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DETAIL SPECIFICATION

SEMITRAILERS, STAKE; SEMITRAILERS, VAN, AND SEMITRAILERS, REFRIGERATOR: MILITARY DESIGN

This specification is approved for use by the U.S. Army Tank Automotive Research, Development and Engineering Center (TARDEC), Research, Development and Engineering Command (RDECOM), Department of the Army, and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers semitrailers intended for use in transporting military supplies, general cargo, and perishable items.

1.2 Classification. Semitrailers will be of the following models (see 6.2):

Model	Description
M118A1	Semitrailer, Stake, 6 Ton, 2-Wheel
M119A1	Semitrailer, Van, Cargo, 6 Ton, 2-Wheel
M127A2C	Semitrailer, Stake, 12 Ton, 4-Wheel
M128A2C	Semitrailer, Van, Cargo, 12 Ton, 4-Wheel
M129A2C	Semitrailer, Van, Supply, 12 Ton, 4-Wheel
M349A3	Semitrailer, Refrigerator, 7 1/2 Ton, 2-Wheel
M349A4	Semitrailer, Refrigerator, 7 1/2 Ton, 2-Wheel

Comments, suggestions, or questions on this document should be addressed to U.S. Army RDECOM, Tank Automotive Research, Development and Engineering Center, ATTN: RDTA-EN/STND/TRANS MS #268, 6501 E. 11 Mile Road, Warren, MI 48397-5000 or emailed to DAMI_STANDARDIZATION@conus.army.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at https://assist.daps.dla.mil.

AMSC N/A FSC 2330

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 (see 6.2).

COMMERCIAL ITEM DESCRIPTIONS

A-A-50271 - Plates, Identification

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-PRF-3150 - Lubricating Oil, Preservative, Medium
MIL-PRF-10924 - Grease, Automotive and Artillery
MIL-PRF-23827 - Grease, Aircraft and Instrument, Gear and Actuator Screw
MIL-PRF-46176 - Brake Fluid, Silicone, Automotive, All Weather, Operational and Preservative (Metric)

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-209 - Lifting and Tie Down Provisions
MIL-STD-461 - Electromagnetic Emission and Susceptibility Requirements for the Control of
MIL-STD-1179 - Lamps, Reflectors and Associated Signaling Equipment for Military Vehicles

(Copies of these documents are available online at https://assist.daps.dla.mil/quicksearch/ or from the Standardization Document 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 (see 6.2).

DRAWINGS

ARMY

8736092	-	Semitrailer, Stake, 6 Ton, 2-Wheel, M118A1
8736684	-	Semitrailer, Stake, 12 Ton, 4-Wheel, M127A2C
8736685	-	Semitrailer, Van, Cargo, 12 Ton, 4-Wheel, M128A2C
8736686	-	Semitrailer, Van, Supply, 12 Ton, 4-Wheel, M129A2C
8736687	-	Semitrailer, Refrigerator, 7 1/2 Ton, 2-Wheel, M349A3
8736746	-	Semitrailer, Refrigerator, 7 1/2 Ton, 2-Wheel, M349A4
8750501	-	Semitrailer, Van, Cargo, 6 Ton, 2-Wheel, M119A1

(Copies of these documents are available from DAMI_STANDARDIZATION@conus.army.mil or U.S. Army RDECOM, Tank Automotive Research, Development and Engineering Center, ATTN: RDTA-EN/STND/TRANS MS #268, 6501 E. 11 Mile Road, Warren, MI 48397-5000.)

FEDERAL MOTOR VEHICLE SAFETY STANDARDS (FMVSS)

49CFR571.121	-	Air Brake Systems

FEDERAL MOTOR CARRIER SAFETY REGULATIONS (FMCSR)

49CFR393.70	-	Coupling devices and towing methods, except for driveaway-towaway operations
49CFR393.86	-	Rear impact guards and rear end protection
49CFR393.106	-	What are the general requirements for securing articles of cargo?

(Copies of these documents are available from www.gpoaccess.gov/cfr/index.html or U.S. Government Printing Office, P.O. Box 979050, St. Louis, MO 63197-9000.)

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 (see 6.2).

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI/ASQC Z1.4 - Sampling Procedures and Tables for Inspection by Attributes (DoD Adopted)

(Copies of these documents are available from American National Standards Institute, 25 West 43rd Street, New York, NY 10036 or website: http://www.ansi.org/)

SAE INTERNATIONAL

SAE J682 - Wheel, Rear, Splash and Stone Throw Protection (DoD Adopted)
SAE J2014 - Pneumatic Tires for Military Tactical Wheeled Vehicles (DoD Adopted)

(Copies of these documents are available from www.sae.org or SAE Customer Service, 400 Commonwealth Drive, Warrendale, PA 15096-0001.)

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, 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), a sample shall be subjected to first article inspection in accordance with 4.2.

3.2 Materials. Materials used shall be in accordance with the manufacturer's materials specifications for semitrailers. The materials shall be capable of meeting all of the operational and environmental requirements specified herein (see 4.5.1). Recovered materials shall be used to the maximum extent practicable.

3.3 Construction. Semitrailer shall be constructed in accordance with the applicable drawing specified in table I, specifications and standards, and as supplemented herein (see 4.5.2). If more than one unit of a particular component is used in or on the semitrailer, the components used shall be identical in make, material, and quantity. The riveting, welding practices, and quality shall be the same on each semitrailer (see 4.5.2).

3.3.1 Seals. When fording or operating in mud, sand, or snow, seals shall prevent entrance of foreign matter into the bearings, which are exposed to contamination during these operations. All bearing seals shall restrict the leaking of lubricants from bearings (see 4.5.2).

TABLE I. Drawing, model, and system voltage.

Drawing	Description	System voltage
8736092	Semitrailer, Stake, 6 Ton, 2-Wheel, M118A1.	24 volts
8736684	Semitrailer, Stake, 12 Ton, 4-Wheel, M127A2C.	12 & 24 volts
8736685	Semitrailer, Van, Cargo, 12 Ton, 4-Wheel, M128A2C.	12 & 24 volts
8736686	Semitrailer, Van, Supply, 12 Ton, 4-Wheel, M129A2C.	12 & 24 volts
8736687	Semitrailer, Refrigerator, 7 1/2 Ton, 2-Wheel, M349A3.	12 & 24 volts
8736746	Semitrailer, Refrigerator, 7 1/2 Ton, 2-Wheel, M349A4.	24 volts
8750501	Semitrailer, Van, Cargo, 6 Ton, 2-Wheel, M119A1.	24 volts

3.3.2 Lighting system. The internal and external lighting system, as specified on applicable drawings, shall operate at the voltage listed in table I under all semitrailer operating conditions. All electrical contacts and connections shall maintain positive contact under all semitrailer operating conditions and have continuity from end to end of each circuit. The external lighting system shall meet the applicable requirements of MIL-STD-1179 (see 4.5.2).

3.3.3 Tires and tubes.

3.3.3.1 Tires. Unless otherwise specified (see 6.2), tires shall be in accordance with SAE J2014 (see 4.5.2).

3.3.4 Adjustment mechanisms. All adjustment mechanisms shall function properly and maintain adjustment settings during all vehicle operating conditions (see 4.5.2).

3.4 Performance. Semitrailer shall meet performance requirements of this specification when fully equipped, loaded with applicable payload and serviced with products specified in table II, and coupled with an applicable prime mover. Semitrailer serviced and equipped for existing climatic conditions shall operate as specified without special equipment.

3.4.1 Environmental conditions. The semitrailer shall operate under extreme conditions in ambient air temperatures ranging from minus (-) 50 degrees Fahrenheit (°F) [-46 degrees Celsius (°C)] to plus (+) 125 °F (52 °C). The complete semitrailer when in storage shall withstand -80 °F (-62 °C) without deterioration that may cause failure of any component of the semitrailer (see 4.5.3).

TABLE II. Service products.

Product use	Ambient air temperature	
	-65 °F to 0 °F (-54 °C to -18 °C)	-10 °F to 115 °F (-23 °C to +46 °C)
Oil:		
For hydraulic brakes	MIL-PRF-46176	MIL-PRF-46176
For general purpose lubrication	Commercial (water dispensing, low temperature)	MIL-PRF-3150
Grease:		
For bearings	MIL-PRF-23827	MIL-PRF-23827
For general chassis lubrication, including wheel bearings	MIL-PRF-10924	MIL-PRF-10924

3.4.2 Payloads and speeds.

3.4.2.1 Highway operation. The semitrailer shall provide satisfactory operation over smooth, hard-surfaced roads, when loaded with rated payload, as specified in table III, and at a sustained speed of 50 miles per hour (mph) [80 kilometers per hour (km/h)] (see 4.5.4).

3.4.2.2 Cross-country operation. The semitrailer shall provide satisfactory operation over unimproved roads, open, rolling or hilly terrain, when fully loaded with the rated payload, as specified in table III and at a sustained speed of 20 mph (32 km/h) (see 4.5.4).

TABLE III. Weights and payloads.

Model	Curb weight (pounds)	Payload allowance minimum (pounds)
M118A1	8060 (3656 kg*)	12 000 (5443 kg)
M119A1	7160 (3248 kg)	12 000 (5443 kg)
M127A2C	13 000 (5902 kg)	24 000 (10 886 kg)
M128A2C	15 220 (6904 kg)	24 000 (10 886 kg)
M129A2C	15 400 (6985 kg)	24 000 (10 886 kg)
M349A3	8600 (3901 kg)	15 000 (6804 kg)
M349A4	8600 (3901 kg)	15 000 (6804 kg)

*kg = kilogram

3.4.3 Brake system.

3.4.3.1 Service brakes. The service brakes of the semitrailer (loaded with rated payload) and proper towing vehicle combination shall control, decelerate and stop the vehicle combination within 30 feet (ft) [9.1 meters (m)] from a speed of 20 mph (32 km/h) on a dry, hard, level, smooth surface. Application of brakes on all wheels of the semitrailer shall be concurrent. The semitrailer brake system shall meet the applicable requirements of 49CFR571.121 in effect on the date the semitrailer is manufactured (see 4.5.2 and 4.5.5).

3.4.3.2 Automatic actuation. The semitrailer shall be equipped with an automatic actuating device to apply the semitrailer brakes upon breakaway from the towing vehicle. When loaded to rated payload, device shall maintain application of the brakes and hold the semitrailer stationary on a 20 percent (%) grade for not less than 15 minutes (see 4.5.2 and 4.5.6).

3.4.4 Fording ability. The semitrailer shall ford hard-bottomed salt or fresh water crossings to a depth sufficient to completely submerge the chassis without damage to semitrailer or components and without impairment of the braking mechanism or entrance of water into wheel bearings (see 4.5.7).

3.4.5 Tracking ability. The semitrailer, with rated payload, shall conform to requirements of 49CFR393.70 (see 4.5.8).

3.4.6 Turning ability. The semitrailer, when coupled to the proper towing vehicle, shall make complete turns to the right or left with the semitrailer assuming a 90 degree angle with the towing vehicle, without cramping, side-slipping, or damage to either the towing vehicle or the semitrailer (see 4.5.9).

3.4.7 Landing gear. Landing gear shall support the fully loaded semitrailer, and shall withstand, without damage, the strains imposed upon it, when coupling or uncoupling the towing vehicle, and raising or lowering the fully loaded semitrailer (see 4.5.2 and 4.5.10).

3.4.8 Gradeability.

3.4.8.1 Longitudinal grades. The semitrailer, loaded with rated payload, at rated cross-country speed specified herein, and ascending or descending longitudinal grades of 40%, shall follow the towing vehicle without sliding or shifting to an extent that could cause loss of control of the vehicle combination (see 4.5.11).

3.4.8.2 Side slopes. The semitrailer shall follow the towing vehicle without slipping or upsetting when operating, either left or right, on side slopes having a 20% grade (see 4.5.11).

3.4.9 Electromagnetic interference. The semitrailer shall conform to the applicable electromagnetic interference requirements of MIL-STD-461 for ground equipment (see 4.5.12).

3.4.10 Van bodies, and refrigerator vans, waterproofness.

3.4.10.1 Panel joints and doorseals, waterproofness. The semitrailer body, doors, and all components shall be waterproof to prevent entrance of water due to rain, melting snow, road splash or other causes (see 4.5.13).

3.4.10.2 Semitrailer, van refrigerator (M349 series).

3.4.10.2.1 Refrigeration unit and body heat leakage. The refrigeration unit shall be installed on the M349 series semitrailer. When installed and operating, the semitrailer refrigerator body shall not lose more than 68 British thermal units (Btu) per hour [20 watts (W)] per hour, per °C at a temperature differential of 52±2 °F (11±1 °C) (see 4.5.2 and 4.5.14).

3.4.10.2.2 Floorpan. Floorpan of the refrigerator body shall be leakproof (see 4.5.15).

3.4.11 Durability. The vehicle, with rated payload, shall possess not less than a 60% probability of completing a minimum of 6000 miles [9656 kilometers (km)] of operation in accordance with the operational profile without replacement or overhaul of the principal components or subassemblies. This shall include suspension, including springs, axles and wheels, major brake components less brake shoes and common hardware; landing device; leveling jacks; and frame and van/body compartments (see 4.5.16).

3.5 Marking and identification. Marking and identification shall be permanent and legible, and shall include as a minimum, the manufacturer's identification, the National Stock Number (NSN), and the Part or Identifying Number (PIN) (see 4.5.2 and 6.2).

3.6 Safety. Sharp edges and projecting points which are non-functional shall be rounded or blunted. Fastener length shall be trimmed and not excessive. Boltholes shall have all burrs removed. Where equipment access is necessary, non-skid platforms, footwalks, steps and handholds of adequate number and strength shall be provided. Mud and stone throw protection shall be provided in accordance with SAE J682. All pressure relief devices shall be directed away from personnel relieving pressure and passers-by. All applicable FMVSS and FMCSR standards, rules and regulations shall be incorporated into the trailer at the time of manufacture. A front end structure shall be provided complying with 49CFR393.106. A rear end underride protection structure shall be provided complying with 49CFR393.86 (see 4.5.2).

3.6.1 Tiedowns. Tiedowns shall be provided in accordance with MIL-STD-209, type II, class 2 (see 4.5.2).

3.7 Servicing and adjustment. Semitrailer shall be adjusted for immediate operation and shall be serviced for climatic conditions at the delivery point. Servicing shall be compatible with processing for shipment as specified by the procuring activity (see 4.5.2).

3.8 Workmanship. Workmanship shall be of such quality as to assure that the vehicle and components thereof are free from any defects that compromise, limit, or reduce semitrailer or component capabilities herein expressed (see 4.5.2).

3.9 Name, shipping and service data plates. Unless otherwise specified (see 6.2), data plates shall conform to applicable drawings and meet performance requirements of A-A-50271 (see 4.5.2).

3.10 Painting. Unless otherwise specified (see 6.2), all conditioning, priming and painting shall be in accordance with the manufacturer's standard practices. If special painting or color is required, it shall be stated in the contract or order (see 4.5.2).

4. VERIFICATION

4.1 Classification of inspection:

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

4.2 First article inspection. Unless otherwise specified (see 6.2), first article inspection shall be performed on one semitrailer as specified when a first article inspection is required (see 3.1). This inspection shall include the examinations of 4.4 (see table IV) and the tests of 4.5.3 through 4.5.16.

4.3 Conformance inspection.

4.3.1 Acceptance test. Prior to conformance testing, each semitrailer without payload shall be completely assembled and serviced and operated for a distance of 5 miles (8 km) on smooth relatively level hard surfaced roads.

4.4 Examination.

4.4.1 Sampling. Samples from an inspection lot for conformance inspection shall be selected in accordance with ANSI/ASQC Z1.4. Any redesign or modification of the contractor's standard to comply with specified requirements shall receive particular attention for adequacy and suitability. This element of inspection shall encompass all visual examinations and dimensional measurements of requirements listed in table IV. Noncompliance with any specified requirement or presence of one or more defects preventing or lessening maximum efficiency shall constitute cause for rejection.

TABLE IV. Classification of defects.

Category	Defect	Method of examination
Major:		
101	Frame, structural, welding, riveting or sheet metal defects (see 3.3).	Visual
102	Fifth wheel plate and kingpin incorrect (see 3.3).	Visual
103	Axles, improper assembly and mounting; welding defects (see 3.3).	Visual and Functional
104	Doors, hinges, locks (vans) improper fit, inoperative (see 3.3).	Functional
105	Operating units, improper installation (see 3.3).	Visual
106	Suspension system components, damaged, leaks (see 3.3.1).	Visual
107	Electrical system components and circuits, malfunction, inoperation, damaged (see 3.3.2).	Visual and Functional
108	Wheels and tires, improper size, damaged (see 3.3.3).	Visual
109	Adjustment mechanism defective (see 3.3.4).	Visual and Functional
110	Brake system components, damaged; leaks, improper components assembly or installation, clearance inadequate (see 3.4.3.1).	Visual and Functional
111	Parking brakes, malfunction (see 3.4.3.2).	Visual and Functional
112	Automatic brake actuation, malfunction (see 3.4.3.2).	Functional
113	Landing gear, malfunction; improper assembly or installation (see 3.4.7).	Visual and Functional
114	Batteries (refrigerators) damaged, discharged (see 3.4.10.2).	Visual
115	Refrigeration unit, malfunction; leaks, improper installation (see 3.4.10.2).	Visual and Functional
116	Safety devices missing. Semitrailer has sharp edges, burrs, etc. (see 3.6).	Visual
117	Tiedowns missing, improper (see 3.6.1).	Visual
118	Faulty workmanship affecting performance (see 3.8).	Visual
Minor:		
201	Wiring or tubing, improper; coded; or protective defective (see 3.3).	Visual
202	Body, doors, storage boxes, racks, improper fits, assembly, installation; defective materials (see 3.3).	Visual and Functional

TABLE IV. Classification of defects - Continued.

Category	Defect	Method of examination
203	Electrical system components improper installation or assembly (see 3.3.2).	Visual
204	Battery cables improper installation, wrong lengths (see 3.4.10.2).	Visual
205	Refrigeration unit, damaged; leaks (see 3.4.10.2).	Visual
206	Bumper, lifting eyes and tiedowns, missing; improperly located; welding defects (see 3.6.1).	Visual
207	Lubrication fittings, defective; missing; improper installation (see 3.7).	Visual
208	Lubrication, improper (see 3.7).	Visual
209	Servicing, adjustment improper (see 3.7).	Visual
210	Faulty workmanship not affecting performance (see 3.8).	Visual
211	Decal markings, data and instruction plates, incomplete data; missing; improper location or size (see 3.9).	Visual
212	Paint, application or color improper (see 3.10).	Visual
213	Protective coatings, application, coverage or materials improper (see 3.10).	Visual

TABLE V. Classification of inspection.

Title	Requirement	Test	First article	Conformance
Environmental	3.4.1	4.5.3	X	
Highway & cross-country	3.4.2	4.5.4	X	
Service brake	3.4.3.1	4.5.5	X	X
Automatic actuation device	3.4.3.2	4.5.6	X	X
Fording	3.4.4	4.5.7	X	
Tracking ability	3.4.5	4.5.8	X	X
Turning ability	3.4.6	4.5.9	X	
Landing gear	3.4.7	4.5.10	X	
Gradeability	3.4.8	4.5.11	X	
Electromagnetic compatibility	3.4.9	4.5.12	X	
Waterproofing & sealing	3.4.10.1	4.5.13	X	X
Heat leakage	3.4.10.2.1	4.5.14	X	
Floorpan waterproofness	3.4.10.2.2	4.5.15	X	
Durability	3.4.11	4.5.16	X	

4.5 Methods of inspection.

4.5.1 Materials. Conformance to 3.2 shall be determined by inspection of contractor records providing proof or certification that materials conform to requirements. Applicable records shall include drawings, specifications, design data, receiving inspection records, processing and quality control standards, vendor catalogs and certifications, industry standards, test reports, and rating data.

4.5.2 Defects. Conformance to 3.3, 3.4.3, 3.4.7, 3.4.10.2.1, and 3.5 through 3.10 shall be determined by examination for the defects listed in table IV. Examination shall be visual, tactile, or by measurement with SIE.

4.5.3 Environmental test. To determine conformance to 3.4.1, the semitrailer, properly serviced and equipped shall be exposed for 24 hours to each of the extreme temperature conditions shown in the requirement and then subjected to the applicable tests.

4.5.4 Highway and cross-country test. To determine conformance to 3.4.2.1 and 3.4.2.2, the semitrailer will be loaded with the applicable payload specified in table III over the specified terrain at specified speeds and observed for satisfactory operation performance.

4.5.5 Service brake test. To determine conformance to 3.4.3.1, the semitrailer towing vehicle combination shall be operated as specified and observed for stopping at the specified distance.

4.5.6 Automatic actuation device test. To determine conformance to 3.4.3.2, the automatic actuation device shall be actuated, to assure that brake application is maintained and semitrailer holds stationary for the specified period on a specified grade.

4.5.7 Fording test. To determine conformance to 3.4.4, the semitrailer shall be operated in water at specified depth and time period. Upon completion of fording operation, all sealed items and wheel bearings shall be examined. Entrance of water that would preclude proper function of the brake system or wheel bearing shall be cause for rejection.

4.5.8 Tracking ability test. To determine conformance to 3.4.5, the semitrailer with prime mover shall be operated as specified and observed for deviation from the path of the prime mover.

4.5.9 Turning ability test. To determine conformance to 3.4.6, the semitrailer combination shall be operated as specified and observed for specified turning angle in both directions and observed for interference with prime mover.

4.5.10 Landing gear test. To determine conformance to 3.4.7, the landing gear on the fully loaded semitrailer shall be fully lowered and fully raised. In addition, the fully loaded semitrailer shall be coupled and uncoupled while supported on the landing gear. The landing gear shall meet the specified functional and operational requirements during and following the tests.

4.5.11 Longitudinal grades and side slope tests. To determine conformance to 3.4.8.1 and 3.4.8.2, the semitrailer towing vehicle combination shall be operated on specified grades and slopes and observed for meeting specified performance requirements.

4.5.12 Electromagnetic compatibility test. To determine conformance to 3.4.9, the semitrailer shall be tested as specified in MIL-STD-461.

4.5.13 Waterproofing and sealing. To determine conformance to 3.4.10.1, each semitrailer van body shall be subjected to a 15 minute spray test to determine waterproofness of panel joints and door seals. Test shall be conducted prior to installation of insulation, inner panels, plywood flooring, and sound deadening material. The spray shall be delivered by nozzles operating at 25 pounds per square inch (lb/in^2) [172 kiloPascals (kPa)] water pressure, sufficient in number and so placed [approximately 2 ft (0.6 m) from body], to directly spray full area of sides, roof, front, and rear of van body. During test, doors shall be closed as in normal operation.

4.5.14 Heat leakage test. To determine conformance to 3.4.10.2.1, the semitrailer equipped with a refrigerating unit shall be placed in a controlled temperature room, where the temperature difference between inside and outside of semitrailer shall be a minimum of 50 °F (10 °C) during any test. Eleven thermocouples or thermometers which have been checked against a secondary, standard thermometer shall be placed outside and located as follows to record the ambient air temperature: one at each of the eight corners; one in the center of the top; and one at the center of the bottom. Thermometers shall be not less than 5 inches (in.) [127 millimeters (mm)] from body of semitrailer. Electric resistors surrounded by shields to minimize radiation shall be placed within semitrailer. If incandescent elements are used, they shall be operated at 1/2 normal voltage by connecting two in series. Eleven thermocouples which have been compared to a secondary, standard thermometer shall be placed inside semitrailer as follows: one in each of two opposite upper and two opposite lower corners; one in the center of each side; one in the center of the ceiling; one in the center of the front wall; one in the center of the door; one in the centerline of the floor 4 ft (1.2 m) from the door; and one on the center of the floor 3 ft (0.9 m) from the front wall. Each inside thermocouple shall be placed to measure the air temperature 1 in. (25 mm) from the surface to which it is attached. An 8 or 10 in. (203 or 254 mm) electric fan shall be placed within the semitrailer on the raised portion of the floor and faced toward the door to provide interior air circulation. The door shall then be closed and not opened for the duration of the test. Electric current shall then be sent, through the resistor and the fan to provide 900 to 1000 W within the semitrailer. When the interior

temperature has reached a stationary level, the amount of heat required to hold this level for 6 hours in the fixed ambient air temperature shall be measured in terms of W hours. The heat leakage of the semitrailer shall then be determined as follows:

$$\text{Heat leakage (Btu/hr -°F)} = \frac{\text{W hours x 3.415}}{\text{6 x [interior temperature - exterior temperature (°F)]}}$$

$$\text{Heat leakage (W/°C)} = \frac{\text{W hours}}{\text{6 x [interior temperature - exterior temperature (°C)]}}$$

4.5.15 Floorpan waterproofness. The floorpan of each refrigerator semitrailer body shall be tested for waterproofness by filling body or floor with water to a depth sufficient to determine conformance to requirements of 3.4.10.2.2.

4.5.16 Durability. To determine conformance to 3.4.11, the semitrailer shall be examined as specified in 4.5.2 (see table IV) and tested as specified in table V. Subsequently the vehicle shall be road tested for 6000 miles (9656 km), as specified in table VI.

TABLE VI. 6000 mile (9656 km) test.

Course	Mileage and speeds
Hard-surfaced roads	2400 miles (3862 km) at varying speeds up to maximum
Gravel and dirt roads	1500 miles (2414 km) at varying speeds up to maximum
Level cross-country	1380 miles (2221 km) at varying speeds up to maximum
Hilly cross-country	600 miles (966 km) at varying speeds up to maximum
Belgian block	120 miles (193 km) at speeds applicable to trailer characteristics

NOTE: 90% of mileage in each category shall be accomplished with payload. The remaining ten percent of mileage shall be performed without payload.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activities within the Military Service or Defense Agency, or within the military service's system commands. 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 that may be helpful, but is not mandatory.)

6.1 Intended use. The trailers covered under this specification should perform under extreme battlefield conditions, including cross-country operation at -50 to 125 °F, fording water to a depth sufficient to completely submerge the chassis of the vehicle, ascending and descending longitudinal grades of 40%, and managing slide slopes having a 20% grade. Since operation of commercial semitrailers under these same conditions would result in catastrophic failure, this item is military unique. Specific semitrailers covered under this specification are as follows:

a. Semitrailer, van, cargo: For transporting general cargo.
b. Semitrailer, van, supply: For transporting general supply items.
c. Semitrailer, refrigerator: For transporting perishable food and other items, both frozen and unfrozen.
d. Semitrailer, stake: For transporting general cargo.

6.2 Acquisition requirements. Acquisition documents should specify the following:

a. Title, number, and date of this specification.
b. Model of semitrailer required (see 1.2).
c. If required, the specific issue of individual documents referenced (see 2.2.1, 2.2.2, and 2.3).
d. If first article is required (see 3.1 and 4.2).
e. Tires, if other than as specified (see 3.3.3.1).
f. PIN and quantity of trailers required (see 3.5 and 6.3).
g. Type of information required on data plate, if other than specified (see 3.9).
h. Paint, if other than as specified (see 3.10).
i. Packaging requirements (see 5.1).

6.3 Part or Identifying Number (PIN). The PIN to be used for semitrailers acquired to this specification are created as follows (see 3.5 and 6.2):

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Model:
1 - M118A1
2 - M119A1
3 - M127A2C
4 - M128A2C
5 - M129A2C
6 - M349A3
7 - M349A4

Specification number

Prefix for military specification

6.4 Definitions. The following definitions are established as guidelines governing leakage:

a. Weep - Any evidence of fluid beyond the seal.
b. Seep - Any evidence of fluid beyond the seal that does not result in formation of a droplet.
c. Droplet - Any evidence of fluid beyond the seal that results in the formation of a droplet.
d. Drip - Any evidence of fluid beyond the seal where droplet forms and falls.

6.5 Subject term (key word) listing.

Floorpan waterproofness
Fording ability
Gradeability
Landing gear
Seals
Tiedowns
Tracking ability

Turning ability

6.6 Recycled materials. The use of recycled materials which meet the requirements of the applicable material specifications without jeopardizing the intended use of the item will be encouraged (see 3.2).

6.7 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:
Army - AT

Preparing Activity:
Army - AT

(Project 2330-2010-006)

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at https://assist.daps.dla.mil.