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General Specifications Change Notification (GSCN)

WR #	GSCN Name	Effective Date
22-376	2D in Retail: Multiple barcodes management practices	April 2023

Associated Work Request (WR) Number:

WR-21-001 (Future State ASP request), WR-22-031 (ASP future state conformance requirements), WR-22-172 (section 8 optimisation), WR-22-327 (HRI)

Background:

Phase 2 of the 2D in Retail work addresses the changes required for cross-application standards and rules to be used during both the transition period and the future state of 2D barcodes at retail point-of-sale (POS), which were defined during phase 1. The second set of cross application rules to be updated is the section on multiple barcode management practices for trade items scanned in general retail.

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2.1.2 Fixed measure trade items – open supply chain

Fixed measure trade items are those that are always produced in the same version and composition (e.g., type, size, weight, contents, design). The identification number identifies the item unambiguously. Every trade item that is different from another in any respect is assigned a separate Global Trade Item Number (GTIN).

2.1.3 Fixed measure trade items scanned at retail POS

A fixed measure consumer trade item that is intended to be read at [high-volume retail point-of-sale \(POS\)](#). ~~The trade item must SHALL~~ be identified with a GTIN-8, GTIN-12, or GTIN-13. It ~~must~~ **SHALL** carry a barcode from the EAN/UPC ~~symbol family~~ or the GS1 DataBar® ~~r~~Retail POS family. ~~During a transition period, 2D barcodes may be applied in addition to the linear barcode. For information on how to manage multiple barcodes see section 4.15. For a summary of all conformance requirements for this AIDC application standard, 2D barcodes, cross-application rules and related technical specifications, see section 8.2~~

~~To support new applications additional GS1-approved data carriers (encoding additional data with the GTIN) may be applied. For information on how to manage multiple barcodes see section 4.15.~~

~~For a summary of all conformance requirements for this AIDC application standard, cross-application rules and related technical specifications, see section 8.3.~~

2.1.3.1 Fixed measure trade items scanned at retail POS using GTIN-12 or GTIN-13

Application description

Figure 2.1.3.1-1. GTIN-12/GTIN-13 data structure

	GS1 Company Prefix						Item reference						Check digit
(GTIN-13)	N ₁	N ₂	N ₃	N ₄	N ₅	N ₆	N ₇	N ₈	N ₉	N ₁₀	N ₁₁	N ₁₂	N ₁₃
	U.P.C. Company Prefix						Item reference						Check digit
(GTIN-12)		N ₁	N ₂	N ₃	N ₄	N ₅	N ₆	N ₇	N ₈	N ₉	N ₁₀	N ₁₁	N ₁₂

The GS1 Company Prefix is allocated by a GS1 Member Organisation to a system user. It makes the ID number unique worldwide but does not identify the origin of the item. Any valid GS1 Company Prefix, other than ones starting with a zero, may be used to issue a GTIN-13 and any valid U.P.C Company Prefix may be used to issue a GTIN-12. The GS1 Prefixes used for this purpose can be found in section [1.4](#).

The item reference is assigned by the system user, who must observe the rules in section [4](#).

The check digit is explained in section [7.9](#). Its verification, carried out automatically by the barcode reader, ensures that the number is correctly composed.

GS1 key

Required

The allowed key formats for this application are:

- GTIN-12
- GTIN-13

Rules

All the GTIN rules described in section [4](#).

**Attributes****Required**

Not applicable

Optional

For all the GS1 Application Identifiers (AI) that can be used with a GTIN, see section 3.

Rules

Not applicable.

Data carrier specification**Carrier choices**

The data carriers for this element string are:

- UPC-A barcode (carrying a GTIN-12)
- EAN-8 barcode (carrying GTIN-8)
- EAN-13 barcode (carrying a GTIN-13)
- GS1 DataBar Retail POS family (carrying GTIN-12 or GTIN-13)

The GS1 DataBar symbols encode a 14-digit numeric string. When encoding GTIN-8, GTIN-12 or GTIN-13 in GS1 DataBar symbols zero-fill with six, two, or one zeroes to the left of the GTIN.

Symbol X-dimensions, minimum symbol height and minimum symbol quality

See section 5.12.3.1, GS1 symbol specification table 1.

Symbol placement

There are no specified rules for symbol placement on loose produce scanned at POS.

Unique application processing requirements

Not applicable

2.1.4 Fixed measure trade items scanned in general distribution and at retail POS

Trade items intended for general distribution and retail point-of-sale scanning ~~must SHALL~~ carry a barcode ~~of from~~ the EAN/UPC or GS1 DataBar ~~retail POS symbology family~~. ~~During a transition period, 2D barcodes may be applied in addition to the linear barcode. For a summary of all conformance requirements for this AIDC application standard, 2D barcodes, cross-application rules and related technical specifications, see section 8.3.~~

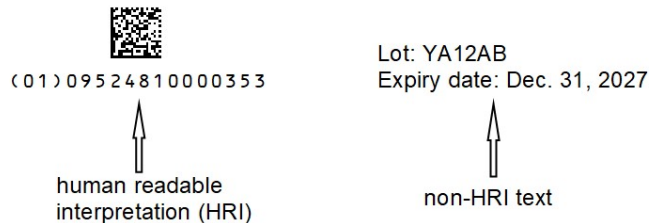
These trade items SHALL be identified with GTIN-8s, GTIN-12s or GTIN-13s (see section 2.1.3). For symbol X-dimensions, minimum symbol height and minimum symbol quality, see section 5.12.3.3, GS1 symbol specification table 3. ~~During a transition period, 2D barcodes may be applied in addition to the linear barcode. For information on how to manage multiple barcodes see section 4.15. For a summary of all conformance requirements for this AIDC application standard, 2D barcodes, cross-application rules and related technical specifications, see section 8.3.~~



Note: Allocation of GTIN-8 to new trade items for this application SHALL conform to section 4.2.74.3-7

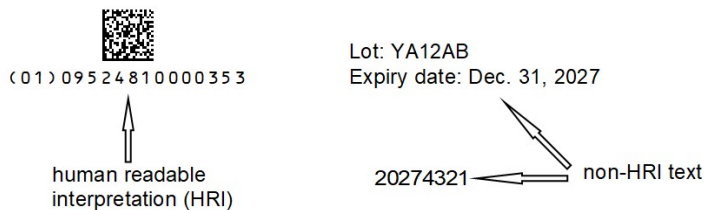
~~For information on how to manage multiple barcodes see section 4.15.~~

Figure 4.14-10. Example of human readable placement



GS1 element strings encoded in a data carrier which are intended for internal use, e.g., AI (243), may appear on the object in either non-HRI text or HRI. Non-HRI SHOULD NOT be placed adjacently to the barcode as this can make it difficult for the GTIN to be identified.

Figure 4.14-11. Example of internal use application identifier human readable placementWR



Commented [DM6]: WR22-327

4.14.24.14.3 Manual date marking

Where regulations and/or trade partner agreements require applied date markings for stock rotation and manual identification, the ISO standard (8601) for date sequence SHOULD be used. The format SHOULD be YYYY-MM-DD preceded by the date type short form (See figure below for respective date types) based on ISO standard abbreviations (15223).

Figure 4.14.3-1. Short forms by date type

Date type	Short form
Production	PROD
Packaging	PACK
Best Before	BEST
Expiration	EXP

AIDC techniques are suggested over any manual process to ensure accurate and timely stock rotation. Every effort should be made to adopt an automated process to increase productivity and date management.

4.15 Multiple barcode management practices for trade items (cross-sector)

When additional barcodes are introduced into an existing scanning environment or business application, all application standard conformant existing barcodes must SHALL remain acceptable as choices. This section provides a set of management practices intended to permit the use of multiple barcodes on the same package trade item.



Note: Additional barcodes encoded with GTIN and GTIN attributes such as lot number, serial number or expiry date are also stored in the respective master data records.



4.15.1 Multiple barcode management practices for trade items (all sectors)

1. **Current standards:** All scanning systems SHALL deploy symbology identifiers (see section 5.1.3) and when using GS1 Application Identifiers, process them according to GS1 rules (see section 7.8).
2. **GTIN plus attribute(s) flag:** Where applications require GTIN plus additional data to be captured in a multiple barcode symbol environment, modifications to systems should ~~SHOULD~~ be made to automate this requirement to optimise efficiency.
3. **Adjacent placement:** ~~Wherever~~ When two symbols barcodes can be used for the same application (i.e., point-of-sale, point of care, POS, POC, general distribution) they SHOULD be placed adjacent to each one another while maintaining their . Adjacent placement of symbols ~~SHALL never infringe on symbol~~ Quiet Zones. The orientation (stack or row of symbols barcodes) or sequence (which symbol barcode is placed on the left, right, top, or bottom) shall ~~SHALL~~ be determined by the brand owner.
~~a. Where adjacent placement on one panel surface of an object is not possible, the barcodes SHOULD be placed on an adjoining surface of the object. is not permitted based on space limitations, placement on adjacent panels SHOULD be attempted. This practice does not supersede any section 6 symbol barcode placement rule (e.g., 8 mm (0.3 inch) free space between symbols barcodes and panel edge).~~
4. **Non-adjacent placement:** ~~Wherever~~ When two symbols barcodes are used for different applications (e.g., point-of-sale, POS, B2C extended packaging), they SHOULD be placed non-adjacent to one another.
5. **Obscure placement:** ~~Wherever~~ When a symbol barcode is used for production control purposes only (e.g., Data Matrix encoded with a non-GS1 syntax to match label to product), it SHOULD be made as obscure as possible or even obstructed on the trade item package.
6. ~~Product URL barcode indication:~~ For barcodes encoding AI (01) (8200) see section 4.14 Human-readable interpretation rules, rule 12.)
6. **Use of GS1-128 or GS1 2D symbol barcode as supplemental symbol barcode with EAN/UPC or ITF-14 as the main symbol barcode:** In general retail and general distribution, where EAN/UPC or ITF-14 is used to encode the GTIN and where a GS1-128 or GS1 2D symbol barcode is used to encode GTIN attributes, the same GTIN SHALL be encoded in all GS1 symbols barcodes.
7. **GS1-128 as supplemental barcode:** When an EAN/UPC or ITF-14 is used to encode GTIN and where GS1-128 is used to encode GTIN attributes, GS1-128 SHOULD encode GTIN and the GTIN attributes in a single barcode to ensure accurate data association.
8. **Use of GS1 2D symbol barcode as supplemental symbol barcode with GS1-128 as main symbol barcode:** In general distribution, where GS1-128 is used to encode GTIN and attributes, these element strings at a minimum SHALL be encoded in the supplemental GS1 2D symbol barcode.

4.15.2 GS1 multiple barcode management practice for general retail

In addition to the requirements outlined in section 4.15.1, the following rules applies apply to the use of multiple barcodes for general retail.

1. **Use of GTIN:** All GS1 barcodes on a single trade item SHALL encode the same GTIN.
2. **Use of GTIN attributes:** When the GTIN and GTIN attributes occur in multiple barcodes on a single trade item, the attribute values SHALL be the same.
3. **Migration to 2D barcodes:** A GS1 DataMatrix, QR Code (GS1 Digital Link URI) or Data Matrix (GS1 Digital Link URI), SHALL be used in addition to the EAN/UPC, or a GS1 DataBar retail POS family of barcodes, to ensure stakeholders that are not yet able to consistently scan 2D barcodes are not negatively impacted. Application Standard Profiles in section 8 provide information on conformance requirements for the transition period and future use of 2D barcodes at retail POS.
4. **Placement when using a 2D barcode for multiple applications:** When a 2D barcode will be scanned in multiple applications (e.g., point-of-sale, inventory management and consumer



engagement), placement for POS takes precedence. The same adjacent placement rules as stated in section 4.16.1 are applicable.



Note: Where GS1 DataBar and 2D barcodes are used, GTIN and GTIN attributes SHALL be encoded in a single barcode to ensure accurate data association

GTIN in GS1 DataBar processing: In order to facilitate migration away from a multiple barcode environment where one retailer requires EAN/UPC and another GS1 DataBar Expanded, at a minimum, all general retailers SHALL be able to process the AI (01) GTIN from GS1 DataBar Expanded.

4.15.3 GS1 multiple barcode management practices for healthcare

In addition to the requirements outlined in section 4.15.1, the following rules apply to the use of multiple barcodes for healthcare.

- 1. GTIN in GS1 DataMatrix and GS1 DataBar processing (retail healthcare):** In order to facilitate migration away from a multiple barcode environment where one retail pharmacy requires EAN/UPC and another retail pharmacy requires GS1 DataMatrix or GS1 DataBar Expanded, at a minimum, retail pharmacies SHALL have the capability to process the AI (01) GTIN from GS1 DataMatrix and GS1 DataBar in addition to the capability for EAN/UPC.
- 2. GTIN in GS1 DataMatrix, GS1 DataBar and GS1-128 processing (non-retail healthcare):** In order to facilitate migration away from a multiple barcode environment where one healthcare provider requires EAN/UPC or ITF-14 and another healthcare provider requires GS1 DataMatrix, GS1 DataBar Expanded, or GS1-128, at a minimum, non-retail pharmacies SHALL have the capability to process AI (01) GTIN from GS1 DataMatrix, GS1 DataBar and GS1-128 in addition to the capability for EAN/UPC and ITF-14.
- 3. GS1-128 as secondary symbol:** In point-of-care applications, where EAN/UPC or ITF-14 is used to encode GTIN and where GS1-128 is used to encode GTIN attributes, GS1-128 SHOULD encode GTIN as it is best practice to encode the GTIN attributes and the GTIN in a single symbol whenever possible to ensure accurate data association.



Note: Where GS1 DataBar and GS1 DataMatrix are used, GTIN and GTIN attributes SHALL be concatenated to ensure accurate data association.

- 4. Scenario-based management practices:** Multiple barcode practices which apply to all sectors are found in section 4.15.1 and take precedence over those specific only to healthcare. While industry best practice focuses on using only one barcode per package, a product package that serves multiple markets may have the need for application of multiple barcodes. When this occurrence is unavoidable, the management practices for use of multiple symbols found in figure 4.15.3-1 apply for regulated healthcare trade items. The figure separates solutions based on combinations of scanner environments encountered for each scenario:
 - Scanners encountered combination #1: Package scanned in retail pharmacies (Yes or No).
 - Scanners encountered combination #2: Package scanned in general distribution (Yes or No).



Term	Definition
Global Location Number (GLN)	The GS1 identification key used to identify physical locations or parties. The key comprises a GS1 Company Prefix, location reference and check digit.
Global Model Number (GMN)	The GS1 identification key used to identify a product model or product family. The key comprises a GS1 Company Prefix, model reference and a check character pair.
Global Returnable Asset Identifier (GRAI)	The GS1 identification key used to identify returnable assets. The key comprises a GS1 Company Prefix, asset type, check digit and optional serial number.
Global Service Relation Number (GSRN)	The GS1 identification key used to identify the relationship between an organisation offering services and the recipient or provider of services. The key comprises a GS1 Company Prefix, service reference and check digit.
Global Shipment Identification Number (GSIN)	The GS1 identification key used to identify a logical grouping of logistic or transport units that are assembled by the consignor (seller) for a transport shipment from that consignor to one consignee (buyer) referencing a despatch advice and/or BOL. The key comprises a GS1 Company Prefix, shipper reference and check digit.
Global Trade Item Number® (GTIN®)	The GS1 identification key used to identify trade items. The key comprises a GS1 Company Prefix, an item reference and check digit.
GS1 Application Identifier (AI)	The field of two or more digits at the beginning of an element string that uniquely defines its format and meaning.
GS1 Application Identifier data field	The data used in a business application defined by one GS1 Application Identifier.
GS1 check character calculation	An algorithm used by the GS1 system for the calculation of the check characters to verify accuracy of data.
GS1 check digit calculation	An algorithm used by the GS1 system for the calculation of a check digit to verify accuracy of data. (e.g., modulo 10 check digit, price check digit).
GS1 Common Currency Coupon Code	An identification number for coupons issued in a common currency area (e.g., the euro currency) that uses the GS1 Prefixes 981-983.
GS1 Company Prefix (GCP)	A unique string of four to twelve digits used to issue GS1 identification keys. The first digits are a valid GS1 Prefix and the length must be at least one longer than the length of the GS1 Prefix. The GS1 Company Prefix is issued by a GS1 Member Organisation. As the GS1 Company Prefix varies in length, the issuance of a GS1 Company Prefix excludes all longer strings that start with the same digits from being issued as GS1 Company Prefixes. See also U.P.C Company Prefix.
GS1 Composite symbology	A GS1 system composite symbol consists of a linear component (encoding the item's primary identification) associated with an adjacent Composite Component (encoding attribute data, such as a batch number or expiration date). The composite symbol always includes a linear component so that the primary identification is readable by all scanning technologies, and so that imager scanners can use the linear component as a finder pattern for the adjacent 2D Composite Component. The composite symbol always includes one of three multi-row 2D Composite Component versions (e.g., CC-A, CC-B, CC-C) for compatibility with linear- and area-CCD scanners and with linear and rastering laser scanners.
GS1 conformant barcode	A family of symbols comprising all barcodes in accordance with an application standard, the data carrier specifications and relevant GS1 symbol specification table.
GS1 DataBar Composite symbology family	A family of symbols comprising all the GS1 DataBar barcodes when an accompanying Composite Component is printed directly above the linear component.
GS1 DataBar Expanded barcode	A barcode that encodes any GS1 identification key plus attribute data, such as weight and "best before" date, in a linear symbol that can be scanned omnidirectionally by suitably programmed point-of-sale scanners.
GS1 DataBar Expanded Stacked barcode	A barcode that is a variation of the GS1 DataBar Expanded barcode that is stacked in multiple rows and is used when the normal symbol would be too wide for the application.
GS1 DataBar Limited barcode	A barcode that encodes a GTIN with a leading digit of zero or indicator digit of one in a linear symbol; for use on small items that will not be scanned at the point-of-sale.
GS1 DataBar Omnidirectional barcode	A barcode that encodes a GTIN. It is designed to be read by omnidirectional scanners.
GS1 DataBar Retail POS family	The members of the GS1 DataBar symbology family designed to be read in segments by omnidirectional scanners at retail POS: GS1 DataBar Omnidirectional; GS1 DataBar Stacked Omnidirectional; GS1 DataBar Expanded; GS1 DataBar Expanded Stacked.
GS1 DataBar Stacked barcode	A barcode that is a variation of the GS1 DataBar Truncated barcode that is stacked in two rows and is used when the GS1 DataBar Truncated barcode would be too wide for the application.