NOTE: MIL-STD-758 has been redesignated as a Standard Practice. The cover page has been changed for Administrative reasons. There are no other changes to this Document.

NON-MEASUREMENT SENSITIVE

MIL-STD-758C (SH) 13 APRIL 1990 SUPERSEDING MIL-STD-758B (SH) 20 AUGUST 1979

DEPARTMENT OF DEFENSE STANDARD PRACTICE

PACKAGING PROCEDURES FOR SUBMARINE SUPPORT ITEMS



AMSC N/A AREA PACK

<u>DISTRIBUTION STATEMENT A.</u> Approved for public release; distribution is unlimited.

FOREWORD

- 1. This Military Standard is approved for use by the Naval Sea Systems Command, Department of the Navy, and is available for use by all Departments and Agencies of the Department of Defense.
- 2. Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Naval Sea Systems Command, SEA 55Z3, Department of the Navy, Washington, DC 20362-5101 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.
- 3. This standard establishes acceptable preservation methods, materials, containers, packing, marking, and processes for the packaging of submarine support (repair parts and spares) items.
 - 4. This standard also includes requirements for the following:
 - a. Fire-retardant packaging materials
 - b. Transparent and minimum/reduced cube unit protection
 - c. Sensitive electronic item protection
 - d. Exclusions
 - e. Asbestos item protection
 - f. Repair parts (nonrepairable/consumable) and spares (repairable) protection
 - g. Shipment markings
 - h. Quality assurance provisions.

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1. SCOPE

- 1.1 Scope. This standard establishes the procedures for the packaging of submarine support items at the time of acquisition or completion of repair which will assure maximum protection, minimum cube preservation, and transparent preservation, where appropriate, without the need for reprocessing.
 - 1.2 Exclusions. Exclusions from the coverage of this standard are as follows:
 - a. Support items for Naval nuclear propulsion plants
 - b. Support and critical items requiring a specially designed reusable container or special method of preservation and packing in accordance with a product or commodity specification, drawing, or packaging instruction
 - c. Items requiring packaging which cannot be packaged in accordance with this standard, such as cables and electrodes.

2. APPLICABLE DOCUMENTS

- 2.1 Government documents.
- 2.1.1 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 document 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

F	F	D	F	R.	A)	Ι.

A-A-1894	Paper, Kraft, Treated (Fire Resistant)
PPP-C-795	Cushioning Material, Packaging (Flexible Cellular, Plastic Film) for Packaging Applications
PPP-C-850	Cushioning Material, Polystyrene, Expanded, Resilient (for Packaging Uses)
PPP-C-1120	Cushioning Material, Uncompressed Bound Fiber for Packaging
PPP-C-1842	Cushioning Material, Plastic, Open Cell (for Packaging Applications)
PPP-F-320	Fiberboard, Corrugated and Solid, Sheet Stock (Container Grade), and Cut Shapes
UU-P-268	Paper, Kraft, Wrapping

MILITARY

MIL-P-116	Preservation, Methods of
MIL-R-5001	Rubber Cellular Sheet, Molded and Hand Built Shapes; Latex Foam
MIL-R-6130	Rubber, Cellular, Chemically Blown
MIL-C-17435	Cushioning Material, Fibrous Glass
MIL-L-19140	Lumber and Plywood, Fire-Retardant Treated
MIL-P-19644	Plastic Molding Material (Polystyrene Foam, Expanded Bead)
MIL-R-20092	Rubber or Plastic Sheets and Assembled and Molded Shapes, Synthetic, Foam or Sponge Open Cell
MIL-P-26514	Polyurethane Foam, Rigid or Flexible, for Packaging
MIL-C-52211	Components and Assemblies for Industrial Gas Production, Storage, and Transport Equipment, Packaging of
MIL-F-81334	Foam, Plastic, Flexible, Open Cell Polyester Type, Polyurethane
MIL-F-87090	Foam, Combustion Retardant, for Cushioning Supply Items Aboard Navy Ships

STANDARDS.

MILITARY

MIL-STD-794	Parks and Equipment, Procedures for Packaging of				
MIL-STD-1330	Cleaning and Testing of Shipboard Oxygen, Nitrogen and Hydrogen Gas Piping Systems				
MIL-STD-2073-1	DOD Material Procedures for Development and Application of Packaging Requirements				

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Naval Publications and Forms Center, (ATTN: NPODS), 5801 Tabor Avenue, Philadelphia, PA 19120-5099.)

2.1.2 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.

DOCUMENTS

DEPARTMENT OF TRANSPORTATION

Code of Federal Regulations, Title 49

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

INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA)

Dangerous Goods Regulations (DGR)

(Application for copies should be addressed to: Publications Agent, International Air Transport Association, 2000 Peel Street, Montreal, Quebec Canada, H3A 2R4.)

NOTE

This tariff incorporates instructions contained in the International Civil Aviation Organization (ICAO).

THE INTER-GOVERNMENTAL MARITIME CONSULTATIVE ORGANIZATION (IMCO)

International Maritime Dangerous Goods Code (IMDGC)

(Application for copies should be addressed to: International Maritime Organization, 101-104 Picadilly, London WIV OAE, England.)

RECOMMENDATIONS ON THE TRANSPORT OF DANGEROUS GOODS (RTDG)

(Application for copies should be addressed to the United Nations (UN), Sales Section, New York, NY.)

PUBLICATIONS

NAVAL SUPPLY SYSTEMS COMMAND (NAVSUP)

PUB 505

Packaging and Materials Handling; Preparation of Hazardous Materials for Military Air Shipments

SHIP'S PARTS CONTROL CENTER (SPCC)

INST 4030.4

Packaging of Fleet Ballistic Missile Weapons and Strategic Weapons Systems Reparable Items

INST 4030.10	Packaging, Packing and Marking of Level I/SUBSAFE (Submarine Safety Certification) Program Items
INST 4030.14	Packaging, Packing and Marking of TRIDENT Repairable and TRIDENT Planned Equipment Replacement Program (TRIPER) Items

(Application for copies of SPCC Instructions should be addressed to Commanding Officer, Navy Ships Parts Control Center, Code 0741, Mechanicsburg, PA 17055-0788.)

(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.2 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 with the exception of the publications listed in paragraph 3.5 herein. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. DEFINITIONS.

- 3.1 Critical items. Items meeting one or more of the following criteria are considered critical.
- 3.1.1 Critical chemically. Items which are of such a nature that any degree of deterioration (in the form of corrosion, stain, scale, mold, fungi, bacteria, etc.) caused by oxygen, moisture, sunlight, living organisms, temperature, time, and other contaminants, will result in premature failure or malfunction of the item or equipment in which installed or to which the item is interfaced.
- 3.1.2 Critical physically. Items of such a nature that a slight degree of physical action on the items or any integral surfaces there of renders them unfit for use. This includes items having a surface finish of 32 microinches root mean square or less, requiring a high degree of cleanliness and freedom from contamination as well as those requiring special protection against shock, vibration, abrasion, and distortion damage.
- 3.2 Support items. Items subordinate to, or associated with, an end item (i.e., spares, repair parts, tools, test equipment, support equipment, and sundry material) and required to operate, service, repair, or overhaul an end item.
- 3.2.1 Repair parts. Those support items that are coded (identified through provisioning) to be not repairable (i.e. consumable items).
- 3.2.2 Spares. Those support items that are coded (identified through provisioning) to be repairable (i.e. repairable items), also known as depot level repairables.

3.3 Packaging and provisioning definitions. In addition to the definitions in 3.1 and 3.2, MIL-STD-2073-1 DOD Material Procedures for Development and Application of Packaging Requirements and MIL-STD-1561 Provisioning Procedures, Uniform DOD, expound on terminology used in the packaging and transportation fields.

4. GENERAL REQUIREMENTS.

- 4.1 Minimum cube/transparent unit packs. Processing in accordance with the requirements specified herein shall ensure maximum item protection with minimum cube (see appendix A, figure 1, and appendix B, figure 2) utilization and transparency, where applicable. The appropriate method of preservation shall be selected from those contained in appendices A or B, and modified as specified to accomplish minimum cube/transparent unit packs. The final unit pack described by this standard shall be constructed in such a manner that it can be placed in a bin, drawer, or other designated shipboard stowage location without modification. If further cube reduction for or within the shipboard stowage is necessary, repaired parts (consumables/nonrepairable) unit protected in accordance with appendix A may be removed from the outer box (including cushioning) leaving the barrier bag or wrap intact. The barrier bag or wrap shall not be removed until the item is ready for use. Spares (repairables), unit protected in accordance with appendix B, shall not be removed from the unit pack until ready for use.
- 4.2 Repair parts. Repair parts (consumables/nonrepairable) not exceeding 40 pounds shall be unit protected by the appropriate method specified in appendix A. Items exceeding 40 pounds shall be unit protected in accordance with MIL-P-116, using transparent materials specified therein, or the applicable method as determined by the contracting activity for item protection. Sensitive electronic items shall be as specified (see appendix C).
- 4.3 Spares. Spares (repairables) not exceeding 100 pounds shall be unit protected by the appropriate method specified in appendix B. Spares exceeding 100 pounds shall be unit protected in accordance with MIL-P-116, using the transparent materials specified therein, or the applicable method as determined by the contracting activity for item protection. Sensitive electronic items, shall be as specified (see appendix C).
- 4.4 Oxygen and nitrogen systems. (Except Electrolytic Oxygen Generators See 4.4.1). Unless otherwise specified, oxygen and nitrogen gas systems (equipment, repair parts, spares, and piping) shall be cleaned and packaged in accordance with MIL-STD-1330.
- 4.4.1 Electrolytic oxygen generators and systems. Electrolytic oxygen generators, repair parts, and spares shall be cleaned; with the method of unit pack and level of exterior pack as specified in accordance with MIL-C-52211.
- 4.5 Hazardous items. Hazardous materials shall be packaged in accordance with NAVSUP PUB 505, DOT 49 CFR, IATA DGR, IMCO IMDGC, and the UN RTDG.

- 4.6 Level I/SUBSAFE items. Level I/SUBSAFE items shall be packaged in accordance with SPCCINST 4030.10.
- 4.7 TRIDENT items. Packaging of TRIDENT repairable and TRIDENT Planned Equipment Replacement Program (TRIPER) items shall be in accordance with SPCCINST 4030.14.
- 4.8 Fleet ballistic missile weapons and strategic weapons repairable items. Packaging of fleet ballistic missile weapons and strategic weapons repairable items shall be in accordance with SPCCINST 4030.4.
- 4.9 Sensitive electronics items. Method of preservation and marking of sensitive electronics items adversely affected by electromagnetic, electrostatic, magnetic, and radioactive field forces shall be in accordance with appendix C.
- 4.10 Asbestos items. Items containing asbestos materials shall be unit protected in sealed impermeable packages/containers. Flexible packs shall be heat-sealed. Each package/container shall be marked in accordance with appendix D.
- 4.11 Preservatives. Unless otherwise specified, or unless special preservatives are required for personnel safety or equipment operational purposes, preservatives, when required, shall conform to P-10 of MIL-P-116.
- 4.11.1 Talc/talcum. Talc/talcum, when used in the preservation process (in dusting, for example), shall be free of asbestos and asbestos-form material.
 - 4.12 Navy fire-retardant materials.
- 4.12.1 Cushioning and wrapping materials. User of excelsior, newspaper, shredded paper (all types, including wax paper), and similar hygroscopic or nonneutral materials and all types of loose-fill materials for applications such as cushioning, filler, stuffing, and dunnage for materials destined for shipboard stowage and use shall be prohibited, except that vermiculite is approved for packaging applications of liquid (chemical and petroleum) products. Cushioning and wrapping materials shall have properties for resistance to fire. Examples are as follows:

A-A-1894

Material

Paper, kraft, treated (fire-resistant)
Paper, kraft, wrapping
Fiberboard
Plastic film, flexible, cellular
Polystyrene expanded, resilient
Plastic, open cell, cushioning
Bound fiber

Specification

UU-P-268, type II, grade C or D PPP-F-320, class - domestic/fire-retardant PPP-C-795, class 3 - fire-retardant PPP-C-850, grade SE PPP-C-1842, type I, style B PPP-C-1120, type III or IV, grade 1

Material

Specification

Rubber, latex foam	MIL-R-5001, grade A
Rubber, cellular	MIL-R-6130, grade A
Fibrous glass	MIL-C-17435
Polystyrene foam	MIL-P-19644, type II
Rubber, cellular, synthetic	MIL-R-20092, class 5
Polyurethane foam	MIL-P-26514
Polyurethane foam, flexible, open cell	MIL-F-81334
Foam, combustion retardant, for	MIL-F-87090
cushioning supply items aboard	
Navy ships	

4.12.2 Lumber and plywood. Unless otherwise specified, all lumber and plywood, including laminated veneer material, used in shipping container and pallet construction, members, blocking, bracing, and reinforcing shall be fire-retardant treated material conforming to MIL-L-19140 as follows:

Levels A and B - Type II - weather resistant
Category 1 - general use

Level C - Type I - non-weather resistant
Category 1 - general use

- 4.12.3 Fiberboard. Unless otherwise specified, fiberboard used in the construction of class-domestic, non-weather resistant fiberboard and cleated fiberboard boxes, including interior packing forms, shall meet the flamespread and the specific optic density requirements specified in PPP-F-320 and the amendments thereto.
- 4.13 Packing. Unless otherwise specified herein, packing requirements shall be in accordance with MIL-STD-2073-1, appendix C or the exterior shipping container table of MIL-STD-794, as applicable.
- 4.14 Marking. Shipment markings shall be in accordance with appendix D and other special requirements stated herein.
- 4.15 Classified material. Handling of all classified material shall be in accordance with the contract requirements.
- 4.16 Quality assurance provisions. Unless otherwise specified, quality assurance provisions shall be in accordance with MIL-P-116, MIL-STD-2073-1, or MIL-STD-794 and the referenced document, as applicable.

5. DETAILED REQUIREMENTS.

5.1 Minimum cube/transparent preservation methods for submarine repair parts (consumable/nonrepairable) not exceeding 40 pounds. See appendix A.

- 5.2 Minimum reduced cube/transparent packaging for submarine spares (repairable items) not exceeding 100 pounds. See appendix B.
 - 5.3 Method of preservation for sensitive electronic items. See appendix C.
 - 5.4 Marking. See appendix D.

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 packaging procedures covered in this standard are intended to be used for submarine support items.
 - 6.2 Acquisition requirements. Acquisition documents must specify the following:
 - a. Title, number, and date of this specification
 - b. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1, appendix A, B, C, and D).
 - 6.3 Subject term (key word) listing.

Asbestos

Ballistic

Critical

Electrolytic

Electromagnetic

Electrostatic

Fire-retardant

Hazardous

Magnetic

Nuclear

nuclear

Radioactive

Spares

Transparent

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

Preparing activity: Navy - SH (Project Pack - N054)

MINIMUM CUBE/TRANSPARENT PRESERVATION METHODS FOR SUBMARINE REPAIR PARTS (CONSUMABLES/ NONREPAIRABLE) NOT EXCEEDING 40 POUNDS

10. SCOPE

10.1 Scope. This appendix covers the requirements for minimum cube/transparent preservation methods (unit protection) for submarine repair parts (consumable/nonrepairable) items not exceeding 40 pounds. Exceptions and supplementary preservation methods are stated in section 40.

20. APPLICABLE DOCUMENTS

20.1 Government documents.

20.1.1 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

FEDERAL

T_P_378

L-Y-3/8	Plastic, Sheet, and Strip, Timi Gauge, Polyoletin
PPP-C-795	Cushioning Material, Packaging (Flexible Cellular, Plastic Film) for Packaging Applications
PP-C-1842	Cushioning Material, Plastic, Open Cell (For Packaging Applications)
MILITARY	
MIL-P-116	Preservation, Methods of
MIL-B-117	Bags, Sleeves, and Tubing
MIL-B-22019	Barrier Materials, Transparent, Flexible, Sealable, Volatile Corrosion Inhibitor Treated

Plastic Sheet and Strip Thin Gauge Polyolefin

MIL-B-22020

Bags, Transparent, Flexible, Sealable, Volatile Corrosion Inhibitor Treated

MIL-B-22191

Barrier Materials, Transparent, Flexible, Heat-Sealable

STANDARD

MILITARY

MIL-STD-2073-1 DOD Material Procedures for Development and Application of Packaging Requirements

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Naval Publications and Forms Center, (ATTN: NPODS), 5801 Tabor Avenue, Philadelphia, PA 19120-5099.)

30. METHODS OF PRESERVATION

- 30.1 Method I (mechanical items only). Unit protection of the contact preservative coated item shall be by either a transparent wrap of barrier material conforming to MIL-B-22191, type II, or in a transparent bag conforming to MIL-B-117, type I, class C, style 2. To prevent bag puncture or damage, all sharp edges and protrusions of the item shall be wrapped or cushioned with transparent material conforming to MIL-B-22191, type II. Wraps shall be secured with transparent, pressure-sensitive tape. Bag closure shall be by heat sealing.
- 30.2 Method IA-8. The item, preservative coated or uncoated, shall be unit protected in a transparent bag conforming to MIL-B-117, type I, class E, style 2. To prevent bag damage or puncture, all sharp edges and protrusions of the item shall be wrapped or cushioned with barrier material conforming to MIL-B-22191 or L-P-378, or cushioning conforming to PPP-C-795, class 3, or PPP-C-1842, type I, style B. When an item is coated with a contact preservative, the initial wrap or cushioning shall conform to MIL-B-22191 type II. Bag closure shall be by heat sealing.

30.3 Methods IC-1 and IC-3.

- 30.3.1 Methods IC-1 and IC-3 (general). The item preservative coated or uncoated, shall be unit protected in a transparent bag conforming to MIL-B-117, type I, class C, style 2. To prevent bag damage or puncture, all sharp edges and protrusions of the item shall be wrapped or cushioned with barrier material conforming to MIL-B-22191 or L-P-378, or cushioning conforming to PPP-C-795, class 3, or PPP-C-1842, type I, style B. When an item is coated with a contact preservative, the initial wrap or cushioning shall conform to MIL-B-22191, type II. Bag closure shall be by heat sealing.
- 30.3.2 Methods IC-1 and IC-3 (volatile corrosion inhibitor (VCI) preservative). Contact type preservatives shall not be used on items requiring these methods. The item shall be unit protected in a transparent VCI treated material by either a wrap or bag of material conforming to

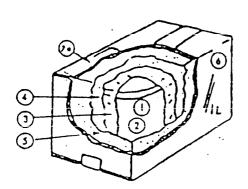
MIL-B-22019, type I or II, or MIL-B-22020, class 1 or 2 (P-18 of MIL-P-116), respectively. Material in accordance with MIL-B-22019 shall be used to cushion the item's sharp edges and protrusions when the items are unit protected in bags. Bag closure shall be by heat sealing except MIL-B-22019, type II material, which is pressure (cold) sealable.

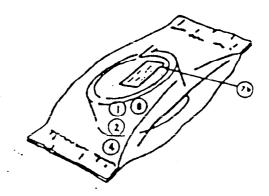
- 30.4 Method IIC. The item shall be unit protected in a heat-sealed transparent bag conforming to MIL-B-117, type I, class E, style 2. To prevent puncture or damage to the bag, the item shall be wrapped with layers of material conforming to MIL-B-22191 or L-P-378, or cushioned with material conforming to PPP-C-795, class 3, or PPP-C-1842, type I, style B. The required desiccant and card type humidity indicator shall be placed within the heat-sealed, transparent barrier bag.
- 30.5 Method III. The items shall be unit protected in transparent material by either a wrap or bag constructed of material conforming to L-P-378 or MIL-B-22191 type III. To prevent puncture or damage to the bag, the items shall be wrapped with layers of material conforming to L-P-378 or MIL-B-22191, type III, or cushioned with material conforming to PPP-C-795, class 3, or PPP-C-1842 type I, style B. Wraps shall be secured with transparent, pressure sensitive tape. Bag closure shall be made by any means except stapling.

40. NOTES

- 40.1 Preservation and marking (general). For methods of preservation and marking of all electrostatic, magnetic, or radioactivity field force sensitive electronic items (for example, solid state components such as diodes, transistors, integrated circuits, or equipment containing such parts), see appendix C.
- 40.2 Supplementary preservation methods. The preservation methods shall be supplemented, when required, for protection of the wrapped or flexible unit packs by use of folding, set-up, or metal-edged paperboard, or fiberboard containers conforming to MIL-STD-2073-1, appendix F. Unless otherwise specified, container selection shall be at the option of the contractor (see 4.12.3).
- 40.3 When required to prevent damage to the item and wrap/barrier bag during handling, shipment, and storage, supplemental cushioning as shown on figure 1 shall be applied between the barrier bag and container.
- 40.4 Unit packs. The use of shaped, preformed, molded, or equivalent, unit packs using transparent material conforming to MIL-B-22191, or L-P-378 in conjunction with plastic-coated board are acceptable, provided there is no increase in the unit pack cube. These unit packs shall meet the tests specified in MIL-P-116 for the applicable preservation method. Strip or block form of unit packs shall incorporate provisions for separating the unit quantities.
- 40.5 Use of commercial materials. Commercial materials may be used, provided such materials are equal to or better than those specified for the applicable preservation method.

- 1. ITEM
- 2. PRESERVATIVE OR DESSICANT
- 3. PROTECTIVE WRAP/CUSHIONING
- 4. BARRIER BAG
- 5. CUSHIONING (SEE 4.12.1)
- 6. BOX (SEE 4.12.3)
- 7. IDENTIFICATION LABEL
 A. OUTER BOX
 B. PLACE INSIDE BAG OR TAB END
- 8. FOR METHOD II, INCLUDE DESICCANT AND INDICATOR





ITEM UNIT PROTECTED FOR HANDLING AND STORAGE IN THE SUPPLY SYSTEM

REDUCED CUBE UNIT PACKS FOR SUBMARINE STOWAGE WITH BOX AND SUPPLEMENTAL CUSHIONING REMOVED

Any boxed item, preservation methods; III, IC, IA, or II as specified in appendix A, may have the outer box and supplemental cushioning removed for bin or drawer type stowage without sacrifice of environmental protection and item identification.

SH 11433

FIGURE 1. Example of reduced cube/transparent preservation methods for submarine repair parts.

MINIMUM REDUCED CUBE/TRANSPARENT PACKAGING FOR SUBMARINE SPARES (REPAIRABLE ITEMS) **NOT EXCEEDING 100 POUNDS**

10. SCOPE

10.1 Scope. This appendix covers the requirements for minimum reduced cube/transparent packaging (preservation, packing, and marking) for submarine spare items not exceeding 100 pounds. Additional shipping container requirements for items weighing from 40 to 100 pounds are included in section 40. Exceptions to requirements are stated in section 50.

20. APPLICABLE DOCUMENTS

20.1 Government documents.

20.1.1 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 that issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2)

SPECIFICATION

MILITARY

MIL-P-9902

Panels, Full Cleated, Partially Cleated and Uncleated: Plywood, Veneer

Paper-Overlaid and Solid Fiberboard for Box, Modular Systems

STANDARD

MILITARY

MIL-STD-794

Parts and Equipment, Procedures for Packaging

MIL-STD-2073-1 DOD Material Procedures for Development and Application of

Packaging Requirements

MS 90363

Box, Fiberboard with Cushioning for Special Minimum

Cube Storage and Limited Reuse Application

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Naval Publications and Forms Center, (ATTN: NPODS), 5801 Tabor Avenue, Philadelphia, PA 19120-5099.)

30. METHODS OF PRESERVATION

30.1 Method I. Unit protection shall be in accordance with MS 90363 and MS 90363-4.

- 30.2 Method IA. Unit protection shall be in accordance with MS 90363 and MS 90363-1.
- 30.3 Method IC. Unit protection shall be in accordance with MS 90363 and MS 90363-3.
- 30.4 Method II. Unit protection shall be in accordance with MS 90363 and MS 90363-2.
- 30.5 Method III. Unit protection shall be in accordance with MS 90363 and MS 90363-5.
- 30.6 Special requirements. For items weighing from 40 to 100 pounds, individual shipping container requirements specified in section 40 shall apply for shipment only.

40. SHIPPING CONTAINER REQUIREMENTS

- 40.1 Shipping containers. In addition to the fiberboard unit container shown on figure 2, all items weighing 40 to 100 pounds shall be overpacked (see figure 3) in an individual exterior wood or wood, cleated-plywood box for the level of packing specified in the contract or order in accordance with MIL-STD-2073-1 appendix C, the exterior shipping container table of MIL-STD-794, or in a plywood panel modular systems container conforming to MIL-P-9902, type I or II as required, class 1, style A or B optional. Shipping containers with a gross weight exceeding 200 pounds, shall be provided with skids and shall be in accordance with the requirements of the wood or wood, cleated-plywood box specification. The unit pack shall be centered and cushioned (see figure 3) on all surfaces between the unit packs and the shipping container, with cushioning conforming to 4.12.1.
- 40.1.1 Closure. To permit reuse of the container, containers shall be closed by securing the top and bottom panels to the end and the sides with wood screws and banded in accordance with the applicable container specification or appendix thereto.
- 40.2 Marking. In addition to any special markings specified in the contract or order, and herein, container markings shall be in accordance with the applicable container specification or appendix thereto, 4.14, and appendix D.
 - 40.2.1 Special markings. Each shipping container shall be marked as follows:
 - a. The top, one side, and one end of the shipping container shall be marked "REUSABLE CONTAINER AND CUSHIONING USE FOR RETURN OF NRFI ASSEMBLY" in black letters, 2 inches high, minimum.
 - b. Containers closed with screws shall also be marked "TO OPEN USE SCREWDRIVER" in black letters, 1 inch high, minimum.

50. NOTES

50.1 Preservation and marking (general). For methods of preservation and marking of all electrostatic, magnetic, or radioactive field force sensitive electronic items (for example, solid state components such as diodes, transistors, integrated circuits, or equipment containing such parts), the requirements of appendix C also apply.

- ITEM
- WRAP (WHEN APPLICABLE) (SEE 4.12.1) 2.
- **CUSHIONING (SEE 4.12.1)**
- DESICCANT (WHEN APPLICABLE)
- SEALED BAG (WHEN APPLICABLE)
- PRECAUTIONARY LABELS (WHEN APPLICABLE)
 - SENSITIVE ELECTRONIC DEVICE
 - (b) CAUTION ELECTROSTATIC SENSITIVE DEVICE
 - (c) METHOD OF DESICCATED PACK
- FIBERBOARD BOX (SEE 4.12.3)
- TAPE

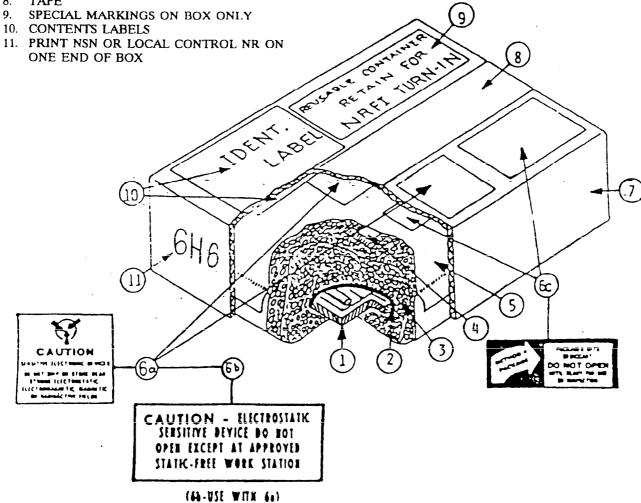
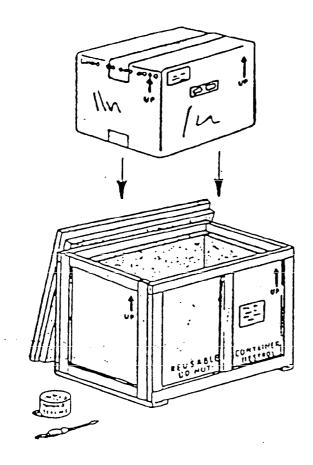


FIGURE 2. Example of reduced cube/transparent preservation methods for submarine spares in accordance with MS 90363.



ITEM PACKAGED IN ACCORDANCE WITH MS 90363 FOR ON BOARD SHIPBOARD STOWAGE, (SEE 4.12.3)

THIS PLYWOOD BOX IS NOT INTENDED FOR SHIPBOARD STOWAGE, (SEE 4.12.2)

FIGURE 3. Example of proper method of overpacking a depot/contractor spare item weighing 40 to 100 pounds.

METHOD OF PRESERVATION FOR SENSITIVE ELECTRONIC ITEMS

10. SCOPE

10.1 Scope. This appendix covers the requirements for the method of preservation (unit protection/pack) for sensitive electronic items such as, but not limited to, diodes, transistors, integrated circuits, and equipments incorporating such items and which are susceptible to damage from electrostatic, electromagnetic, or both, field forces. Additional guidance for electrostatic discharge (ESD) sensitive items is contained in DOD-STD-1686, DOD-HDBK-263 and MIL-HDBK-773.

20. APPLICABLE DOCUMENTS

20.1 Government documents.

20.1.1 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

1777	-	*	-	•	•	
PP.		Н	ĸ	A	П	

PPP-C-795	Cushioning Material, Packaging (Flexible Cellular, Plastic Film) for Packaging Applications
PPP-C-1842	Cushioning Material, Plastic, Open Cell (for Packaging Applications)
MILITARY	
MIL-P-116	Preservation, Methods of

MIL-B-117 Bags, Sleeves, and Tubing

MIL-B-81705 Barrier Materials, Flexible, Electrostatic-Free, Heat Scalable

MIL-B-81997 Pouches, Cushioned, Flexible, Electrostatic-Free, Reclosable, Transparent

STANDARD

MILITARY

DOD-STD-1686 Electrostatic Discharge Control Program for Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices)

HANDBOOKS

MILITARY

DOD-HDBK-263 Electrostatic Discharge Control Handbook for Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices); (Metric)

MIL-HDBK- 773 Electrostatic Discharge Protective Packaging

(Copies of specifications, standards, and handbooks required by contractors in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Naval Publications and Forms Center, (ATTN: NPODS), 5801 Tabor Avenue, Philadelphia, PA 19120-5099.)

30. GENERAL REQUIREMENTS

- 30.1 Lead and terminal protection. Lead or terminal configurations shall be maintained as manufactured without causing loads or stresses capable of causing damage to the item. Protection shall be by means of a carrier, container construction, or inserts of noncorrosive, electrostatic-free supporting materials. Materials used to maintain item position and lead or terminal configuration shall permit item removal and replacement without damage to the item.
- 30.1.1 Carrier. Carriers, when used for additional protection of miniature electronic items, shall be of such strength to prevent damaging resonances, shocks, and electrostatic charges to the sensitive items. Anchoring or securing of the item, leads, or terminals within the carrier by means of tape or adhesive is prohibited. The carrier shall maintain physical separation and manufactured configuration of the item leads or terminals during packaging, handling, transportation, storage/stowage, and for testing operations. The carrier shall be configured to permit safe and easy removal, inspection, and item replacement, and shall be constructed without sharp edges to preclude subsequent damage to the item, packaging material or method of preservation.
- 30.2 Wraps and cushioning. Wraps and cushioning, when required for additional protection, shall be noncorrosive and in accordance with MIL-P-116, 4.12.1 and shall not crumble, flake, powder, or shed. Wraps or cushioning in direct contact with the electrostatic sensitive items shall conform to the electrostatic protection requirements specified herein (see 40.1).
- 30.3 Unit protection. Unless otherwise specified, sensitive electronic items subject to degradation from electrostatic, electromagnetic forces or both, shall be unit protected in accordance with method IA of MIL-P-116, except as specified herein (see section 40).

40. DETAIL REQUIREMENTS

- 40.1 Packaging materials. Packaging materials currently covered by title, scope, or intended use under Government specifications, but modified as electrostatic-free materials, or newly developed electrostatic-free packaging materials not covered by Government packaging material specifications, are encouraged for use. Use of such modified or newly developed electrostatic-free packaging materials will be permitted subject to the contracting officer's determination that the physical properties of such material are equal to or better than similarly constructed material covered under a required Government packaging material specification and, that such materials satisfy the electrostatic decay rate requirement specified in MIL-B-81705. The materials manufacturer or contractor shall furnish to the Government inspector for review, documented proof of conformance to the requirements specified herein, certified by an acceptable test laboratory. Upon submission for acceptance, copies of the contractor's document proof shall be forwarded to the contracting officer packaging activity. The decision of the contracting officer shall be final as to the acceptability or non-acceptability of the packaging material and the decision shall not be subject to review under the disputes clause of the contract. When such materials are acceptable, unit packaging shall be in accordance with the procedures for electrostatic protection.
- 40.2 Electrostatic protection. Items which may be adversely affected by electrostatic field forces shall be provided an initial wrap of material conforming to MIL-B-81705, type II, or cushioned in material conforming to PPP-C-795 class 2, or PPP-C-1842, type III, style A or B, and unit protected in heat-sealed bags conforming to MIL-B-117, type I, class F, style 1. Alternatively, reclosable, cushioned pouches conforming to MIL-P-81997, type I or II may be used in lieu of the initial wrap or cushioning. Noncorrosive conductive materials shall be applied to all exposed leads and connector pins to maintain a common potential. This is to protect the items from electrostatic charges that may be encountered during handling.
- 40.3 Electromagnetic protection. Unless otherwise specified, items subject to damage by electromagnetic forces shall be unit protected in heat-sealed barrier bags conforming to MIL-B-117, type I or II, class E, style 1, or type I, class F, style 1. When MIL-B-117, type I or II, class E, style 1 bags are selected, the items shall be provided an initial wrap or cushioning as specified in 40.2, and the barrier material shall contain a laminate of aluminum foil and meet the MIL-B-117 requirements.
- 40.4 Electromagnetic and electrostatic protection. When the item requires both electromagnetic and electrostatic protection, unit protection shall be as specified under electrostatic protection (see 40.2).
- 40.5 Magnetic protection. When specified, sensitive electronic devices subject to damage from simple magnetic fields (as opposed to radio frequency or electromagnetic radiation) shall be protected by completely enclosing the sensitive devices in ferrous metals or ferritic compositions of sufficient thickness to provide the required degree of protection.

- 40.6 Radioactive protection. When specified, sensitive electronic devices subject to damage from radioactivity shall be protected by completely enclosing the sensitive devices in lead or lead-filled compositions of sufficient thickness to provide the required degree of protection.
 - 40.7 Supplemental cushioning and containers.
 - 40.7.1 Repair parts.
- 40.7.1.1 Cushioning. To prevent damage to the flexible barrier bag during handling, shipment, and storage/stowage, supplemental cushioning shall be applied between the barrier bag and container as shown on item 5 of figure 1, appendix A.
- 40.7.1.2 Containers. When the selected preservation method does not provide for a unit container (box), the method shall be supplemented by use of a folding or setup paperboard, or fiberboard container (unit or intermediate) as specified in 40.1 of appendix A.
 - 40.7.2 Spares. Cushioning and containers shall be in accordance with figure 2, appendix B.

50. MARKING

50.1 Marking. In addition to any special markings specified in the contract or order and herein, (see figure 2), marking shall be in accordance with appendix D. Marking of interior packs and shipping containers shall include bar coding.

MARKING

10. SCOPE

10.1 Scope. This appendix establishes the procedures and criteria for shipment, handling, storage, and stowage markings for submarine support items.

20. APPLICABLE DOCUMENTS

20.1 Government documents.

20.1.1 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 that issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATION

MILITARY

MIL-P-116

Preservations, Methods of

STANDARDS

MILITARY

MIL-STD-129 Marking for Shipment and Storage

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Naval Publications and Forms Center, (ATTN: NPODS), 5801 Tabor Avenue, Philadelphia, PA 19120-5099.)

20.1.2 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.

PUBLICATIONS

OFFICE OF THE CHIEF OF NAVAL OPERATIONS (OPNAV)

OPNAVINST 5100.23B

Chapter 17 - Navy Occupational Safety and Health (NAVOSH) Program Manual, Asbestos

(Application for copies should be addressed to Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, Pa 19120-5099.)

DEPARTMENT OF LABOR

OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)

Code of Federal Regulations (CFR) 29, 1910.145

Specifications for Accident Prevention - Signs and Tags

CFR 29, 1910.1001

Asbestos, Tremolite, Anthothyllite, Actinolite

(Application for copies should be addressed to Occupational Safety and Health Administration, Office of Publications, 200 Constitution Avenue, NW, Room N3101, Washington, DC 20210.)

30. MARKING

- 30.1 General requirements. In addition to any special markings specified in the contract or order and herein, interior (unit and intermediate) packs and shipping containers shall be marked in accordance with MIL-STD-129 and MIL-P-116. Precautionary, structural, and other special marking required for the protection of the packaged items shall be in accordance with MIL-STD-129.
- 30.2 Interior (unit and intermediate) packs, exterior shipping containers, and palletized unit load identification markings. The following MIL-STD-129 markings, as a minimum, are required:

Requirement

National stock number (NSN)
Item description
Quantity and unit of issue
Contract or order number
Level of protection and date
Level of protection and date
Gross weight and cube
Serial number (when applicable)
Shelf life marking (when applicable)
Bar coding

Example

1H2825-00-111-1111 Gear 1 each N00104-75-C-1234 A 1/75 (interior containers)

A/B 1/75 (shipping container)
Wt. Cu. (shipping containers)

MFD 12/83 Inspect/Test date 12/84

30.3 Placement of markings. In addition to the requirements specified in MIL-STD-129 and MIL-P-116, placement of markings shall be as shown on figures 1 and 2 of appendices A and B, respectively. Labels, when used with a transparent flexible unit pack, shall be placed inside each bag or heat sealed within a section (tab end) of the bag separated from the item. Unless otherwise specified in the contract or order, labels for oxygen and nitrogen systems (see 4.4) shall be located outside of the barrier bag. Labels shall not be placed in direct contact with the items coated with a preservative compound. Labels shall not be placed in direct contact with items not coated with a preservative if there is a question of compatibility (corrosivity) between the label and the item. Labels shall be positioned so that they are completely readable without opening of the unit pack.

30.4 Special markings.

30.4.1 Asbestos items. An asbestos caution label conforming to OSHA 29 CFR, part 1910, sections 145 and 1001 shall be affixed to each interior (unit and intermediate) pack and shipping container. Caution labels shall state the following in accordance with OPNAVINST 5100.23, chapter 17:

CAUTION

CONTAINS ASBESTOS FIBERS AVOID CREATING DUST BREATHING ASBESTOS DUST MAY CAUSE SERIOUS BODILY HARM

30.5 Additional marking. Except for spares (see appendix B), when a unit container is used externally to the flexible bag or film, or when the unit container is also the exterior shipping container, additional information shall be marked on the exterior of the container stating that the exterior of the container down to, but not including the flexible bag or film, may be removed to reduce the package to a minimum cube prior to placement of the items in shipboard bin or drawer type stowage.

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