



THE USE OF OXYGEN-COMPATIBLE AIR (OCA) © 2004

For mixing with pure oxygen, it is of the utmost importance to use oxygen-compatible air, called OCA for short. Since pure oxygen can ignite / explode spontaneously in the presence of various hydrocarbon contaminants, it was determined about 10 years ago that normal scuba air standards were NOT sufficiently safe for that purpose. Typical scuba air should be CGA (Compressed Gas Association) Grade E which allows up to 5 mg / M³ of condensed hydrocarbons. OCA standards (also called "Modified Grade E") permits only 0.1 mg / M³ to be present, or 50 times less hydrocarbon material! Therefore, it becomes essential to know the actual hydrocarbon level in any air to be mixed with pure O₂.

Standards" for Grade E and Oxygen Compatible Air *		
Contents:	"Grade E" Air	O₂ Compatible Air (O.C.A.)
Oxygen percentage	20-22%	20-22%
Condensed Hydrocarbons (oil)	5.0 mg/m ³	Up to 0.1 mg/m³
Carbon Monoxide	10 parts per million	Up to 2.0 parts per million
Carbon Dioxide	1000 parts per million	1000 parts per million
Odor	Not objectionable	Not objectionable
Gaseous Hydrocarbons	25 parts per million	25 parts per million

* Standards for Grade E Air may vary by country

From a practical "field application" standpoint, two different approaches to this situation have been taken.

OCA can be determined by frequent air analyses that specifically certify that status. Regular air analyses for "Grade E" (diving) air DOES NOT ascertain this ... the test for OCA is a special procedure that must be requested in addition to the regular data included in a "Grade E" analysis. While no national study has ever been conducted to determine the frequency with which common Grade E dive air would also meet OCA standards, certain current information suggests that a significant portion of samples would FAIL that test. Even if an analysis gives a positive OCA status, that condition could be lost at any time through any number of compressor, separator or filter malfunctions. In addition, contaminants present in almost undetectable amounts do accumulate over time and may eventually reach unacceptable levels. No meaningful data is presently available to show how fast this actually occurs and what real dangers it might present. The bottom line here is that **EXPLOSIONS / FIRES HAVE OCCURRED WHEN INCOMPATIBLE AIR WAS INTRODUCED INTO AN OXYGENATED DIVE TANK OR BLENDING APPARATUS.**

A second, and perhaps the best way, to GUARANTEE OCA is to hyper-filter your Grade E air. While regular analyses are always useful, they do NOTHING to protect your air supply from unexpected systems failures (e.g. broken piston ring, clogged separator element) that could downshift your air quality into oxygen – INCOMPATIBLE status! Because the level of hydrocarbon contamination required for INCOMPATIBILITY is so low, very minor air station malfunctions could be dangerous. In that regard, hyper-filtration acts as a "firewall safeguard" since incompatible air might only be discovered BY ACCIDENT during mixing! Note: Hyper-Filters are NOT the same as standard Grade E air filters...they differ in construction and mode of filtration. ADDITION OF MORE GRADE E FILTERS TO YOUR EXISTING SYSTEM WILL NOT GUARANTEE THE PRODUCTION AND MAINTENANCE OF OCA STATUS. GSMoT STRONGLY RECOMMENDS THE USE OF A "TRUE" HYPER-FILTER TO GUARANTEE OCA STATUS AT ALL TIMES.

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