SAE The Engineering Society For Advancing Mobility Land Sea Air and Space

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# AEROSPACE STANDARD

AS 8010A

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## AVIATOR'S BREATHING OXYGEN PURITY STANDARD

Ø 1. PURPOSE: This standard defines the minimum degree of purity for aviator's breathing oxygen at the point of manufacture. It covers gaseous, liquid and chemically generated oxygen.

Ø 2. REFERENCE DOCUMENT: (for Test Methods)

Ø 2.1 MIL-O-27210 Oxygen, Aviator's Breathing, Liquid and Gas.

3. GENERAL REQUIREMENTS:

Ø 3.1 Aviator's Breathing Oxygen (ABO), must contain not less than 99.5% oxygen by volume. The oxygen must contain no odor. The remainder, except for moisture and minor constituents specified in Table I, may be argon, nitrogen, or similar inert gas.

3.2 Moisture (Water Vapor):

Ø 3.2.1 Moisture in liquid or gaseous oxygen must not exceed 5 µg per liter of gas at a temperature of 21.1°C (70°F) and pressure of 101.3 kPa (760 mm) of mercury. This corresponds to a dewpoint of -63.3°C (-82°F).

Ø 3.2.2 Moisture in chemically generated oxygen when oxygen is being used at the rate at which it is generated must not exceed 20 mg per liter (20 g per $m^3$) of oxygen at 21.1°C (70°F) and 101.3 kPa (760 mm of Hg). This corresponds to a dewpoint of 25°C (77°F).

Ø 3.2.3 Moisture in chemically generated oxygen which is stored under pressure with subsequent pressure reductions, shall be specified and determined by the actual application.

3.3 Particles:

Ø 3.3.1 Liquid oxygen must be filtered through a 10 µm nominal (40 µm absolute) filter located in the fill line to the shipping container.

Ø 3.3.2 Gaseous oxygen must not contain particles with any dimension in excess of 100 µm, fiber size in excess of 40 µm by 600 µm and total solids not in excess of 1.0 mg per cubic meter of oxygen (1.0 mg/$m^3$).

Ø 3.3.3 Chemically generated oxygen must not contain particles with any dimension larger than 500 µm. Fibers must not exceed 40 µm by 3000 µm. Total solids shall not exceed 5.0 mg per cubic meter of oxygen (5.0 mg/$m^3$).

Ø 3.4 Gaseous oxygen containers must be in accordance with all applicable Federal Specifications and must be clean and unable to contaminate oxygen stored therein.

Ø 3.5 Gaseous or liquid oxygen containers filled to this specification must be identified with a durable tag which is permanently and legibly marked as aviator's breathing oxygen produced in accordance with AS 8010A.

Ø 3.6 Chemical oxygen generators must:

(1) have means to clearly indicate that the generator has not been expended.

(2) be labeled: "This generator will produce Aviator's Breathing Oxygen in accordance with AS 8010A."