

Packaging and Marking Guide For DoD



Defense Contract Management Agency

October 2012

FOREWORD

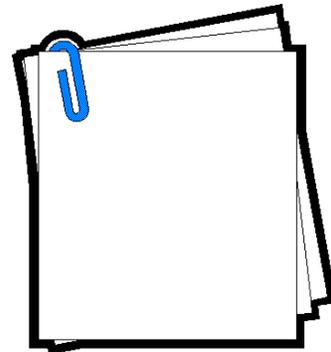
This Booklet has not been officially adopted by DOD. It is prepared as an informational guide for familiarization purposes only and is not intended to take the place of contractual requirements, specifications or regulations. The information contained herein is derived from current government packaging documents, pamphlets and technical manuals and is used for instructional purposes only.

October 2012

For more information, contact
a DCMA Packaging Specialist at
Packaging.Inbox@dcma.mil
Or call 215-737-3578

Location of Packaging Requirements in Solicitations & Contracts

- Part 1, Section A - Table of Contents
- Section B - Schedule of Supplies & Services
- Section C - Specifications
- Section D - Packaging & Marking
- Section E - Inspection & Acceptance
- Section F - Deliveries & Performance
- Attachments
 - CID's (Commercial Item Descriptions)
 - Military or Federal Specifications
 - Aperture Cards & Drawings
 - Special Packaging Instructions
 - Master Solicitations & FAR clauses
 - Product Specifications
 - Military Standard Drawings (MS)
 - Industry Standards (ASTM's)
 - Packaging Requirement Codes



ORDER OF PRECEDENCE

The general order of precedence will be:

1. Laws and Executive Orders
2. Requirements specifically listed in the contract. There is even an order of precedence clause covering which section of the contract takes precedence over other sections. The following clause covers sealed bid contracts and states:

52.214-29 Order of Precedence - Sealed Bidding

Any inconsistency in this solicitation or contract shall be resolved by giving precedence in the following order: (a) the schedule (excluding the specifications); (b) representations and other instructions; (c) contract clauses; (d) other documents, exhibits and attachments; and (e) the specifications.

(end of clause)

3. Detailed Federal Specifications and Standards.
4. General Specifications and Standards
5. Normal Commercial Practice.

The terms and conditions of a contract always supersedes a specification unless written changes to the contract have been obtained from the Contracting Officer.

HAZARDOUS MATERIALS



In addition to Contractual Requirements -
MUST be Packaged in accordance with the
Appropriate modal regulation:

- Title 49 CFR for Land
- IMO for Water
- ICAO/ IATA for Commercial Air
- AFMAN 24-204(I)* for Military Air

*Joint Regulation: [DLAI 4145.3 / TM 38-250 /](#)
[NAVSUP PUB 505 / MCO P4030.19I](#)

Must be marked and labeled in accordance with the
appropriate Modal Regulations and if specified,
MIL-STD-129.

In case of conflicting information, the appropriate
Modal Regulations take precedence.

Items NOT Going into Stock

SHALL be packaged in accordance with
standard commercial practice
as defined in
ASTM D-3951
(Latest Revision is ASTM D3951-10)

Some Items Intended for packaging by ASTM D-3951* include:

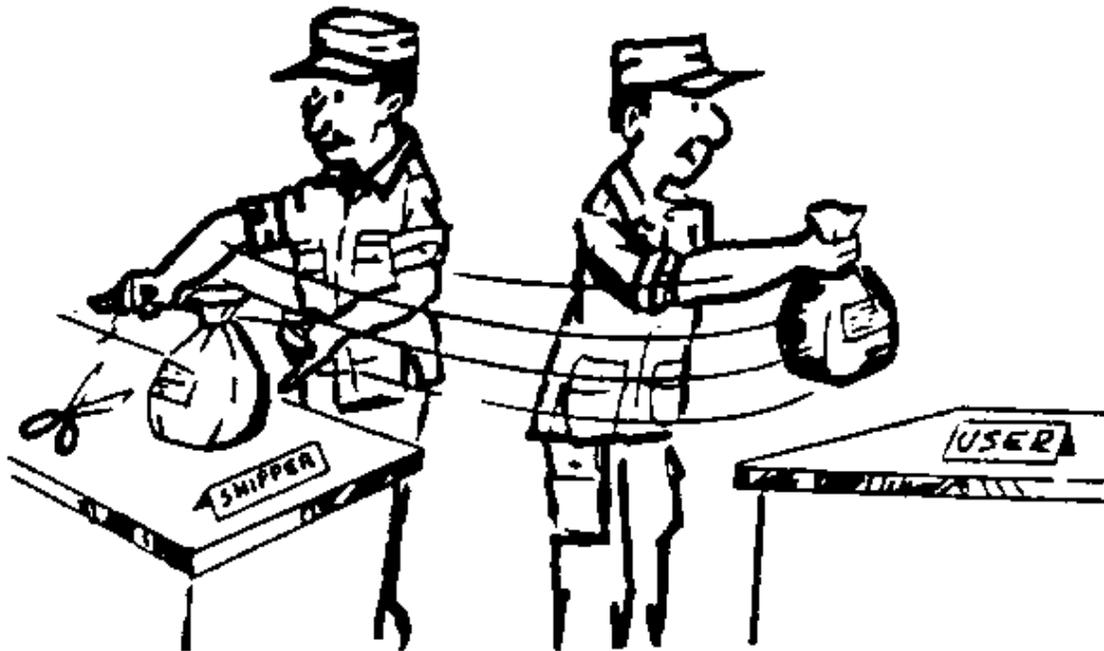
Items Intended for Immediate Use.

Items for Not Mission Capable Supply

Items Intended for Depot Operational Consumption

Small Parcel Shipments (CONUS), Not for Stock.

Direct Vendor Deliveries (CONUS)



* "DoD Contracts and Purchase Orders may require additional markings per MIL-STD-129."

DOMESTIC or EXPORT Considerations

- The type of goods – The Fragility Factor
- Type of carrier -
Trucks and Trains or Ships and Planes
- Delivery Time - Days and Weeks vs. Weeks and Months
- Types of hazards -
On the Ground vs. On the Water or In the Air
Extreme Temperatures and Humidity
- Cost factors – Handling and Transportation
- Legal restrictions –
Import and Export Documentation
After-sale use (What Happens To the Packaging?)

LEVELS OF PROTECTION

LEVELS OF PROTECTION

A means of specifying the level of Military Preservation and Packing that a given item requires to ensure that it is not degraded during shipment and storage.

MIL-STD-2073-1e Levels of Preservation are designed to protect an item during shipment, handling, undetermined storage, and distribution to consignees worldwide.

Military Levels of Packing

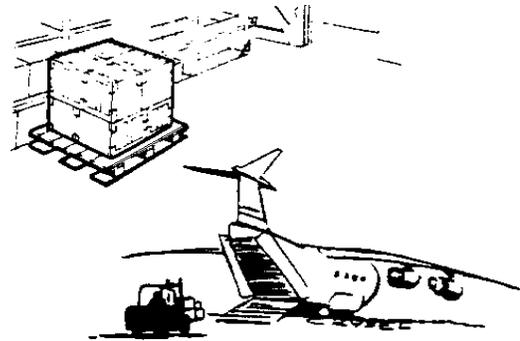
LEVEL A

Level "A" is the level of packing required for protection of material against the most severe worldwide conditions known or anticipated to be encountered during shipment, handling and storage.

A Level A pack must, in tandem with the applied method of preservation, be capable of protecting material from the effects of direct exposure to extremes of climate, terrain, and operational and transportation environments.

Examples of situations: War Reserve Material, mobilization, strategic and theater deployment and employment, open storage, deck loading and Foreign Military Sales.

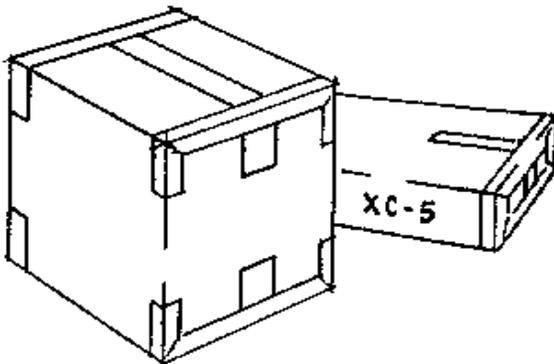
Examples of containers used for Level A packing requirements include, but are not limited to, overseas type wood boxes, and plastic and metal reusable containers.



LEVEL B

Level "B" is the level of packing required for protection of material under moderate (anticipated) worldwide shipment, handling and storage.

A pack designated Level "B" must be designed, in tandem with the applied preservation, to be capable of protecting material not directly exposed to extremes of climate, terrain, and operational and transportation environments.



Examples of Situations: Security Assistance, such as Foreign Military Sales and containerized overseas shipments.

Examples of containers used for Level B packing requirements include, but are not limited to, domestic wood crates, weather resistant fiberboard containers, fast pack containers, weather-resistant fiber drums, and weather resistant paper and multi-wall shipping sacks.

Items Going into the Military Distribution Center

will be packaged in accordance with

MIL-STD-2073-1e (1)

dated 7 January 2011

MIL-STD-2073-1e requirements apply to:

- A. Items expected to enter the military distribution system.
- B. Items delivered during wartime.
- C. Items requiring reusable containers.
- D. Items intended for delivery at sea.

***See contractual requirements**

APPENDICES

- APPENDIX A - DEVELOPMENT OF MILITARY PACKAGING REQUIREMENTS
- APPENDIX B - FACTORS & FORMULAE ESTABLISHING MILITARY PACKAGING QUP & ICQ
- APPENDIX C - CONTAINERS
- APPENDIX D - DEVELOPMENT OF MILITARY PACKAGING REQUIREMENTS FOR KITS (PARTS & MODIFICATION)
- APPENDIX E - MILITARY PACKAGING DATA FORMS
- APPENDIX F - MILITARY PACKAGING DESIGN VALIDATION PROVISIONS
- APPENDIX G - QUALITY ASSURANCE PROVISIONS
- APPENDIX H - PROCEDURES FOR COMPLIANCE WITH CONTAINER DESIGN RETRIEVAL SYSTEM (CDRS) REQUIREMENTS.
- APPENDIX J - MILITARY PACKAGING REQUIREMENT CODES

FIVE (5) BASIC METHODS OF MILITARY PRESERVATION

METHOD	HEADING
10	PHYSICAL PROTECTION
20	PRESERVATIVE COATING ONLY
30	WATERPROOF PROTECTION
40	WATERVAPORPROOF PROTECTION
50	WATERVAPORPROOF PROTECTIONS WITH DESICCANT

METHOD 10

(Formerly Method III)

PHYSICAL PROTECTION

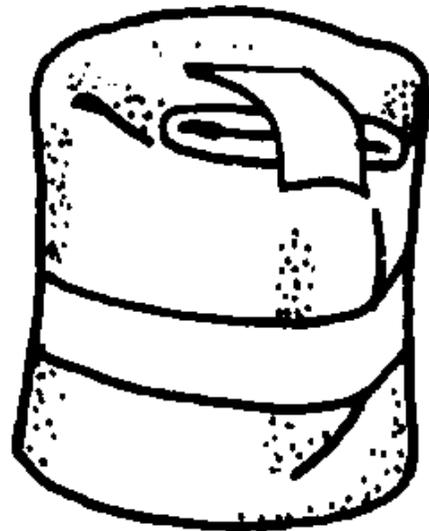
Protection from Physical Damage and Mechanical Malfunction

Types of items to be preserved Method 10:

Plastic, Ceramics, Glass, Painted Metal, Finished Wood Products.



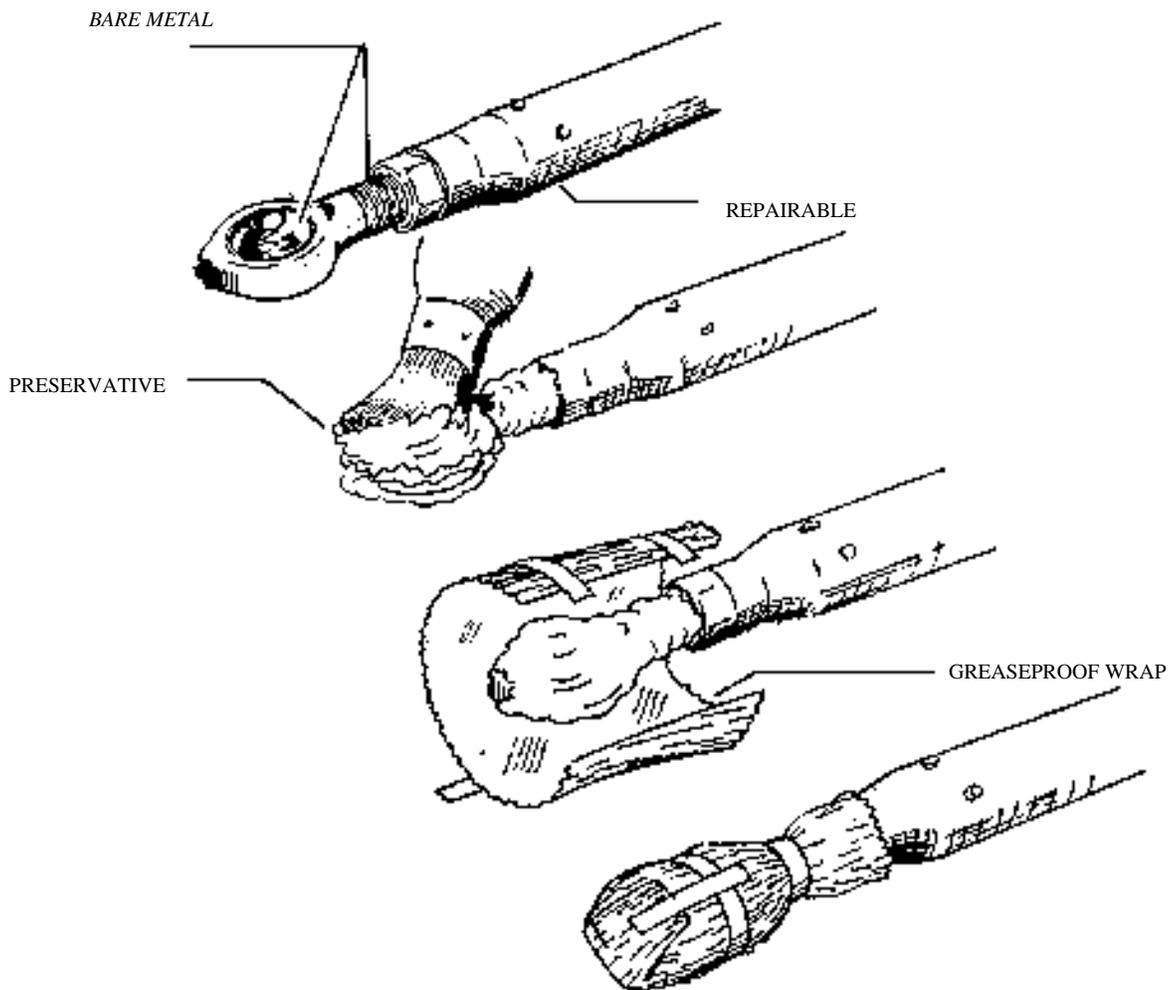
Unpreserved items shall be provided protection from physical damage and mechanical malfunction. Cushioning materials, dunnage, blocking and bracing shall be applied as required to protect the items and the enclosing media and restrict the movement of the item within the container.



METHOD 20

(Formerly Method I)

Preservative Coating Only (with greaseproof wrap, as required)



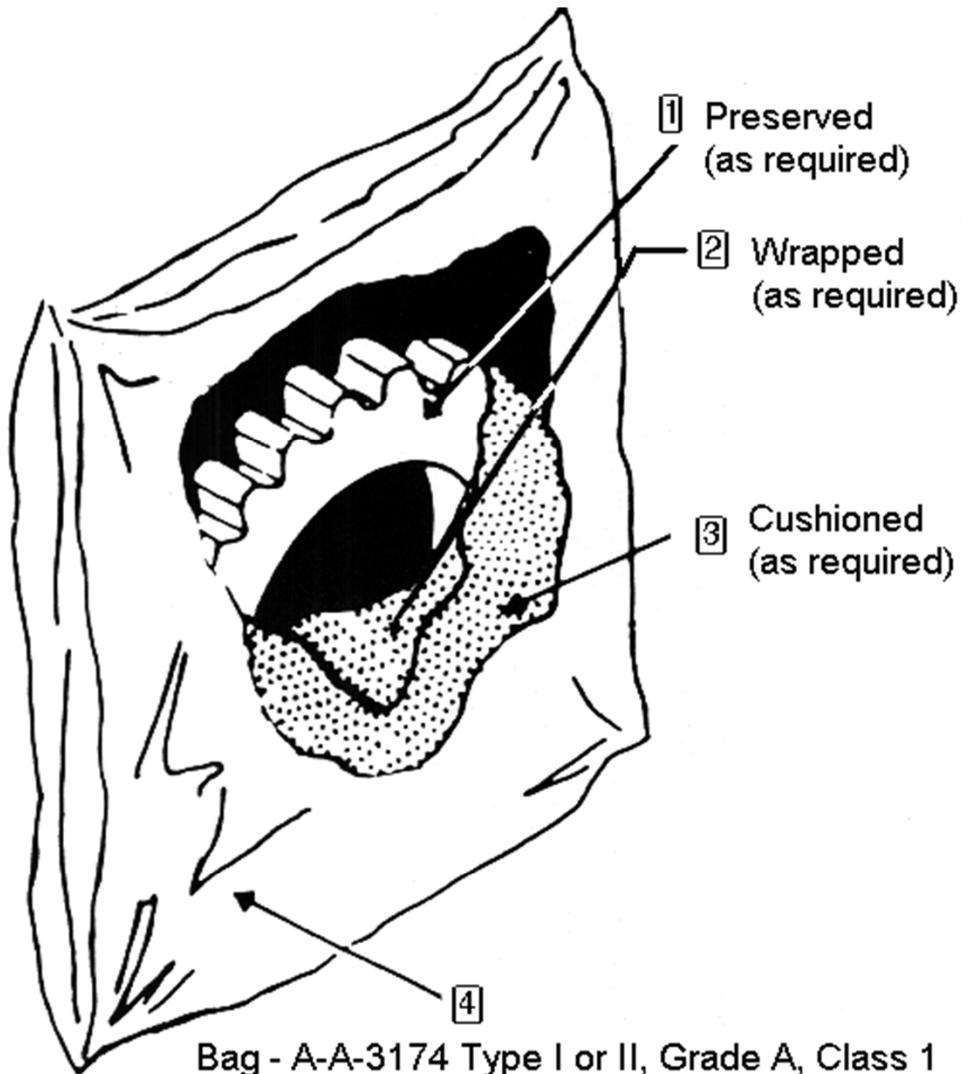
PRESERVED METHOD 20
READY FOR PACKING

METHOD 31

(Formerly Sub-Method IC-3)

WATERPROOF BAG, SEALED

Waterproof Enclosure, with Preservative as Required

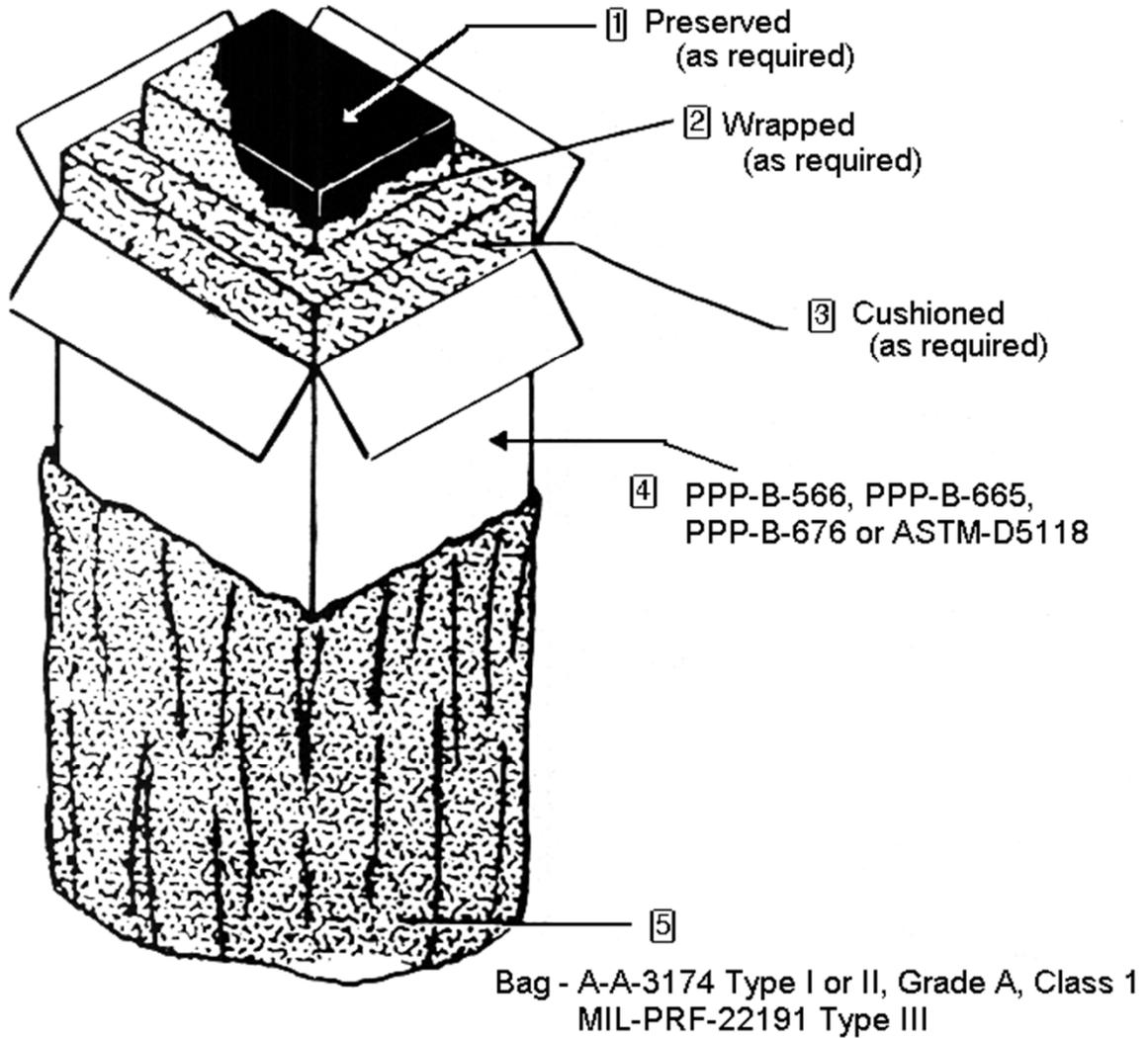


Bag - A-A-3174 Type I or II, Grade A, Class 1
MIL-PRF-22191 Type III
MIL-B-22020 as limited by Mil-I-8574

METHOD 32

(Formerly Sub-Method IC-2)

CONTAINER, WATERPROOF BAG, SEALED

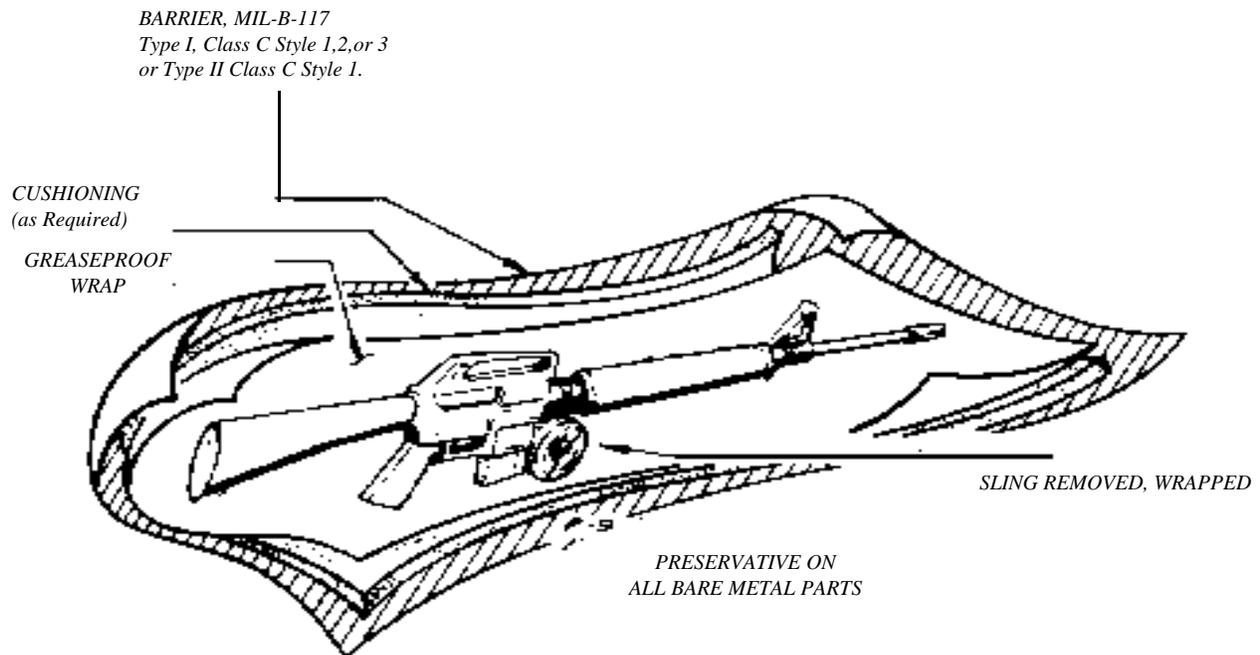


METHOD 33

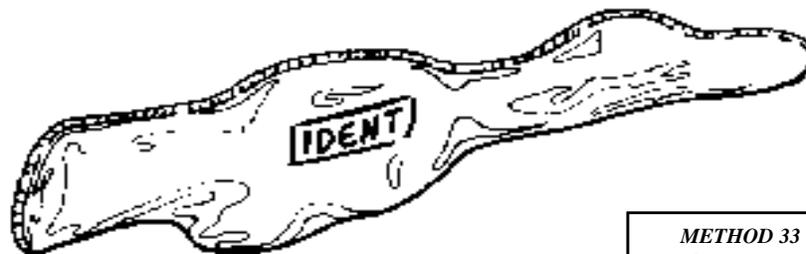
(Formerly Sub-Method IC-1)

GREASEPROOF-WATERPROOF BAG, SEALED

Waterproof or Waterproof-Greaseproof Enclosure, with Preservative as Required



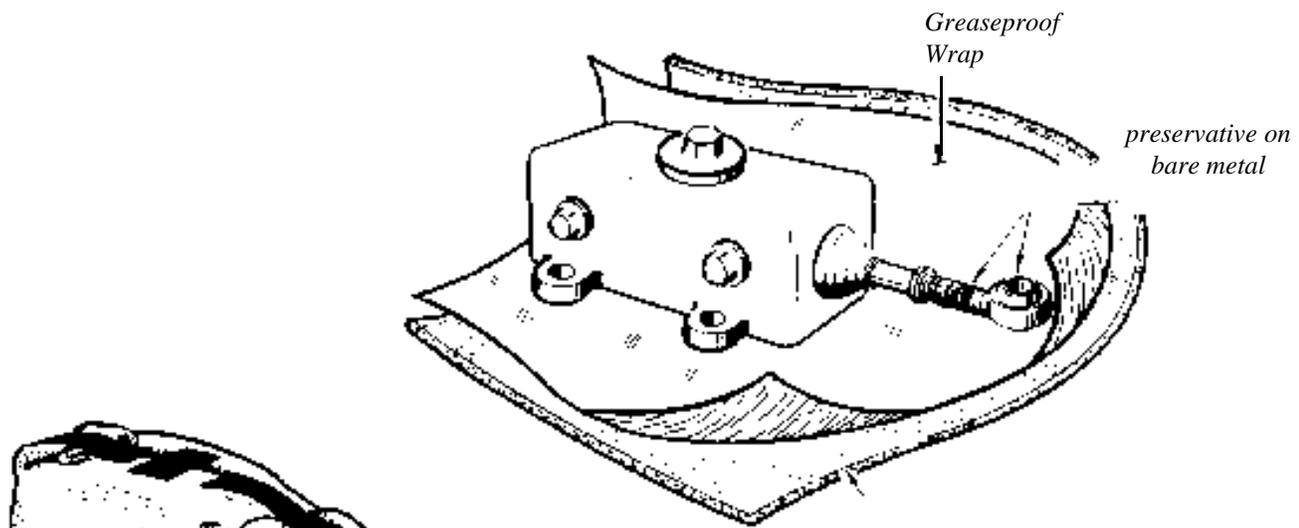
*BARRIER WRAPS OR BAGS SHOULD
NEVER BE USED AS A STORAGE OR
SHIPPING CONTAINER. ALWAYS
OVERPACK IN THE APPROPRIATE
CONTAINER.*



*METHOD 33
PRESERVED ITEM*

METHOD 41

(Formerly Sub-Method IA-8)
Watervaporproof Bag, Sealed



Bag made from MIL-B-131, Class 2
Folded and Sealed on 2 Edges.



Exhaust Excess Air

BARRIER WRAPS OR BAGS SHOULD NEVER BE
USED AS A STORAGE OR SHIPPING CONTAINER.
ALWAYS OVERPACK IN THE APPROPRIATE
CONTAINER.

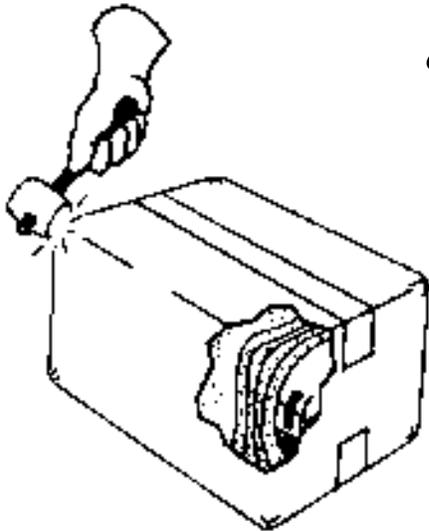
READY FOR PACKING

METHOD 42

(Formerly Sub-Method IA-14)

Container, Bag, Sealed, Container

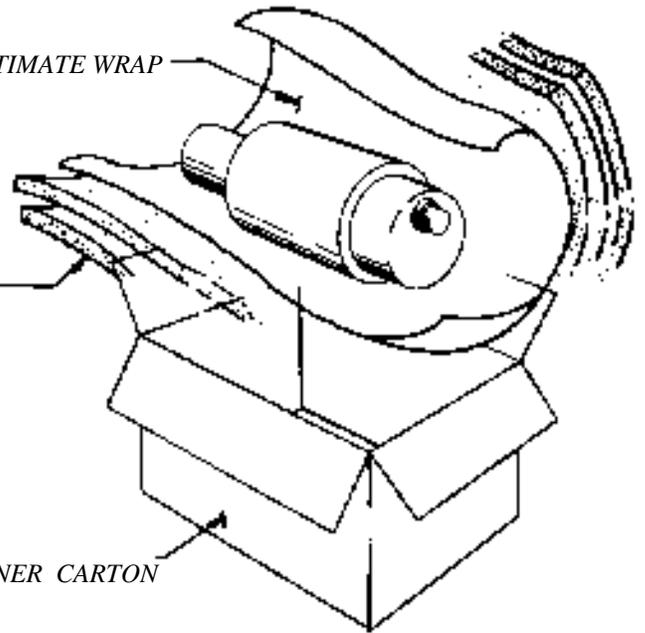
CORNER FLATTENED
TO PREVENT BAG
PUNCTURE



INTIMATE WRAP

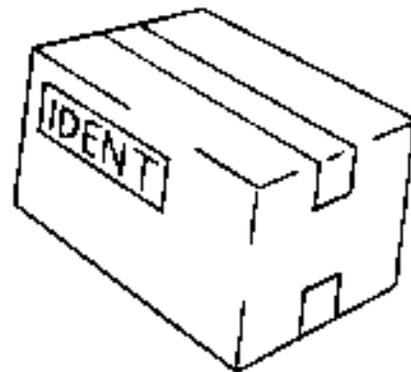
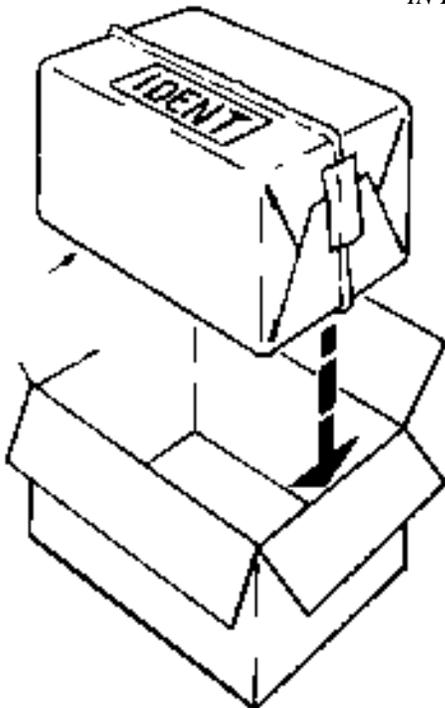
CUSHIONING

INNER CARTON



ITEM PACKED
TIGHT

INNER CARTON PLACED
IN BAG, MIL-B-131, CLASS 2,
HEAT SEALED AND
IDENTIFIED

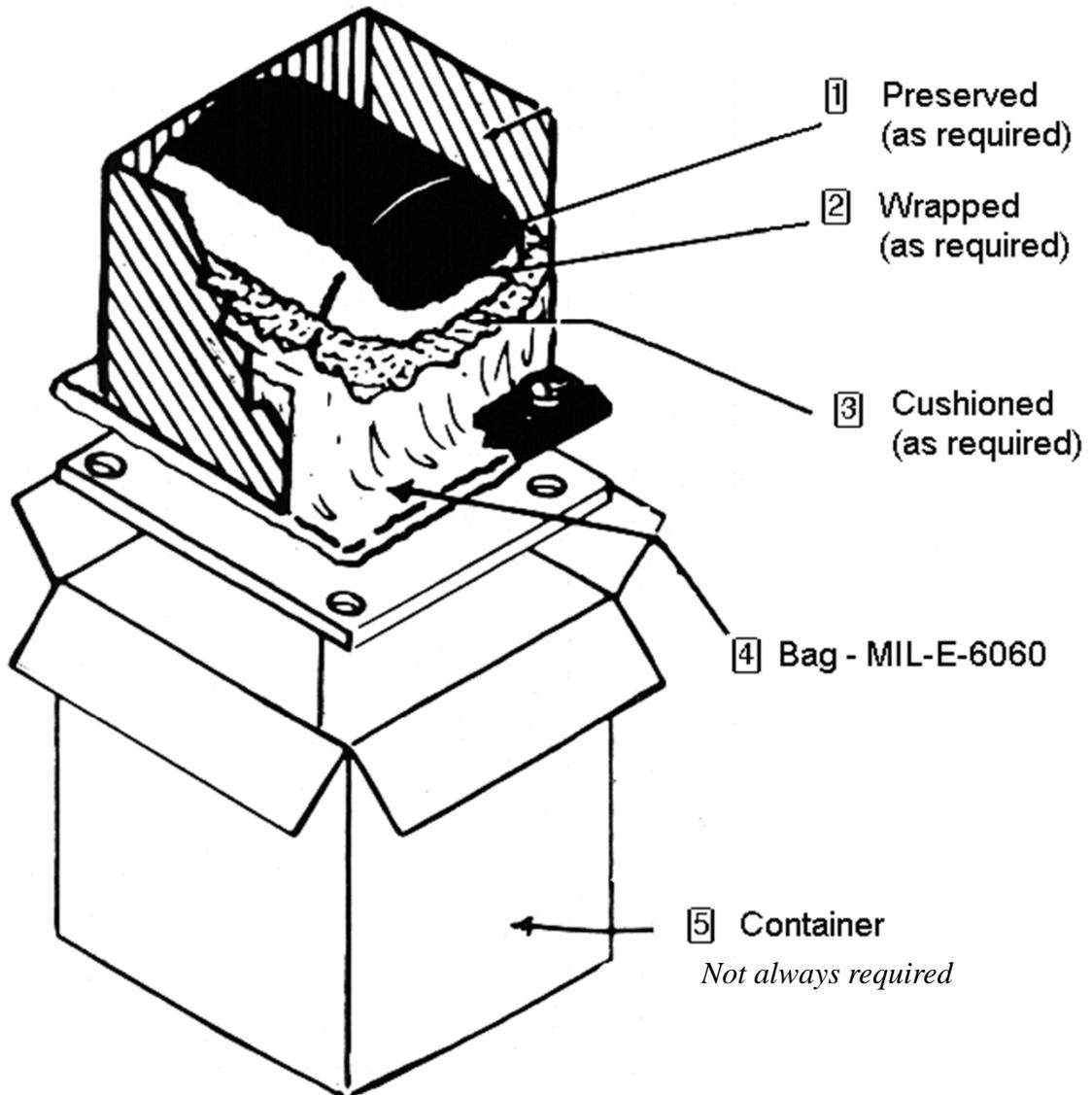


OUTER CARTON
SEALED AND
IDENTIFIED

METHOD 43

(Formerly Sub-Method IA-16)

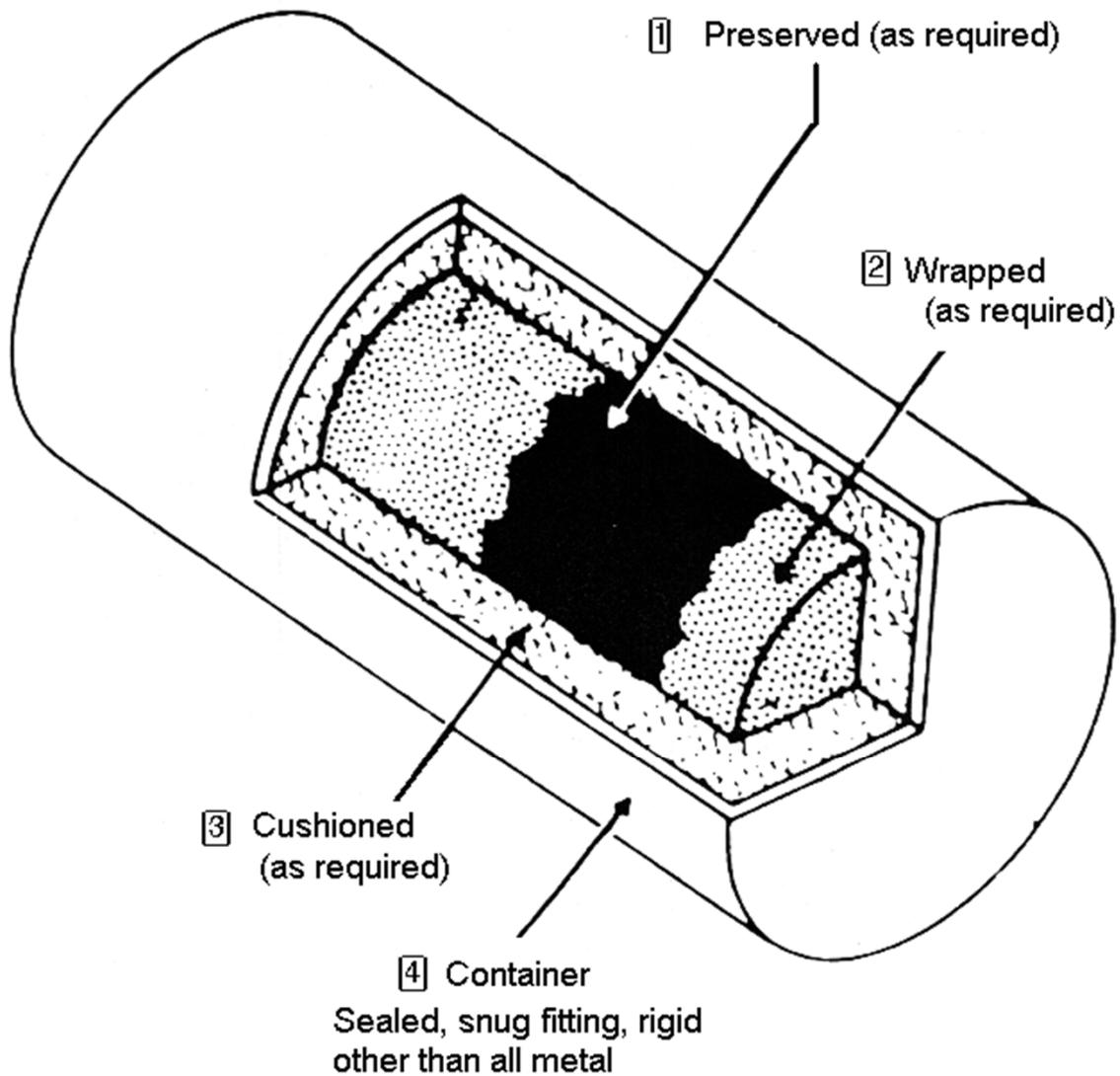
FLOATING WATERVAPORPROOF BAG, SEALED



Method 44

Rigid Container (other than metal)

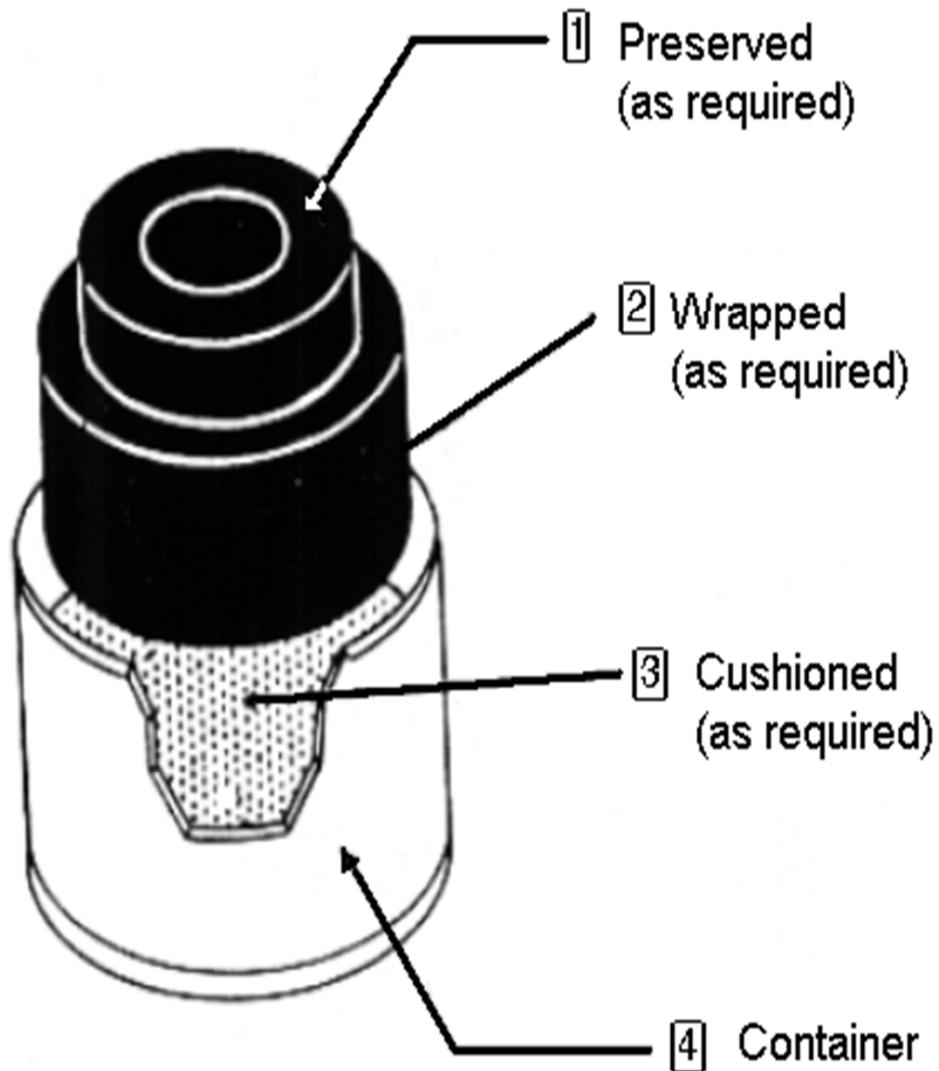
(Formerly Sub-Method IA-13)



Method 45

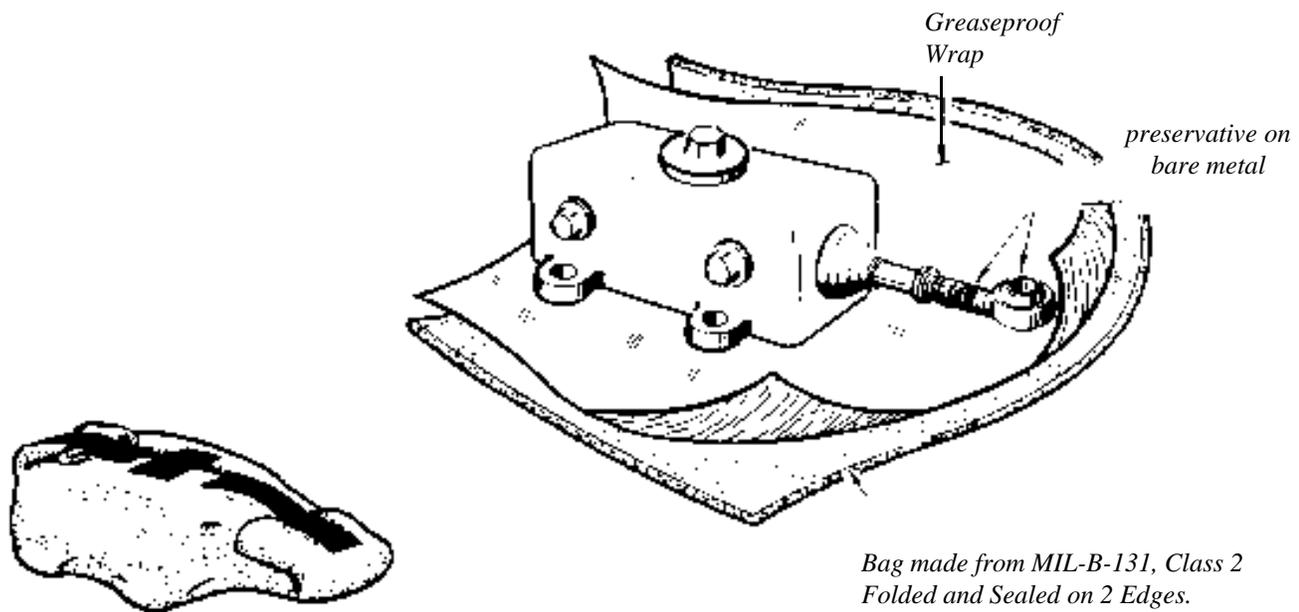
Rigid Metal Container, Sealed

(Formerly Sub-Method IA-5)



METHOD 51

(Formerly Sub-Method bVIlc)
Watervaporproof Bag, Sealed
WITH DESICCANT



Place Desiccant and
Humidity Indicator
Inside Bag



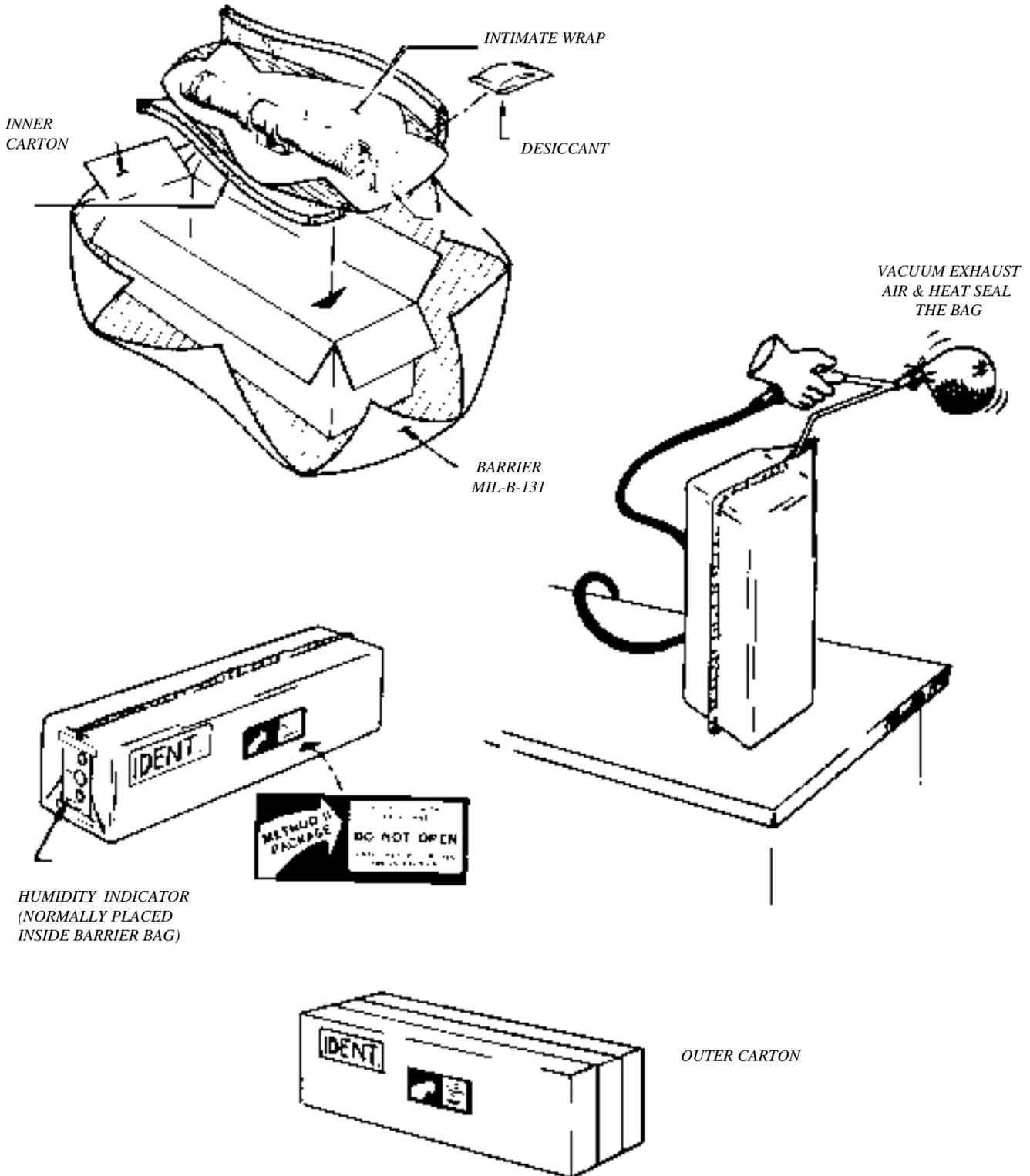
BARRIER WRAPS OR BAGS SHOULD NEVER BE
USED AS A STORAGE OR SHIPPING CONTAINER.
ALWAYS OVERPACK IN THE APPROPRIATE
CONTAINER.

METHOD 52

(Formerly Sub-Method II-B)

CONTAINER, WATERVAPORPROOF BAG, SEALED, CONTAINER

*Watervaporproof enclosure, with Desiccant
, with Preservative as Required*



Sample Worksheet

MIL-STD-2073-1E Worksheet				
PURPOSE: To translate packaging requirements from Orders or Contracts which specify Packaging Requirements Codes in accordance with MIL-STD-2073-1E				
Contractor:			Contract Number:	
Procuring Office:			Item Description:	
HEADING	DETAIL	TABLE	CODE	REQUIREMENT
	Hazardous Material	D = Dangerous N = Non Regulated		
QUP	Quantity per Unit Pack	Page 142 Para. J.4.3		
ICQ	Intermediate Pack Quantity	Page 143 Para J.4.11		
PRES METH	Method Preservation	J.I or J.Ia		
CLNG/DRY	Cleaning and Drying	J.II		
PRESV MAT	Preservative Material	J.III		
WRAP MAT	Wrap Material	J.IV		
Cush/Dunn Mat	Cushioning / Dunnage Material	J.V		
Thkness	Cushioning Thickness	J.VI		
UC	Unit Pack Container	J.VII		
IC	Intermediate Container	J.VII		
UCL	Unit Container Level	J.VIII		
OPI	Optional Procedure Indicator	J.VIIIa		
PACK	Level A Military Packing	J.IX		
PACK	Level B Military Packing	J.IXa		
PACK	Minimal Packing	J.IXb		
Spec Mark	Special Marking	J.X		

PACKAGING REQUIREMENT CODES (PRC) - MIL-STD-2073-1E

HM (HAZARDOUS MATERIAL) When the item is regulated by Title 49, Code of Federal Regulations or other regulation such as IATA/ICAO or DLAM 4145.3, a code "**D**" will be annotated in this block. When the item is not regulated, a code "**N**" will be annotated although in most cases it is left blank.

QUP (QUANTITY PER UNIT PACK) Para. J.4.3

States the quantity per unit pack in the clear up to 999. BLK will be used for Bulk and ZZZ for Special Requirments listed in supplemental data or drawings

ICQ (INTERMEDIATE CONTAINER QUANTITY) Para J.4.11

When intermediate containers are used, the number of unit packs per intermediate containers up to 100 will be listed in the clear. Other codes may be AAA, XXX or ZZZ.

PRESERVATION Table J.I, & J.Ia

Method of Preservation will be a two (2) digit code derived from the tables. Table J.I information is for the preservation methods and submethods established by Para. 5.2.3 Table J.Ia codes are for packaging procedures which are regularly used and require a more detailed description than allowed by the basic code and yet do not require the use of special packaging instructions. Always check the tables in sequence to avoid errors.

CLEANING & DRYING PROCEDURES Table J.II

This is a one (1) digit code sometimes shown as CLN/DRY or C/D.

PRESERVATIVE MATERIAL Table J.III

A two (2) digit code. Refers to the type of material to be used to coat the item. Table III lists contact preservative material in alphanumeric order.

WRAPS Table J.IV

A two (2) digit code. This is a listing of what the item will be wrapped in after it has been properly preserved.

CUSHIONING AND DUNNAGE

Table J.V

A two (2) digit code. Codes listing the cushioning and dunnage material that will be utilized after the item has been wrapped. This material will usually be placed between the wrapped item and the inside of the unit container

CUSHIONING THICKNESS

Table J.VI

One (1) digit code listing the minimum thickness that is required between the unit and the unit container in any one direction.

UNIT CONTAINER

Table J.VII

Two (2) digit code listing the type of container into which the item will be placed.

INTERMEDIATE CONTAINER

Table J.VII

Two (2) digit code listing the type of container that is to be used if an intermediate container is necessary.

UNIT CONTAINER LEVEL

Table J.VIII

One (1) digit:

"O" - Denotes the unit container is not an acceptable shipping container.

"A" or "B" - Denotes if the container is an acceptable shipping container and what the highest level of protection will be afforded by this container.

"D" - No container is required.

"M" - Unit container provides minimal packing protection.

"Z" - Indicates that the container requires special considerations (air only, inside storage only, etc.)

OPI (Optional Procedure Indicator)

Table J.VIIIa

"A" is indicated if packaging is in accordance with a specification or a special packaging instruction.

"M" indicates that all packaging data is mandatory for compliance and no substitutions are permitted.

"O" indicates an option can be exercised as to the submethods and packaging materials to used.

MILITARY PACKING

Table J.IX

One (1) digit code. Indicates the type of shipping container for MILITARY packing.

MINIMAL PACKING

Table J.Ixa

One (1) digit code. Indicates the type of shipping container for Minimal packing.

SPECIAL MARKINGS

Table J.X

Two (2) digit code. If more than one code or a combination of codes not included in the table must be specified, "ZZ" will be annotated which indicates that supplemental data is listed elsewhere.

Some contracts will show the following information:

UNIT PACK WEIGHT

Five (5) digit numerical code. It shows the actual unit pack weight in the clear to the nearest on tenth of a pound. The decimal point does not show.

UNIT PACK SIZE

LGTH WIDTH DPTH

Four (4) digit numerical code. This code shows the outside dimensions in the clear to the nearest tenth of an inch in the order of length, width and depth (or height). The decimal points do not show. (Example: 0035 = 3 1/2")

UNIT PACK CUBE

WH CUB 1000th

Four (4) digit code for the whole cube and three (digits in the 1000th column. These numbers indicate the actual cube of the unit pack to the nearest one thousandth of a cubic foot up to 9,999.999 cubic feet.

Packaging Code Lookup Tool
<http://www.palm.saic.com>

Mil-Std-2073

Paragraph 5.7 Quality Assurance Provisions. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all quality assurance requirements as specified in Appendix G

Quality Assurance Provisions

Appendix G

Preservation Inspections

Visual Preservation Examinations

Leakage Test

Vacuum Retention Technique

Submersion or Immersion Technique

Pneumatic Pressure Technique

Hot Water Technique

Squeeze Technique

Heat Sealed Seam Test

Preservation Inspection Provisions

Table G.1

Some of the included visual inspection is for:

- Item contaminated by handling after cleaning.
- Contaminated wiping cloths or compressed air used.
- Preservative not as specified.
- Excessive Preservative.
- Wrap not as specified.
- Cushioning material or thickness not as specified.
- Interior unit container corners not blunted.
- Excessive looseness in unit container.
- Weight & cube of unit pack exceeds maximum allowable.
- Incorrect QUP
- Marking omitted, incorrect or illegible.

When a box or container is used to effect the unit pack of Method 31, 32, 41 and 51, unit pack markings of MIL-STD-129 shall be applied to the barrier bag as well as the box specified to effect the unit pack.

PACKAGE MARKINGS

Four types of Basic Markings

1. Identification Marking

NSN - (National Stock Number)
CAGE Code and PN - (Part #)
Nomenclature
Quantity and unit of issue
Contract number (on unit & intermediate containers)
Military Method and date of unit pack preservation
Shelf Life Information (if applicable)
Serial Numbers (if applicable)
Gross Weight (on exterior containers)

2. Bar Code Markings

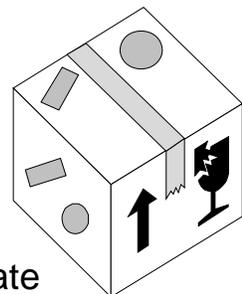
NSN (& Serial Number) for unit and intermediate packs
NSN, Contract number, CAGE, CLIN, Shipment Number (& Serial Number) on exterior shipping containers

3. Address Markings

Uses Military Shipping Label (MSL).
Transportation Control Number (TCN), DODAAC of Ultimate Consignee, and Piece Number must be bar coded when shipment is destined into the Defense Transportation System
2D Bar Coding of MSL Information, TCMD data and line item supply data.

4. Special Markings

Hazardous Material
Set Marking, Project Code
Warranty, Manufactured, Cured or Assembled Date
Expiration, Inspection or Pack Date
Arrows, Fragile, Special Handling, etc.
UID and RFID



Unit & Intermediate Container
Label Example.



2910004567416

2910-00-456-7416

CAGE 57685

PN 341

CARBURETOR

1 EA

DAA625-03-C-1056

M41 02/08

MFD DATE 01/08

EXP DATE 01/09

SER NO 1157



1157

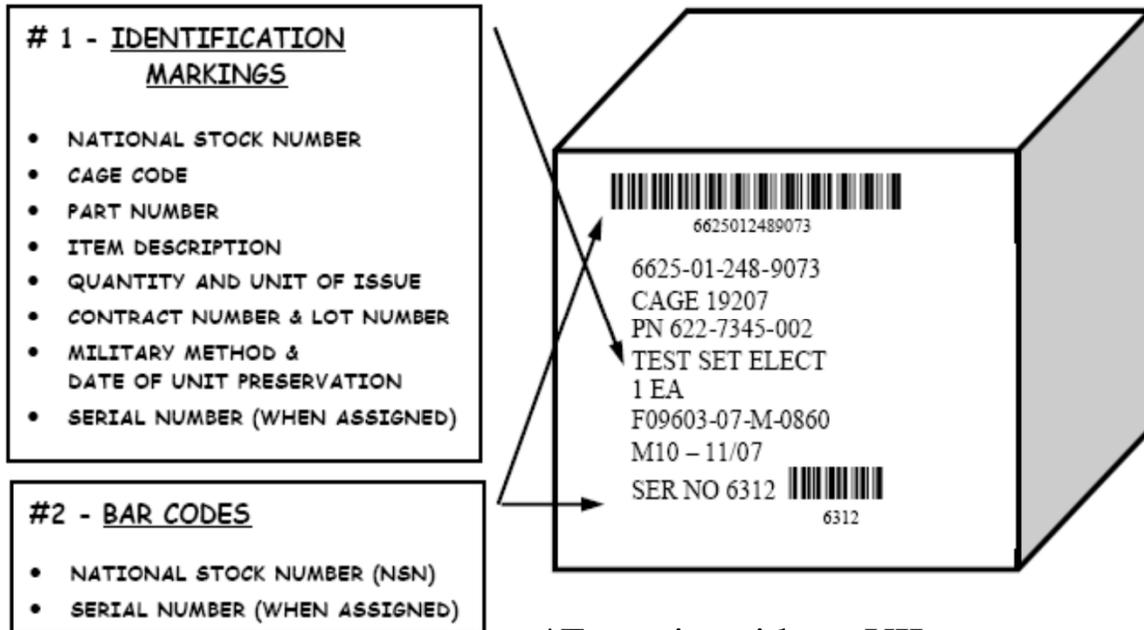
*MFD and EXP Date for Shelf Life Items and Serial Numbers only if Applicable.

ID DATA
INCLUDES UII(s)
(if required)



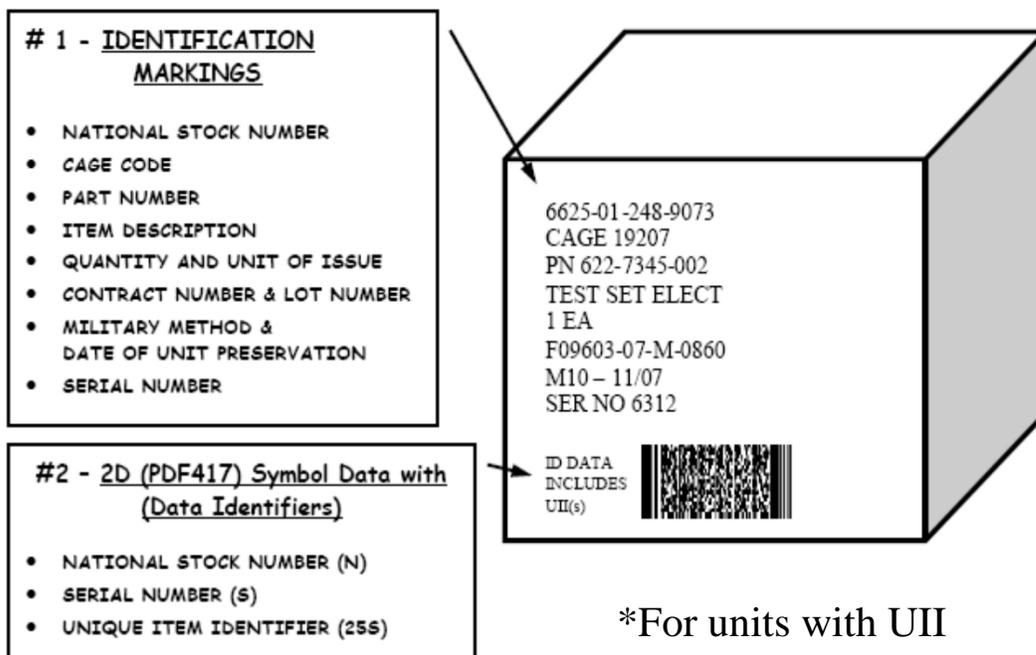
*Application of the linear bar codes is not required when the 2D (PDF417) identification symbol is used.

Unit & Intermediate Containers with linear (Code 39) bar codes



*For units without UII

Unit & Intermediate Containers with 2D (PDF417) symbol*



*For units with UII

Exterior Container Label Example.



2910004567416



0001AA



DAA62507M1056



BET0001Z



57685

2910-00-456-7416

CAGE 57685

PN 341

3 EA

DAA625-07-M-1056

M41 02/08

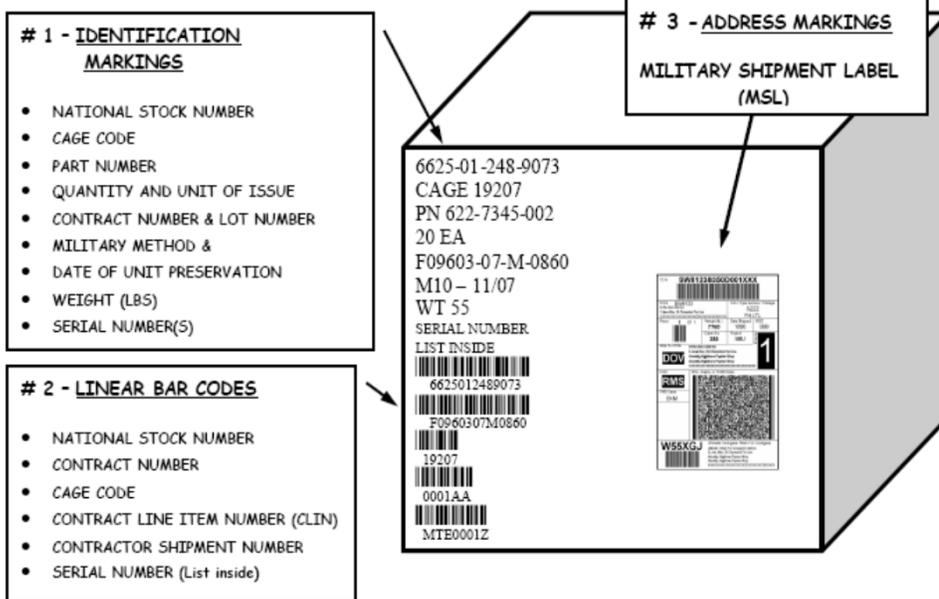
WT 30

ID DATA
INCLUDES UII(s)
(if required)



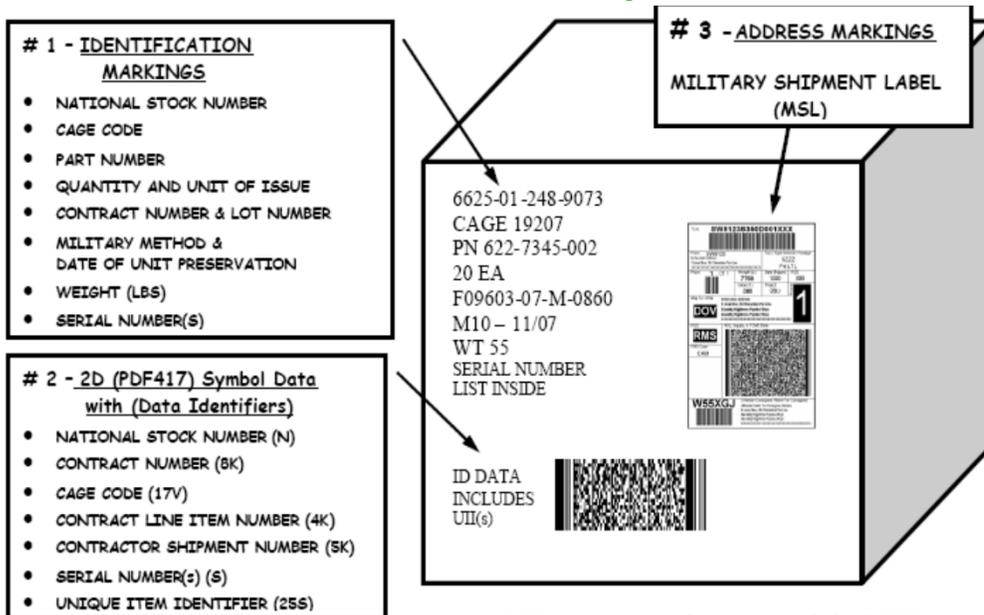
*Application of the linear bar codes is not required when the 2D (PDF417) identification symbol is used.

Exterior Containers with linear (Code 39) bar codes



*For containers without UII

Exterior Containers with 2D (PDF417) symbol*



*For containers with UII

Military Shipping Label (MSL)

Sample – CONUS Shipment

TCN			
S1501A4202A453XXX			
From		TAC / Type Service / Postage	
73342		FRT LTL	
ATGM			
4700 WEST 10TH ST			
INDIANAPOLIS IN 46222-3277			
Piece	Weight (lb.)	Date Shipped	Project
1 OF 1	1210	07/20/04	
	Cube (ft.)	RDD	FMS Case
	60	340	
Priority	MSL, Supply & TCMD Data		
3			
POD			
Ship To / POE	TRANSPORTATION OFFICER DDSP NEW CUMBERLAND FACILITY BUILDING MISSION DOOR 113-143 NEW CUMBERLAND PA 17070-5001		
Ultimate Consignee / Mark For Consignee	W25G1U TRANSPORTATION OFFICER DDSP NEW CUMBERLAND FACILITY BUILDING MISSION DOOR 113-134 NEW CUMBERLAND PA 17070-5001		

The label contains Address Markings

The 2D Bar Code contains Address Markings and Inventory Control Information

FOB Destination TCN uses letter “X” and the five digit CAGE Code, Four Digit Julian Date, first letter of the company name, last three digits of Shipment Number from DD 250, Suffix Number, Partial Shipment Code and Split Shipment Code (Usually “XXX”)

Special Markings

- **Shelf-life**
- **Project Code**
- **Fragile/ Delicate**
- **Method 50**
- **Expedited Handling**
- **Hazardous Materials**



Special Markings

Shelf-life

- Shown below identification data on unit, intermediate and exterior containers
- **TYPE I (non-extendable):**
MFD DATE 10/01
EXP DATE 10/06
- **TYPE II (extendable):**
ASSEMBLED DATE 10/01
INSP/TEST DATE 10/04
- **RUBBER or ELASTOMER (TYPE I OR II):**
CURED DATE 4Q01
INSP/TEST DATE 4Q05

Special Markings

Project Code



Special Handling

Method 50



Red Background & Letters, White Block & Arrow



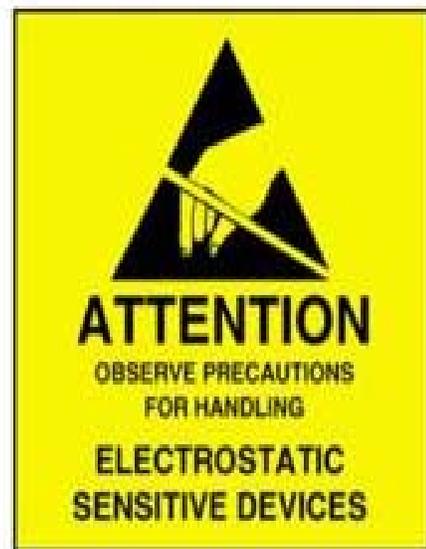
Red and White

Electrostatic Discharge (ESD) Sensitive



Unit Pack

Yellow Background, Black Letters & Graphics



Intermediate and Exterior Pack

Special Markings

Expedited Handling



Red and White

NMCS

NSN 7540-00-139-4835
5084-102

OPTIONAL FORM 84 (REV. 2-84)
PREVIOUS EDITION NOT USABLE

Green NMCS Letters on White Background

Special Markings

DOT Hazardous Materials

- Proper Shipping Name
- UN Number
- Hazard Labels



Red and White

UN Performance Specification

Example of a Single or Combination Marking:

u
n 4G / Y 7.4 / S /99/USA /DOD

- (a) The United Nations Symbol
- (b) Type of Packaging Code
- (c) Packing Group:

X = PG I, II and III
 Y = PG II and III
 Z = PG III Only

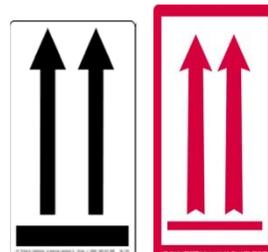
- (d) Maximum Gross Mass (In Kilograms)
- (e) Letter "S", Solid or Inner Packagings
- (f) Year of Manufacture or assembly
- (g) State (Country) authorizing mark
- (h) Symbol of Manufacturer/Certifier

Cargo Aircraft Only Label



Orange & Black

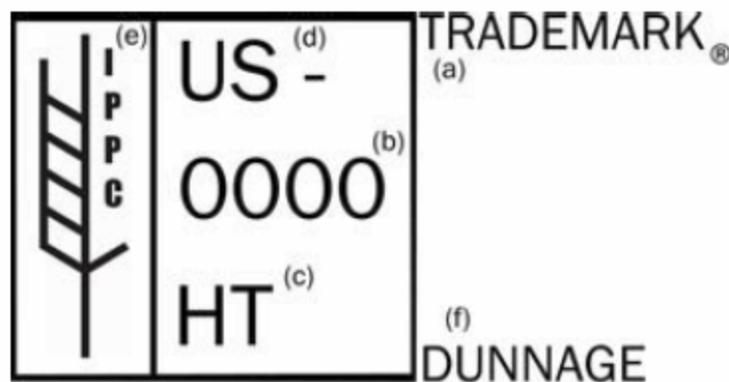
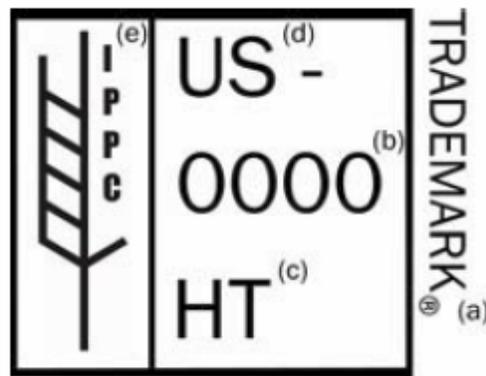
Package Orientation Marking



Black on White or Red on White

HEAT TREATED Wood Packaging Material

Required for all Wood Packaging Material (WPM). WPM is defined as wood pallets, skids, load boards, pallet collars, wooden boxes, reels, dunnage, crates, frames, and cleats.



MUST – 56 degree Celsius (132 F) Core Temp for 30 Minutes
KD19HT – Kiln Dried, 19% Moisture Content, Heat Treated but not sufficient.

Unique Item Identification (UID) of Parts

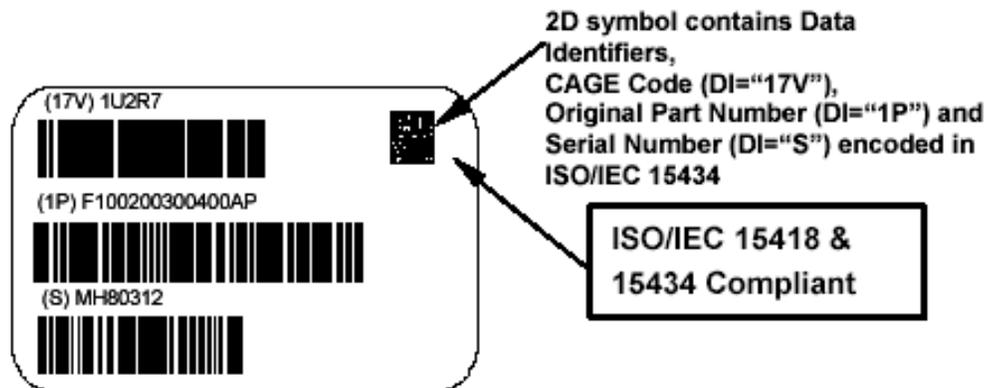


FIGURE 2.c Example of Label with Linear and Data Matrix Using Construct #2 for New Item

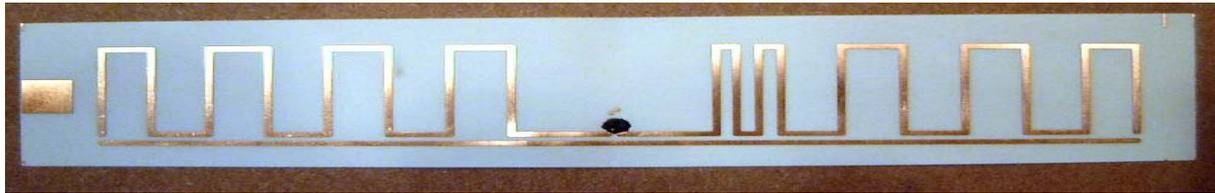
DFARS Clause 252.211-7003 Item Identification and Valuation
Mandated to be in all solicitations where it will apply as of January 1, 2004. Mandatory requirement—no exceptions or waivers.

UID is required for items valued at \$5000 or more, or otherwise specifically required in the contract.

Remember to mark the UID Serial Number placed on the outside of the Unit, Intermediate and Exterior Pack per MIL-STD-129P(3).

www.acq.osd.mil/dpap/UID/

Radio Frequency Identification RFID (Passive)



- 252.211-7006
- Latest Revision Dated September 2011
- Class 1 Generation 2 tags only after 1 Mar 2007.
- Currently cases/pallets shipped from suppliers – eventually UID items
- Captures Shipment/order data

Official Website www.dodrfid.org

**Contains Policy, Business Rules,
Implementation Plan and Supplier Guide**

Radio Frequency Identification RFID (Passive)

- Create Number:
 - Size of Tag, - 64 or 96 Bit
 - Type of Object - Case, Pallet or UID Item
 - CAGE - Prime or 3rd Party
 - Serial Number - up to 16,522,293 or 68,719,476,736
- Converted to Binary Code, then Hexadecimal and Electronically Placed on Tag
- Input “Hex” Number into WAWF Advanced Shipping Notice (ASN)
- Hex Number must be exactly 16, 24, 32, or 64 Characters in Length.

