



Date: July 2016

Subject: Breathing Air Applications

To whom it may concern,

AIRpipe meets ISO 8573-1, Class 1.1.1. standards for air quality and cleanliness. Meeting these levels of cleanliness ensures AIRpipe as suitable in Class D breathing applications.

Follows is an explanation on classes and purity requirements for breathing air applications.

U.S. NAVY EXPLANATION OF CLASS D BREATHING AIR

CGA Grade	Industrial Uses
A	Industrial compressed air
L	SCBA
D	OSHA breathing air
E	SCUBA
J	Specialty grade air, analytical applications
N	Medical/USP air

d. Table 1 of CGA G-7.1-2011, reference (5) lists maximum concentrations of the air constituents for each grade of compressed air. A blank box in the table indicates no maximum limiting characteristic. This does not mean that the substance is not present, but indicates that testing that component is not a requirement for compliance with the specification. Intuitively, one would think that like eggs, Grade A air would be the best air quality; however, Grade A air has the least stringent requirements. OSHA, the Navy, and ANSI Z88.2 base their breathing air purity requirements on CGA G-7.1 Grade D breathing air criteria, which basically have not changed since CGA G-7.1-1989 and are listed in the table below.

TABLE 1 CGA G-7.1-2011 GRADE D COMPRESSED AIR PURITY REQUIREMENTS	
Characteristic	CGA G-7.1-2011 Requirements
Oxygen content (v/v)	19.5%-23.5%
Oil (Condensed)	$\leq 5 \text{ mg/m}^3$
Carbon monoxide	$\leq 10 \text{ ppm}$
Carbon dioxide	$\leq 1,000 \text{ ppm}$
Water content	Dew point $\leq -50^\circ\text{F}$ (67 ppm v/v). Note 6 states that for SCBA use in extreme cold a dew point not to exceed -65°F (24 ppm v/v) or the dew point must be 10°F lower than the coldest temperature where the respirator is worn.
Odor	None (No pronounced odor)

Thank you,

Chad Hills
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