



Technical Standard Order

Subject: TSO-C99, PROTECTIVE BREATHING EQUIPMENT

a. Applicability.

(1) Minimum Performance Standard. This Technical Standard Order (TSO) prescribes the minimum performance standard that protective breathing equipment must meet in order to be identified with the applicable TSO marking. This TSO has been prepared in accordance with the procedural rules set forth in Subpart O of the Federal Aviation Regulations (FAR) Part 21. Protective breathing equipment that are to be so identified and that are manufactured on or after the date of this TSO must meet the minimum performance standard set forth in Society of Automotive Engineers, Inc. (SAE), Aerospace Standard (AS) 8031, "Personal Protective Devices for Toxic and Irritating Atmospheres, Air Transport Crew Members," dated June 1980. SAE AS 8031 incorporates as a reference SAE AS-452A, "Oxygen Mask Assembly, Demand Pressure Breathing, Crew" dated October 20, 1965 for the respiratory protective portion of the equipment and FAA Report FAA-AM-78-41 titled "The Optical Properties of Smoke-Protective Devices," dated October 1978, for light transmission.

(2) Environmental Standard. None.

b. Marking. Each separate component, in addition to the marking specified in Federal Aviation Regulation (FAR) § 21.607(d), must be marked as follows:

(1) Each component of equipment having multiple facial sizes must be marked to indicate its relative size, and whether it will seal on beards e.g., "Beards will not seal."

(2) Each smoke goggle/oxygen mask component, fullface mask, and hood must be marked to indicate the average oxygen usage rate measured during contaminant leakage testing for each combination or fullface mask.

c. Data Requirements.

(1) In addition to FAR § 21.605, the manufacturer must furnish the Manager, Aircraft Certification Office (ACO), Federal Aviation Administration (FAA), having purview of the manufacturer's facilities, one copy each of the following technical data.

- (i) Operating instructions.
- (ii) Equipment limitations.
- (iii) Installation procedures and limitations.
- (iv) Schematic drawings as applicable to the installation procedures.
- (v) Wiring diagrams as applicable to the installation procedures.
- (vi) Specifications.
- (vii) List of the major components (by part number) that make up the equipment system complying with the standards prescribed in this TSO.
- (viii) Manufacturer's TSO qualification test report.
- (ix) Nameplate drawing.

(2) In addition to those data requirements that are to be furnished directly to the FAA, each manufacturer must have available for review by the Manager, ACO having purview of the manufacturer's facilities the following technical data:

- (i) A drawing list, enumerating all the drawings and processes that are necessary to define the article design.
- (ii) The functional test specification to be used to test each production article to ensure compliance with this TSO.
- (iii) Equipment calibration procedures.
- (iv) Corrective maintenance procedures (within 12 months after TSO authorization).
- (v) Schematic drawings.
- (vi) Wiring diagrams.

d. Data to be furnished with manufactured units. One copy of the data and information specified in paragraphs (c)(1)(i) through (vii) of this TSO and instructions for periodic

maintenance and calibration which are necessary for continued airworthiness must go to each person receiving for use one or more articles manufactured under this TSO.

e. Availability of Reference Documents.

(1) Copies of SAE AS 8031 and AS 452A may be purchased from the Society of Automotive Engineers, Inc., Department 331, 400 Commonwealth Drive, Warrendale, Pennsylvania 15096.

(2) FAA report No. FAA-AM-78-41 may be obtained from the National Technical Information Service (NTIS), Springfield, VA 22161. Catalogue No. ADA064678.

(3) Federal Aviation Regulations 21, Subpart O, and Advisory Circular 20-110, "Index of Aviation Technical Standard Orders," may be reviewed at the FAA Headquarters in the Office of Airworthiness, Aircraft Engineering Division (AWS-110), and at all regional ACO's.

/S/ M. C. BEARD
Director of Airworthiness