

INCH-POUND
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MIL-PRF-32058A(USAF)

23 August 2012

SUPERSEDING

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 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 a material whose physical properties meets or exceeds those listed in Table I.

Table I. Physical properties

Property	ASTM Method	Value
Specific Gravity	D-792	1.04
Shore Hardness	D-2240	94A/45D
Taber Abrasion	D3489	200 mg loss
	H-18 Wheel 1,000-g Load, 1,000	
Tensile Strength at Break	D-412	2,400 lb/in <sup>2</sup>
Flexural Modulus	D-790	16,000 lb/in <sup>2</sup>
Tear Strength, Die C	D-624	450 lb <sub>f</sub> /in
Thermal Coefficient of Linear Thermal Expansion	D-696	78E-06 in/in/°F

Comments, suggestions, or questions on this document should be addressed to: WR-ALC/GRVEB, Robins AFB GA 31098-1813. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <https://assist.dla.mil>.

AMSC N/A

FSC 1730

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Type II – Not Used.

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 – Not Used

Class C – Not Used.

## 2 APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3, 4, or 5 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 of documents cited in sections 3, 4, or 5 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 cited in the solicitation or contract.

#### FEDERAL STANDARDS

FED-STD-595/13591	Yellow, Gloss
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#### COMMERCIAL ITEM DESCRIPTIONS

A-A-52088	Rope, Cotton, or Cotton/Polyester Blend
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#### DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-PRF-5606	Hydraulic Fluid, Petroleum Base; Aircraft, Missile and Ordnance
MIL-DTL-5624	Turbine Fuel, Aviation, Grades JP-4 and JP-5
MIL-PRF-6083	Hydraulic Fluid, Petroleum Base, For Preservation and Operation
MIL-DTL-83133	Turbine Fuel, Aviation, Kerosene Type, JP-8 (NATO F-34), NATO F-35, and JP-8+100 (NATO F-37)

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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

## DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-810	Environmental Engineering Considerations and Laboratory Tests
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## DEPARTMENT OF DEFENSE HANDBOOKS

MIL-HDBK-808	Finish, Protective and Codes for Finishing Schemes for Ground and Ground Support and Equipment
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(Copies of these documents are available online at <https://assist.dla.mil/quicksearch/> or 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 of these documents are those cited in the solicitation or contract.

## AIR FORCE MANUAL

AFM 32-1123	Airfield and Heliport Planning and Design
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(Application for copies should be addressed to the contracting Officer.)

## AIR FORCE DRAWINGS

42D6594	Chock Assembly-Wheel, Adjustable Rope Type
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(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 specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

## AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

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

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(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](http://www.astm.org) .)

## SOCIETY OF AUTOMOTIVE ENGINEERS (SAE)

SAE AMS 1424 Deicing/Anti-Icing Fluid, Aircraft, SAE Type I

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

2.4 Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein (except for related specification sheets), 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), four samples (two pairs) shall be subjected to first article inspection in accordance with 4.2.

3.2 Description. A pair of wheel chock assemblies are required to be secured around an aircraft's wheel and keep it stationary in the environmental conditions specified herein.

3.3 Size and weight. Chocks (synonymous with chock assemblies) shall be as light as possible while meeting all requirements of this specification. Maximum weight of a chock shall not exceed 45lbs. In order for the chocks and lanyards to properly interface with military aircraft landing gear the size measurements shall be as specified in Table II.

Table II. Chock sizes.

Size	Chock Length (in.) *	Minimum Chock Height (in.) *	Minimum Chock Width (in.)*	Lanyard Length (in.)*	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
Note: * 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.

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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 chock. The material for chocks shall be any material whose properties meet or exceed those of Table I.

3.5.2 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.

3.5.3 Fungus proof materials. Materials that are nutrients for fungi shall not be used.

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

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 becoming 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. Chock shall be finished in accordance with MIL-HDBK- 808.

3.6.3 Color. 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. Chock color shall remain steadfast in the environmental conditions specified herein.

3.6.4 Lanyard. The lanyard shall be made from rope specified in A-A-52088.

3.6.5 Slippage. The 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. The chock shall not float in water.

3.6.7 Compression. The chock shall withstand a minimum applied weight of 170 psi, with a minimum overall weight of 3,500 lbs. for at least 15 minutes.

3.6.8 Part or identifying number. The part or identifying number (see 6.3) 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.

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3.7 Durability. 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. 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. One person, in less than 30 minutes, shall be able to perform all daily inspections and service tasks, including, but not limited to, inspection for cracks, wear, deformation, and insuring rope is properly secured and of proper length.

3.8 Performance.

- 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)
- c. Operational test (see 4.7)

Requirements shall be verified in accordance with Table III.

TABLE III. Requirement verification matrix.

Section 3 Requirement	Verification Method	Section 4 Verification
3.1 <u>First article</u> .	Not Applicable (N/A)	
3.2 <u>Description</u> .	N/A	
3.3 <u>Size and weight</u> .	Examination	4.6.2 <u>Dimensional check</u> . 4.6.3 <u>Weight check</u> .
3.4 <u>Components</u> .	N/A	

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TABLE III. Requirement verification matrix – Continued.

Section 3 Requirement	Verification Method	Section 4 Verification
3.5 <u>Materials</u> .	N/A	
3.5.1 <u>Materials for Type I chock</u> .	Examination	4.6.1 <u>Examination of product</u> .
3.5.2 <u>Prohibited materials</u> .	Examination	4.6.1 <u>Examination of product</u> .
3.5.3 <u>Fungus proof materials</u> .	Examination	4.6.1 <u>Examination of product</u> .
3.5.4 <u>Protective treatment</u> .	Examination	4.6.1 <u>Examination of product</u> .
3.6 <u>Design and construction</u> .	Examination	4.6.1 <u>Examination of product</u> .
3.6.1 <u>Foreign object damage (FOD)</u> .	Examination	4.6.1 <u>Examination of product</u> .
3.6.2 <u>Finish</u> .	Examination	4.6.1 <u>Examination of product</u> .
3.6.3 <u>Color</u> .	Examination	4.6.1 <u>Examination of product</u> .
3.6.4 <u>Lanyard</u> .	Examination	4.6.1 <u>Examination of product</u> .
3.6.5 <u>Slippage</u> .	Examination	4.6.1 <u>Examination of product</u> .
3.6.6 <u>Buoyancy</u> .	Test	4.6.4 <u>Buoyancy test</u> .
3.6.7 <u>Compression</u> .	Test	4.6.5 <u>Compression test</u> .
3.6.8 <u>Part or identifying number</u> .	Examination	4.6.1 <u>Examination of product</u> .
3.7 <u>Durability</u> .	Examination	4.6.5 <u>Compression test</u> . 4.6.6 <u>Impact test</u> .
3.8 <u>Performance</u> .	N/A	
3.8.1 <u>Environmental conditions</u> .		4.6.8.1 <u>High temperature test</u> . 4.6.8.2 <u>Low temperature test</u> .

4.2 First article inspection. The first article chocks shall be subjected to the examination and tests described in 4.6.1 through 4.6.8.2. The contractor shall provide or arrange for all test equipment and facilities. Unless otherwise approved by the procuring activity, all first article chocks shall be in the same configuration at all times and configuration changes shall not be made during the first article inspection. The contractor shall include a statement of conformance

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certifying that the material properties of the chock material meet or exceed values listed in Table I.

4.3 Conformance inspection. Each production chock shall be subjected to the examination described in 4.6.1.

4.4 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.

4.5 Rejection and retest. If a chock fails first article inspection, the chock will be considered rejected until the cause is determined and corrective action is taken, only then shall retest be accomplished.

4.6 Testing methods.

4.6.1 Examination of product. Each wheel chock shall be examined to verify compliance with the requirements herein prior to accomplishing any other demonstrations or tests listed in 4.6. A contractor-generated, Government-approved checklist (part of the test procedure) shall be used to identify each requirement not verified by an analysis, certification, demonstration, or test, and shall be used to document the examination results. Particular attention shall be given to materials, workmanship, dimensions, surface finishes, protective coatings and sealants and their application, welding, fastening, and markings. Proper operation of each wheel chock function shall be verified. Certifications and analyses shall be provided in accordance with Table IV. Each production chock shall be inspected to a Government-approved reduced version of the checklist.

4.6.2 Dimensional check. Dimensions for the wheel chock and lanyard shall be as specified in Table II.

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

4.6.4 Buoyancy test. The contractor shall 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.

4.6.5 Compression test. The Contractor shall develop a test procedure to demonstrate that the chock will withstand a minimum applied weight of 170 psi, with a minimum overall weight of 3,500 lbs. for at least 15 minutes. The weight shall be uniformly distributed across the top-face of a portion of the chock; the maximum width of the distributed load shall be 17 inches. Any



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cracking or permanent deformation shall be cause for rejection. 'Permanent deformation' shall be defined as an observable deformation of 1/16 inch or greater, compared to the as manufactured dimensions, 60 minutes +/- 5 minutes after any portion of the load has been removed.

4.6.6 Impact test. The Contractor shall develop a test procedure to demonstrate that a chock encountering an impact of at least 525 ft-lb against a surface equal to or greater than the hardness of concrete. The chock shall withstand 20 cycles. Any cracking, chipping, or permanent deformation shall be cause for rejection. 'Permanent deformation' shall be defined as an observable deformation of 1/16 inch or greater, compared to the as-manufactured dimensions.

4.6.7 Contamination test. The Contractor shall develop a test procedure 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.

4.6.8 Environmental test.

4.6.8.1 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 4.6.5 and 4.6.6. Any evidence of discoloration, cracking, or permanent change in dimensions due to heating shall be cause for rejection.

4.6.8.2 Low temperature test. Chock shall be cooled to -60°F, allowed to stabilize, and subjected to tests described in 4.6.5 and 4.6.6. Any evidence of cracking, increased brittleness, or permanent change in dimensions due to cooling shall be cause for rejection.

4.7 Operational test. All operational testing shall be satisfactorily completed and approved prior to final first article acceptance. The chocks shall be delivered to three Government 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 Government personnel. The chocks shall be used as often as possible in all environmental conditions. Government 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.

4.8 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.

4.9 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

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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.

## 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. When first article is required (see 3.1).
- d. Applicable levels of preservation, packaging, and packing (see 5.1).
- e. Part or identifying number (see 6.3).

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		Type		Size		Class
specification	number		(see 1.2)		(see 1.2)		(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 ground equipment  
 ACFT loose equipment  
 ACFT parking  
 ACFT safety  
 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.

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6.6 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

Custodian:

Air Force - 84

Preparing activity:

Air Force - 84

Reviewer:

Air Force – 99

Agent:

Air Force – 99

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