



AEROSPACE STANDARD	AS8025™	REV. A
	Issued 1988-02 Revised 1999-01 Reaffirmed 2026-06 Superseding AS8025	
Passenger Oxygen Mask		

RATIONALE

AS8025A has been reaffirmed to comply with the SAE Five-Year Review policy.

A reaffirmed status is given to technical reports that have been reviewed by the technical committee and deemed to be current with no need for immediate revision. No changes have been made to this document as a result of this review.

FOREWORD

Changes in this revision are format/editorial only.

1. SCOPE:

This standard covers oronasal type masks which use a continuous flow oxygen supply. Each such mask comprises a facepiece with valves as required, a mask suspension device, a reservoir, or rebreather bag (when used), a length of tubing for connection to the oxygen supply source, and a means for allowing the crew to determine if oxygen is being delivered to the mask. The assembly shall be capable of being stowed suitably to meet the requirements of its intended use.

1.1 Purpose:

This standard establishes the minimum requirements for the design, construction and performance of continuous flow oxygen masks for passenger cabin occupants in civil commercial aircraft.

1.2 Presentation:

When presented, the mask assembly's application shall be obvious. The mask shall be capable of quick and easy donning regardless of any special orientation requirements.

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1.3 Coding of Performance Classification:

An eight-digit performance classification number shall be assigned to each class of masks. This number shall correspond to the number assigned to the minimum performance curve established in 6.1.7.2.2 and shall represent the required minimum oxygen flow rates (NTPD) to the mask shown on curve "C" of Figure 1 at cabin pressure altitudes of 15 000, 25 000, 30 000 ft and the maximum approved altitude, respectively. Flow rates shall be to one decimal.

Typical Example - AS 8025-08233248-YY*-XX*

0.8 - required minimum oxygen flow, L/min, NTPD, at 15 000 ft

2.3 - required minimum oxygen flow, L/min, NTPD, at 25 000 ft

3.2 - required minimum oxygen flow, L/min, NTPD, at 30 000 ft

4.8 - required minimum oxygen flow, L/min, NTPD, at maximum approved altitude

*YY - Maximum approved altitude in thousands of feet

*XX - Additional coding which the mask manufacturer may desire to add

1.4 Interchangeability of Mask Assemblies:

1.4.1 Same Coding: Masks with the same coding shall be interchangeable.

1.4.2 Different Performance Classification Numbers (remainder of coding the same): Only those masks whose performance classification number shows that at all certified cabin altitudes, the required oxygen flow rates are equal to or less than the flow rates supplied to the mask from the airplane system shall be used on that airplane.

2. APPLICABLE DOCUMENTS:

2.1 Completely Applicable:

The following specifications, drawings, and publications of the issue in effect on the date of initiation of qualification tests, shall form a part of this specification:

MIL-P-7105	Pipe Threads, Taper, Aeronautical National Form, Symbol ANPT
MIL-S-8879	Screw Threads, Controlled Radius Root with Increased Minor Diameter
MIL-O-27210 or AS8010	Oxygen 99.5%, Gas and Liquid
BB-N-411	Nitrogen, Liquid and Gas

2.1 (Continued):

MIL-STD-889 Metals - Definition of Dissimilar

Federal Standard Colors
No. 595

2.2 Partially Applicable:

The following specifications, drawings, and publications of the issue in effect on the date of initiation of qualification tests shall form a part of this specification to the extent noted in this document:

AS916 Standard for Oxygen Flow Indicators

AIR1082 Fluid System Component Specification Criteria

A.T.A 100 Specification for Manufacturer's Technical Data

FAR PART 25 Federal Aviation Regulations Covering Airworthiness Standards for Transport
Category Airplanes

MIL-STD-810 Environmental Testing, Aeronautical and Associated Equipment, General
Specification

TSO-C64 Oxygen Mask Assembly, Continuous Flow, Passenger (For Air Carrier Aircraft)

3. GENERAL REQUIREMENTS:

3.1 Product:

The article furnished under this specification shall be capable of meeting the requirements specified herein.

3.2 Deviations:

Where the requirements of this specification differ from requirements of the specifications, drawings, and publications listed, the requirements of this specification shall govern.

3.3 Materials:

- 3.3.1 General: Materials shall be of type, grade, and quality, which experience or test or both have demonstrated to be suitable for the purpose intended. Materials which contaminate oxygen or are affected adversely by continuous service with oxygen shall not be used.

Materials shall have at least flame-resistant properties as specified in Federal Aviation Regulation Part 25.853.

- 3.3.2 Facepiece: The facepiece shall be free of objectionable odors. Materials in contact with the skin shall be selected to be non-allergenic and non-irritating.
- 3.3.3 Cleaning and Sterilizing: The mask shall be made of materials which permit cleaning and sterilization without adverse effects and without disassembly. The manufacturer shall recommend the method of cleaning and sterilizing.
- 3.3.4 Elastomer Components: All elastomer materials used in the mask shall have been manufactured not more than 12 months prior to the delivery date of the mask except those materials that a longer period has proven feasible. A tag or leaflet describing elastomeric components with service life limits and a suggested method for inspection and detection of deterioration in these components, which may adversely affect the performance of the mask, shall be attached to or included in the packaged mask prior to delivery to the user.
- 3.3.5 Fungus (Inert): Components shall be fungus proofed by selection to the greatest extent practicable of parts and materials that are non-nutrient to fungus, or by treatment of the parts and materials prior to their use. Treatment shall be non-allergenic and non-irritating with no objectionable odors and shall be consistent with the other material requirements in 3.3.
- 3.3.6 Dissimilar Metals: Unless suitably protected against electrolytic corrosion, dissimilar metals shall not be used in intimate contact with each other (Reference MS33586).
- 3.3.7 Material Specification: The material specification of all parts of this mask assembly shall be submitted for approval to the procuring activity if requested.

3.4 Workmanship:

The mask shall be fabricated and finished in accordance with the highest grade practice in the manufacture of this type equipment. The finished mask and all internal parts shall be cleaned throughout and be free of flashing, burrs, scale, and oils, or any other conditions or materials that might adversely affect the safe operation of the mask. All components shall be resistant to snags, breaks, tears, and other harmful actions which could lead to malfunction of the mask due to rough handling during its service life.

3.5 Finish:

All materials that are not inherently corrosion-resistant shall be finished with a protective treatment or coating to minimize the effect of exposure to the environmental conditions that may be encountered in the service for which the equipment is intended. The protective treatment or coating shall not chip, flake, or powder, or otherwise contaminate the mask.

3.6 Color:

The color of the facepiece shall be No. 13538 yellow of Federal Standard No. 595.

3.7 Interchangeability:

All parts having the same manufacturer's part number shall be directly and completely interchangeable with each other with respect to installation, performance and operation.

3.8 Deterioration:

Corrosion or deterioration, such as oozing of plasticizers, of any component that could in any manner make the mask unsuitable for use and prevent the mask from meeting operational requirements during its service life shall be cause for rejection of the mask.

3.9 Service Life:

The service life of the article after delivery to the using agency shall be not less than three years when normal storage and use conditions are observed. This includes subjecting the mask assembly to cleaning and sterilization treatments (see 5.4). At the end of and during the service life specified or established, or both, by the mask manufacturer, the mask assembly shall be operationally serviceable and capable of meeting the appropriate requirements specified herein. If the mask is deemed disposable by the mask manufacturer, its service life may be considered complete after the first normal use. Shelf life shall be considered separately and will be over and above service life. Shelf life shall be specified.

3.10 Reliability:

Reliable operation shall be a major consideration, even after long periods of inattention during stowage on the shelf or in the aircraft, or both.

3.11 Identification Markings:

The following information shall be marked on the outside of the article using materials or processes, or both, that shall ensure legibility during the expected life span of the article. The marking shall not cause smudging or discoloration of the article.

- a. The words "Oxygen Mask"
- b. Manufacturer's Part Number
- c. Manufacturer's Name and Address
- d. Performance Classification Number (see 1.3)
- e. Elastomer Cure Date (see 3.3.4)
- f. Picture (see 5.11)
- g. Date of Manufacture
- h. TSO Number (If Applicable)

4. DETAIL CONSTRUCTION REQUIREMENTS:

4.1 Facepiece Assembly:

- 4.1.1 Fit: The facepiece shall be of a sufficient resilience, size and shape to conform readily to extreme facial contours using no more pressure than supplied by the mask suspension device. The facepiece shall cover the airways of the nose and mouth. The main body of the mask shall be stiff enough to minimize deformation due to incorrect handling, which might result in reduction in operating performance.
- 4.1.2 Volume: The chamber formed between the face and the mask shall at all times be of a minimum volume.
- 4.1.3 Valve Design: Valves, where used, shall be designed to offer minimum resistance to inflow of oxygen and ambient air during inhalation, and to outflow of expiration gases during exhalation.
- 4.1.4 Provision for Attachment of Actuation Cord for Turning on Oxygen Supply: Provision shall be made where applicable for the attachment of a ribbon or a lanyard to the mask to turn on the oxygen supply. This lanyard and its attachment provision must be capable of withstanding a pull of 44.48 N (10 lbf) in any direction.

4.2 Mask Suspension (Holding) Device:

A simple mask suspension device shall be provided for holding the mask on the user's face during normal head movements. The attachment of the suspension device shall not restrict the orientation of the mask. The device shall have such dimensions and elastic properties that it can hold the mask to the face without adjustment and at the same time it shall present minimum discomfort to the wearer. A simple means for adjusting the tightness of the mask shall be provided.

The adjustment means shall be easily identifiable to the user by a visual or tactile recognition, such as tabs at the ends of elastic suspension straps.

The suspension device shall be stowed on the facepiece in a manner that shall not interfere with normal operation of the mask, with hand-held usage, or with automatic presentation of the mask assembly.

4.3 Gas Bag (Where Used):

The gas bag, where used, shall be attached to the facepiece and tubing with sufficient strength to withstand a pull force in any direction of 22.24 N (5 lbf) for at least three seconds and shall be made of flexible material which will collapse when not in use. The gas bag(s) shall have the following minimum and maximum capacity when inflated to 0.125 kPa (0.5 inches of water) positive pressure.

TABLE 1

Type	Minimum Volume (cm ³)	Maximum Volume (cm ³)
Reservoir	1000	1500
Rebreather	800	1000

4.4 Tubing:

The oxygen supply tube, which is to be used for connecting the mask assembly to the oxygen supply source, shall be light in weight, and shall be capable of being bent to a 12.7 mm (0.5 inch) radius measured to the center line of the tube for stowage purposes with less than a 5% restriction to flow during subsequent use. The tubing shall be fully flexible within a temperature range of -29 °C (-20 °F) to 71 °C (160 °F). For installations requiring tight radii, "anti-kink" devices are recommended.

4.5 Flow Indication:

- 4.5.1 There must be a means to allow the crew to determine whether oxygen is being delivered to each oxygen mask assembly.
- 4.5.2 Flow indication must comply with AS916 as applicable.

5. PERFORMANCE REQUIREMENTS:

Unless otherwise specified, all flow requirements refer to oxygen.

5.1 Environmental Conditions:

- 5.1.1 Stowage Configuration: The mask assembly including the supply tubing shall be capable of being stowed in such a manner as to be ready for its intended use. The mask shall remain serviceable in its stowed configuration until it is required for its specific application. The maximum stowage envelope shall be defined by the manufacturer in coordination with the buyer. Where the mask is to be automatically presented by a drop method, compliance shall be demonstrated by showing that the mask falls freely from an inverted rigid box with envelope dimensions representing the intended installation.
- 5.1.2 Temperature and Humidity: The assembly shall be capable of being stowed at temperatures of 71 °C (160 °F) for 120 hours at relative humidities varying from 5 - 95% and at -57 °C (-70 °F) for two hours, without adversely affecting subsequent performance after return to room temperature.
- 5.1.3 Condensation: Operation of the equipment shall not be adversely affected by moisture accumulated during use.
- 5.1.4 Vibration: In its stowed configuration, the equipment shall be capable of withstanding vibrations as follows:
 - 5.1.4.1 Resonance: One million cycles or eight hours, whichever occurs first, at each resonance occurring within the frequency range of Figure 6. (Where several resonances are encountered the vibration periods may then be limited to those resonances considered most likely to produce failure.)
 - 5.1.4.2 No Resonance: One million cycles in each of three mutually perpendicular directions, at 100 cycles per second and the corresponding amplitude of Figure 6.

5.2 Operational Serviceability:

- 5.2.1 Presentation: After exposure to any of the conditions of 5.1, the mask assembly, including supply tubing, shall be capable of being presented from its stowed configuration and meeting the performance requirements specified herein.
- 5.2.2 Altitude: Overall operation shall be satisfactory following sudden pressure changes from sea level to the maximum altitude for which approval is desired.
- 5.2.3 Low Temperature: After the temperature of the mask assembly in its stowed configuration has stabilized at approximately 21 °C (71 °F), the assembly shall be capable of immediate and satisfactory operation when exposed to -40 °C (-40 °F) for a minimum period of five minutes.

5.3 Endurance:

The mask assembly shall be capable of satisfactory operation for a minimum of 50 000 simulated breathing cycles at an approximate rate of 30 cycles per minute, essentially sinusoidal, at a delivery rate of 70 L/min ATPD for 10% of the inspiration time, and at least 30 L/min ATPD for 50% of the remaining inspiration time.

5.4 Sterilization:

Reusable mask assemblies shall be capable of being subjected to the cleaning and sterilization treatment recommended by the manufacturer, without disassembly and with no adverse effects.

5.5 Strength:

- 5.5.1 Assembly: When the supply tubing is connected to the outlet fitting, the mask assembly shall withstand a static tensile load of 88.96 N (20 lbf) applied to the facepiece for at least three seconds without damage to the assembly or disconnection from the outlet fitting. The load shall be applied as described in 6.1.4.1. Figures 3 and 4 show commonly used outlet fittings. When the mask assembly is used with these or other outlet fitting configurations, the manufacturer must show compliance using the appropriate fitting or fittings.
- 5.5.2 Assembly Connected to a Warm Outlet (Chemical Oxygen Generator): When the supply tubing is connected to the outlet fitting and the fitting temperature is 79 ± 3 °C (175 ± 5 °F), the mask assembly shall withstand a static tensile load of 22.24 N (5 lbf) applied to the facepiece for at least three seconds without damage to the mask assembly or disconnection from the outlet fitting. The load shall be applied as described in 6.1.4.1. Figure 3 shows a commonly used outlet fitting for chemical oxygen generators. When the mask assembly is used with this outlet or other outlet fitting configurations, the manufacturer must show compliance using the appropriate fitting or fittings if required by the buyer.