

UNITIZATION PROCEDURES FOR BULK EXPLOSIVES OR BULK PROPELLANTS PACKED IN 21-GALLON FIBERBOARD CONTAINERS, UNITIZED 8 CONTAINERS PER SPECIAL 4-WAY ENTRY PALLET

(REV. 1981) DHS-71

REGULATORY DIVISION _____
 U.S. DEPARTMENT OF JUSTICE _____
 WASHINGTON, D.C. _____

UNITIZATION		DATE	
NO.	DESCRIPTION	BY	DATE
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REG-100-100

GENERAL NOTES

(GENERAL NOTES CONTINUED)

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1, AND AUGMENTS TM 743-200-1 (CHAPTER 5) AND CONFORMS TO MIL-STD-1660.
- B. HEIGHT, CUBE AND WEIGHT OF A PALLET UNIT WILL VARY SLIGHTLY DEPENDING UPON THE ACTUAL DIMENSIONS OF THE CONTAINERS AND THE WEIGHT OF THE SPECIFIC ITEM BEING UNITIZED.
- C. FOR DETAILS OF THE 21-GALLON FIBERBOARD CONTAINER, SEE MILITARY SPECIFICATION MIL-C-70470.

CONTAINER DIAMETER ----- 16-1/8"
 CONTAINER HEIGHT ----- 27-5/8"
 GROSS WEIGHT ----- 176 LBS (APPROX)

- D. DUNNAGE LUMBER SPECIFIED IS OF A NOMINAL SIZE. FOR EXAMPLE, 1" X 4" MATERIAL IS ACTUALLY 3/4" THICK BY 3-1/2" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" WIDE.
- E. UNLESS OTHERWISE SPECIFIED, A PLUS OR MINUS 1/4" IS ALLOWED ON OVERALL DIMENSIONS OF ANY DUNNAGE ASSEMBLY. SIMILAR PIECES IN AN ASSEMBLY, HOWEVER, MUST BE WITHIN 1/8" OF THE SAME DIMENSION.
- F. WHEN ASSEMBLING A PALLET UNIT, CARE SHALL BE TAKEN TO INSURE THAT THE CONTAINERS AND DUNNAGE ASSEMBLIES ARE EVENLY ALIGNED HORIZONTALLY AND VERTICALLY, AS APPLICABLE, SO THAT THE SIDES AND ENDS OF THE PALLET UNIT DO NOT EXCEED A 1/2" TOLERANCE.
- G. IN ORDER TO OBTAIN COMPACT (SOUND) PALLET UNITS, ALL STRAPS SHALL BE LOCATED IN PROPER ALIGNMENT AND TENSIONED UNTIL THEY CUT INTO THE EDGE OF THE TOP DUNNAGE ASSEMBLY AND THE PALLET DECK. AFTER TENSIONING, EACH STRAP WILL BE SECURED USING ONE SEAL AND TWO PAIR OF NOTCHES PER SEAL. ALL STRAPPING MUST BE STRAIGHT WITHIN 2" ON ANY SURFACE OF THE UNITIZED LOAD, I.E., TOP, BOTTOM, SIDES, OR ENDS THAT IT ENCOMPASSES.

- H. WHEN APPLYING ANY STRAP, CARE MUST BE EXERCISED TO ASSURE THAT THE END OF THE STRAP ON THE UNDERSIDE OF THE JOINT EXTENDS AT LEAST 6" BEYOND THE SEAL. THIS EXTRA MINIMUM LENGTH OF STRAP IS REQUIRED TO PERMIT SUBSEQUENT TIGHTENING OF LOOSENED STRAPPING. RETENSIONING CAN BE ACCOMPLISHED WITHOUT REPLACING STRAPPING OR SPLICING STRAPPING THROUGH THE USE OF A MANUAL OR PNEUMATIC FEEDWHEEL TYPE TENSIONING TOOL AND THE APPLICATION OF ONE ADDITIONAL SEAL.
- J. CONVERSION TO METRIC EQUIVALENTS: DIMENSIONS WITHIN THIS DOCUMENT ARE EXPRESSED IN INCHES, AND WEIGHTS ARE EXPRESSED IN POUNDS. WHEN NECESSARY, THE METRIC EQUIVALENTS MAY BE COMPUTED ON THE BASIS OF ONE INCH EQUALS 25.4MM AND ONE POUND EQUALS 0.454KG.
- K. INSTALL HORIZONTAL STRAPS TO ENCIRCLE THE DUNNAGE ASSEMBLIES AS SHOWN. HORIZONTAL STRAPS MUST BE TENSIONED AND SEALED PRIOR TO THE APPLICATION OF TIEDOWN STRAPS.

- L. INSTALL EACH TIEDOWN STRAP TO PASS UNDER THE TOP DECK BOARDS OF THE PALLET AND TO BE LOCATED AS SHOWN. TIEDOWN STRAPS WILL NOT BE APPLIED UNTIL THE HORIZONTAL STRAPS HAVE BEEN TENSIONED AND SEALED.
- M. THE FOLLOWING AMC (DARCOM) DRAWINGS ARE APPLICABLE FOR OUTLOADING AND STORAGE OF THE ITEMS COVERED BY THIS DRAWING.

CARLOADING ----- DRAWING 19-48-4115-5PA1002.
 TRUCKLOADING ----- DRAWING 19-48-4117-11PA1003.
 STORAGE ----- DRAWING 19-48-4118-1-2-3-4-14-22PA1002.
 MILVAN ----- DRAWING 19-48-4166-15PA1003.
 COMMERCIAL CONTAINER - DRAWING 19-48-4153-15PA1002.

- N. FOR METHOD OF SECURING A STRAP CUTTER TO THE PALLET UNIT, SEE DARCOM DRAWING 19-48-4127-20P1000.

(CONTINUED AT RIGHT)

MATERIAL SPECIFICATIONS

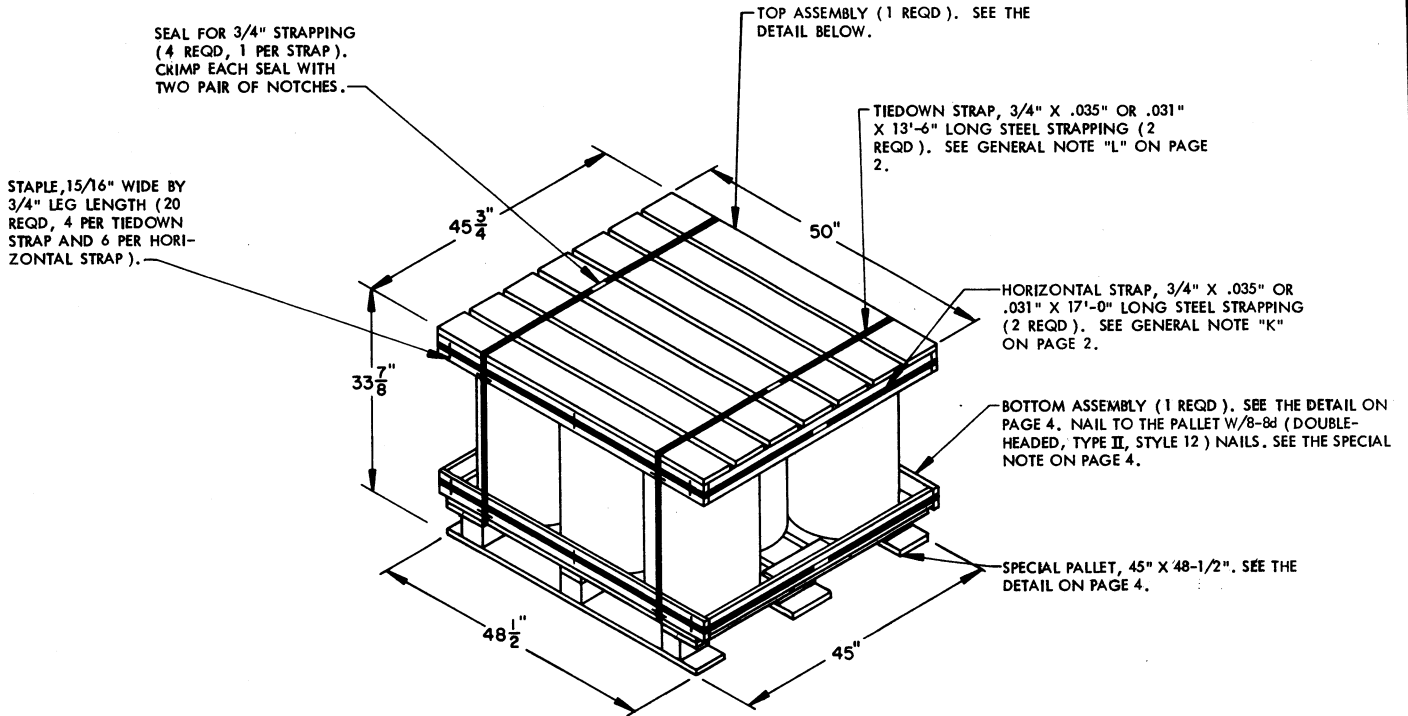
- PALLET ----- SPECIAL 4-WAY ENTRY, SIZE 45" X 48-1/2", PRESERVATIVE TREATED, SEE GENERAL NOTES "P", "Q", "R" AND "S" ABOVE.
- LUMBER ----- SEE TM 743-200-1 (DUNNAGE LUMBER) AND FED SPEC MM-L-751, SEE GENERAL NOTES "P", "Q", "R" AND "S" ABOVE.
- NAILS ----- FED SPEC FF-N-105; FOR TOP ASSEMBLY, COMMON, CEMENT COATED OR CHEMICALLY ETCHED, ALT: ANNULAR-RING TYPE NAIL OR PALLET TYPE (MECHANICALLY DEFORMED) NAIL OF SAME SIZE; FOR PALLET, SEE KEY NUMBERS ON PAGE 4. FOR BOTTOM ASSEMBLY, SEE THE SPECIAL NOTE ON PAGE 4.
- STRAPPING, STEEL - FED SPEC QQ-S-781; CLASS 1, TYPE I OR II, HEAVY DUTY, FINISH A (GRADE 2), SIZE 3/4" X .035" OR .031".
- SEAL, STRAP ----- FED SPEC QQ-S-781; TYPE D, STYLE I, II, OR III, CLASS H, FINISH A (GRADE 2).
- STAPLE, STRAP --- FED SPEC FF-N-105; TYPE III, STYLE 3.

- O. IF LESS THAN EIGHT CONTAINERS ARE TO BE LOADED ON A PALLET, IT SHALL BE ACCOMPLISHED BY SUBSTITUTING EMPTY OR REJECT CONTAINERS AS NECESSARY. WHEN (EMPTY/REJECT) FILLER CONTAINERS ARE USED IN PLACE OF OMITTED CONTAINERS TO COMPLETELY FILL OUT A PALLET UNIT, THEY WILL BE MARKED AS SPECIFIED IN MIL-STD-129.
- P. THE PALLET AND ALL WOODEN DUNNAGE USED IN THE UNIT LOAD SHALL BE PRESERVATIVE TREATED IN ACCORDANCE WITH THE PROCEDURES SPECIFIED IN MILITARY SPECIFICATION MIL-B-2427 FOR CLEATED WOODEN BOXES. WHEN THE DUNNAGE CONSISTS OF MORE THAN ONE COMPONENT, IT MUST BE ASSEMBLED PRIOR TO TREATMENT. THE LETTERS PA DENOTING PQ56 (COPPER QUINOLINOLATE), PB DENOTING M-GARD W550 (ZINC NAPHTHENATE EMULSIFIABLE), OR PC DENOTING M-GARD W510 OR CUNAPSOL (COPPER NAPHTHATE) WILL BE APPLIED TO AN OUTER FACE OF A DUNNAGE ASSEMBLY AND TO THE OUTER FACE OF THE CENTER POST ON A 51-1/2" SIDE OF THE PALLET IN LETTERS AT LEAST ONE-INCH HIGH.
- Q. THE WOODS USED FOR THE ASSEMBLY OF THE DUNNAGE ASSEMBLIES AND PALLET MUST BE SELECTED FROM GROUPS II, III AND/OR IV OF MIL-STD-731. ALL OTHER REQUIREMENTS SPECIFIED WITHIN MIL-STD-731 PERTAINING TO THE WOODS USED IN PALLET OR DUNNAGE ASSEMBLY CONSTRUCTION ARE TO BE FOLLOWED.
- R. ANY REQUEST FOR DEVIATION FROM THE PROCEDURES DELINEATED IN THIS DRAWING MUST BE DIRECTED TO THE COMMANDER, U.S. ARMY ARMAMENT RESEARCH, DEVELOPMENT AND ENGINEERING CENTER, ATTN: SMCAR-ESK, ROCK ISLAND, IL 61299-7300, FOR SPECIFIC APPROVAL. FOR EXAMPLE, SPECIFIC APPROVAL MUST BE OBTAINED FOR SUBSTITUTING A DIFFERENT TYPE OF STRAPPING THAN THE STRAPPING SPECIFIED.
- S. IF THE PALLET UNIT IS TO BE TRANSPORTED BY RAILCAR, ONLY WOODS FROM GROUP III OF MIL-STD-731 WILL BE USED FOR PALLET AND DUNNAGE ASSEMBLY CONSTRUCTION.

REVISION

REVISION NO. 1, DATED APRIL 1989, CONSISTS OF:

- 1. REDUCING OVERALL PALLET DIMENSIONS.
- 2. UPDATING THE PALLET UNIT TO CONFORM TO 1 ABOVE.

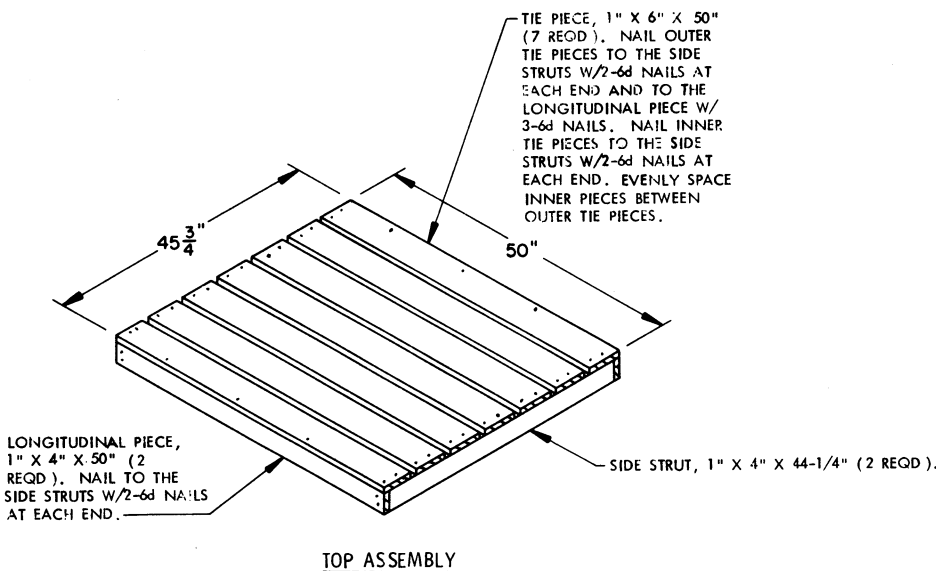


PALLET UNIT

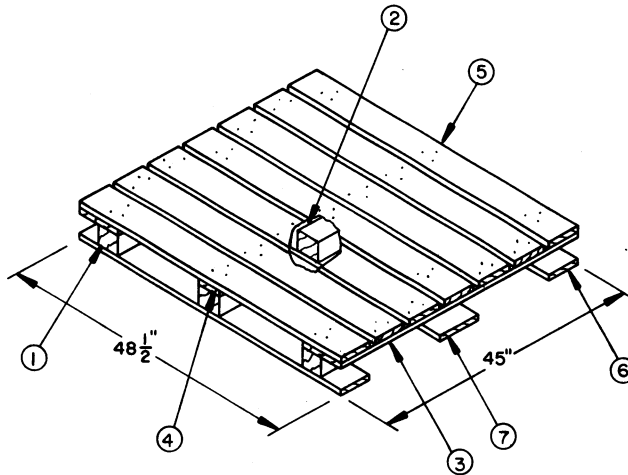
SEE GENERAL NOTE "B" ON PAGE 2.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	31.42	10.47
1" X 6"	31.00	15.50
NAILS	NO. REQD	POUNDS
6d (2")	58	0.34
TYPE II, STYLE 12 8d (2-1/4")	8	0.09
PALLET, SPECIAL, 45" X 48-1/2"	1 REQD	88 LBS
STEEL STRAPPING, 3/4" X .031" OR .035"	61.00' REQD	4.36 LBS
SEAL FOR 3/4" STRAPPING	4 REQD	NIL
STAPLE, 15/16" X 3/4"	20 REQD	NIL

ITEM	WEIGHT
8 CONTAINERS OF BULK EXPLOSIVES @ 176 LBS	1,408 LBS (APPROX)
DUNNAGE	57 LBS
PALLET	89 LBS
TOTAL WEIGHT	1,554 LBS (APPROX)
CUBE	44.8 CU FT (APPROX)



TOP ASSEMBLY



SPECIAL PALLET DETAIL

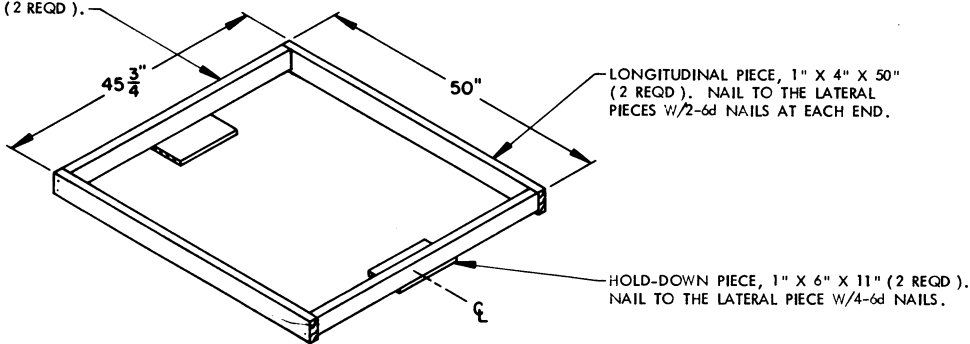
KEY NUMBERS

- ① OUTER POST, 4" WIDE X 2-3/4" HIGH (ACTUAL) X 5-1/2" LONG (6 REQD).
- ② CENTER POST, 4" WIDE X 2-3/4" HIGH (ACTUAL) X 7-1/2" LONG (3 REQD).
- ③ OUTER STRINGER, 1" X 8" X 45" (2 REQD).
- ④ CENTER STRINGER, 1" X 4" X 45" (1 REQD).
- ⑤ TOP DECK BOARD, 1" X 6" X 48-1/2" (7 REQD). NAIL TO SIDE PIECE W/2 NAILS (TYPE II, STYLE 18), 2-1/4" LONG X .120" DIAMETER AT EACH END. NAIL OUTSIDE AND CENTER DECK BOARDS THRU THE STRINGERS INTO THE POSTS W/3 NAILS (TYPE II, STYLE 18), 3" OR 3-1/4" LONG X .135" DIAMETER AT EACH LOCATION. NAIL OTHER DECK BOARDS TO THE STRINGERS W/3 NAILS (TYPE II, STYLE 18), 1-1/2" LONG X .120" DIAMETER AT EACH LOCATION.
- ⑥ OUTER RUNNER, 1" X 6" X 48-1/2" (2 REQD). NAIL TO THE POSTS W/3 NAILS (TYPE II, STYLE 18), 2-1/4" LONG X .120" DIAMETER AT EACH JOINT.
- ⑦ CENTER RUNNER, 1" X 8" X 48-1/2" (1 REQD). NAIL TO THE POSTS W/3 NAILS (TYPE II, STYLE 18), 2-1/4" LONG X .120" DIAMETER AT EACH JOINT.

SPECIAL NOTE:

THE BOTTOM ASSEMBLY WILL BE INSTALLED AFTER THE CONTAINERS HAVE BEEN POSITIONED ON THE PALLET UNIT. LOWER THE BOTTOM ASSEMBLY OVER THE CONTAINERS, TO REST ON THE 48-1/2" SIDES OF THE PALLET. NAIL TO THE PALLET DECK W/2-8d NAILS (DOUBLE-HEADED, TYPE II, STYLE 12) AT EACH END.

LATERAL PIECE, 1" X 2-3/4" (ACTUAL) X 44-1/4" (2 REQD).



BOTTOM ASSEMBLY

(SEE THE SPECIAL NOTE ABOVE)