

|   |                                 |                        |
|---|---------------------------------|------------------------|
| <b>SPECIFICATION</b><br><b>AmerisourceBergen Distribution Services</b>  |                                 | <b>Pages</b><br><br>23 |
| <b>SOP Title and Version:</b><br>SSC-SPEC-001 CMO Serialization Specification [r02]   |                                 |                        |
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**Author:**

| Name and Title   | Signature | Date |
|--|-----------|------|
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Revision History

| Version | Date        | Author    | Description  |
|---------|-------------|-----------|--|
| 1.0     | 23-FEB-2016 | M. Sample | Initial Release  |
| 1.1     | 15-MAR-2016 | M. Sample | Revised to cover all of ABC CMOs and updated for tertiary packaging GTINS where required.  |
| 2.0     | 16-MAR-2016 | M. Sample | Added packaging prefix for vials   |
| 2.1     | 19-APR-2016 | M. Sample | Corrected typo that indicated ABC shall manage serial numbers; correct statement is that CMOs shall manage...  |
| 6       | 21-APR-2106 | M. Sample | <ul style="list-style-type: none"> <li>- Revised requirements to address issues with India (DGFT) specific export requirements: packaging indicators on GTINs &amp; SSCC on Partial</li> <li>- Added specific requirements about EPCIS exchange (AS2 &amp; required events)</li> <li>- Differentiated between SSCC required for a pallet from the packaging line vs. logistics SSCC</li> </ul> |
| r[02]   | 20-JUL-2018 | M. Sample | Revised to remove requirement to permit YYMMDD format in the human readable format and explicitly recommend the use YYYY-MM, YYYY-MMM-DD, &, YYYY-MM, or YYYY-MMM.   |

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## 1. Purpose

The purpose of this document is to provide the minimum set of requirements to be used when designing compliant product labeling and packaging for the Drug Supply Chain and Security Act (DSCSA). Examples have been provided as guidance, however the final label design shall be approved by all required parties including Packaging, Regulatory, Quality, Engineering, and Marketing.

Requirements contained are the aggregation of requests from the wholesaler business, global standards organization, and current best practices. For each product, it is the assumption that AmerisourceBergen Business will work the Contract Manufacturer to determine the optimal label layout, font size, and material. It is the goal to standardize upon layouts and proof sharing where possible.

## 2. Scope

This document contains labeling guidelines and examples for applying serialization markings to all applicable levels of product packaging, including case and pallet labels. At this time, the serialization barcode and labeling markings do not replace the current FDA required NDC and linear barcode.

This document applies to all contract manufacturers or packagers that are partnered with any AmerisourceBergen business, including BluePoint Laboratories, MWI Animal Health and American Health Packaging.

### 3. Roles & Responsibilities

| Role                           | Responsibility   |
|--------------------------------|--|
| AmerisourceBergen product team | Own overall product and all approvals, such as artwork, are performed.   |
| Contract Manufacturer          | Contracted entity that manufactures, or packages, products on behalf of AmerisourceBergen business units. Responsible for meeting the requirements for serializing AmerisourceBergen products. |
| Secure Supply Chain Operations | AmerisourceBergen's global serialization operations team. All integrations for serial number transactions for CMOs are managed by the SSC Operations Team.                                     |

#### 4. Definitions, Acronyms and Abbreviations

| ACRONYM/ ABBREVIATION     | DEFINITION  |
|---------------------------|---|
| SSCC                      | Serialized Shipping Container Code  |
| GTIN                      | Global Trade Item Number  |
| AI(00)                    | This is the GS1 Application Identifier for SSCC. The number that follows a (00) is the SSCC number.   |
| AI(01)                    | This is the GS1 Application Identifier for GTIN. The number that follows a (01) is the products GTIN number.  |
| AI(10)                    | This is the GS1 Application Identifier for batch / lot number. The number that follows a (10) is the products batch/lot number.   |
| AI(17)                    | This is the GS1 Application Identifier for expiration date in YYMMDD format. The number that follows a (17) is the date.  |
| AI(21)                    | This is the GS1 Application Identifier for the product's serial number. The number that follows a (21) is the serial number.  |
| AI(30)                    | This is the GS1 Application Identifier for the quantity contained in a particular packaging unit. The number that follows a (30) is the quantity. This identifier is being retired by HDA and is not required in the 2D barcodes. |
| Serial Number Disposition | At the end of a batch run, this is the information associated with all commissioned serial numbers, including status and packaging aggregation hierarchy.   |
| Primary Packaging         | This is the lowest unit of packaging that requires serialization. Typically referred to as the lowest unit of sale. Examples of primary packaging are Bottles, Unit Cartons, and Wallets  |
| Interpack Packaging       | This is the level of packaging between the primary and case. Examples of Intermediate packaging are Inner Packs.  |
| EPCIS                     | Electronic Product Code Information Services (EPCIS) is a global GS1 Standard for creating and sharing visibility event data, both within and across enterprises.   |
| GS1 DataMatrix            | A Data Matrix code is a two-dimensional matrix barcode consisting of black and white "cells" or modules arranged in either a square or rectangular pattern.   |
| CMO                       | Contract Manufacturer producing product on AmerisourceBergen Business's behalf  |
| Commissioning Event       | The event that indicates that a serial number is born; typically contains lot, expiration, GTIN and serial number   |
| Pack Event                | The event that links a child serial number to a parent serial number. Eaches to Cases, Cases to Pallets, etc.   |
| Ship event                | The Event that provide shipping and purchasing information for all serial numbers physically shipped  |

## 5. References

| Document  | Location  |
|---|---|
| HDA Guidelines for Bar Coding in the Pharmaceutical Supply Chain  | <a href="http://www.hda.org/publications/hda-guidelines-for-bar-coding-in-the-pharmaceutical-supply-chain-quick-start-guide">http://www.hda.org/publications/hda-guidelines-for-bar-coding-in-the-pharmaceutical-supply-chain-quick-start-guide</a> |
| GS1 AIDC Guideline  | <a href="http://www.gs1.org/sites/default/files/docs/gsmg/healthcare/AIDC_Healthcare_Imp_Guide.pdf">http://www.gs1.org/sites/default/files/docs/gsmg/healthcare/AIDC_Healthcare_Imp_Guide.pdf</a>   |
| GS1 DataMatrix  | <a href="http://www.gs1.org/sites/default/files/docs/barcodes/GS1_DataMatrix_Introduction_and_technical_overview.pdf">http://www.gs1.org/sites/default/files/docs/barcodes/GS1_DataMatrix_Introduction_and_technical_overview.pdf</a>               |
| FDA SNI Guidance  | <a href="http://www.fda.gov/downloads/RegulatoryInformation/Guidances/UCM206075.pdf">http://www.fda.gov/downloads/RegulatoryInformation/Guidances/UCM206075.pdf</a>   |
| GS1 General Specifications Version 1.4  | <a href="http://www.gs1.org/docs/gsmg/barcodes/GS1_General_Specifications.pdf">http://www.gs1.org/docs/gsmg/barcodes/GS1_General_Specifications.pdf</a>   |
| H.R. 3024; Drug Quality and Security Act (DQSA), Title II – Drug Supply Chain Security Act (DSCSA)      | <a href="http://www.fda.gov/Drugs/DrugSafety/DrugIntegrityandSupplyChainSecurity/DrugSupplyChainSecurityAct/">http://www.fda.gov/Drugs/DrugSafety/DrugIntegrityandSupplyChainSecurity/DrugSupplyChainSecurityAct/</a>                               |
| FDA Safety Considerations for Container Labels and Carton Labeling Design to Minimize Medication Errors | <a href="https://www.fda.gov/downloads/drugs/guidances/ucm349009.pdf">https://www.fda.gov/downloads/drugs/guidances/ucm349009.pdf</a>   |

## 6. Requirements

### 6.1 General Requirements

These are the general requirements for all products manufactured and packaged on behalf of AmerisourceBergen

| Rqmt ID | Requirement   | Mand/Recom   |
|---------|---|--|
| GEN_010 | Contract Manufacturers shall follow GS1 standards for encoding information in a 2D DataMatrix   | Mandatory  |
| GEN_020 | Contract Manufacturer shall manage the generation and allocation of all serial numbers.   | Mandatory  |
| GEN_021 | Contract Manufacturers shall manage their OWN SSCC 18 codes aligning to GS1 Standards   | Mandatory  |
| GEN_025 | Contract Manufacturers shall generate serial numbers that are a minimum length of 8 digits.   | Mandatory  |
| GEN_026 | If no prior serialization strategy defined, contract manufacturers shall generate NUMERIC serial numbers. (non-alpha numeric)   | OPTIONAL → Will align to existing CMO SN Strategy        |
| GEN_027 | Contract Manufacturers shall not start a serial number with a 0.  | Mandatory - To minimize risk of data truncation.         |
| GEN_030 | Contract manufacturers shall receive the primary, or lowest unit of sale, GTIN, from the AmerisourceBergen Business team.   | Mandatory  |
| GEN_031 | If no prior serialization strategy defined, it is preferred that contract manufacturers use the ABC preferred packaging indicators, see table 1, for higher levels of packaging above the each. | OPTIONAL → Will align to existing CMO SN Strategy        |
| GEN_032 | In the event that a contract manufacturer will not use the ABC preferred packaging indicators, they shall communicate those different indicators to the ABC team.                               | Optional   |
| GEN_040 | Contract Manufacturers may implement product aggregation for all packaged product if their strategy is to aggregate. This includes from the each, to the interpack (if applicable), and pallet. | OPTIONAL → this is only if a CMO has plans to aggregate. |

| GTIN Prefix | Packaging Level   |
|-------------|---|
| 0           | Each – Bottle / Unit Carton / Vial Multi-Pack Carton / Wallet |
| 2           | Interpack – Pack Bundle (Bottle or Vial Cartons)              |
| 3           | Interpack – Pack Carton (HUD, Wallet)                         |
| 6           | Shipper Case  |
| 8           | Pallet (where required by local country regulations)          |

**Table 1 – Packaging Level & GTIN packaging digit**

## 6.2 Each and Interpack Labeling Requirements

The following requirements are applicable to all less than case packaging down to the lowest unit of sale and Interpack packaging: Bottles, Inner Packs, Cartons, etc. It is recommended to implement those optional requirements when label real estate permits.

| Rqmt ID | Requirement   | Mand/Recom                                    |
|---------|---|---|
| LBL_010 | Contract Manufacturers shall label their primary, lowest unit of sale, with a 2D GS1 DataMatrix ECC200  | Mandatory                                     |
| LBL_050 | Contract Manufacturers shall encode the GTIN in the 2D GS1 DataMatrix AI(01) for the lowest saleable unit.  | Mandatory                                     |
| LBL_060 | Contract Manufacturers shall encode the Serial Number in the 2D GS1 DataMatrix AI(21) for the lowest saleable unit.   | Mandatory                                     |
| LBL_070 | Contract Manufacturers shall encode the Lot Number in the 2D GS1 DataMatrix AI(10) for the lowest saleable unit.  | Mandatory                                     |
| LBL_080 | Contract Manufacturers shall encode the Expiration Date in the 2D GS1 DataMatrix AI(17) for the lowest saleable unit. This should be stored in YYMMDD format, per GS1 AIDC standards.   | Mandatory                                     |
| LBL_130 | Contract Manufacturers shall label their lowest unit of sale with the GTIN in Human Readable format   | Mandatory                                     |
| LBL_140 | Contract Manufacturers shall label their lowest unit of sale with the Serial Number in Human Readable format  | Mandatory                                     |
| LBL_150 | Contract Manufacturers shall label their lowest unit of sale with the Lot Number in Human Readable format   | Mandatory                                     |
| LBL_160 | Contract Manufacturers shall label their lowest unit of sale with the Expiration Date in Human Readable format; YYYY-MMM-DD, YYYY-MMM, YYYY-MM are the acceptable formats.<br><br>Dates may be required with either hyphens, space or forward (\) or backslash (/) to separate the portions of the expiry date.<br><br>The use of YYMMDD is not acceptable. | Mandatory                                     |
| LBL_070 | Contract Manufacturers shall label any Interpack packaging, if applicable, with a 2D GS1 DataMatrix ECC200  | Mandatory (if required to enable aggregation) |
| LBL_075 | Contract Manufacturers shall encode the GTIN in the 2D GS1 DataMatrix AI(01) for the interpack.   | Mandatory (if required to enable aggregation) |
| LBL_076 | Contract Manufacturers shall encode the Serial Number in the 2D GS1 DataMatrix AI(21) for the interpack.  | Mandatory (if required to enable aggregation) |
| LBL_080 | Contract Manufacturers shall encode the Lot Number in the 2D GS1 DataMatrix AI(10) for the interpack.   | Mandatory (if required to enable aggregation) |

| Rqmt ID | Requirement  | Mand/Recom                                    |
|---------|--|---|
| LBL_085 | Contract Manufacturers shall encode the Expiration Date in the 2D GS1 DataMatrix AI(17) for the interpack. This should be stored in YYMMDD format, per GS1 AIDC standards.   | Mandatory (if required to enable aggregation) |
| LBL_090 | Contract Manufacturers shall label any Interpack packaging, if applicable, with the GTIN in Human Readable format  | Mandatory                                     |
| LBL_100 | Contract Manufacturers shall label any Interpack packaging, if applicable, with the Serial Number in Human Readable format   | Mandatory                                     |
| LBL_110 | Contract Manufacturers shall label any Interpack packaging, if applicable, with the Lot Number in Human Readable format  | Mandatory                                     |
| LBL_120 | <p>Contract Manufacturers shall label any Interpack packaging, if applicable, with the Expiration Date in Human Readable format; YYYY-MMM-DD, YYYY-MMM, YYYY-MM are the acceptable formats.</p> <p>Dates may be required with either hyphens, space or forward (\) or backslash (/) to separate the portions of the expiry date.</p> <p>The use of YYMMDD is not acceptable.</p> | Mandatory                                     |
| LBL_170 | Contract Manufacturers shall verify the readability of the 2D GS1 DataMatrix, containing serialization information, to a minimum of a ISO Grade C  | Recommended, to be agreed upon with CMO       |

### 6.2.1 Primary / Interpack Label Example 1:

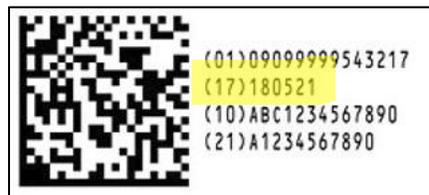
Below is an example of a 22x22 GS1 DataMatrix with GTIN, Batch, Expiration, and Serial Number all encoded in the DataMatrix. When space is not a limiting factor, such as on new labeling design, it may be preferred to keep the human readable information together as illustrated below.



For expiration date formatting, YYYY-MMM-DD, YYYY-MMM, YYYY-MM are the acceptable formats. Dates may be required with either hyphens, space or forward (\) or backslash (/) to separate the portions of the expiry date.

The use of YYMMDD is not acceptable. The use of YYMMDD is confusing to the end prescriber and may lead to misinterpretation of the expiration date.

The below example is **NOT** acceptable:



### 6.2.3 Primary Label Example #2:

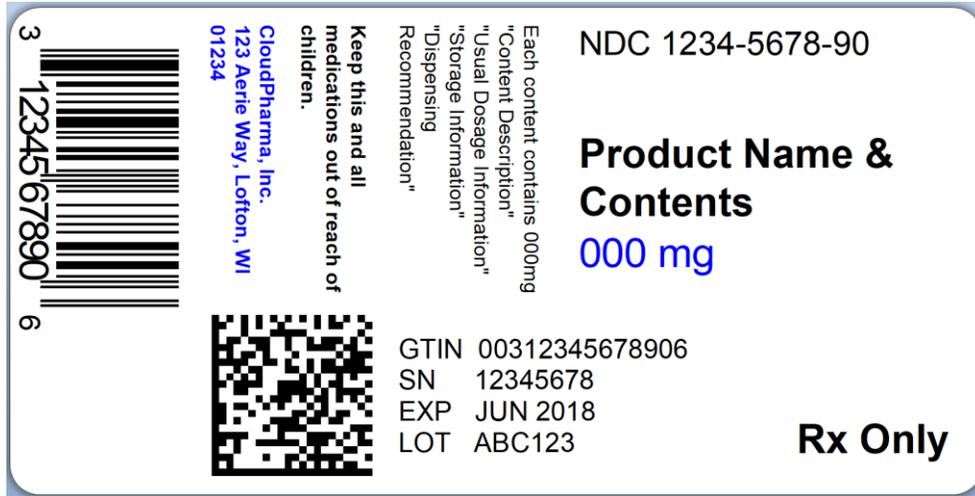
Below is an example of a 22x22 DataMatrix with GTIN, Batch, Expiration, and Serial Number all encoded in the DataMatrix. However if space is a consideration, and GTIN, Lot, and Expiration date are already present on the primary packaging, only serial number was printed next to the DataMatrix:



It is recommended to use "SN", or "Ser No" to designate that the following information is the product serial number.

### 6.2.4 Primary Label Example #3:

Below is an example of a unit label including the required GS1 ECC 200 Data Matrix and Human Readable Information.



The label is a rectangular white box with a blue border. On the left side, there is a vertical barcode with the number 3 at the top and 6 at the bottom. To the right of the barcode is the number 1234567890. Below the barcode is a square QR code. To the right of the QR code is the text: "Keep this and all medications out of reach of children." followed by "CloudPharma, Inc.", "123 Aerie Way, Lofton, WI", and "01234". To the right of the QR code is a list of fields: "Content Description", "Usual Dosage Information", "Storage Information", "Dispensing Recommendation", "Each content contains 000mg", "NDC 1234-5678-90", "Product Name & Contents", "000 mg", "GTIN 00312345678906", "SN 12345678", "EXP JUN 2018", "LOT ABC123", and "Rx Only".

3  
1234567890  
6

CloudPharma, Inc.  
123 Aerie Way, Lofton, WI  
01234

Keep this and all  
medications out of reach of  
children.

"Content Description"  
"Usual Dosage Information"  
"Storage Information"  
"Dispensing  
Recommendation"

Each content contains 000mg

NDC 1234-5678-90

**Product Name &  
Contents**  
000 mg

GTIN 00312345678906  
SN 12345678  
EXP JUN 2018  
LOT ABC123

**Rx Only**

### 6.3 Homogenous Case Labeling Requirements

The following requirements are applicable to case labels and are aligned with the 2016 HDA DSCSA Barcode Guidelines.

| Rqmt ID        | Requirement  | Mand/Recom |
|----------------|--|------------|
| <b>LBL_220</b> | Contract Manufacturers shall label their cases with a 2D GS1 DataMatrix ECC200   | Mandatory  |
| <b>LBL_230</b> | Contract Manufacturers shall encode the GTIN in the 2D GS1 DataMatrix AI(01)   | Mandatory  |
| <b>LBL_240</b> | Contract Manufacturers shall encode the Serial Number in the 2D GS1 DataMatrix AI(21)  | Mandatory  |
| <b>LBL_250</b> | Contract Manufacturers shall encode the Lot Number in the 2D GS1 DataMatrix AI(10)   | Mandatory  |
| <b>LBL_260</b> | Contract Manufacturers shall encode the Expiration Date in the 2D GS1 DataMatrix AI(17) This should be stored in YYMMDD format, per GS1 AIDC standards.  | Mandatory  |
| <b>LBL_280</b> | Contract Manufacturers shall encode the GTIN in a 1D GS1-128 Linear Barcode AI(01)<br>(See ABC Labeling Guidelines)  | Mandatory  |
| <b>LBL_290</b> | Contract Manufacturers shall encode the Serial Number in a 1D GS1-128 Linear Barcode AI(21) (See ABC Labeling Guidelines)  | Mandatory  |
| <b>LBL_300</b> | Contract Manufacturers shall encode the Lot Number in a 1D GS1-128 Linear Barcode AI(10) (See ABC Labeling Guidelines)   | Mandatory  |
| <b>LBL_310</b> | Contract Manufacturers shall encode the Expiration Date in a 1D GS1-128 Linear Barcode AI(17). This should be stored in YYMMDD format, per GS1 AIDC standards. (See ABC Labeling Guidelines)   | Mandatory  |
| <b>LBL_320</b> | Contract Manufacturers shall encode the Case Quantity in a 1D GS1-128 Linear Barcode AI(30) (See ABC Labeling Guidelines)  | Mandatory  |
| <b>LBL_330</b> | Contract Manufacturers shall label their product case with the GTIN in Human Readable format   | Mandatory  |
| <b>LBL_340</b> | Contract Manufacturers shall label their product case with the Serial Number in Human Readable format  | Mandatory  |
| <b>LBL_350</b> | Contract Manufacturers shall label their product case with the Lot Number in Human Readable format   | Mandatory  |
| <b>LBL_360</b> | Contract Manufacturers shall label their product case with the Expiration Date in Human Readable format; YYYY-MMM-DD, YYYY-MMM, YYYY-MM are the acceptable formats.<br><br>Dates may be required with either hyphens, space or forward (\) or backslash (/) to separate the portions of the expiry date. | Mandatory  |

| Rqmt ID        | Requirement  | Mand/Recom |
|----------------|--|------------|
|                | The use of YYMMDD is not acceptable.   |            |
| <b>LBL_370</b> | Contract Manufacturers shall label their product case with the Quantity in Human Readable format   | Mandatory  |
| <b>LBL_371</b> | Contract Manufacturers shall verify the readability of the 2D GS1 DataMatrix containing serialized information to a minimum of a ISO Grade C | Mandatory  |
| <b>LBL_372</b> | Contract Manufacturers shall verify the readability of the GS1-128 barcodes containing serialized information to a minimum of a ISO Grade C  | Mandatory  |
| <b>LBL_375</b> | Contract Manufacturers shall verify human readable information via manual inspection, or OCV   | Mandatory  |
| <b>LBL_377</b> | Contract Manufacturers shall apply the case label to two adjacent sides; <b>preferable</b> using a corner wrap label.                        | Mandatory  |

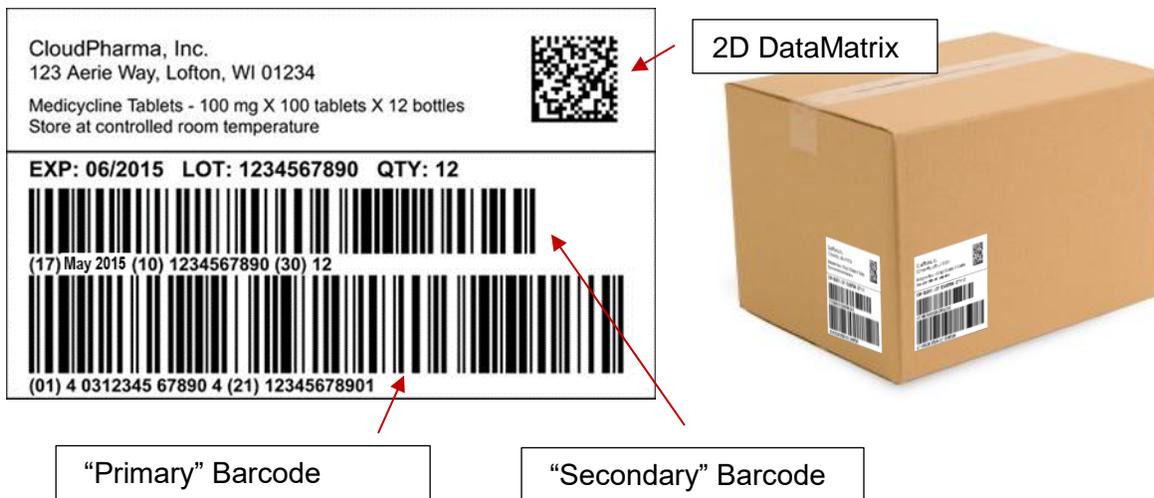
### 6.3.1 Serialized Case label - Example of Corner Wrap

It is standard and best practice that case labels, utilize a 4" x 10" corner wrap label.



### 6.3.2 Serialized Case Label – Non-Corner Wrap Case Label Placement Example

Although not preferred, in the event that a corner wrap label is not feasible, two like labels shall be 1.00" from the shared corner and 1.25" from the bottom of the case.



#### 6.4 Non-Homogenous/Partial Cases & Pallet Labeling Requirements

The following requirements are applicable to those labels applied to all non-homogenous cases, partial cases, and shipper pallets.

| Rqmt ID | Requirement  | Mand/Recom  |
|---------|--|---|
| LBL_380 | Contract Manufacturers shall label their non-homogenous (mixed) and partial (not full) cases with an 18 digit SSCC in a GS1-128 Barcode using AI(00) | Mandatory<br><b>Optional</b> IF required to follow DGFT GTIN application on all cases |
| LBL_400 | Contract Manufacturers shall label their non-homogenous (mixed) and partial (not full) cases with the SSCC in Human Readable format                  | Mandatory<br><b>Optional</b> IF required to follow DGFT GTIN application on all cases |
| LBL_380 | Contract Manufacturers shall label their product pallets cases with an 18 digit SSCC in a GS1-128 Barcode using AI(00)                               | Mandatory   |
| LBL_400 | Contract Manufacturers shall label their full product pallets with the SSCC in Human Readable format   | Mandatory   |
| LBL_410 | Contract Manufacturers shall label their partial product pallets cases with an 18 digit SSCC in a GS1-128 Barcode using AI(00)                       | Mandatory   |
| LBL_430 | Contract Manufacturers shall label their partial product pallets with the SSCC in Human Readable format  | Mandatory   |
| LBL_440 | Contract Manufacturers shall verify the readability of the SSCC GS1-128 barcode to a minimum of a ISO Grade C  | Mandatory   |
| LBL_450 | Contract Manufacturers shall verify SSCC human readable information via manual inspection, or OCV, on the Pallet Label                               | Mandatory   |

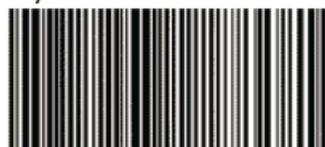
### 6.4.1 Packaging Serialized Shipping Container Codes Label Example

Below is an example of an SSCC-18 Label that would be used on all homogenous pallets coming from packaging facilities.



### 6.4.2 Logistics Serialized Shipper Container Code Label Example

Below is an example of an SSCC-18 Label that would be used on all logistic pallets coming from a 3PL or manufacturer distribution center:

|   |  |  |  |
|---|--|--|--|
| <b>FROM:</b><br>XYZ SUPPLIER<br>1060 W ADDISON ST<br>CHICAGO, IL 60613  |  | <b>TO:</b><br>CUSTOMER #1234<br>143 BEALE ST.<br>MEMPHIS, TN 38103 |  |
| <b>SHIP TO POSTAL CODE:</b><br>(420) 38141<br> |  | <b>CARRIER: RDWY</b><br>ROUTE: 4768<br>B/L#: 0083273642            |  |
| <b>P.O.#</b> (400) 8194696681<br>              |  |  |  |
| <b>XYZ SUP</b>  |  | <b>8194</b>  |  |
| <b>SSCC:</b><br>(00) 1 0003002 10000001 6<br>  |  |  |  |

#### 1. Ship-From Information

Enter the origin address

Rec'd Font Size 10-12pt; Area 1" x 1 3/4"

#### 2. Ship-To Information

Enter the customer warehouse address

Rec'd Font Size 10-12pt; Area 1" x 2 1/4"

#### 3. Ship-To Postal Code

Enter as shown, with bar code of zip code below

Rec'd Font Size 10-12pt; Area 1" x 2"

#### 4. Shipper Information

Include four-digit SCAC code of carrier, route (opt), bill of lading or carrier/PRO number

Rec'd Font Size 10-12pt; Area 1" x 2"

#### 5. PO Number

Enter the customer PO number with bar code of the number below

Rec'd Font Size 20-24pt; Area 1"x 4"

#### 6. Expanded Supplier Name

Enter the first seven characters of the supplier's name

Rec'd Font Size 36-40pt; Area 1" x 2 3/4"

#### 7. Customer Warehouse ID

Enter the four-digit Customer warehouse number (first four digits from PO number)

Rec'd Font Size 36-40pt; Area 1" x 1 1/4"

#### 8. SSCC

Enter the SSCC Identifier with large bar code below

Rec'd Font Size 18-22pt; Area 2" x 4"

SSCC 18 Product Code Break Down:



## 6.5 Contract Manufacturing Process, Data and Technical Requirements

The following are requirements for interfacing with AmerisourceBergen Business's serial number management repository. Note that specifics around integration with the serial number management repository will be provided in a separate interface specification document.

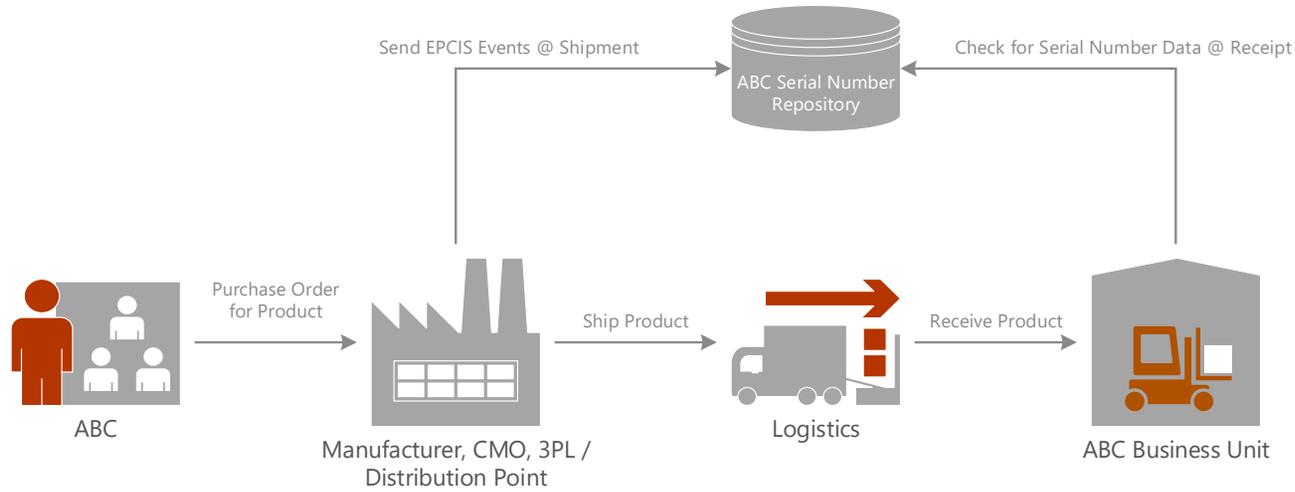
| Rqmt ID | Requirement   | Mand/Recom |
|---------|---|------------|
| SN_080  | Contract Manufacturers shall be able to integrate with AmerisourceBergen Business's serial number management system via an automated interface via sFTP or AS2                                      | Mandatory* |
| SN_085  | Contract Manufacturers shall support sending serial number events via GS1 EPCIS 1.0 or higher.  | Mandatory* |
| SN_090  | Contract Manufacturers shall send serial number information (commissioning, pack (if aggregating), and ship events) for completed lots of product only.   | Mandatory* |
| SN_100  | Contract Manufacturers shall send serial number information to AmerisourceBergen Business's serial number management system after a lot has been completed and shipped; after CMO QA has signed off | Mandatory* |
| SN_110  | Contract Manufacturers shall include, in the ship event, the related purchase order number.   | Mandatory* |
| SN_160  | If repackaging product, the contract manufacturer shall also communicate a list of consumed serial numbers (decommissioned) back to the ABC product owner as part of the batch record.              | Mandatory* |

\*AmerisourceBergen Business recognizes that not all Contract Manufacturers have varying levels of technical capabilities. This will be evaluated on a case by case bases and it will be determined how much and to what level of data exchange will occur.

When a contract manufacturer is ready for data exchange, the SSC operations team will engage with the CMO and begin the onboarding process.

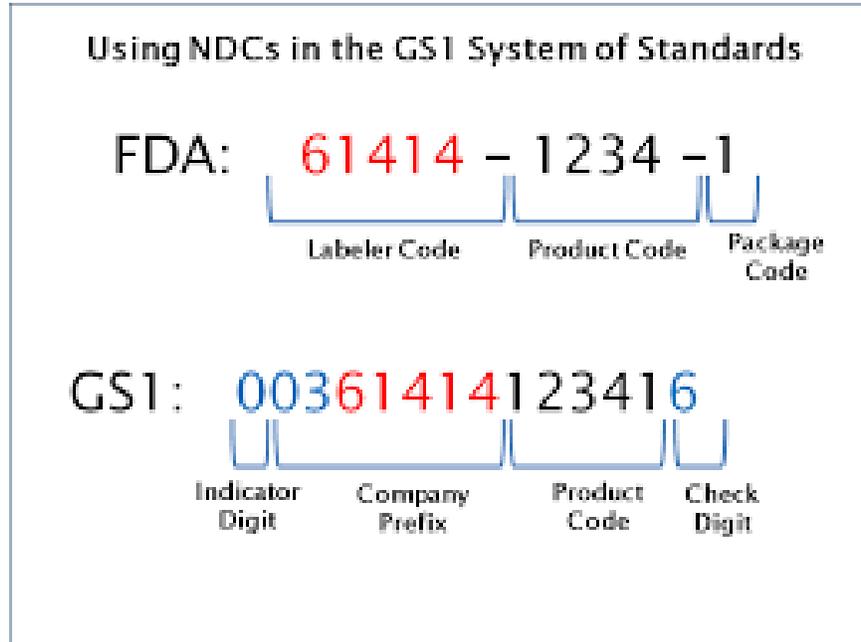
### 6.5.2 Process for Exchanging Data

The following is a typical process and data flow for exchanging POs & serialized data between CMOs.



## 7. Appendix

### 7.1 Converting NDC to a GTIN



## 7.2 HDA Case Specification

See homogenous case labeling examples.

| <b>HDMA Shipping Case Product Identification Label – Summary Specifications</b><br><b>Bar Code Symbology, Encoded Data Element, Human-Readable Interpretation (HRI) &amp; Print Quality</b> |  |   |
|---|--|---|
| <b>Important Parameters</b>   |  | <b>Format #1 – GTIN+SERIAL NUMBER</b>   |
| <b>Symbology</b><br>(see Note 1)  | Primary:<br>Secondary:<br>2D Prim+Sec.:                                | GS1-128 (incl. FNC1 where req'd)<br>GS1-128 (incl. FNC1 where req'd)<br>GS1 DataMatrix (incl. FNC1 where req'd)                               |
| <b>Encoded Data Elements</b><br>(see Note 2)  | Primary:<br>Secondary:<br>2D Prim.+Sec.<br>COMBINED:                   | GTIN-14 + SN: AI(01)+AI(21)<br>EXP + LOT + QTY: AI(17)+AI(10)+AI(30)<br>GTIN-14 + SN + EXP + LOT + QTY:<br>AI(01)+AI(21)+AI(17)+AI(10)+AI(30) |
| <b>GS1-128 Bar Code Symbol X-dimension</b><br>Primary & Secondary   | Preferred:<br>Minimum:   | 16.7-20.0 mils (0.0167-0.0200 in.)<br>13.3 mils (0.0133 in.)<br>*Use largest X-dim that will fit on the label                                 |
| <b>GS1-128 Bar Code Symbol Height</b><br>Primary & Secondary<br>(Increased height can improve scannability)   | PRIMARY Preferred:<br>Minimum:<br><br>SECONDARY Preferred:<br>Minimum: | GTIN-14 + SN: AI(01)+AI(21)<br>0.75 inches<br>0.5 inches<br><br>EXP + LOT + QTY: AI(17)+AI(10)+AI(30)<br>0.5 inches<br>0.4 inches             |
| <b>GS1 DataMatrix (2D) Bar Code X-dimension</b>   | Preferred:<br>Minimum:   | 30.0 mils (0.0300 in.)<br>30.0 mils (0.0300 in.)  |
| <b>Bar Code Quiet Zones - MINIMUM Width</b>   | GS1-128<br>GS1 DataMatrix  | 10X (10 times X-dim; 0.20" recommended)<br>3X (3 times X-dim; 0.10" recommended)  |
| <b>Bar Code Quality - MINIMUM Grade</b>   | GS1-128<br>GS1 DataMatrix  | 1.5/10/880 (per GS1 & ISO/IEC 15416)<br>1.5/20/880 (per HDMA & ISO/IEC 15415)   |
| <b>Position of Bar Code Symbols on Label</b>  | 2D Prim.+Sec.:<br>Secondary:<br>Primary:                               | GS1 DataMatrix, Upper Right Corner<br>GS1-128, Directly Above Primary Symbol<br>GS1-128, Bottom of Label                                      |
| <b>Bar Code Human-Readable Interpretation (HRI) Position &amp; Size</b>   | 2D Prim.+Sec.:<br>Secondary:<br>Primary:                               | None (Data is IDENTICAL to Prim. & Sec.)<br>Below GS1-128, 10 Point (8 pt. min.)<br>Below GS1-128, 10 Point (8 pt. min.)                      |
| <b>Secondary Data DESC.</b>   | Secondary:   | Above GS1-128, 12 Point (10 pt. min.)   |
| <b>Printing Process and Substrate</b>   | All Labels   | Thermal Transfer<br>Pressure-sensitive Label  |
| <b>Label Skew</b>   | All Labels   | +/- 2 Degrees from Horizontal**<br>**Approx. 0.15 Inch Across a 4" Wide Label   |

2D GS1 DataMatrix Specifications



Note 1: Primary and secondary data in separate GS1-128 bar codes and GS1 DataMatrix are required.  
 Note 2: GS1-128 & GS1 DataMatrix symbols encode FNC1 at the beginning of the symbol and as a variable-length field delimiter, as required.

GTIN: FNC1+AI(01)+GTIN  
 GTIN+SN: FNC1+AI(01)+GTIN+AI(21)+SN  
 EXP+LOT+QTY: FNC1+AI(17)+EXP+AI(10)+LOT+FNC1+AI(30)+QTY  
 GTIN+SN+EXP+LOT+QTY: FNC1+AI(01)+GTIN+AI(21)+SN+FNC1+AI(17)+EXP+AI(10)+LOT+FNC1+AI(30)+QTY