CDS CLO2 Concentration vs Receiver Surface Area

It seems the larger the CDS receiver container surface area, the more efficient the process becomes.

The reference is the 500 ml clamp-lid container: 240 ml distilled water and 12 ml MMS + 12 ml 10% HCL = 3000 ppm.

Left = 200 ml DW plus 10 ml MMS + 10 ml 10% HCL.
Right = 140 ml DW plus 7 ml MMS + 7 ml 10% HCL.
Photo taken at + 10 minutes.

Photo taken at +13 hours. (12 hours at room temp and 1 hour in a fridge. White color on right jar is condensation inside jar.
Left ppm = 2106 Right ppm = 2010

240 ml distilled water and 12 ml MMS + 12 ml 10% HCL
3000 ppm CDS made with 10% HCL

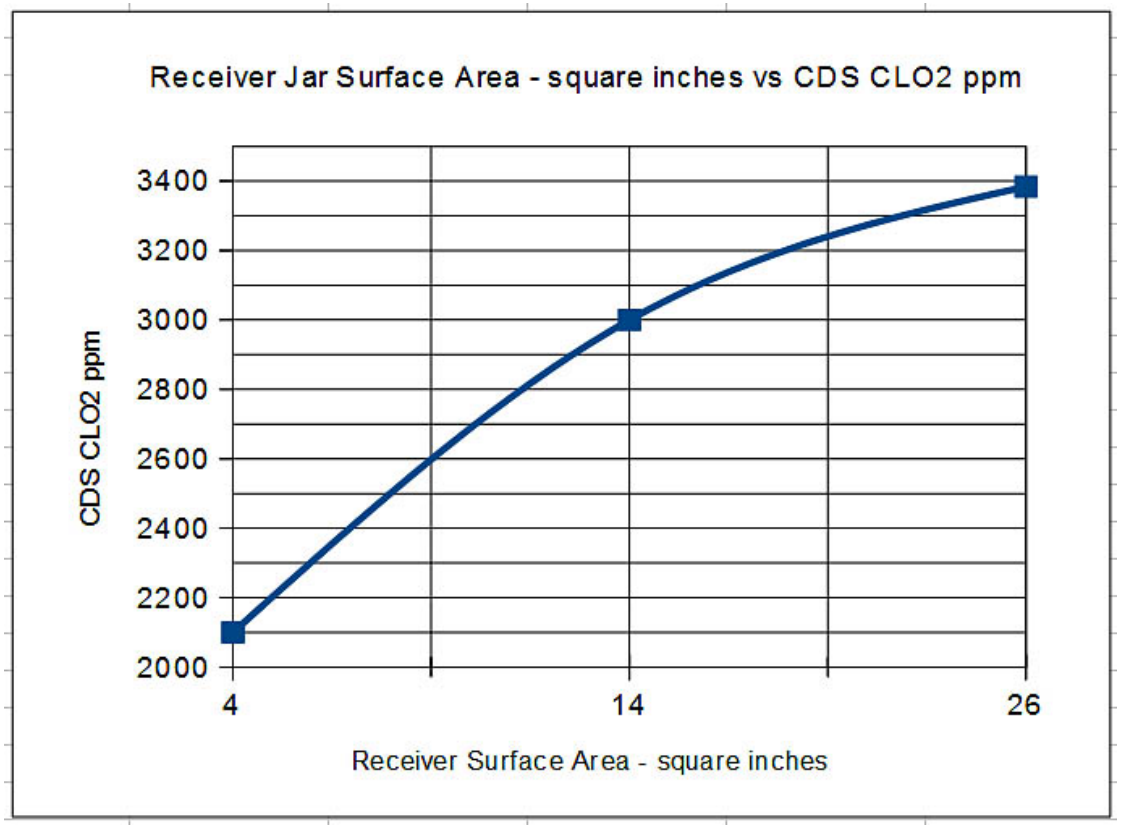
500 ml capacity jar has 14 square inches of surface area and the reactor has 2.4 square inches.

Jelly jar has 4 square inches surface area and its reactor has 1.75 square inches.

Square clamp-lid jar has 4.5 square inches of surface area and its reactor has 1 square inch of surface area.

Container quantities are in proportion to the reference 240 ml of distilled water.

Receiver is 26 square inches surface area
Reactor is 3.6 square inches surface area
240 ml distilled water in receiver
12 ml MMS + 12 ml 10% HCL in reactor
12 hours at 75-80F room temperature
3384 ppm CDS 6 August 2016



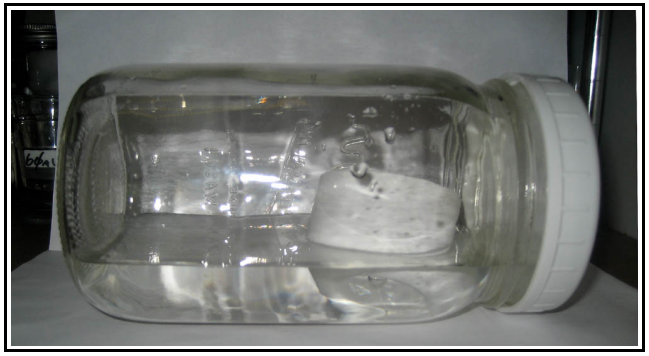
CDS made using the 12 hour overnight method. Receiver container was BPA-free water storage plastic with 100 sq inches of surface area in the flat position. Reactor was a glass jar with a 2.24 sq in surface area. Two tests were preformed. 240 ml of distilled water for both tests. Test #1 used 5 ml of MMS and 5 ml of 10% HCL. Test #2 used 10 ml of MMS and 10 ml of 10% HCL. CLO2 concentration was 1290 and 1548 ppm respectively. 11-12 August '16

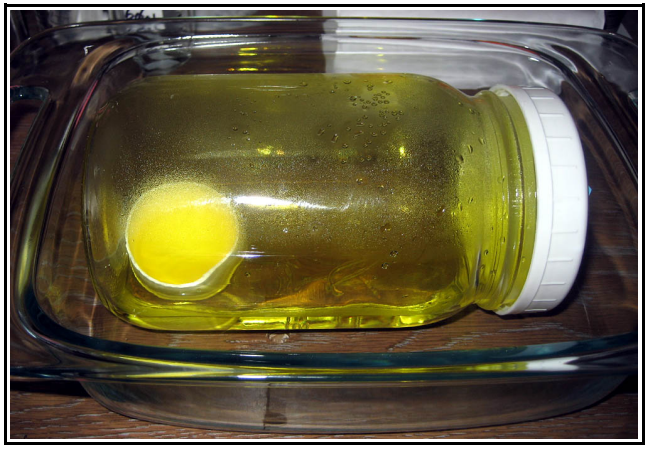
It appears that there is an upper limit to receiver surface area.

Another test, this time using 240 ml of distilled water and 10 ml of MMS + 10 ml of 10% HCL. The receiver is a one quart canning jar with a plastic lid plus a silicone disc seal. When the jar is in the normal vertical position, the surface area of the distilled water is 10 square inches. When the jar is laid on its side, the surface area of the distilled water becomes 20 square inches, twice what it was in the vertical position.

After the reactor and ingredients were lowered into the jar in the upright position, the lid was put on and then the combination was tilted 90 degrees into the horizontal position for 12 hours. After 12 hours, the jars were put into a fridge to cool down so less CLO2 gas would escape when the receiver was opened. The 240 ml of CDS measured 3000 ppm using a photometer.

Compared with the reference 500 ml capacity CDS jar, which also produces 3000 ppm CDS but uses 12 ml of MMS and 12 ml of 10% HCL, this setup is more efficient because the surface area of the CDS is 20 square inches instead of 14 square inches. Note also that the quart jar air space is 75% of the total jar volume and CDS is only 25%. It seems that a large CDS surface area is more important than having a small amount of air space in a receiver. So, this equipment setup results in using 16% less reactor ingredients to make 3000 ppm CDS.





It is also possible to make 240 ml of 3000 ppm CDS using 10 ml of MMS and 10 ml of 4% HCL in a 500 ml capacity canning jar as shown above on page one, center photo, that has 14 square inches of surface area. However, the time required is 24 hours. See this **PDF file** for details.