

# Sport Scrubber Duration

The duration of the Sport KISS scrubber canister is based on independent testing done at the ANSTI test facilities in the United Kingdom. Multiple tests were conducted, including testing to the CE standard of EN14143.

The first test was done in accordance with EN14143. The parameters for this standard are depth of 40 m (131 ft), water temperature of 4° C (39.2° F), 40 liter/minute breathing rate, and 1.6 liter of CO2 generation.

The other tests conducted maintained the same breathing rate and CO2 generation, but the depth and temperatures varied.

In all three analyses, two tests were conducted. The results are on the first table below.

Depth	Temperature	Breathing Rate	CO2 Generation	Duration
(EN14143 Standards)				
40 meters/131 ft	4°C/39.2°F	40 liter/minute RMV	1.6 liter/minute	65 min - 5mbar CO2
18 meters/59 ft	4°C/39.2°F	40 liter/minute RMV	1.6 liter/minute	87 min - 5mbar CO2
18 meters/59 ft	12°C (53°F)	40 liter/minute RMV	1.6 liter/minute	116 min - 5mbar CO2

In order to better explain what these results mean, below is a table outlining RMV's, CO2 generation, and how long they are sustainable.

Breathing Rate	CO2 Generation	Explanation (CO2 = 85% of VO2 and VO2 = 4% of RMV)
22.5 liter/minute RMV	0.77 lpm CO2	Most relaxed divers, doing little or no swimming, can sustain an RMV of 22.5 lpm almost indefinitely.
37.5 liter/minute RMV	1.28 lpm CO2	A physically fit diver, taking slow deep breaths while swimming hard can sustain an RMV of 37.5 lpm for a few minutes.
75 liter/minute RMV	2.55 lpm CO2	A diver with the conditioning of a Navy S.E.A.L., doing severe work, can sustain an RMV of 75 lpm for one or two minutes.

As gas density (depth), water temperature, and CO2 generation (divers work rate) vary, the canister duration will either improve or degrade.

While most divers can't maintain a breathing rate of 1.6 liters of CO2 per minute, don't dive in 4° C (39.2°F) water, and/or deep dive, these time frames are still good indicators of scrubber duration. They show that scrubber duration should not be rated as a single value; that the type of diving that is being done must be taken into consideration. Also, it shows that any test results, from testing done at the surface, will not provide realistic canister durations.

All testing was conducted using Sofnolime 797 grade.

Any divers who use an absorbent which changes colour, should not use the colour-change as an indicator for time remaining on the canister.