KKK-L-370D
16 June 1988
SUPERSEDING
KKK-L-370C
AMENDMENT 2
28 JANUARY 1966

FEDERAL SPECIFICATION

LINING, FRICTION, (CLUTCH AND BRAKE, METALLIC, METAL-CERAMIC AND SEMIMETALLIC)

This specification was approved by the Commissioner, Federal Supply Service, General Service Administration, for the use of all Federal agencies.

1. SCOPE

1.1 Scope. This specification covers metallic, metal-ceramic, and semimetallic friction linings that are for replacement of clutch and brake linings (see 6.1). Linings include continuous ring, ring segment button type, and cylindrical segment or block type linings.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: US Army Tank-Automotive Command, ATTN: AMSTA-GDS, Warren, MI 48397-5000, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document, or by letter.

AMSC N/A FSC 2520
DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

1.1.1 Federal specification coverage. Federal specifications do not include all types of the commodity indicated by the titles of the specifications, but are intended to cover only those most generally used by the Federal Government.

1.2 Classification.

1.2.1 Types. The linings covered by this specification shall be of the following types as specified (see 6.2):

Type I - Copper or bronze-base lining surface.
Type II - Iron-base lining surface.
Type III - Metallic-ceramic lining surface.

2. APPLICABLE DOCUMENTS

2.1 Government documents. The following documents, of the issues in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

SPECIFICATIONS
FEDERAL

PPP-B-566	- Boxes, Folding, Paperboard.
PPP-B-601	- Boxes, Wood, Cleated-Plywood.
PPP-B-621	- Boxes, Wood, Nailed and Lock-Corner.
PPP-B-636	- Box, Fiberboard.
PPP-B-676	- Boxes, Setup.

STANDARDS
FEDERAL

FED-STD-102	- Preservation, Packaging, and Packing Levels.
FED-STD-123	- Marking For Shipment (Civil Agencies).

(Activities outside the Federal Government may obtain copies of Federal specifications, standards, and commercial item descriptions as outlined under General Information in the Index of Federal Specifications, Standards and Commercial Item Descriptions. The Index, which includes cumulative bimonthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.)

(Single copies of this specification, and other Federal specifications and commercial item descriptions required by activities outside the Federal Government for bidding purposes, are available without charge from General services Administration Business Service Centers in Boston, MA; New York, NY; Philadelphia, PA; Washington, DC; Atlanta, GA; Chicago, IL; Kansas City, MO; Fort Worth, TX; Houston, TX; Denver, CO; San Francisco, CA; Los Angeles, CA; and Seattle, WA.)

(Federal Government activities may obtain copies of Federal standardization documents and the Index of Federal Specifications, Standards and Commercial Item Descriptions from established distribution points in their agencies.)

SPECIFICATIONS
MILITARY

MIL-P-116	- Preservation, Methods of.
MIL-B-117	- Bags, Sleeves and Tubing - Interior Packaging.
MIL-P-46093	- Primer Coating, Synthetic (For Brake Drums).

STANDARDS
MILITARY

MIL-STD-105	- Sampling Procedures and Tables for Inspection by Attributes.
MIL-STD-129	- Marking for Shipment and Storage.
MIL-STD-130	- Identification Marking of US Military Property.
MIL-STD-1186	- Cushioning, Anchoring, Bracing, Blocking, and Waterproofing, with Appropriate Test Methods.
MIL-STD-45662	- Calibration Systems Requirements.

(Copies of Specifications and Standards required by contractors in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting activity.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted shall be those listed in the issue of the DODISS specified in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS shall be the issue of the nongovernment documents which is current on the date of the solicitation.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM B312	- Green Strength for Compacted Metal Powder Specimens, Test Method for.
ASTM D3951	- Commercial Packaging, Practice for.

(Application for copies should be addressed to American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein (except for associated detail specifications, specification sheets or MS standards), the text of this specification shall take precedence. Nothing in this specification, however, shall supersede applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 First article. Unless otherwise specified (see 6.2), the contractor shall furnish sample units of each type of lining material (see 1.2.1) which shall be subjected to first article inspection (see 4.4). First article inspection samples, properly marked with identifying information shall be representative of the types to be furnished to the Government. All subsequent lining material delivered to the Government shall conform to these samples.

3.2 Materials. Materials used in the fabrication of linings shall be as specified herein and in accordance with referenced specifications and drawings (see 4.8.1).

3.2.1 Recycled, virgin and reclaimed materials. There are no requirements for the exclusive use of virgin materials. The use of recycled or reclaimed (recovered) materials is acceptable provided that all other requirements of this specification are met (see 4.8.1 and 6.4.1).

3.3 Design and construction. The design and construction of the linings shall be as specified (see 6.2) or in accordance with applicable drawings. Each lining shall be fabricated with or without a backing layer. Wearing surfaces shall be fabricated as follows (see 4.8.1 and 4.8.2):

a. Full metallic type: Iron or copper base binder with friction-modifying fillers.
b. Semimetallic type: Resinous binder with copper.
c. Metallic-ceramic type: Copper or iron matrix combined with ceramic ingredients and other friction-modifying additives.

3.3.1 With backing layer. Each lining shall consist of two layers designated as a wearing layer and a backing layer (see 3.3.3, 3.3.4 and 4.8.2).

3.3.1.1 Types I and II. The linings of types I and II shall consist of a metallic wearing layer either fused directly and continuously to a metal backing layer, or contain an integral woven, expanded, stabbed, or perforated metal reinforcing member at or near the back surface.

3.3.1.2 Type III. The linings of type III shall consist of a metal-ceramic wearing layer retained by a metal cup, a sintered metal backing layer, or both; or brazed to a flat-steel backing member.

3.3.2 Without backing layer. For replacement of similar linings used as original equipment, types I and II linings may be furnished without a backing layer (see 4.8.2).

3.3.3 Wearing layer (see 4.8.1).

3.3.3.1 Type I. The wearing layer for type I linings shall be a porous mixture of not less than 65 percent (%) nor more than 90% copper or bronze with materials such as iron, tin, lead, and graphite uniformly distributed through it to obtain the specified physical properties. When specified (see 6.2), the percentage of free iron shall not exceed 5%.

3.3.3.2 Type II. The wearing layer for type II linings shall be a porous material having not less than 60% nor more than 99% iron with other materials such as tin, lead, silica, and graphite uniformly distributed through it to obtain the specified physical properties.

3.3.3.3 Type III. Type III linings shall have a wearing layer with a metallic content of not less than 40% when measured by weight.

3.3.4 Backing layer. The thickness of the backing layer shall be not less than 25% nor more than 66% of the total facing thickness for disc-type clutch facings and brake linings; and not less than 12.5% for shoe or band-type clutch facings and brake linings (see 4.8.2).

3.3.4.1 Type I. The backing layer for type I linings shall be rolled plate or sheet of either copper, steel, or sintered iron. The integrally molded reinforcement shall be made of perforated, woven, stabbed, or expanded ferrous or nonferrous metal.

3.3.4.2 Type II. The backing layer of type II linings shall be rolled plate or sheet of either copper, steel, or sintered iron. The integrally molded reinforcement shall be made of perforated, woven, stabbed, or expanded ferrous or nonferrous metal.

3.3.4.4 Type III. The backing layer for type III linings shall be rolled plate or sheet of either copper, steel, or sintered iron.

3.3.5 Interchangeability. The linings shall be interchangeable with, and suitable as replacement for, linings supplied as original equipment on commercial vehicles and tractors without requiring alteration of existing clutch or brake parts or any shaping or bending operations of the lining (see 4.8.2).

3.3.6 Application construction. Unless otherwise specified (see 6.2), linings up to and including 18 inches (in) outside diameter shall be made in a complete ring; linings having an outside diameter greater than 18 inches shall be made in segments. Linings shall also be suitable for use on so-called "cushion type" clutches where steel springs are used behind the facings to give smoother operation (see 4.8.2).

3.3.7 Functional construction. When specified (see 6.2), linings for externally contracting and internally expanding band-type clutches shall be furnished in continuous strips up to 16 inches in length, of stated width, thickness, and radius of curvature (see 4.8.2).

3.4 Performance.

3.4.1 Ferrous or nonferrous metal backing layer. All backing linings shall show no separation of layers or break in the bond between the backing and wearing layers after being bent through an angle of 90 degrees (°) with the backing layer on the inside of the bend and with the radius of bend sufficiently small to cause cracks and fractures in the wearing layer (see 4.8.3.1).

3.4.2 Sintered-iron backing layer. All linings shall show no separation of layers or break in the bond between the backing and wearing layers after being chiseled into the wearing layer at an angle of approximately 30° (see 4.8.3.2).

3.4.3 Wearing layer transverse rupture. The linings of types I and II, without backing, shall have a transverse rupture strength of not less than 4000 pounds per square inch (psi) when tested for green strength in accordance with ASTM B312 (see 4.8.3.3).

3.4.4 Coefficient of friction. Coefficient of friction of the wearing layer of the lining against smooth cast iron shall be as specified in 3.4.4.1 and 3.4.4.2 at pressures from 20 to 200 psi and temperatures from 0 to 900 degrees Fahrenheit (°F) (see 4.8.3.4).

3.4.4.1 Kinetic. The kinetic (sliding) coefficient of friction shall be not less than 0.22 at surface speeds of 4000 to 6000 feet per minute (fpm) and no less than 0.25 at surface speeds of less than 3000 fpm. Coefficient at surface speeds between 3000 and 4000 fpm and over 6000 fpm shall be at comparable ratios (see 4.8.3.4.1).

3.4.4.2 Static. The static coefficient of friction shall be no less than 0.30 (see 4.8.3.4.2).

3.5 Hardness. The Brinell hardness number of the wearing layer, using a 10-millimeter (mm) ball with a 500-kilogram (kg) load, at 72°F and a 30-second (sec) test duration shall be not less than that specified in table I for the wearing layer thickness (see 4.8.4).

TABLE I. Wearing layer hardness.

Thickness of layer (in)	Minimum Brinell number
1/16 and less	20
Over 1/16 to 3/32	17
Over 3/32	12

3.6 Density. The density, weight per cubic inch, of the wearing layer shall be as specified in table II (see 4.8.5).

TABLE II. Wearing density.

	Ounces per cubic inch	
	minimum	maximum
Type I	2.5	4.0
Type II	1.5	3

3.7 Identification markings. The identification marking shall be in accordance with MIL-STD-130 and clutch lining shall be marked with a number, letter, or symbol which will adequately identify the manufacturer and material. Segments of combination sets shall be identified for the clutches or brakes on which they are to be used. Identification marks shall appear on every piece of lining and on each piece in a set. The same identification symbol shall apply to linings of different sizes, widths and thickness. The material of all linings submitted under the same identification mark shall have the same properties, as closely as the best commercial practices permit (see 4.8.2).

3.7.1 Special military marking. For Department of Defense purchases the specification number and type number of the lining shall also be included in the identification markings.

3.8 Workmanship. Workmanship shall be of a quality that meet all specified requirements and shall assure that linings are free of defects that would affect serviceability, interchangeability, and performance (see 4.8.2).

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order (see 6.2), the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform or witness any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items must meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of assuring that all products or supplies submitted to the Government for

acceptance comply with all requirements of the contract. Sampling in quality conformance does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material.

4.1.2 Inspection equipment. Unless otherwise specified in the contract (see 6.2), the contractor is responsible for the provision and maintenance of all inspection equipment necessary to assure that supplies and services conform to contract requirements. Inspection equipment must be capable of repetitive measurements to an accuracy of 10% of the measurement tolerance. Calibration of inspection equipment shall be in accordance with MIL-STD-45662.

4.2 Classification of inspections:

a. First article inspection (see 4.4).
b. Quality conformance inspections (see 4.5).
   1. Examination (see 4.5.2).
   2. Acceptance tests (see 4.5.3).
c. Control tests (see 4.6).
d. Preparation for delivery (see 4.8.6).

4.3 Inspection conditions. Unless otherwise specified (see 6.2), all inspections shall be conducted under the following conditions:

a. Air temperature 73 $\pm$ 18°F
b. Barometric pressure $28.5 \begin{smallmatrix} + 2 \\ - 3 \end{smallmatrix}$ inches mercury (in Hg)
c. Relative humidity 50 $\pm$ 30%.

4.4 First article inspection. Unless otherwise specified (see 6.2), the Government shall select a sample of each type selected from the first 25 units produced under the production contract for first article inspection. First article samples shall be properly marked with identifying information and shall be inspected as specified in tables III and IV. Approval of the first article sample by the Government shall not relieve the contractor of his obligation to supply linings that are fully representative of those inspected as a first article sample. Any changes or deviation of the production units from the first article sample shall be subject to the approval of the contracting officer.

TABLE III. Classification of inspections.

Title	Requirement	Inspection	First article	Quality conformance		Control
				Examination	Tests	
Materials and construction	3.2 thru 3.3, and 3.3.3	4.8.1	X	X		
Defects (see 4.5.2 & table IV)	3.3, 3.3.1, 3.3.2, 3.3.4 thru 3.3.7, 3.7 and 3.8	4.8.2	X	X		X
Ferrous or nonferrous metal backing layer	3.4.1	4.8.3.1	X		X 1/	
Sintered-iron backing layer	3.4.2	4.8.3.2	X		X 2/	
Wearing layer transverse rupture	3.4.3	4.8.3.3	X			
Coefficient of friction	3.4.4	4.8.3.4				
Kinetic	3.4.4.1	4.8.3.4.1	X			X
Static	3.4.4.2	4.8.3.4.2	X			X
Hardness	3.5	4.8.4	X			
Density	3.6	4.8.5	X			
Packaging and packing	5.1	4.8.6.2	X	X		X

1/ For types I and III linings.
2/ For types II and III linings.

4.4.1 First article inspection failure. Test item deficiencies found during, or as a result of, the first article test, shall be cause for rejection of the items until evidence has been provided by the contractor that corrective action has been taken to eliminate the deficiency. Any deficiency found during, or as a result of the first article test, shall be evidence that all items already produced prior to completion of the first article test are similarly deficient unless contrary evidence satisfactory to the contracting officer is furnished by the contractor. Such deficiencies on all items shall be corrected by the contractor. The Government shall not accept products until first article testing is completed to the satisfaction of the Government.

4.5 Quality conformance inspections.

4.5.1 Sampling.

4.5.1.1 Lot formation. An inspection lot shall consist of all linings of one type (see 1.2.1), from an identifiable production period, from one manufacturer, submitted at one time for acceptance.

4.5.1.2 Sampling for examination. Samples for quality conformance examination shall be selected from each lot in accordance with general inspection level II of MIL-STD-105.

4.5.1.3 Sampling for tests. Samples for tests shall be selected in accordance with level S-2 of MIL-STD-105.

4.5.2 Examination.

4.5.2.1 Acceptable quality level. Each sample selected in accordance with 4.5.1.2 shall be examined to determine conformance to the following acceptable quality levels (AQL's).

Classification	AQL
Major	1.0
Minor	2.5

4.5.2.2 Classification of defects. For examination purposes, defects shall be classified as listed in table IV.

TABLE IV. Classification of defects.

Category	Defect	Method of examination
Critical	None	
Major	AQL 1.0% Defective	
101	Dimensions affecting interchangeability, out of tolerance (see 3.3).	SIE 1/
102	Lining sets incomplete (see 3.3).	Visual
103	Faulty workmanship affecting performance (see 3.8).	Visual
Minor	AQL 2.5% Defective	
201	Dimensions not affecting interchangeablity, out of tolerance (see 3.3).	SIE
202	Improper marking of data and instructions (see 3.7).	Visual
203	Faulty workmanship affecting appearance (see 3.8).	Visual

1/ SIE = Standard Inspection Equipment.

4.5.3 Tests. Unless otherwise specified herein, samples selected in accordance with 4.5.1.3 shall be subjected to the quality conformance tests specified in table III and shall conform to an AQL as specified in table IV.

4.6 Control tests. Control tests shall be conducted on 10 linings from each lot of 1000 units consecutively produced, except that not more than 20 shall be selected in any 30-day period. The lining assemblies shall be subjected to the control tests specified in table III.

4.7 Failure. Failure of any sample to pass any of the specified quality conformance or control tests for linings shall be cause for the Government to refuse acceptance of the production quantity represented, until action taken by the contractor to correct defects and prevent recurrence has been approved by the Government.

4.8 Methods of inspection.

4.8.1 Materials and construction. Conformance to 3.2 through 3.3 and 3.3.3 shall be determined by inspection of contractor records providing proof or certification that design, construction, processing, and 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.

4.8.2 Defects. Conformance to 3.3, 3.3.1, 3.3.2, 3.3.4 through 3.3.7, 3.7 and 3.8 shall be determined by examination for the defects listed in table IV. Examination shall be visual, tactile, or by measurement with standard inspection equipment.

4.8.3 Performance tests.

4.8.3.1 Ferrous or nonferrous metal backing layer. To determine conformance to 3.4.1, the sample of material with steel, copper, integral woven metal, expanded metal, stabbed metal, or perforated metal backing, shall be bent through an angle of 90° with the backing layer on the inside of the bend and with the radius of bend sufficiently small to cause cracks and fractures in the wearing layer. After bending, there shall be no separation of layers or break in the bond between the backing and the wearing layers.

4.8.3.2 Sintered-iron backing layer. To determine conformance to 3.4.2, the sample sintered-iron backing layer shall be fastened to an inspection flat plate with "C" clamps. The wearing layer shall be chiselled at an angle of approximately 30°. After this test there shall be no separation of layers or break in the bond between backing and wearing layers.

4.8.3.3 Wearing layer transverse rupture. To determine conformance to 3.4.3, the sintered metal of types I and II linings when furnished without backing layers shall be tested for transverse rupture as specified in ASTM B312. Rupture at less than 4000 psi shall be cause for rejection.

4.8.3.4 Coefficient of friction. To determine conformance to 3.4.4, the sample shall be subjected to a run-in test prior to determining whether a previously untested sample meets the requirements of 3.4.4. Duration of such a test, conducted at average load and speed shall be either the length of time required to obtain full contact between mating surfaces or the time required to obtain a constant coefficent of friction value. The kinetic and static coefficient of friction values obtained in 4.8.3.4.1 and 4.8.3.4.2 respectively after this run-in test shall be representative of those obtained in a vehicle after the break-in period.

4.8.3.4.1 Kinetic. To determine conformance to 3.4.4.1, observation shall be made when using a previously untested sample with the wearing layer bearing on smooth cast iron, at a pressure of 20 to 200 psi, and at temperatures from 0 to 900°F, with high surface speed at 4000 to 6000 fpm and a low surface speed at less than 3000 fpm.

4.8.3.4.2 Static. To determine conformance to 3.4.4.2, observations shall be made when linings are tested as specified in 4.8.3.4.1.

4.8.4 Hardness. To determine conformance to 3.5, the Brinell hardness number of the wearing layer shall be as specified in table I when using a 10-mm ball with 500-Kg load at 72°F for a period of 30 sec.

4.8.5 Density. To determine conformance to 3.6, weight per cubic inch of the wearing layer shall be as specified in table II.

4.8.6 Preparations for delivery.

4.8.6.1 Defects. Conformance to 5.1 shall be determined by examination for the defects listed in table V.

TABLE V. Classification of preparation for delivery defects.

Category	Defects	Method of examination
Minor	AQL 2.5% defective	
Materials	Any component missing or damaged (see 3.2).	Visual
Marking (exterior and interior)	Omitted; incorrect; illegible; improper size, location, sequence, or method of application (see 3.7).	Visual
Workmanship	Inadequate application of components such as incomplete closure of container flaps, loose strapping, or indaquate stapling (see 3.8).	Visual
	Distortion of container.	Visual

4.8.6.2 Tests (military purchases only).

4.8.6.2.1 Packaging. To determine conformance to 5.1, the unit package shall be subjected to the tests specified in method IC-2 of MIL-P-116.

4.8.6.2.2 Packing. To determine conformance to 5.1, the exterior pack shall be subjected to the interior packing tests specified in MIL-STD-1186.

4.9 Inspection of preparation for delivery.

4.9.1 Sampling.

4.9.1.1 Lot formation. The lot size shall be of the number of shipping containers in the end item inspection lot. The sample unit shall be one shipping container fully prepared for delivery.

4.9.1.2 Sampling for examination. Samples for examination shall be selected in accordance with level S-2 of MIL-STD-105.

4.9.2 Examination.

4.9.2.1 AQL. Each sample selected in accordance with 4.9.1.2 shall be examined to determine conformance to an AQL of 2.5%.

4.9.2.2 Classification of defects. For examination purposes, defects shall be classified as specified in table V.

4.9.3 Control tests for packages and packs.

4.9.3.1 Nonmilitary. Not applicable.

4.9.3.2 Military. Control tests samples shall be selected at the rate of 2 samples from each lot of 400 units consecutively produced, except that not more than 4, nor less than 2 units shall be selected in any 30-day period. Test samples shall be examined for defects specified in 4.9.2 and shall be subsequently subjected to the tests specified in 4.8.6.2.

4.9.3.3 Failure. Failure of any sample to pass any of the specified control tests for packages and packs shall be cause for the Government to refuse acceptance at the production quantity represented, until action taken by the contractor to correct defects and prevent recurrence has been approved by the Government.

5. PACKAGING

5.1 Civil agencies. The definitions and application of levels of preservation and packing for civil agency procurement shall be in accordance with FED-STD-102.

5.2 Military activities. Preservation shall be level A or C and packing shall be level A, B, or C, as specified (see 6.2).

5.2.1 Preservation.

5.2.1.1 Level A.

5.2.1.1.1 Cleaning. Linings shall be cleaned in accordance with MIL-P-116, Process C-1.

5.2.1.1.2 Drying. Linings shall be dried in accordance with MIL-P-116.

5.2.1.1.3 Preservation application. All ferrous metal surfaces shall be preserved with a primer coating conforming to MIL-P-46093.

5.2.1.1.4 Unit packs. Each lining set shall be individually unit packed in accordance with submethod IC-2 of MIL-P-116. Each set shall be preserved, wrapped, and cushioned as required and enclosed in a snug fitting box, conforming to PPP-B-566, PPP-B-676 paper board box or PPP-B-636 weather resistant fiberboard box, which shall be enclosed in a sealed bag conforming to MIL-B-117, types I and II, Class B or C, Style 1, 2, or 3.

5.2.1.2 Level C. Preservation shall be in accordance with ASTM D3951.

5.2.2 Intermediate packs. Unit packs not exceeding 64 cubic inches in size and 5 lb in weight, shall be placed in intermediate containers conforming to PPP-B-636, Class Weather Resistant. The closure shall be in accordance with the container specification.

5.2.3 Packing. Packing shall be level A, B, or C as specified (see 6.2).

5.2.3.1 Level A. Linings shall be preserved as specified in 5.2.1 and packed in wood containers conforming to PPP-B-601, Overseas type or PPP-B-621, Class 2. The closure and the strapping shall be in accordance with the container specification.

5.2.3.2 Level B. Linings shall be preserved as specified in 5.2.1 and shall be packed in fiberboard containers conforming to PPP-B-636, Class weather resistant, the closure shall be in accordance with the container specification.

5.2.3.3 Level C. Linings shall be preserved as specified in 5.2.1 and shall be packed in fiberboard containers conforming to PPP-B-636, Class domestic.

5.3 Marking:

5.3.1 Military activities. In addition to any special or other identification marking required by the contract each unit, supplementary, intermediate and exterior container shall be marked in accordance with MIL-STD-129. The complete military or contractor's type or part number as applicable (including the FSCM), shall be marked on all units in accordance with the identification marking provisions of MIL-STD-129.

5.3.2 Civil agencies. In accordance to markings required by the contract or order (see 6.2), the packages and shipping containers shall be marked in accordance with FED-STD-123.

6. NOTES

6.1 Intended use. The friction lining covered by this specification are used for replacement of clutch and brake linings furnished as original parts on power driven equipment.

6.2 Ordering data. Purchasers shall select the preferred options permitted herein and include the following information in acquisition documents:

a. Title, number and date of this specification.
b. Type of the linings and whether for clutch or brake (see 1.2.1).
c. If first article inspection is not required (see 3.1).
d. Army part number of the linings (see 3.3).
e. Not more than 5% free iron if free iron is specified (see 3.3.3.1).
f. If application construction shall be other than as specified (see 3.3.6).
g. Band-type clutch lining dimensions if required (see 3.3.7).
h. If responsibility for inspection shall be other than as specified (see 4.1).
i. If responsibility for inspection equipment shall be other than as specified (see 4.1.2).
j. If inspection conditions shall be other than as specified (see 4.3).
k. If first article sample size shall be other than as specified (see 4.4).
l. Selection of applicable level and preservation and packing requirements (see 5.2).
m. Selection of applicable level and packing requirement (see 5.2.3).
n. If marking for civil agencies shall be other than as specified (see 5.3.2).

6.3 Transportation description. Transportation descriptions and minimum weights applicable to this commodity are:

Rail:

Brake linings, flexible, not otherwise indexed by name.
Carload minimum weight 30 000 lb.

Motor:

Brake linings, flexible, not otherwise indexed.
Truckload minimum weight 30 000 lb subject to
Rule 115, National Motor Freight Classification.

6.4 Definitions.

6.4.1 Recovered materials. "Recovered materials" means materials that have been collected or recovered from solid waste (see 6.4.2).

6.4.2 Solid waste. "Solid waste" means (a) any garbage, refuse, or sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility; and (b) other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities. It does not include solid or dissolved material in domestic sewage, or solid or dissolved material in irrigation return flows or industrial discharges which are point sources subject to permits under section 402 of the Clean Water Act, (33 U.S.C. 1342 et seq.), or source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.) (Source: Federal Acquisition Regulations, section 23.402).

6.5 Subject term (key word) listing.

Lining, Friction Material, Clutch and Brake
Clutch, Lining, Ceramic
Metallic Lining, Friction
Fiberous Material, Lining

6.6 Changes from previous issue. Asterisks (or vertical lines) are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

Custodians:
Army - AT
Navy - YD

Preparing activity:
Army - AT

(Project 2520-0219)

Review activity:
DLA - CS

User activity:
Army - AR

Civil Agency Coordinating Activity:
GSA-FSS

☆U.S. GOVERNMENT PRINTING OFFICE: 1988 - 505-033/92694