

APPENDIX 48

UNITIZATION PROCEDURES FOR AMMUNITION AND COMPONENTS PACKED IN CYLINDRICAL METAL CONTAINERS ON 4-WAY ENTRY METAL OR RESIN-TREATED PALLET

**CARTRIDGE, 120MM, APFSDS-T, M829 SERIES, OR
CANISTER, M1028, OR HEAT-MP-T, M830 OR
M830A1, OR TPCSDS-T, M865, PACKED 1 PER
PA116 OR PA171 CONTAINER, UN-ITIZED 30 PER
44" X 40" PALLET; APPROX CON-TAINER SIZE
44-1/2" L X 7-3/4" W X 7-3/4" H**

**NOTICE: THIS APPENDIX CANNOT STAND ALONE BUT MUST BE USED IN CONJUNCTION WITH THE BASIC UNITIZATION
PROCEDURES DRAWING 19-48-4231-20PM1006.**

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U.S. ARMY MATERIEL COMMAND DRAWING

<p>APPROVED, U.S. ARMY RESEARCH, DEVELOPMENT AND ENGINEERING COMMAND</p> <p>REHMSTEDT. MARK.J.12305 48400</p> <p><small>Digitally signed by REHMSTEDT.MARK.J.1230548400 DN: c=US, ou=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=REHMSTEDT.MARK.J.12305484 00 Date: 2016.07.20 12:55:07 -05'00'</small></p> <p style="text-align: right;">RDAR-EIL-TP</p>	<p>CAUTION: VERIFY PRIOR TO USE AT HTTPS://MHP.REDSTONE.ARMY.MIL THAT THIS IS THE MOST CURRENT VERSION OF THIS DOCUMENT. THIS IS PAGE 1 OF 4.</p>		<p style="font-size: 24pt; font-weight: bold;">DECEMBER 1988</p>																										
<p>APPROVED, U.S. ARMY JOINT MUNITIONS COMMAND</p> <p>RUS.ALLEN.J .1230354282</p> <p><small>Digitally signed by RUS.ALLEN.J.1230354282 DN: c=US, ou=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=RUS.ALLEN.J.1230354282 Date: 2016.08.01 12:14:47 -05'00'</small></p> <p style="text-align: right;">AMSJM-LIT</p>	<p>DO NOT SCALE</p>	<p style="font-size: 24pt; font-weight: bold;">NOVEMBER 2016</p>																											
<p>APPROVEDBY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND</p> <p>SHIMP.UPTON .R.1231257183</p> <p><small>Digitally signed by SHIMP.UPTON.R.1231257183 DN: c=US, ou=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=SHIMP.UPTON.R.1231257183 Date: 2016.08.01 14:03:14 -05'00'</small></p> <p style="text-align: right;">U.S. ARMY DEFENSE AMMUNITION CENTER</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">ENGINEER OR TECHNICIAN</td> <td style="width: 10%;">BASIC REV.</td> <td style="width: 65%;">LAURA A. FIEFFER MADELINE BANKS</td> </tr> <tr> <td>ENGINEERING DIVISON</td> <td></td> <td>FIEFFER.LAUR A.A.1230375727 <small>Digitally signed by FIEFFER.LAURA.A.1230375727 DN: c=US, ou=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=FIEFFER.LAURA.A.1230375727 Date: 2015.10.27 14:40:15 -05'00'</small></td> </tr> <tr> <td>TEST ENGINEER</td> <td></td> <td>FELICIANO.AD IN.1259200373 <small>Digitally signed by FELICIANO.ADN.1259200373 DN: c=US, ou=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=FELICIANO.ADN.1259200373 Date: 2015.11.02 13:24:17 -05'00'</small></td> </tr> <tr> <td>TEST REPORT</td> <td style="text-align: center; font-weight: bold;">12-89</td> <td></td> </tr> <tr> <td>EXPLOSIVE SAFETY DIRECTORATE</td> <td></td> <td>TIRONE.JOSEPH. ANDREW.1026683 749 <small>Digitally signed by TIRONE.JOSEPH.ANDREW.1026683749 DN: c=US, ou=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=TIRONE.JOSEPH.ANDREW.1026683749 Date: 2015.12.03 17:53:44 -05'00'</small></td> </tr> </table>	ENGINEER OR TECHNICIAN	BASIC REV.	LAURA A. FIEFFER MADELINE BANKS	ENGINEERING DIVISON		FIEFFER.LAUR A.A.1230375727 <small>Digitally signed by FIEFFER.LAURA.A.1230375727 DN: c=US, ou=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=FIEFFER.LAURA.A.1230375727 Date: 2015.10.27 14:40:15 -05'00'</small>	TEST ENGINEER		FELICIANO.AD IN.1259200373 <small>Digitally signed by FELICIANO.ADN.1259200373 DN: c=US, ou=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=FELICIANO.ADN.1259200373 Date: 2015.11.02 13:24:17 -05'00'</small>	TEST REPORT	12-89		EXPLOSIVE SAFETY DIRECTORATE		TIRONE.JOSEPH. ANDREW.1026683 749 <small>Digitally signed by TIRONE.JOSEPH.ANDREW.1026683749 DN: c=US, ou=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=TIRONE.JOSEPH.ANDREW.1026683749 Date: 2015.12.03 17:53:44 -05'00'</small>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">REVISION NO. 6</td> <td style="width: 75%;">NOVEMBER 2016</td> </tr> <tr> <td colspan="2" style="text-align: center; font-weight: bold;">SEE THE REVISION LISTING ON PAGE 2</td> </tr> <tr> <td>CLASS</td> <td>DIVISION</td> <td>DRAWING</td> <td>FILE</td> </tr> <tr> <td style="text-align: center; font-weight: bold;">19</td> <td style="text-align: center; font-weight: bold;">48</td> <td style="text-align: center; font-weight: bold;">4231/ 48</td> <td style="text-align: center; font-weight: bold;">20PM1006</td> </tr> </table>	REVISION NO. 6	NOVEMBER 2016	SEE THE REVISION LISTING ON PAGE 2		CLASS	DIVISION	DRAWING	FILE	19	48	4231/ 48	20PM1006
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19	48	4231/ 48	20PM1006																										

PALLET UNIT DATA					
ITEMS INCLUDED		*HAZARD CLASS AND DIVISION	*COMPATIBILITY GROUP	APPROX WEIGHT LBS (METAL PALLET)	APPROX WEIGHT LBS (RESIN PALLET)
NSN	DODIC				
1315-					
01-269-2256	C380	1. 2. 1	C	2, 281	2, 258
01-550-4807	C785	1. 3	C	2, 107	2, 084
01-599-5341	C785	1. 3	C	2, 227	2, 204
01-226-7418	C786	1. 2. 1	C	2, 131	2, 108
01-232-4638	C787	1. 2. 1	E	2, 461	2, 438
01-333-0534	C791	1. 2. 1	E	2, 481	2, 458
01-361-5023	C792	1. 2. 1	C	2, 265	2, 242
01-489-1143	CA26	1. 3	C	2, 401	2, 378
01-516-5248	CA38	1. 3	C	2, 431	2, 411

*HAZARD CLASSIFICATION DATA CONTAINED IN THE ABOVE CHART IS FOR GUIDANCE AND INFORMATIONAL PURPOSES ONLY. VERIFICATION OF THE SPECIFIED DATA SHOULD BE MADE BY CONSULTING THE MOST RECENT JOINT HAZARD CLASSIFICATION SYSTEM LISTING OR OTHER APPROVED LISTING(S).

REVISIONS

REVISION NO. 1, DATED JUNE 1996, CONSISTS OF CHANGES PER ECP M4T3008 (#1 – 6) AND ECP M6T8075 (#6) INCLUDING:

1. ADDING GENERAL NOTE "L" (BUNDLING STRAPS).
2. UPDATING "PALLET UNIT DATA" CHART.
3. ADDING DAC DRAWING AND MILITARY SPECIFICATIONS TO GENERAL NOTE "G" (PALLET AND ADAPTERS).
4. ADDING ADDITIONAL NSNS TO GENERAL NOTE "K" (DOT-SP MARKING).
5. UPDATING GENERAL NOTE "C" (STRAP OVERLAP).
6. ADDING ITEMS TO "PALLET UNIT DATA" CHART BY NATIONAL STOCK NUMBER.
7. DELETING STRAP CUTTER GENERAL NOTE AND RE-LETTERING OTHER GENERAL NOTES.
8. ADDING GENERAL NOTE "M" (PA116 DRAWING).

REVISION NO. 2, DATED JANUARY 2001, CONSISTS OF CHANGES PER ECP R7K3011 INCLUDING:

ADDING RESIN-TREATED PALLET AND ASSOCIATED REFERENCES.

REVISION NO. 3, DATED SEPTEMBER 2002, CONSISTS OF CHANGES PER ECP R2T5305 INCLUDING:

1. ADDING PA171 CONTAINER AND ASSOCIATED REFERENCES.
2. ADDING ITEM BY NATIONAL STOCK NUMBER TO THE "PALLET UNIT DATA" CHART.
3. ADDING A NEW NSN TO GENERAL NOTE "K" (DOT-E MARKING).
4. UPDATING THE PALLET UNIT HEIGHTS.
5. ADDING GENERAL NOTE "O" (LOT NUMBER MARKING) AND ASSOCIATED PICTORIAL ON PAGE 3.

REVISION NO. 4, DATED APRIL 2007, CONSISTS OF CHANGES PER ECP R06K2015 (#1), R06K3003 (#2), OR R07K2007 (#1 AND 2) INCLUDING:

1. ADDING ITEM BY NATIONAL STOCK NUMBER TO "PALLET UNIT DATA" CHART.
2. CHANGING GENERAL NOTE "K" REFERENCE FROM "DOT-E-9649" TO "DOT-SP 9649".

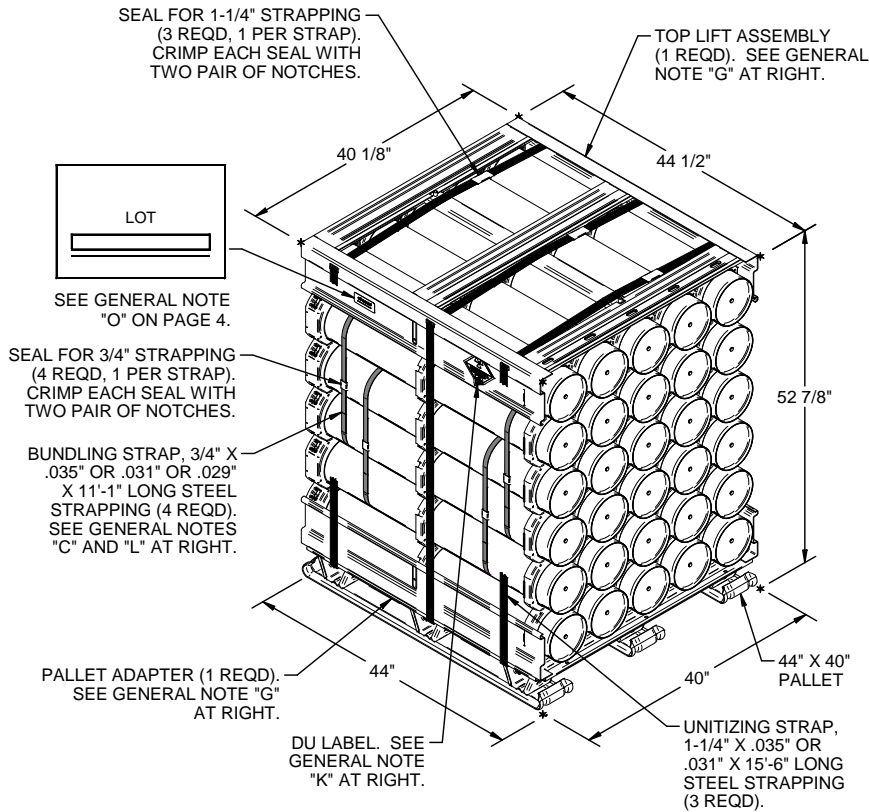
REVISION NO. 5, DATED AUGUST 2010, CONSISTS OF CHANGES PER ECP R07T3003 (#1) AND ECP R10K2004 (#3) INCLUDING:

1. ADDING ITEM BY NATIONAL STOCK NUMBER TO THE "PALLET UNIT DATA" CHART.
2. ADDING LOT NUMBER MARKING ON UNIT LOAD DRAWING ON PAGE 4 AND REWORDING GENERAL NOTE "O" (LOT NUMBER MARKING).
3. ADDING DU LABELING INFORMATION TO GENERAL NOTE "K".

REVISION NO. 6, DATED NOVEMBER 2016, CONSISTS OF CHANGES PER ECP R11T3007 INCLUDING:

ADDING ITEM BY NATIONAL STOCK NUMBER TO THE "PALLET UNIT DATA" CHART.

GENERAL NOTES



METAL PALLET UNIT

SEE GENERAL NOTE "B" AT RIGHT.

30 CONTAINERS OF 120MM CARTRIDGES (1 PER CONTAINER) @ 76 LBS	2,270 LBS
DUNNAGE	106 LBS
PALLET	105 LBS
TOTAL WEIGHT	2,481 LBS (APPROX)
CUBE	54.7 CU FT (APPROX)

BILL OF MATERIAL

METAL PALLET, 44" X 40"	1 REQD	105 LBS
PALLET ADAPTER	1 REQD	41 LBS
TOP LIFT ASSEMBLY	1 REQD	54 LBS
STEEL STRAPPING, 3/4"	44.33' REQD	3.96 LBS
STEEL STRAPPING, 1-1/4"	46.50' REQD	6.64 LBS
SEAL FOR 3/4" STRAPPING	4 REQD	NIL
SEAL FOR 1-1/4" STRAPPING	3 REQD	NIL

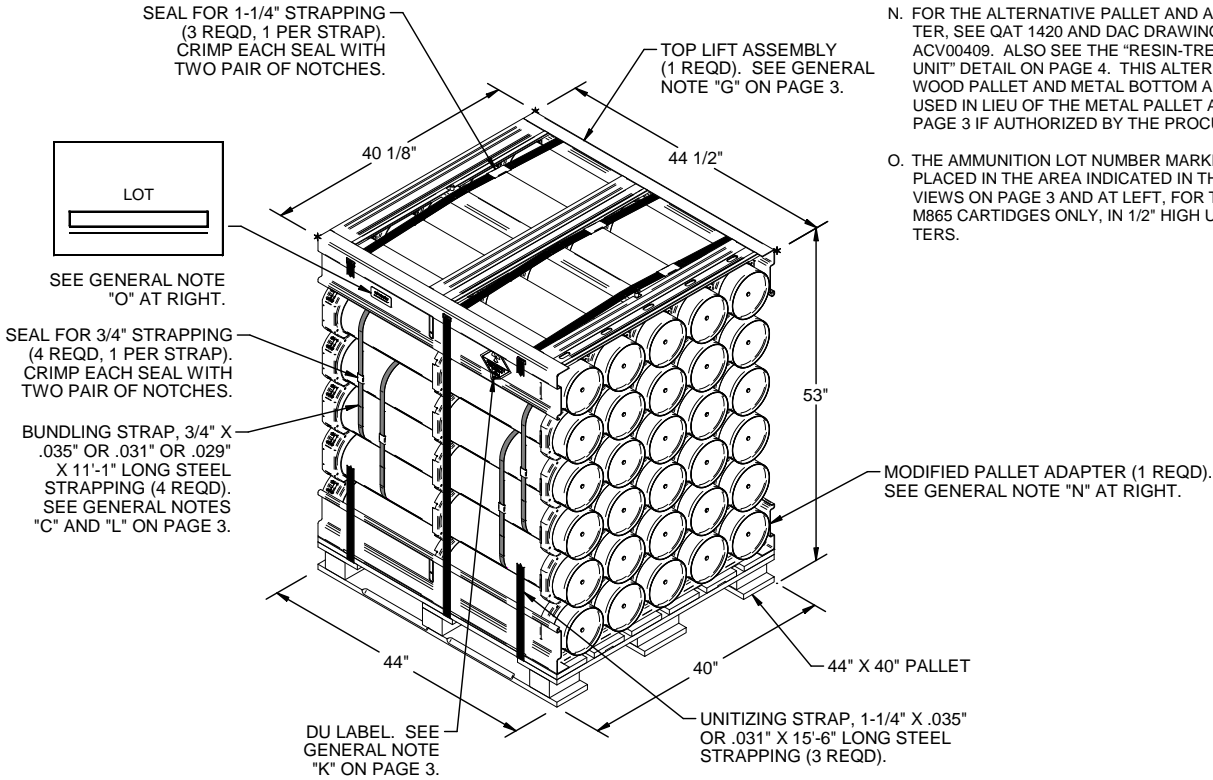
- A. THIS APPENDIX CANNOT STAND ALONE BUT MUST BE USED IN CONJUNCTION WITH THE BASIC UNITIZATION PROCEDURES DRAWING 19-48-4231-20PM1006. TO PRODUCE AN APPROVED UNIT LOAD, ALL PERTINENT PROCEDURES, SPECIFICATIONS AND CRITERIA SET FORTH WITHIN THE BASIC DRAWING WILL APPLY TO THE PROCEDURES DELINEATED IN THIS APPENDIX. ANY EXCEPTIONS TO THE BASIC PROCEDURES ARE SPECIFIED IN THIS APPENDIX.
- B. DIMENSIONS, 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. BUNDLING STRAPS MUST BE TENSIONED AND SEALED PRIOR TO THE APPLICATION OF THE UNITIZING STRAPS. INSTALL BUNDLING STRAPS AS CLOSE TO THE OUTER CONTAINER RINGS AS POSSIBLE, TO AVOID DAMAGE TO THE CONTAINERS. **CAUTION:** STRAPS MUST NOT BE ALLOWED TO OVERLAP.
- D. ALTHOUGH THE CONTAINERS DEPICTED IN THE UNIT LOAD AT LEFT ARE CONSTRUCTED WITH INTERLOCKING DEVICES, THE INTERLOCKS WILL NOT FUNCTION PROPERLY UNLESS THE CONTAINERS ARE POSITIONED SO THAT THE "PINS" OF THE INTERLOCKS ARE FACING UPWARD. THIS ORIENTATION WILL AID IN THE PREVENTION OF CONTAINER MOVEMENT, BOTH Laterally AND LONGITUDINALLY, DURING SHIPMENT OF THE UNIT LOAD.
- E. THE FOLLOWING AMC DRAWINGS ARE APPLICABLE FOR OUTLOADING AND STORAGE OF THE ITEMS COVERED BY THIS APPENDIX.

CARLOADING	19-48-4242/48-5PM1004
TRUCKLOADING	19-48-4243/48-11PM1004
STORAGE	19-48-4250/48-1-2-3-4-14-22PM1004
END OPENING ISO CONTAINER	19-48-4245/48-15PM1009
MILVAN SIDE OPENING ISO CONTAINER	19-48-4244/48-15PA1008
CROP	19-48-4272/48-15PM1016
	19-48-4906/25-CA1707
- F. IF ITEMS COVERED HEREIN ARE UNITIZED PRIOR TO ISSUANCE OF THIS REVISION TO THIS APPENDIX, THE BOXES NEED NOT BE REUNITIZED SOLELY TO CONFORM TO THIS REVISION.
- G. FOR DETAILS OF PALLET AND PALLET ADAPTERS, SEE DAC DRAWING AC200000501, MIL-A-70788 AND MIL-P-70786. FOR AN ALTERNATIVE PALLET AND ADAPTER, SEE GENERAL NOTE "N" ON PAGE 4. FOR PA171 CONTAINER, ONLY REVISION F OR LATER OF DRAWING AC200000470 SHALL BE USED.
- H. THE UNITIZATION PROCEDURES DEPICTED HEREIN MAY ALSO BE USED FOR UNITIZING 120MM CARTRIDGES WHEN IDENTIFIED BY DIFFERENT NATIONAL STOCK NUMBERS (NSN) THAN WHAT IS SHOWN ON PAGE 2, PROVIDED THE CONTAINER DOES NOT VARY FROM WHAT IS DELINEATED HEREIN. THE EXPLOSIVE CLASSIFICATION OF OTHER ITEMS MAY BE DIFFERENT THAN WHAT IS SHOWN.
- J. EMPTY OR REJECT PA116 OR PA171 CONTAINERS WILL BE USED AS FILLER CONTAINERS AS NECESSARY. FILLER CONTAINERS MUST BE INSTALLED IN THE MIDDLE OF THE TOP LAYER(S) OF CONTAINERS. IF FIVE FULL CONTAINERS ARE TO BE OMITTED, ONE FULL LAYER OF CONTAINERS WILL BE OMITTED. WHEN (EMPTY) FILLER CONTAINERS ARE USED IN PLACE OF OMITTED CONTAINERS TO COMPLETELY FILL OUT A LAYER ON A PALLET, THEY WILL BE MARKED AS SPECIFIED IN ARDEC DRAWING 12982865.
- K. FOR DODICS C380, C786, C792 AND CA26 ONLY, THE TOP COVER OF THE PALLET WILL BE MARKED "DOT-SP 9649" IN ONE-INCH WHITE LETTERS NEAR THE CLOSED END OF THE CONTAINERS. A "RADIOACTIVE YELLOW-II" LABEL MUST ALSO BE APPLIED TO THE TOP LIFT ASSEMBLY, SEE DAC DRAWING ACV00832 FOR DETAILS.
- L. WHEN TWO OR MORE LAYERS ARE OMITTED, THE BUNDLING STRAP REQUIREMENT WILL CHANGE. A FOUR LAYER UNIT WILL HAVE THE TWO BUNDLING STRAPS OMITTED THAT WERE AROUND THE THIRD, FOURTH AND FIFTH LAYERS. THE REMAINING BUNDLING STRAPS WILL SURROUND THE SECOND THROUGH FOURTH LAYERS. A UNIT WITH THREE OR LESS LAYERS DOES NOT REQUIRE BUNDLING STRAPS. THERE WILL BE NO CHANGES IN THE STABILIZING STRAP REQUIREMENTS.

(CONTINUED ON PAGE 4)

(GENERAL NOTES CONTINUED FROM PAGE 3)

- M. FOR DETAILS OF PA116 CONTAINER, SEE ARDEC DRAWING 9386831. FOR DETAILS OF PA171 CONTAINER, SEE ARDEC DRAWING 12990755.
- N. FOR THE ALTERNATIVE PALLET AND ASSOCIATED ADAPTER, SEE QAT 1420 AND DAC DRAWINGS ACV00248 AND ACV00409. ALSO SEE THE "RESIN-TREATED PALLET UNIT" DETAIL ON PAGE 4. THIS ALTERNATIVE ENHANCED WOOD PALLET AND METAL BOTTOM ADAPTER MAY BE USED IN LIEU OF THE METAL PALLET AND ADAPTER ON PAGE 3 IF AUTHORIZED BY THE PROCURING ACTIVITY.
- O. THE AMMUNITION LOT NUMBER MARKING SHALL BE PLACED IN THE AREA INDICATED IN THE ISOMETRIC VIEWS ON PAGE 3 AND AT LEFT, FOR THE M829A3 AND M865 CARTRIDGES ONLY, IN 1/2" HIGH UNDERLINED LETTERS.



RESIN-TREATED PALLET UNIT

SEE GENERAL NOTE "B" ON PAGE 3.

30 CONTAINERS OF 120MM CARTRIDGES (1 PER CONTAINER) @ 76 LBS	-----	2,270 LBS
DUNNAGE	-----	106 LBS
PALLET	-----	82 LBS
<hr/>		
TOTAL WEIGHT	-----	2,458 LBS (APPROX)
CUBE	-----	54.8 CU FT (APPROX)

BILL OF MATERIAL				
RESIN PALLET, 44" X 40"	-----	1 REQD	-----	82 LBS
PALLET ADAPTER	-----	1 REQD	-----	41 LBS
TOP LIFT ASSEMBLY	-----	1 REQD	-----	54 LBS
STEEL STRAPPING, 3/4"	-----	44.33' REQD	-----	3.92 LBS
STEEL STRAPPING, 1-1/4"	-----	46.69' REQD	-----	6.68 LBS
SEAL FOR 3/4" STRAPPING	-----	4 REQD	-----	NIL
SEAL FOR 1-1/4" STRAPPING	-----	3 REQD	-----	NIL