



4. Nitrox Diver

4.1 Introduction

This is the entry-level certification course for recreational divers wishing to utilize enriched air nitrox (EAN) as a breathing gas. The objective of this course is to train divers in the benefits, hazards, and proper procedures for using nitrox mixes from 22 through 40 percent oxygen content.

4.2 Qualifications of Graduates

Upon successful completion of this course:

1. Graduates may engage in diving activities utilizing EAN-22 to EAN-40 without direct supervision

Graduates would be qualified to enroll in:

1. TDI Advanced Nitrox Course
2. TDI Decompression Procedures Course
3. TDI Semi-closed Rebreather Course

4.3 Who May Teach

Any active TDI Nitrox Instructor

4.4 Student to Instructor Ratio

Academic

1. Unlimited, so long as adequate facility, supplies and time are provided to ensure comprehensive and complete training of subject matter

Confined Water (swimming pool-like conditions)

1. N/A

Open Water (ocean, lake, quarry, spring, river or estuary)

1. Since entry level nitrox is essentially an informational and academic based course, no dives are specifically required as there are no skills to evaluate.
2. Optional dives are desirable to effectively demonstrate the advantages of EAN use in practical field use. If scheduled, no direct instructor supervision is required but dives should not be conducted in environments that may exceed the existing skill or depth levels of the student.

4.5 Student Prerequisites

1. Minimum age 15
2. Have a minimum certification of open water diver or a current enrollment in an open water diver course



4.6 Course Structure and Duration

Open Water Execution

1. Two nitrox dives are recommended but are not required

Course Structure

1. TDI allows instructors to structure courses according to the number of students participating and their skill level

Duration

1. The suggested number of classroom hours is 3

4.7 Administrative Requirements

The following is the administrative tasks:

1. Collect the course fees from all the students
2. Ensure that the students have the required equipment
3. Communicate the training schedule to the students
4. Have the students complete the:
 - a. *TDI Liability Release and Express Assumption of Risk Form*
 - b. *TDI Medical Statement Form*

Upon successful completion of the course the instructor must:

1. Issue the appropriate TDI certification by submitting the TDI Diver Registration Form to TDI Headquarters or registering the students online through member's area of the TDI website

4.8 Training Material

Required material

1. *TDI Understanding Nitrox Diver Manual*

Optional Material

1. TDI plastic EAD table
2. *TDI Understanding Nitrox PowerPoint*

4.9 Required Equipment

1. Nitrox cylinder for analyzing
2. Nitrox analyzer

4.10 Required Subject Areas

The *TDI Understanding Nitrox Manual* is mandatory for use during this course but instructors may use any additional text or materials that they feel help present these topics. The following topics must be covered during this course:

1. History of Enriched Air Nitrox (EAN)



2. Physiology
 - a. Oxygen
 - b. Nitrogen
3. Physics
 - a. Pressure review
 - b. Partial pressures
4. Equipment Considerations
 - a. Forty percent oxygen content and less
 - b. Above 40 percent oxygen content
5. Dive Tables
 - a. Equivalent air depth (EAD) introduction of concept only for demonstration
 - b. EAN tables
 - c. Switching mixes on repetitive dives
6. Dive Computers
 - a. Mix adjustable
 - b. Oxygen (O₂) integrated
7. Advantages and Disadvantages of EAN
 - a. Use as air for physiological advantage with air tables or computers
 - b. Use to extend no-decompression bottom times or shorten surface intervals
 - c. Oxygen toxicity hazards and depth limits
 - d. Discussion of myths and facts regarding EAN mixtures
8. Procedures
 - a. Use and theory of oxygen analyzer
 - b. Gas analysis and logging
9. Common Mixing Procedures
 - a. Partial pressure blending
 - b. Continuous blending
 - c. Membrane separation system

4.11 Required Skill Performance and Graduation Requirements

Pre-dive

1. Use TDI Tables to plan a nitrox dive taking advantage of EAD calculations
2. Create a simple written dive plan for a nitrox dive to an maximum operating depth (MOD) calculated with P_{O₂} between 1.3 and 1.6 depending on environmental conditions
3. Demonstrate correct use of oxygen analyzer
4. Demonstrate correct cylinder management and labeling
5. Conduct simple pre-dive briefing (may be simulated if dives are not part of program)
6. Program nitrox computer, if used, with appropriate oxygen percentage



In order to complete this course, students must:

1. Satisfactorily complete the TDI Nitrox Course written examination
2. Demonstrate understanding of oxygen analysis for nitrox mixtures