



KISS Classic CCR: Syntactic Foam Test Results

By Tony Howell.

In a previous copy of Dive New Zealand magazine, I told you that the first KISS Classic rebreather with a syntactic coated canister had arrived in New Zealand. I can now tell you how this innovation will save you money and extend your time underwater



Syntactic foam adhered to the canister on the left.

At least three divers have already converted their KISS Classic rebreathers to syntactic canisters to gain these advantages. OK, what are we talking about here?

To understand why syntactic foam is so exciting, let's look at how a rebreather CO₂ scrubber works. Probably the most common scrubber material in New Zealand is Sofnolime 792. These granules comprise calcium hydroxide, sodium hydroxide and water. When these elements combine with carbon dioxide there is a chemical reaction that converts the calcium hydroxide and CO₂ to calcium carbonate or chalk. A by-product of this reaction is heat and the reaction is known as an exothermic reaction. For a rebreather scrubber to work properly, the core

temperature of the sorb must remain relatively warm. If the exothermic reaction temperature drops in cold water, the process becomes less efficient. Cool it enough and it will stop. Keeping the sorb process warm is vital to the efficient elimination of carbon dioxide.

Now this is where syntactic foam insulation comes into its own. Syntactic foam is a high-density foam which is incredibly hard, making it extremely resistant to compression under extreme pressure. The foam is adhered to the exterior of the KISS Classic/Explorer canister. Its very low density-to-high-specific-strength ratio making it an ideal CCR canister insulator. The foam is covered by a layer of rhino guard to protect it. The finished product now increases the canister insulation by a whopping 30%.

Recent tests of the KISS Classic/Explorer at Micropore's testing facility produced some outstanding results. Two versions of the Classic were used: one with an exterior 3mm lining of syntactic foam, and one without. The tests used an RMV of 30 litre/minute at 1.2 LPM CO₂ and a simulated depth equivalent of 40 metres in 4.4°C water temperature. These test parameters are beyond what even a very physically fit diver could achieve for more than a few minutes. The test results showed that the syntactic version has significantly improved sorb efficiency by 85 minutes.

Based on these test results, the KISS manufacturer has the following revised limits for divers using KISS Classic/Explorer rebreath-

ers with syntactic foam coated canisters:

- 4°C to 17°C – 4 hours
- 18°C or warmer – 5 hours.

These extended durations are very exciting as they not only increase the canister time available for a serious deep dive, but they also reduce the running costs for a KISS Classic/Explorer rebreather over a multi-dive trip. Remember that oxygen is relatively cheap and one 11L cylinder of trimix diluent will last a rebreather diver many days. One major cost for any rebreather diver is the number of sorb refills needed.

This sorb cost has been slashed for KISS Classic/Explorer divers as we have gained an extra hour per 2.7L of sorb. We now have the luxury of deciding whether to dive longer or more often on one canister of sorb.

Walt Stearns, Editor-in-Chief of the Underwater Journal (www.Underwaterjournal.com), summarises the syntactic test results thus: "The KISS Classic, first seen as a reliable workhorse, and still proving it can hold it with the best of them".

Acknowledgements to:

Walt Stearns & KISS Rebreathers

Tony Howell is the KISS Sales Agent for NZ.

For further information, contact Tony at

tony@scubadiving.co.nz

www.scubadiving.co.nz

ph: 04-233 8238

New Zealand Sea Adventures,

9 Marina View,

Mana, Porirua 5026.



CHANGE YOUR DIVING LIFE WITH A KISS REBREATHER

- KISS released their first mCCR in 1999 – and they are still a market leader!
- KISS has one of the best safety records of any recreational/technical diving rebreather!
- KISS is safe, simple, durable, user maintainable – and still improving!
- Lightweight, compact, excellent vision & WOB, canister design resists channeling!
- No electronics to fail, Uses mechanical bleed and manual add for oxygen control!
- 91 metres depth rating, duration of 4 hours at 24C (may vary with model)!
- Comes in a variety of models including sidemount/bailout!

NZ SEA ADVENTURES, YOUR KISS DEALER AND TRAINING CENTRE,
9 Marina View, Mana, Porirua. www.scubadiving.co.nz, 04 233-8238

