

Mountain Safety Research SE200 Community Chlorine Maker

vs

WaterStep BleachMaker

This report compares the Mountain Safety Research (MSR) SE200 Community Chlorine Maker and the WaterStep BleachMaker. The SE200 costs \$249.95 and the BleachMaker costs \$250; both are considered low cost solutions to disinfect water. The systems undergo an electrolysis reaction with a salt brine to produce sodium hypochlorite bleach. While both units make sodium hypochlorite bleach at a similar concentration from salt brine and DC current, their designed use is different. The MSR SE200 produces a small amount of bleach for water disinfection for a family sized unit while the BleachMaker by WaterStep produces a much larger quantity that can be used for water disinfection and medical and general disinfection.

The purpose of the MSR SE200 is to create safe drinking water for low-resource communities in a short amount of time. The unit uses a salt brine and a 12V DC battery in an electrolysis reaction to produce sodium hypochlorite. The salt brine consists of 40 grams of salt and 400 mL of water. 50 mL of brine is placed in the SE200 unit at a time resulting in only 50 mL of sodium hypochlorite being produced. After running the device ten times, the average time for the unit to create sodium hypochlorite bleach is 3 minutes and 52 seconds. The more the device is used consistently, the longer the device takes to make bleach. The device also consistently makes .8 percent concentrated sodium hypochlorite (8000 ppm). At this concentration it takes 5 mL of the bleach to disinfect 20L of water to a safe drinking level.

The purpose of the WaterStep BleachMaker is to make a strong concentration of bleach to be used as a medical and general disinfection as well as disinfect water. This unit is similar to the SE200 in which it utilizes a salt brine and a 12V DC battery in an electrolysis reaction to produce sodium hypochlorite. The salt brine in this unit consists of 500 grams of salt and about 2.5L of water. After the salt is dissolved in water, 2.5L of water is added to further dilute resulting in 5L of the salt water solution. Unlike the SE200, the BleachMaker uses all of the salt brine at once to make sodium hypochlorite bleach. The BleachMaker will produce .5 to .75 percent concentrated bleach (5000-7500 ppm) in about one hour. At this concentration the bleach is strong enough to be used for medical sanitation. For a general purpose sanitation the bleach the original solution must be diluted in a one to ten ratio. To create safe drinking water 1.5 mL of bleach must be added to each liter of water.

The main difference between the MSR unit and the WaterStep unit is the quantity of bleach the unit produces and the intended use of that bleach. The SE200 makes 50 mL of bleach which is much smaller compared to the BleachMaker making 5000 mL or 5 L of bleach. For the SE200 to make the same quantity as the BleachMaker it would have to run 100 times. Since the SE200 make 50 mL of bleach in about 4 minutes, it would take that unit 400 minutes, or 6 hours and 40 minutes to create 5 L. The other main difference is the intended use for the bleach. The SE200 is mainly used to create bleach for disinfecting water. The BleachMaker creates bleach that can be used in medical and general disinfection as well as disinfecting drinking water. While the SE200 creates bleach that has a high enough concentration to be used as a medical or general disinfection, it does not produce a large enough quantity for it to be a practical option.

While both units make sodium hypochlorite bleach at a similar concentration from salt brine and DC current, their designed use is different. This is evident by comparing the volumes produced. MSR produces a small amount of bleach for water disinfection for a family sized unit while the BleachMaker by WaterStep produces 5 liters of bleach that may be used for water disinfection and medical and general disinfection. The BleachMaker is much more versatile in use and time efficient.