



AEROSPACE STANDARD

AS50141™**REV. B**

Issued 2001-07
Revised 2012-04
Reaffirmed 2022-05

Superseding AS50141A

(R) Tube, Pneumatic Tire, Aircraft

RATIONALE

AS50141B has been reaffirmed to comply with the SAE Five-Year Review policy.

1. SCOPE

This SAE Aerospace Standard (AS) establishes requirements for manufacturing, testing, identification, packaging, and quality of tubes for application in commercial and military aircraft wheel assemblies.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

2.1.1 Tire and Rim Association (TRA) Publication

Available from The Tire and Rim Association, 175 Montrose West Avenue, Suite 150, Copley, OH 44321, Tel: 330-666-8121, www.us-tra.org.

Aircraft Yearbook

2.1.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM D 412 Standard Test Method for Vulcanized Rubber and Thermoplastic Elastomers Tension

ASTM D 746 Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact

ASTM D 5118 Standard Practice for Fabrication of Fiberboard Shipping Boxes

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Full document details: SAE AS50141B

For more information on this standard, visit
<https://www.sae.org/standards/content/AS50141B/>

Documents

Document Sharing Hub

2.1.3 American Society for Quality Control Publication

Available from American Society for Quality, 600 North Plankinton Avenue, Milwaukee, WI 53203, Tel: 800-248-1946 (United States or Canada)) or +1-414-272-8575 (International), www.asq.org.

ANSI/ASQC Z1.4 Sampling Procedures and Tables for Inspection by Attributes

2.2 Definitions

2.2.1 LOT

Unless otherwise specified, a lot shall include all tubes of the same size manufactured during one continuous production run.

2.2.2 TUBE

A tube is defined as a flexible gas-retaining chamber with an access port, inserted inside a pneumatic tire/wheel assembly, to hold inflation gas at an elevated pressure.

3. REQUIREMENTS

3.1 Qualification

The tubes furnished under this specification shall be products that are authorized by the procuring activity. Changes in plants, construction, materials or processes that affect performance of the tube shall require requalification per this specification. Qualification testing of a specific tube size need not be re-accomplished if the contractor has been granted approval by the procuring activity and the materials and processes for that tube size have not changed.

3.2 Materials

The materials shall meet the performance requirements specified both herein and by the pertinent reference documents.

3.2.1 Physical Properties of Tube Material

The physical properties of the material used in the tube body shall comply with the requirements of Table 1, if all natural rubber, or Table 2, if butyl or butyl blends.

TABLE 1 - TUBE PHYSICAL PROPERTIES USING ALL NATURAL RUBBER

Property	Before Aging	After Aging
Minimum Tensile Strength (psi)	2100	N/A
Minimum Elongation (percent)	550	N/A
Maximum Set Stretch (percent)	N/A	18
Minimum Tensile Strength of Splice (psi) ¹	1200	N/A

¹Based on cross-sectional area of the rubber adjacent to the splice (reference 4.5.3).

TABLE 2 - TUBE PHYSICAL PROPERTIES USING BUTYL OR BUTYL BLENDS

Property	Before Aging	After Aging
Minimum Tensile Strength (psi)	1000	N/A
Minimum Elongation (percent)	350	N/A
Maximum Set Stretch (percent)	N/A	22
Minimum Tensile Strength of Splice (psi) ¹	500	N/A

¹Based on cross-sectional area of the rubber adjacent to the splice (reference 4.5.3).

3.2.2 Operating Temperature Range

The selected materials shall maintain their intended properties within a temperature range of -58 to 125 °F (-50 to 52 °C). The tube and valve core materials shall satisfactorily pass the low temperature test specified in 4.5.6.

3.3 Physical Characteristics

Tube gauge, weight, static imbalance, and valve configuration/components shall comply with Table 3 requirements. Each tube's service valve shall be provided with a TR VC-5 cap.

3.3.1 Vent Ridges

Vent ridges shall be provided to prevent air entrapment between the tire casing and tube. It is recommended that the ridge groups be spaced at 6-in intervals (approximate), and be molded 0.015 in deep and 0.030 in wide.

3.3.2 Balance

Tubes do not require an individual balance check, but shall be manufactured such that the balance requirements specified in Table 3 are met.

3.3.3 Thickness

Recommended gauge thickness values are given in Table 3. Tubes made from alternate materials may be thinner in gauge provided the performance characteristics of 3.2.1, Table 2, and 4.5 can be achieved.

3.4 Leakage

All tubes shall be gas-tight.