

Classic Scrubber Duration

The duration of the Classic KISS scrubber canister is based on independent testing done at the ANSTI test facilities in the United Kingdom. Testing was conducted to the CE standard of EN14143.

The CO₂ duration for this design of rebreather has been tested in accordance with EN14143 and at a depth of 40 m (131 ft), water temperature of 4° C (39.2° F), 40 litre/minute breathing rate, and 1.6 liter of CO₂ generation, was found to have a duration of 2 hours and 37 minutes to 5 millibar of CO₂ and 2 hours and 50 minutes to 10 millibar of CO₂. Two tests were conducted.

Depth	Temperature	Breathing Rate	CO ₂ Generation	Duration
40 meters/131 ft	4°C/39.2°F	40 liter/minute RMV	1.6 liter/minute	157 min - 5mbar CO ₂

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	CO ₂ Generation	Explanation (CO ₂ = 85% of VO ₂ and VO ₂ = 4% of RMV)
22.5 liter/minute RMV	0.77 lpm CO ₂	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 CO ₂	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 CO ₂	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.

We believe that the design of the Classic KISS scrubber canister is one of the most efficient axial canisters, per weight of absorbent, available today.

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 litres of CO₂ per minute, don't dive in 4° C (39.2°F) water, and/or deep dive, these tests 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 diver who use an absorbent which changes colour, should not use the colour-change as an indicator for time remaining on the canister.