

## Information Paper

### MIL-STD-129R w/Ch1 or Ch2 COMPLIANT BAR CODE MARKING OF PACKAGING

#### CONTAINING ITEMS WITH IUID

(Rev 20 April 2020)

#### NOTICE OF INCLUDED CHANGES:

**This revision provides additional information about the requirements to provide serial number lists and unique item identifier (UII) lists in cases where an intermediate or exterior container contains more than five items with serial numbers or UIIs. It describes important differences between PDF 417 marks and Macro PDF 417 marks. It also includes other minor changes. Changes from the 18 Feb 20 revision are displayed in red.**

#### MARKING EXTERIOR CONTAINERS

##### Exterior Container References:

1. *Exterior Container definition:* “Exterior container. A container, bundle, or assembly that is sufficient by reason of material, design, and construction to protect unit packs and intermediate containers and their contents during shipment and storage. It can be a unit pack or a container with a combination of unit packs or intermediate containers. An exterior container may or may not be used as a shipping container.”
2. *Text marking requirements:* para 5.1.2 and 5.1.2.1
3. *Bar code marking requirements:* para 5.4.1.2 , 5.4.1.2.1 thru 5.4.1.2.6, Figure 1 and Table A-IV

(NOTE: MIL-STD-129P w/ch4, published in 2007 and replaced in 2014, **may apply to a very few old contracts**. It specifies exterior container markings far differently than MIL-STD-129R. 129P w/ch4-specified marks consist of a combination of linear bar codes and PDF417 (stacked linear) bar codes. If contractually required to mark conforming to MIL-STD-129P w/ch4, review that document.)

**The instructions below may be used to manually validate MIL-STD-129R/129R w/ch1 or ch2 compliance of markings of the exterior container packaging of items bearing IUID.**

**The marking requirement for unit packs is different and addressed **later** in this information paper.**

EXAMPLE OF AN EXTERIOR CONTAINER CONTAINING A SINGLE UII/SN

**TO MANUALLY VALIDATE A MARK, LOOK FOR THIS DATA STRUCTURE IN THE DECODED MARK:**

(data compliance indicator)(format trailer separator)06(data element separator)4K0003AD(data element separator)5K0000001(data element separator)8KW52P1J15D0060(data element separator)N6115011115678(data element separator)17V33825(data element separator)S29511509225(data element separator)25SD33825SR61TDPM002295115092-25(format trailer separator)(message trailer)

EXAMPLE OF AN EXTERIOR CONTAINER CONTAINING A SINGLE NSN WITH TWO UIIs/SNs \*

**TO MANUALLY VALIDATE A MARK, LOOK FOR THIS DATA STRUCTURE IN THE DECODED MARK:**

(data compliance indicator)(format trailer separator)06(data element separator)4K0003AD(data element separator)5K0000001(data element separator)8KW52P1J15D0060(data element separator)N6115011115678(data element separator)17V33825(data element separator)S295115092-25(data element separator)25SD33825SR61TDPM002295115092-25(data element separator) (format trailer separator)06(data element separator)S295115092-26(data element separator)25SD33825SR61TDPM002295115092-26(format trailer separator)(message trailer)

\*The SN may be encoded either before or following the UII.

[NOTE: Marking an intermediate container or an exterior container that contains more than 5 items bearing IUID and/or SN is different. All UIIs are encoded in the PDF417 mark or, if one PDF417 mark is not adequate to contain all of the UIIs, in macro PDF417 symbols. If there are more than 5 serial numbers, none are included in the PDF417 mark on the packaging. "A serial number list shall be provided in lieu of marking the packaging." For each exterior (or intermediate) container, the (serial number) "list shall contain a human-readable NSN and the serial number(s) accompanied by a bar code (2D (PDF417) and/or linear (Code 39)) identifying each serialized item in the container. Copies of the list(s) shall be placed inside and outside a container. The words "SERIAL NUMBER LIST INSIDE" shall be marked on the identification-marked side of the container. The list(s), of included serial numbers, attached to the outside of each container shall be enclosed in a water resistant envelope for possible use during receipt, inventory, and pick processes (to preclude opening the packed item)." In addition to the serial number list, para 5.4.1.2.2c of the standard requires a UII list, similar to the serial number list, but encoded in a PDF417 mark or in a Macro PDF 417 mark. For additional specifics, see the subsections of paragraph 5.4.1 in MIL-STD-129R w/ch1 or ch2. In summary, the serial numbers are encoded only on a SN or SN/UII list (not in the PDF417 packaging mark). The UIIs are encoded in the PDF 417 packaging mark AND on a UII or SN/UII list.]

It is important to understand that a "Macro PDF 417 mark" is NOT just "multiple PDF417 marks". Macro PDF417 marks are encoded containing additional control data that (1) identifies that the individual PDF 417 symbol is part of a macro, consisting of multiple PDF 417 symbols (2) identifies the order of each of the PDF 417 symbols in the series and (3) enables the data in all of the PDF 417 symbols in the macro to be reassembled, in order, after all of the individual PDF 417 symbols have been scanned (in any order). Creation of a Macro PDF417 mark must be done by someone who understands Macro PDF 417 marking. And scanning of Macro PDF symbols must be done with a scanner/imager specifically enabled to process Macro PDF 417 marks.

In the examples above,

Data Element	Data Identifier	Example Data**
Contract Line Item Number (CLIN)	4K	0003AD
Contractor Shipment Number	5K	0000001
Contract Number ***	8K	W52P1J-15-D-0060
NSN*	N	6115011115678
CAGE Code	17V	33825
First SN	S	295115092-25
First UII	<u>25S</u>	D33825SR61TDPM002295115092-25

Second SN	S	295115092-26
Second UII	<u>25S</u>	D33825SR61TDPM002295115092-26

\* If item has an NSN, encode it, without hyphens, in the data string between the Contract Number and the CAGE Code. If no NSN, omit that data element.

\*\* Data format type and content is specified in Table A-IV of MIL-STD-129R w/ch2

\*\*\* Also referred to as Procurement Instrument Identifier (PIID). Encode the contract number, omitting any hyphens.

### MARKING UNIT PACKS

#### Unit Pack References:

1. *Unit Pack definition:* "Unit pack. The first tie, wrap, or container applied to a single item, or a quantity thereof, or to a group of items of a single stock number, preserved or unpreserved, which constitutes a complete or identifiable package."
2. *Text marking requirements:* para 5.1.1
3. *Bar code marking requirements:* para 5.4 through 5.4.1.1.2, Figure 1 and Table A-IV

NOTE: In a few cases, a Unit Pack or Intermediate Container must be marked like an Exterior Container, instead of the normal marking prescribed for a Unit Pack or an Intermediate Container. This is done only in those cases where (1) the item in question would customarily be shipped as a single Unit Pack or single Intermediate Container and (2) where the packaging of the unit pack or intermediate container is sufficient, without additional packing, to serve as an exterior container for a shipment by common carrier. **If in doubt as to whether this use case applies to a specific item, contact the procuring office.**

The minimum data elements that are required to be bar coded are the NSN, the serial number (SN) and the UII.

1. The NSN may be encoded in a linear bar code or (preferred) included in the PDF417 symbol containing the SN and UI.
2. The SN and the UII must be encoded in a PDF417 symbol.

EXAMPLE OF AN UNIT PACK CONTAINING A SINGLE UII/SN ENCODED USING DATA IDENTIFIERS AND WITH THE NSN ENCODED IN THE PDF417 MARK (rather than in a linear mark): \*

**TO MANUALLY VALIDATE A MARK, LOOK FOR THIS DATA STRUCTURE IN THE DECODED MARK:**

(data compliance indicator)(format trailer separator)06(data element separator)  
N6115011115678(data element separator)S295115092-25(data element  
separator)25SD33825SR61TDPM002295115092-25(format trailer separator)(message trailer)

EXAMPLE OF A PDF417 MARK ON A UNIT PACK CONTAINING A SINGLE UII/SN ENCODED USING DATA IDENTIFIERS AND WITH THE NSN SEPARATELY ENCODED IN A LINEAR CODE 39 BAR CODE.\*

**TO MANUALLY VALIDATE A MARK, LOOK FOR THIS DATA STRUCTURE IN THE DECODED MARK:**

(data compliance indicator)(format trailer separator)06(data element separator)S295115092-25(data element separator)**25SD**33825SR61TDPM002295115092-25(format trailer separator)(message trailer)

\*The SN may be encoded either before or following the UII.

Table A-IV of MIL-STD-129R w/ch2 addresses the encoding of multiple serial numbers and UIIs.

**NOTES APPLYING TO BOTH EXTERIOR CONTAINER AND UNIT PACK ENCODING**

1. Copies of both MIL-STD-129P w/ch4 and MIL-STD-129R w/ch2 may be downloaded at [https://quicksearch.dla.mil/qsDocDetails.aspx?ident\\_number=35520](https://quicksearch.dla.mil/qsDocDetails.aspx?ident_number=35520)
2. Shipments will likely also require marking with a Military Shipping Label (MSL), also described in MIL-STD-129R w/ch2, but **beyond the scope** of this packaging marking information sheet.
3. This information paper does not address the human readable text part of the MIL-STD's marking requirements. For that, see para 5.1.1 and 5.1.2 of the MIL-STD.
4. Data identifiers encoded in the example strings are shown in **bold** type; do not bold when encoding. In some examples, the "D" is underlined for emphasis. Do not underline the "D".
5. Control characters (RS, GS and EoT are non-printable, ASCII coded, control characters) encoded in the string are as follows:

data compliance indicator [ ]>

format trailer separator RS (ASCII decimal value 30; do NOT encode as "RS")

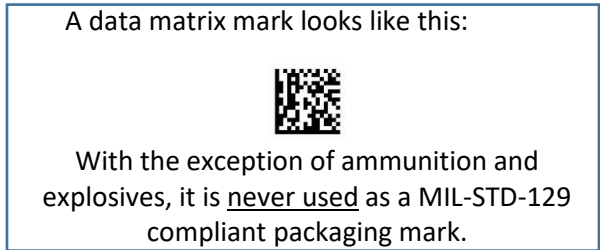
data element separator GS (ASCII decimal value 29; do NOT encode as "GS")

message trailer EoT (ASCII decimal value 4; do NOT encode as "EoT")

6. Always encode the UII with Data Identifier "25S", which means that what follows is the complete UII, including the Issuing Agency Code (underlined for emphasis in examples above)! UIIs, serial numbers and part numbers may include the special characters "-" and "/" in the encoded data.
7. Data identifiers are used, so format header is "06"
8. Do NOT encode carriage returns in the PDF417 mark. Since format "06" is used, the entire contents are encoded with NO spaces in the data string.
9. If data is encoded in PDF417 as specified in Table A-IV, there is no requirement for any linear bar code on the unit or intermediate package (in MIL-STD-129R w/ch2, Figure 18 shows linear bar codes; Figure 1 does not).
10. Do NOT rely completely on this information sheet. See MIL-STD-129R w/ch2, especially Figures 1 and 18, paragraphs 5.1, 5.4 and A.2.5 and Table A-IV.
11. It is important to read the user manual for the printer or laser engraver or barcode generating software (i.e., how to do this in ZPL (Zebra Printer Language for a Zebra Printer) is different than doing it on a Zebra Printer using BarTender as front-end software).
12. If you encode one of the examples above and read it with a bar code reader and anywhere in the string you read the (human readable) characters "GS", you likely encoded it incorrectly.
13. With the exception of ammunition and explosives, MIL-STD-129 compliant data is always encoded in a pdf 417 and/or Code 39 bar code, NEVER in a data matrix symbol.

14. From 2007 to 2014, the latest version of MIL-STD-129 was MIL-STD-129P w/Ch4. The principal difference between 129P w/ch4 and **129R or 129R w/ch1 or 129R w/ch2** guidance for encoding information on unit level packaging of an item containing IUID is that 129P w/ch4 did not require “enveloping” (linking) the SN and the UII of each item. Following are examples of what is encoded in the PDF417 symbol of a unit pack containing two items with serial numbers and UIIs:

- a. MIL-STD-129P w/ch4: “(data compliance indicator)(format trailer separator)06(data element separator)S295115092-25(data element separator)S295115092-26(data element separator)25SD33825SR61TDPM002295115092-25(data element separator)25SD33825SR61TDPM002295115092-26(format trailer separator)(message trailer)
- b. MIL-STD-129R and R w/ch1: (data compliance indicator)(format trailer separator)06(data element separator)S295115092-25(data element separator)25SD33825SR61TDPM002295115092-25(format trailer separator)06(data element separator)S295115092-26(data element separator)25SD33825SR61TDPM002295115092-26(format trailer separator)(message trailer)



**THE EMBEDDED .PDF DOCUMENT BELOW IS A PAGE EXTRACTED FROM MIL-STD-129R W/CH1 THAT PROVIDES A PICTURE OF SAMPLE PACKAGING MARKS AND SHOWS WHERE THE PACKAGING MARKS ARE LOCATED ON THE PACKAGE.**

This information sheet downloadable at:

<https://www.usarmyamis.army.mil/Customersupport/CorrectEncodingPerMIL-STD-129R.pdf>

Automated Movement and Identification Solutions (AMIS)

Revised 20 April 2020

POC: DSN 686-0547, (703) 806-0547

[usarmy.belvoir.peo-eis.list.amis-iuid@mail.mil](mailto:usarmy.belvoir.peo-eis.list.amis-iuid@mail.mil)



MIL-STD-129Rwch1  
Extract.pdf