP, mV	No.	T, °C.	ORP, mV
1	18.5	837	**7**	49.6	799
2	19.0	828	**8**	60.0	802
3	24.9	818	**9**	65.0	801
4	30.0	815	**10**	70.2	801
5	34.9	809	**11**	80.0	802
6	38.5	806	**12**	90.1	800

Conclusion: increase of temperature has only a slight effect on the ORP of (neutral) Anolyte.

Determination of ORP when Anolyte is heated:

Fresh Anolyte with the following parameters was prepared:
pH: 2.5
ORP: 1128mV
C.ac: 655 mg/l
Temperature: 12.4°C.

No.	T, °C	pH	ORP, mV	C.ac, mg/l
1	12.4	2.5	1126	653
2	20.0	2.3	1125	624
3	25.0	2.2	1123	617

4	30.0	2.2	1119	609
5	35.0	2.1	1110	554
6	40.0	1.9	1115	539
7	46.0	1.7	1117	531
8	50.0	1.7	1113	461

Conclusion: increase of temperature has only a slight effect on the ORP of Anolyte. The amount of active chlorine is reduced but not significantly to influence overall performance of anolyte.

Determination of ORP when Catholyte is heated:

Fresh Catholyte with the following parameters was prepared:
pH: 12
ORP: -868mV
C.ac: 0 mg/l
Temperature: 13.2ºC.

No.	T, ºC	pH	ORP, mV	C.ac, mg/l
1	13.2	12.0	-866	0
2	20.1	12.1	-707	0
3	25.0	12.0	-722	0
4	30.0	11.9	-682	0
5	35.0	11.8	-700	0
6	40.0	11.7	-696	0
7	45.0	11.6	-732	0
8	50.0	11.4	-725	0

Conclusion :increase of temperature has only a slight effect on the ORP of Catholyte.

Conclusion:

Each experiment was repeated 2-3 times, accuracy of parallel experiments was good and error difference was not greater than 10%.

With increase of temperature active chlorine concentration decreases, as well as pH values for both Anolyte and Catholyte solutions. As to oxidation-reduction potential (ORP) values for both Anolyte and Catholyte solutions ,it does not change. The registered changers in C.ac. of anolyte are not significant and do not compromise the efficacy on anolyte as biocide.

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