HIGH POTENCY CDS MAKING - JIM HUMBLE METHOD

by Michael Harrah

I made a batch of high potency CDS following Jim's latest CDS instruction video dated 9-Feb-2012
http://www.youtube.com/watch?v=EKy2fK1ILxI&feature=uploademail

I tested it after running one batch of 1 fl.oz. (30 ml) MMS for 20 minutes; then ran another batch of 1 fl.oz. (30 ml) MMS into the same 4 fl.oz. (118 ml) CDS for 20 minutes and tested again.

I conclude from these results that Jim Humble's instructions are accurate and anyone who follows them should get approximately 10,000 ppm CDS after reacting a single 1 fl.oz. (30ml) batch of MMS into 4 fl.oz. (118ml) of distilled water. Reacting a second 1 fl.oz. of MMS into the same 4 fl.oz. of CDS should give you 4 fl.oz. of approximately 20,000 ppm CDS.

METHOD

reaction chamber: 2 fl.oz. baby bottle; 1 fl.oz. (30ml) MMS, 1 fl.oz. (30 ml) citric acid 50%.

receiving chamber: 6 fl.oz. wine bottle tall & skinny; 4 fl.oz. (118 ml) room temperature distilled water.

tubing: 1/4 inch OD polyethylene, no diffuser

temperature: barely boiling

time: 20 minutes

water: all references to water are distilled water.

19-Feb-2012 Ran first 20 minute batch. Took out 1 ml with syringe & performed these tests.

LaMotte 0-500 ppm strips: undiluted ppm is total ml times strip reading. (40x500=20,000, etc.)

1 ml CDS in how much water	strip reading	undiluted PPM	comment on reading
1:40	500 ppm	20,000 ppm	clear match
1:80	250 ppm	20,000 ppm	clear match
1:120	100 ppm	12,000 ppm	seemed like a match
1:160	100 ppm	16,000 ppm	seemed like a match
1:200	50-100 ppm	15,000 ppm approx.	ambiguous
1:240	50 ppm	12,000 ppm	clear match

Added water to above 240 ml dilution (1 ml CDS in 239 ml water) to bring up to 1000 ml, then performed these tests with the meter.

eXact chlorine photometer using glycine and DPD-1 strips per manual

same sample	meter reading	Cl02 table value	undiluted PPM (table value x 1000)	comments
1st	4.35	9.9	9,900 ppm	I think this is probably accurate.
2nd	4.39	9.9	9,900 ppm	

19-Feb-2012 Ran second twenty minute batch into same 4 fl.oz. water from above batch. Took out 1 ml with syringe and performed these tests.

LaMotte 0-500 ppm strips: undiluted ppm is total ml times strip reading. (120x500=60,000, etc.)

1 ml CDS in how much water	strip reading	undiluted PPM	comment on reading
1:40	500+ ppm	unknown	golden brown, above 500ppm
1:80	500+ ppm	unknown	golden brown, above 500ppm
1:120	500 ppm	60,000 ppm	seemed like a match
1:160	100-250 ppm	35,000 ppm approx.	ambiguous
1:200	50-100 ppm	15,000 ppm approx.	ambiguous
1:240	100 ppm	24,000 ppm	clear match
1:280	50-100 ppm	21,000 ppm approx.	ambiguous
1:320	50+ ppm	16,000 ppm approx.	ambiguous
1:360	25-50 ppm	13,500 ppm approx.	ambiguous

Added water to above 360 ml sample to bring up to 1000 ml, then performed these tests with the meter.

eXact chlorine photometer using glycine and DPD-1 strips per manual

same sample	**meter reading**	**Cl02 table value**	**undiluted PPM** (table value x 1000)	**comments**
1st	4.01	9.9	9,900 ppm	At the high end of the meter; clearly inaccurate because I could tell from the test strips this was twice as potent, and just from the color of the dilutions.
2nd	4.31	9.9	9,900 ppm	At the high end of the meter; clearly inaccurate because I could tell from the test strips this was twice as potent, and just from the color of the dilutions.

Took new .5 ml CDS sample from 4 fl.oz. bottle added 1000 ml, then performed these tests with the meter.

eXact chlorine photometer using glycine and DPD-1 strips per manual

same sample	**meter reading**	**Cl02 table value**	**undiluted PPM**	**comments**
1st	4.22	9.9	19,800 ppm	--this is .5 ml CDS and 1000 ml water. (dbl ckd with endmemo dilution calculator, see below)
2nd, took 100ml and added 100ml water	21.3	4.3	17,200 ppm	--this is like .5 ml CDS and 2000 ml water. (dbl ckd with endmemo dilution calculator, see below)
3rd, took 100ml and added 200ml water	21.3	4.3	16,200 ppm	--this is like .5 ml CDS and 3000 ml water. (dbl ckd with endmemo dilution calculator, see below)

Observations: Still observing that LaMotte strips in the high range (500-250 ppm) are showing double the ppm as tests diluted to the mid range (100-50 ppm). This is a big problem. The LaMotte strips seem to be pretty inaccurate on the super high potency above 10,000 ppm. The meter seems to be inaccurate if you run 2 batches into the same CDS and try to test on a 1:1000 dilution; dilution needs to be .5 ml:1000 or more.

Conclusions: LaMotte strips vary by 100% between high end and mid range dilutions. Need to use higher than 1:1000 dilutions with the meter at these high potencies and do more testing, results are varying more. I think the meter does show that the first batch was about 10,000 ppm and the second batch was about 20,000 ppm, but it seems to become less accurate at the high ppms also.

19-Feb-2012 endmemo calculator double checks (http://endmemo.com/bio/dilution.php).

Stock Solution **Dilute solution**

19800 mg/L x 0.5 ml = 9.90 mg/L x 1000 ml
17200 mg/L x 0.5 ml = 4.30 mg/L x 2000 ml
16020 mg/L x 0.5 ml = 2.67 mg/L x 3000 ml

19800 mg/L x 0.5 ml = 9.90 mg/L x 1000 ml
.5ml CDS into 1000ml distilled water

17200 mg/L x 0.5 ml = 4.30 mg/L x 2000 ml
Took 100 ml of above and added 100 ml water; so this is like .5 ml CDS in 2000 ml water.

16020 mg/L x 0.5 ml = 2.67 mg/L x 3000 ml
Took 100 ml of above and added 200 ml water; so this is like .5 ml CDS in 3000 ml water.