



Sea Tales Index

What is NITROX?
Page 1 of 2

1	What is Nitrox Page 1 of 2
2	What is Nitrox Page 2 of 2
3	Dive Boat Etiquette
4	Two-Spot Octopus
5	Mark's Photos Mark Pidcoe's Rules of Diving
6	BB Info

Simply stated, Nitrox is any mixture of oxygen and nitrogen. For example, the air you are breathing right now is one form of Nitrox.

Enriched Air Nitrox

The term Enriched Air Nitrox describes Nitrox mixtures in which the concentration of oxygen (also referred to as Fraction of Oxygen or PO₂) is greater than the 21 percent in air. Thus, while all air is Nitrox, all Nitrox is technically not Enriched Air.

Divers generally use the terms Enriched Air, Enriched Air Nitrox, Nitrox and the acronym EANX interchangeably. For simplicity, we use the term Nitrox and the acronym EANX solely to refer to mixtures with oxygen concentrations (FO₂) of 22 percent or more. Whenever we use the term air, we are referring solely to a mixture of approximately 79 percent nitrogen and 21 percent oxygen.

EANX is an acronym for Enriched Air Nitrox in which the x is a variable standing for the FO₂ value. Thus EAN32, for example, represents a Nitrox mixture with an FO₂ of 32 percent.

The terms richer and leaner are often used to compare Nitrox mixtures with differing FO₂'s. Richer mixtures have higher FO₂s; leaner mixtures have lower FO₂s, and are said to be more dilute.

Nitrox I and II

The two most commonly used Nitrox mixtures are EAN32 and EAN36. Because the use of these mixtures was pioneered by the US government's National Oceanic and Atmospheric Administration (NOAA), these mixes are also known as NOAA Nitrox I (NNI) and NOAA Nitrox II (NNII).

EAN32 (NNI) is well suited for most recreational dives. Divers can use EAN32 at any depth

Limit for recreational diving (100ft/30m), without putting themselves at substantial risk of oxygen toxicity.

EAN36 is an excellent gas for extended scientific or research dives at moderate depths. However, as one approaches the recommended depth limit for recreational diving (100ft/30m), the higher concentration of oxygen in EAN36 puts recreational divers at greater risk of O₂ toxicity than EAN32 does.

EAN32 is the standard mix at many Nitrox filling and blending stations. While some facilities can provide Nitrox mixtures with O₂ concentrations above or below 32 percent, EAN32 is the recommended Nitrox mixture for most recreational dives.



February 3rd, 2010
Casa Machado Restaurant 3750 John J Montgomery, Montgomery Airport field. 6PM meet & greet, 7PM presentation begins.
Chuck Nicklin will be speaking about film making Hollywood style.

Misperceptions Regarding Nitrox

Compared to air, the use of Nitrox by recreational divers is still relatively new. Not surprisingly, there are a number of misunderstandings regarding Nitrox.

Some divers mistakenly believe that Nitrox is designed for ultra-deep diving-

Ironically, Nitrox has more severe depth limitations than air. In fact, using the most common Nitrox mixture, EAN32, at depths below 110ft can impose an increased risk of O₂ toxicity that air divers are not subject to at comparable depths.

Diving Nitrox is substantially more dangerous than diving air-

Nothing in diving is absolutely safe nor absolutely unsafe. Every diving activity carries the potential for risk. Diving Nitrox exposes divers to some risks that are not present when diving air within recreational diving limits. It may reduce some of the risks associated with air diving. With proper training and equipment, the additional risks inherent in diving EANx can be managed to the point where they are offset by Nitrox's potential benefits. In this respect, Nitrox diving is no different than any other diving activity.

The Benefits and Limitations of Nitrox Use

Nitrox has the potential to benefit divers in at least two significant ways. Its use also has a few limitations. An understanding of these benefits and limitations can help you decide whether it is better to dive Nitrox or better to dive air.

MORE Bottom Time-Because Nitrox contains less nitrogen than air does, in terms of avoiding decompression sickness, breathing Nitrox is the equivalent of diving air at shallower depths. Thus, diving EANx has the potential to provide longer no-decompression limits, shorter surface intervals and longer repetitive dives.

Improved Safety-Diving Nitrox exposed your body to less nitrogen than diving air does at the same depth. Thus, if you dive Nitrox within the same depth and time limitations as you normally do air you reduce the risk of decompression sickness. But, in doing so, you forgo the benefit of longer no-decompression limits, and forfeit shorter surface intervals and longer repetitive dives that Nitrox would otherwise provide.

Limitations of Nitrox

- **Nitrox Use Requires Additional Training-**
- **Nitrox Use May Require Special Equipment**
- **Nitrox Costs More than Air-**
- **Nitrox May Not Always be Convenient nor Readily Available**

Planning Nitrox Dives

Use a dive computer that can be programmed for Nitrox. In this way, you can enjoy the maximum possible dive time. The computer will also track your exposure to oxygen. For a limiting PO₂ of 1.4 atm, this is 150 minutes for a single dive or 180 minutes for any 24-hour period. The typical recreational diver makes no more than two or three dives a day, averaging no more than 35-40 minutes each. So long as you remain within a limiting Po₂ of 1.4 atm, and keep your accumulated actual bottom time for any 24hr period well within the three hours NOAA allows, there is simply no need to worry about exceeding the NOAA limits.

You have decided to dive Nitrox for one of two reasons. Either you wish to maximize dive time, or you want to achieve an even greater margin of safety than diving air within the same depth and time limits would otherwise provide.

If your goal is to maximize safety, you will want to plan your dives using either an air-based dive table or dive air-based computer. However, doing so does not eliminate the need to keep your exposure to oxygen within recommended limits.

On the other hand, if your goal is to maximize dive time, your choice of planning tools will include an O₂ analyzer to check your mixture and using a dive computer that can be programmed for Nitrox.

Dive Boat Etiquette

Dive boats can be crowded places.

Most dive boats will have anywhere from 6 to 15 divers on them at a time with each of those divers carrying in excess of 50 lbs of dive gear.

There has to be some sort of guidelines in place when you're dealing with that many people and that much stuff.

Here are some of the basic rules, spoken and unspoken, of dive boat etiquette:

1. Be Early

Get to the dive boat about a half an hour early. This will give you enough time to get all of your scuba gear out of your car and into the dive boat.

Come late at your own peril. Dive boat captains aren't a patient lot. If your dive is scheduled for 12:00 pm and you arrive at 12:30 pm, don't be surprised if you see an empty boat slip.

2. Be Fast

Get on the boat and get your stuff put away fast. Nobody cares that you haven't seen your buddy Bob in ages; but they do care that the boat is running 15 minutes late and your gear still isn't on board.

3. Be Prepared

The boat isn't going to turn around if you forgot your mask. Make sure you do a final equipment check before you stow your gear to make sure you have everything you need.

4. Pack Light

Take only what you need on your dive.

If you're going to take pictures, bring your camera; if you're going to hunt lobster, bring your snare and catch bag; and if you're going to collect fish, bring your slurp gun and net. But under no circumstances should you bring all of it! Space is a valuable commodity on dive boats. Don't clutter the boat with equipment you "might" use.

5. Be Centralized

Store all of your equipment in one place.

When the captain says that the dive site is close, you don't want to run all over the boat to get your equipment together.

More importantly, no one else wants you to do that either.

6. Be Attentive

Listen to the divemaster give the dive briefing. You'll learn lots of important safety information and valuable tips that'll make your dive more enjoyable.

7. Be Efficient

When it's time to put your gear on, you put it on. Suit up fast then get out of the way. Some dive boats are so crowded that people will have to wait for you to finish before they can get ready. If you notice people are waiting, don't notice people are waiting, don't you equipment quickly then move.

8. Don't Store Your Scuba Gear In Dry Areas

Certain areas of most dive boats are designated as "dry areas." These areas are for storing towels, wallets, cell phones, etc. They're not for storing regulators, wetsuits, or catch bags. Keep wet stuff out of the dry area.

Dive boats can be crowded places, but if everyone shows a little consideration they can also be highly organized and fun. Do your part by taking responsibility for your gear and being considerate to your fellow divers.

It'll make your dive a lot more enjoyable.



Physical Fitness and Scuba Diving by Gretchen M. Ashton

Lifting and carrying a scuba tank is one of the skills of equipment handling associated with diving. It requires such minimal strength that it is not a good indicator of physical fitness for diving. Almost everyone can perform this skill with little effort. Physical fitness for diving is more than minimal effort or ability.

Smaller individuals regardless of fitness level will have a more difficult time lifting a scuba tank than larger individuals simply because of body mass. Interestingly, higher body mass index has been suggested by some as the best indicator of an overweight or obese diver.

The Health Profile of our Diving Community and the physiology of diving indicate that physical strength is the third priority for divers following first cardiorespiratory fitness and then weight management. Often, while accomplishing the first two dive fitness goals, an improved level of strength is also achieved. The best exercise programs for diving combine aerobic exercise and good nutrition for weight management with strength exercises that emulate the biomechanics of diving.

California Two-Spot Octopus By Herb Gruenhagen



The California Two-spot Octopus (*Octopus bimaculoides*), also known as the "Bimac Octopus", is an octopus species that lives off the coast of California.

This species of octopus is found in the intertidal and benthic, from the low tide zone to subtidal depths of about 65 ft. It prefers sandy substrate and caves of rock or debris to hide in. It tolerates a wide temperature range (at least 60-80F), though it prefers 65-72 F.

Reaches a mantle size of 7 inches and arms to 24 inches. Not usually heavily textured and has several common colors, such as grey with yellow splotches. Uses highly developed camouflage or color changing to match their environment. Octopuses achieve color change in part by chromatophores, iridophores, and leucophores; all structures of the skin in increasing depth. Chromatophores are generally known as elastic pigmentsacs with muscle fibers attached letting them expand

and contract. The leucophores are important because they allow for the reflection of white light and consequently allow the skin to reflect wavelengths of light which are prevalent in their habitat and produce disruptive patterns. The other aspect to cephalopod camou-

It gets its name from the false eye spots under each real eye known as ocellus. In *O. bimaculoides* the ocellus is an iridescent blue chain link circle set in a circle of black.



I photographed this Two-Spot Octopus late one evening crossing over in the Secret Garden at La Jolla Shores. Image by Herb Gruenhagen © 2009

Lives from 1 to 2 years. Females brood the eggs from the 2 to 4 months required for hatching.

The end is signaled by egg laying in the female or senility in the male.

Its diet consists of clams, mussels, small crabs, crayfish, snails. Hatchlings feed on amphipods or mysid shrimp.

flage is the brain which contains nerves coated in chromatophore fibers, controlling coloration patterning.

The arms are four to five times as large as the body.



Mark Pidcoe U/W Photography Album



Mark Pidcoe Rules of Diving



1. No alcohol before or between dives. Drinking and Diving do not mix.
2. Safety stops for dives past 30' are mandatory.
3. I am a photographer, and that is why I dive! Understand that I will not be ignoring you, rather I focus on my photography first. I will show the subject to you after I get my photo.
4. Because of 2 above, any one of you may end up being the subject of my pictures, and they may end up in the newsletter. This can be negotiated at any time before or after the dive.

5. I prefer to spend my air at the target location, not on getting there. As a result, surface swims of 1/4 mile or more are common for me. I am not in a hurry to get to the destination, or back to the beach.

6. Surface intervals are determined by max depth, not tank change time.

For every foot we descend, I will spend 1 min on the beach! This means for a 90' dive, I will not gear back up for the 2nd dive till I have been gear off in the parking lot for 90 minutes.

7. 1st diver to reach one-half tank pressure determines dive duration. This is the turn around point, when we will head back towards the beach. Do not worry about cutting the dive short because you go thru air at a different rate. I have never dropped a dive buddy from my list due to high air consumption. I have removed them for repeatedly misreporting remaining air pressure.

All divers are welcome, dry, wet, photographer, collector, high or low air consumption, experienced or beginner.



E-mail your newsletter submissions to:
hgruenha@nethere.com

Committee Members:

- Dive Boats: Steve Preddy
- Blackbeards: Jessica Busk
- AV/Sales: Al Barnes
- Speaker Coord: Greg Morris
- Club Greeter: Shanda Magill
- Entertainment: Jessica Busk & Sharon Brooks
- BB Editor: Herb Gruenhagen

The Bottom Bunch dive club started out as a Chula Vista Club more then 20 years ago. The Club motto is safety first then fun. The club loves to dive and loves to be safe too. Weekly dives are planned as well as monthly local boat trips, beach picnics, yearly Holiday party and many other activities. Please come and join the

Bottom Bunch Dive Club. We meet the 1st Wednesday of each month at the Casa Machado on the Montgomery Airfield in Kearny Mesa. Bottom Bunch Dive Club yearly dues are only \$24 per person.

Safety first then Fun!

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2010 Officers:

- President: Mark Pidcoe
- Vice Pres: Karin Filijan
- Treasurer: Jamie Morales
- Secretary: Sharon Brooks
- Dive Coord: Shanda Magill

www.bottombunchdiveclub.com



Bottom Bunch Membership

Dues are payable at the time of application. Make checks payable to THE BOTTOM BUNCH DIVE CLUB. Checks can be mailed to: 1050 E. Ohio Avenue, Escondido, CA 92025-4615.

INDIVIDUAL

\$24.00 membership fee. Dues are due each year in the month of June for the following year for \$24.

FAMILY

Annual dues are \$24 for the first member and \$12 for each additional family member. Dues will be due each year in the month June.

GENERAL MEMBERSHIP

If a member joins during the year the dues are pro-rated for the year so that their annual membership dues will be due in the month of June.

Please bring both the membership and liability form all filled out to the June meeting. **Please RENEW and enjoy diving another year with all your Bottom Bunch friends.**