

INCH-POUND
MIL-PRF-32058(USAF)
18 June 2003

PERFORMANCE SPECIFICATION

CHOCK, WHEEL-TRACK - AVIATION, ADJUSTABLE ROPE TYPE

This specification is approved for use by the Department of the Air Force and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers the requirements for aviation wheel-track chocks of the adjustable rope type.

1.2 Classification. The wheel chocks are of the following types, sizes, and classes (see 6.2).

1.2.1 Types. The chock types are as follows:

Type I - Made of soft wood.

Type II - Made of materials other than those classified as Type I.

1.2.2 Size. Chock sizes are as follows:

Size 1, Size 2, Size 3, Size 4, and Size 5

1.2.3 Class. The chock classes are as follows:

Class A - For use in dry, wet and ice-free weather conditions.

Class B - For use in heavy snow and icy weather conditions.

Class C - For use in all weather conditions.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: WR-ALC/LGECC, 480 Richard Ray Blvd, Suite 200, Robins AFB, GA 31098-1640 by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements documents cited in sections 3 and 4 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

DEPARTMENT OF DEFENSE

MIL-DTL-5624	Turbine Fuel, Aviation, Grades JP-4, JP-5, and JP-5/JP-8 ST
MIL-DTL-83133	Turbine Fuels, Kerosene Types, NATO F-34 (JP-8), AND NATO F-35, AND JP-8+100
MIL-PRF-5606	Hydraulic Fluid, Petroleum Base; Aircraft, Missile and Ordnance
MIL-PRF-6083	Hydraulic Fluid, Petroleum Base, For Preservation and Operation
MIL-PRF-83282	Hydraulic Fluid, Fire Resistant, Synthetic Hydrocarbon Base, Metric, NATO Code Number H-537
MIL-PRF-87257	Hydraulic Fluid, Fire Resistant; Low Temperature, Synthetic Hydrocarbon Base, Aircraft and Missile

FEDERAL

T-R-571	Rope, Cotton, or Cotton and Polyester
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STANDARDS

DEPARTMENT OF DEFENSE

MIL-STD-810	Environmental Engineering Considerations and Laboratory Tests
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FEDERAL

FED-STD-595 Colors Used in Government Procurement

HANDBOOKS

DEPARTMENT OF DEFENSE

MIL-HDBK-808 Finish, Protective and Codes for Finishing Schemes
for Ground and Ground Support and Equipment

(Unless otherwise indicated, copies of the above specifications, standards, and handbooks are available from the Standardization Documents Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.2.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

AIR FORCE MANUAL

AFM 32-1123 Airfield and Heliport Planning and Design

(Application for copies should be addressed to the contracting Officer.)

DEPARTMENT OF COMMERCE

DOC PS 20 American Softwood Lumber Standard

(Application for copies should be addressed to the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402-9325.)

AIR FORCE DRAWINGS

42D6594 Chock Assembly-Wheel, Adjustable Rope Type

(Application for copies should be addressed to the contracting Officer.)

2.3 Non-Government publications. The following documents form a part of this document to the extent herein. Unless otherwise indicated, the issues of the documents which are DoD adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation.

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SOCIETY OF AUTOMOTIVE ENGINEERS (SAE)

SAE AMS 1424 Deicing/Anti-Icing Fluid, Aircraft, SAE Type I
(DoD adopted)

(Application for copies should be addressed to Society of Automotive Engineers, 400 Commonwealth Drive, Warrendael PA 15096-0001, or order through the web site www.sae.org.)

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 1655 Standard Specification for Aviation Turbine Fuels
(DoD adopted)
ASTM D 5340 Standard Test Method for Airport Pavement Condition
Index Surveys

(Application for copies should be addressed to American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103 or order through the web site www.astm.org.)

2.4 Order of precedence. In the event of a conflict between the text of this document and the 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.

3 REQUIREMENTS

3.1 First article. When specified (see 6.2), sample(s) shall be subject to first article inspection in accordance with 4.2.

3.2 Description. The wheel chock shall comply with the performance requirements specified herein. A pair of wheel chocks is required to be secured around an aircraft's wheel and keep it stationary in the extreme environmental conditions specified herein.

3.3 Size and weight. Chocks shall be as light as possible while meeting all requirements of this specification. Maximum weight of type II chock shall not exceed 35lbs. In order for the chocks and lanyards to properly interface with military aircraft landing gear the size measurements shall be as specified in table I.

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Table I. Chock sizes.

Size	Chock Length (in) <u>1/</u>	Minimum Chock Height (in) <u>1/</u>	Minimum Chock Width (in) <u>1/</u>	Lanyard Length (in) <u>1/</u>	Wheel and tire assembly outside Diameter (in)
1	14	4	6	60	Up to 33
2	20	6	8	92	Greater than 33
3	24	4	6	60	Up to 33
4	36	6	8	92	Greater than 33
5	56	6	8	144	For dual or tandem main gear

1/ Tolerances for dimensions are +0.5 –0.0 inches.

3.4 Components. The chock assembly shall consist of a single chock block and a lanyard. Chocks may include additional components such as spikes used to aid in icy conditions; additional components must be an integral part of the design to prevent them from falling off and posing a foreign object hazard to the aircraft or aircraft engines.

3.5 Materials. Unless otherwise specified herein, the materials used shall be in accordance with the manufacturer's materials specification for wheel chocks. All materials shall be selected based on the defined purpose for the specified service life at the environmental extremes specified herein. The use of recovered material made in compliance with regulatory requirements is acceptable providing all requirements of this specification are met.

3.5.1 Materials for type I chocks. The material for type I chocks shall be soft wood. Soft woods known to meet the requirements of this specification are pines (species: Western, Northern, White, Sugar, and Ponderosa) and firs (species: Douglas and White) as specified in DOC PS 20. For other soft woods see the contracting Officer.

3.5.2 Materials for type II chocks. The materials for type II chocks shall consist of materials other than those used for type I chocks.

3.5.3 Prohibited materials. Materials which may cause sparks, break apart, become contaminated with or have its structural integrity compromised by aircraft fluids are prohibited and shall not be used as type II chocks. Chock components, such as spikes, also shall not use these prohibited materials.

3.5.4 Fungus proof materials. Where possible, materials that are nutrients for fungi shall not be used.

3.5.5 Protective treatment. Coatings subject to failure at the extremes specified herein shall not be used.

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3.6 Design and construction. A pair of chock assemblies coupled together in accordance with the aircraft specific technical order shall hold the aircraft at the environmental extremes specified herein.

3.6.1 Foreign Object Damage (FOD). Any component that must be removed for inspection, service, or operation shall be retained by wire rope lanyard or chain preventing it from become separated from the chock.

3.6.2 Finish. The chock and all components shall be constructed and finished in a workmanlike manner. Particular attention shall be given to elimination of sharp edges, splinters, and burrs, surface preparation, and finish. Type I chock shall be finished in accordance with MIL-HDBK-808.

3.6.3 Paint. The chock block shall be color 13591, yellow, as specified in FED-STD-595, or commercial equivalent. If it is impractical to make the chock yellow, the chock shall be reflectorized. Type II chock color shall remain steadfast in the extreme environmental conditions specified herein. Cleaning, chemical treatments, painting, plating, and films shall be in accordance with best commercial practice.

3.6.4 Lanyard. Lanyard shall be made from rope specified in T-R-571 or equal.

3.6.5 Slippage. Bottom surface of chock block shall not slip on bare or wet ramp surface. Ramp surface shall be "good" as specified in ASTM D 5340.

3.6.6 Buoyancy. Type II chock shall not float in water.

3.6.7 Compression. Type II chock shall withstand a compressive load of 630 psi.

3.6.8 Part or identifying number. The part or identifying number shall be permanently and legibly marked on the lanyard end of the chock in 0.5 inch characters minimum. The use of adhesive labels and data plates is prohibited (see 6.3).

3.7 Durability. Durability shall be a consideration in the design of the wheel chocks. Chocks shall not require more than simple inspections to insure chock block is free of cracks, wear, and deformation and lanyard is secure, the proper length, and free of wear. Type II chocks shall withstand the rigors of routine impacts on concrete in normal daily conditions. Normal conditions are defined as between 0 °F and 120 °F, at any humidity.

a. A 30 minute time limit for one person to perform all daily inspection and service tasks, including, but not limited to inspection for cracks, wear, and deformation, and insuring rope is properly secured and proper length.

b. Selection of wear items for a minimum of 4,800 hours of normal operation. Normal conditions are defined as between 0 °F and 100 °F, at any humidity.

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3.8 Performance.

3.8.1 Environmental conditions. All chocks and components shall store and operate under the following environmental conditions:

- a. Full time exposure to temperature ranging from -60 °F to 180 °F.
- b. Full time exposure to relative humidity of 100%.
- c. Full time exposure to UV light.
- d. Precipitation as encountered in any locale in any season.

4. VERIFICATION

4.1 Classification of inspections. The inspection requirements specified herein are classified as follows:

- a. First article inspection (see 4.2)
- b. Conformance inspection (see 4.3)

4.2 First article inspection. First article inspection shall be performed on each chock assembly when a first article sample is required (see 3.1). For type I chocks, the inspection shall include the examinations of 4.7.1 through 4.7.3, and 4.10. For type II chocks, the inspection shall include the examinations of 4.7 through 4.10. The user first article chock assembly shall complete all conformance inspection requirements of 4.3, test requirements of 4.8, and inspection requirements of 4.9.

4.3 Conformance inspection. Conformance inspection shall include the examination of 4.7.1, 4.7.4, and 4.7.9.

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4.4 Test conditions.

4.4.1 Parking ramp conditions. Ramp shall be “good” as specified in ASTM D 5340 and free of cracking, corrugations, depressions, weathering, rutting, and swell.

4.4.2 Parking ramp test configurations.

- a. Aircraft parked, chocks installed and laced with 6” between front chock and tire. Tow vehicle pulls aircraft into chock at minimum speed until aircraft stops moving. After chocks stop the aircraft, tow vehicle is disconnected without pushing the aircraft backwards.
- b. Aircraft parked on incline/decline of 1.5% grade, with chocks installed
- c. Aircraft parked crosswind, with brakes off, with chocks installed
- d. Engine operating at 85% takeoff rated thrust without afterburner, with brakes set and chocks installed

4.5 Test rejection criteria.

- a. Failure or evidence of impending failure, permanent deformation, or wear beyond limits.
- b. Conditions presenting a safety hazard to personnel during operation, service, or maintenance.
- c. Failure to attain the specified performance requirements.
- d. Aircraft rolls more than one foot after contact with chock or chock moves more than 6 inches laterally.
- e. Inability to manually remove chock from the wheel with a reasonable effort without towing the aircraft backwards.

4.6 Rejection and retest. Providing a chock fails conformance testing or inspection, the chock will be considered rejected until the cause is determined and corrective action is taken, only then shall retest be accomplished.

4.7 Testing methods.

4.7.1 Examination of product. The chock shall be examined to determine compliance with the requirements as specified in Section 3. Particular attention shall be given to safety, component fit, materials, color, finish, and part or identifying number. For first article, this examination shall be accomplished using a checklist of requirements, not otherwise validated by tests.

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4.7.2 Dimensional check. Dimensions for the wheel chock and lanyard shall be as specified in table I.

4.7.3 Weight check. A single chock with lanyard shall be weighed and shall be as specified in 3.3.

4.7.4 Buoyancy test. The Contractor shall develop a test plan to demonstrate the chock is not buoyant in water. Any movement of the chock during test, indicating improper selection of materials or inadequate design, shall be cause for rejection. Test must also demonstrate chock does not absorb water. An increase in chock weight of more than 1% due to absorption of water shall be reason for rejection.

4.7.5 Compression test. The contractor shall develop a test plan to simulate the loading experienced from an aircraft rolling over the chock. The compressive load of 630 psi shall be applied normal to the contact surface and in a plane considered to produce the most severe bending stresses. Deformation of more than 1 inch in the loaded chock surface shall be reason for rejection. Failure, cracking, or permanent deformation of more than 1/16 inch one hour after load has been removed shall be cause for rejection.

4.7.6 Impact test. Chocks shall be dropped at various angles from a height of 15 feet onto a concrete surface. Chock shall withstand 200 cycles with only minor scuff marks. Cracking, chipping or breaking of chock block shall be cause for rejection.

4.7.7 Contamination test. The Contractor shall develop a test plan to demonstrate chock is resistant to and does not absorb MIL-PRF-6083, MIL-PRF-5606, MIL-PRF-83282, MIL-PRF-87257, MIL-DTL-5624, MIL-DTL-83133, ASTM D 1655, SAE AMS 1424 and Skydrol in accordance with MIL-STD-810, Method 504. Any absorption, discoloration, or deformation that results from a constant 24-hour exposure to these fluids shall be cause for rejection.

4.7.8 Environmental test.

4.7.8.1 High temperature test. Chock shall be heated to 180°F for two hours, allowed to cool to 120°F, and subjected to tests described in 4.7.5 and 4.7.6. Any evidence of discoloration, cracking, or permanent change in dimensions due to heating shall be cause for rejection.

4.7.8.2 Low temperature test. Chock shall be cooled to -60°F, allowed to stabilize, and subjected to tests described in 4.7.5 and 4.7.6. Any evidence of cracking, embrittlement, or permanent change in dimensions due to cooling shall be cause for rejection.

4.7.9 Slip test. The Contractor shall develop a test plan that incorporates the methods described in paragraph 4.4.2 to demonstrate class A chock will not slip in conditions a. through d., class B chocks will not slip in conditions e. through f., and class C chocks will not slip in any of the following conditions:

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- a. Dry concrete and asphalt
- b. Wet concrete and asphalt
- c. Gloss painted asphalt
- d. Dirt
- e. Soft snow
- f. Glazed ice, one half inch thick or more

Chock movement of more than one foot parallel to loaded direction or six inches perpendicular to loaded direction shall be cause for rejection. Structural failure of chock or unsafe conditions shall be cause for rejection.

4.8 Operational test. The chocks shall be delivered to three Purchaser designated sites for 90 days of operational use. The test period shall start after the chocks have been inspected and prepared for service and the contractor has reviewed the operation instruction and maintenance manuals with Purchaser personnel. The chocks shall be used as often as possible in all environmental conditions. The Purchaser personnel at the beginning or end of the test period may conduct any test cited in this specification. Accumulated operational hours may be used as a part of the Reliability analysis (see 3.7). Any failure preventing chocks from completing its operational testing period shall constitute a reliability failure.

4.9 Final inspection. Following all testing, the chocks and ropes shall be inspected for evidence of loose parts, cracks, deformation, finish failures, wear, part or identifying number legibility, and evidence of corrosion.

4.10 Workmanship. Construction and finish of the chock assembly shall give particular attention to neatness and thoroughness of surface preparation, finish, painting, and freedom of parts from burrs, splinters, and sharp edges.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of materiel is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Department or Defense Agency, or within the Military Department's System Command. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

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6 NOTES

(This section contains information of a general or explanatory nature which may be helpful, but is not mandatory.)

6.1 Intended use. These wheel chocks are intended for use on a variety of aircraft under all environmental conditions on improved and unimproved runway and parking surfaces. The adjustable rope is used to connect or lace the chocks together in front and back of each tire to hold the chocks in place preventing aircraft movement.

6.2 Acquisition requirements. Procurement documents should specify the following:

- a. Title, number, and date of this specification.
- b. Type, Size, and Class (see 1.2).
- c. Part or identifying number (see 6.3).
- d. Applicable levels of preservation, packaging, and packing (see 5.1).
- e. When first article is required (see 3.1 and 4.2).

6.3 Part or identifying number (PIN). The PIN is constructed as follows:

<u>M</u>	<u>32058</u>	-	<u>X</u>	-	<u>X</u>	-	<u>X</u>
Prefix for military specification	Specification number		Type (see 1.2)		Size (see 1.2)		Class (see 1.2)

NOTE: The first dash number is as follows; 1 = Type I 2 = Type II

6.4 Subject term (key word) listing.

ACFT parking
 ACFT Wheel Chock
 ACFT loose equipment
 ACFT safety
 ACFT ground equipment
 Ground safety

6.5 Working example. Air Force drawing 42D6594 may be referenced for dimensional guidance and is considered a working example for Type I, Class A chocks of all sizes.

Custodian:
 Air Force – 99

Preparing activity:
 Air Force – 84

Agent:
 Air Force – 99

(Project 1730-0390)

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7, and send to preparing activity.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

I RECOMMEND A CHANGE:	1. DOCUMENT NUMBER MIL-PRF-32058	2. DOCUMENT DATE (YYYYMMDD) 2003/06/18
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3. DOCUMENT TITLE CHOCK, WHEEL-TRACK - AVIATION, ADJUSTABLE ROPE TYPE

4. NATURE OF CHANGE *(Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)*

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME (Last, First, Middle Initial)	b. ORGANIZATION	
c. ADDRESS (Include Zip Code)	d. TELEPHONE (Include Area Code) (1) Commercial: (2) DSN: (3) FAX: (4) EMAIL:	7. DATE SUBMITTED (YYYYMMDD)

8. PREPARING ACTIVITY

a. NAME WR-ALC/LEEE	b. TELEPHONE Commercial : 478-926-1183, DSN: 468-1183, FAX: X-4771, EMAIL: bob.yohe@robins.af.mil
c. ADDRESS WR-ALC/TILCC 420 SECOND STREET, SUITE 100 ROBINS AFB, GA 31098-1640	IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT: Defense Standardization Program Office 8725 John J. Kingman, Suite 2533 Fort Belvoir VA 22060-6221 Telephone (703) 767-6888 DSN: 427-6888