MEAT AND POULTRY

Traceability for Meat & Poultry
U.S. Implementation Guide

R2.0 — JUN 24 2014

GS1 US

THE GLOBAL LANGUAGE
OF BUSINESS

CONTENTS

ABOUT GS1

GS1® is a neutral, not-for-profit, global organization that develops and maintains the most widely-used supply chain standards system in the world. GS1 Standards improve the efficiency, safety, and visibility of supply chains across multiple sectors. With local Member Organizations in over 110 countries, GS1 engages with communities of trading partners, industry organizations, governments, and technology providers to understand and respond to their business needs through the adoption and implementation of global standards. GS1 is driven by over a million user companies, which execute more than six billion transactions daily in 150 countries using GS1 Standards.

ABOUT GS1 US

GS1 US, a member of GS1 global, is a not-for-profit information standards organization that facilitates industry collaboration to improve supply chain visibility and efficiency through the use of GS1 Standards, the most widely used supply chain standards system in the world. Nearly 300,000 businesses in 25 industries rely on GS1 US for trading-partner collaboration that optimizes their supply chains, drives cost performance and revenue growth while also enabling regulatory compliance. They achieve these benefits through solutions based on GS1 global unique numbering and identification systems, barcodes, Electronic Product Code-based RFID, data synchronization, and electronic information exchange. GS1 US also manages the United Nations Standard Products and Services Code® (UNSPSC®).

1 INTRODUCTION

The meat and poultry industry continues to evolve to meet consumers' needs. Consumers today are much more knowledgeable and demanding about the foods they purchase. The increased focus on food safety and consumer awareness raises the need to identify and adopt business practices and standards that will aid the meat and poultry trading partners' ability to track and trace product throughout the supply chain.

1.1 OVERVIEW

Consumers expect safe and nutritious foods. They also expect all participants in the supply chain to have effective practices in place that allow for the rapid identification, location, and withdrawal of food lots when problems are suspected or confirmed. Ensuring that effective practices are in place across a complex and global supply chain is an on-going challenge. The U.S. meat and poultry industry is comprised of a large array of trading partners, from the farmer or grower to internationally sourced suppliers. For this reason, the *Traceability for Meat and Poultry Implementation Guide* has been developed to aid in the adoption of consistent business practices amongst all trading partners to effectively manage traceability for the meat and poultry industry.

1.2 OBJECTIVE

Supply chain inefficiencies exist in the U.S. meat and poultry industry that are driven from the lack of adoption of global standards. This document is intended to supply all members of the U.S. meat and poultry industry with guidance to develop and adopt business processes which provide traceability to product within the entire supply chain, regardless of size or technological sophistication.

1.3 SCOPE

The scope of this guideline establishes both minimum requirements and best practices to share information between trading partners. This guide covers:

- Traceability practices from the supplier's processing facility to the point of consumer sale;
- All meat and poultry products for human consumption;
- All levels of the product hierarchy, including pallets, cases and consumer items; and
- U.S. supply chain segments including, suppliers, wholesalers, distributors, and retailers.

Traceability is a business process that enables trading partners to follow products as they move through the supply chain. Each traceability partner should be able to identify the direct source and direct recipient of product. Traceability as a business process can be utilized for a variety of business purposes, including:

- Product Recalls/Market Withdrawals;
- Regulatory Compliance;
- Public Health Trace Backs;
- Safety and Quality Assurance; and
- Order Management.

The guidance recommended is based on GS1 Standards for supply chain management and product identification. These standards were developed by industry trading partners to optimize business practices across supply chains world-wide.

1.4 AUDIENCE

This is a practical guide that is intended for those responsible for implementing traceability in their company's operations and supply chain. The document provides a guide for traceability practices for U.S. meat and poultry suppliers, retailers, wholesalers, and distributors.

However, these traceability practices also define, to a degree, interactions with distributors, wholesaler/distributors, exporters, and importers. The guide may be useful to these companies as well.

1.5 SUGGESTIONS ABOUT HOW TO USE THIS DOCUMENT

Step 1: If traceability or GS1 Standards are new to your company, read the section titled "Key Traceability Standards" in Section 2.

Step 2: Read Section 3 to understand Traceability Principles.

Step 3: Read Section 4.1 to determine your company's Role(s) in the Supply Chain.

Step 4: Review the entire guideline for all roles to best understand the traceability process for the entire meat and poultry supply chain.

Step 5: Begin implementing, using the reference documents and appendices for assistance. Users should ensure they understand specific government and/or industry requirements for the markets they serve.

1.6 DOCUMENT SUMMARY

DOCUMENT ITEM	CURRENT VALUE
DOCUMENT TITLE	Traceability for Meat and Poultry U.S. Implementation Guide
DATE LAST MODIFIED	June 12, 2014
CURRENT DOCUMENT RELEASE	R2.0
STATUS	Final
DOCUMENT DESCRIPTION	This document serves as a guide to implementing GS1 Standards in the meat and poultry industry supply chain.

Table A. Document Summary

1.7 LOG OF CHANGES IN R2.0

RELEASE NO.	DATE OF CHANGE	CHANGED BY	SUMMARY OF CHANGE
R2.0	06/12/2014	J Cowan	Brand update as a result of mpXML transition to GS1 US; added disclaimer information; updated copyright and trademarks; updated graphics

Table B. Log of Changes

1.8 CONTRIBUTORS

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Table C. Contributors

GS1 US acknowledges the significant contributions of the organization known as the Meat and Poultry B2B Data Standards Organization (or mpXML) and industry stakeholders listed herein in the development of this document.

2 KEY TRACEABILITY STANDARDS

2.1 GS1 TRACEABILITY STANDARD

GS1 Standards are the "common language of business" and provide the framework necessary to support the traceability business process. This industry best practice implementation guideline is based on the GS1 Global Traceability Standard (GTS). Developed by industry, the standard defines the globally-accepted method for uniquely identifying:

- Trading partners (your suppliers, your own company, your customers, 3rd party carriers);
- Trading locations (can be any physical location such as a warehouse, packing line, storage facility, receiving dock or store);
- The products your company uses or creates;
- The logistics units your company receives or ships; and
- Inbound and outbound shipments.

The GS1 Global Traceability Standard also defines the essential information to be collected, recorded and shared to ensure "one step up, one step down" traceability. The standard is applicable to companies of all sizes and geography.

While the GS1 Global Traceability Standard may be implemented independently from any specific technology, best business practices support the adoption of bar coding on cases, consumer items, and pallets. Businesses are further encouraged to adopt electronic messaging to exchange essential business information. These technologies will be explored in the sections that follow.

GS1® is a not-for-profit global standards organization with member affiliates in every country. Together with national meat and poultry trade associations, they provide important resources that are able to help your company understand the most effective way to implement traceability with your trading partners. They can also help your company to connect with technology providers that serve the meat and poultry industry. To obtain a copy of the GS1 Global Traceability Standard, visit www.gs1.org.

2.2 GLOBAL TRADE ITEM NUMBER

What is a Global Trade Item Number?

A Global Trade Item Number® (GTIN®) is the standardized and globally unique way to identify items traded in the supply chain. Where there is a requirement to accurately order, invoice, price or receive your product then the GTIN is the basic enabler. The GTIN provides a common language to support multiple business practices, including traceability.

How is a GTIN assigned to the traded items my company produces?

When product is sold under a brand name, the brand owner is responsible for assigning the GTIN. If the company is the brand owner, the first step is to approach your local GS1 Member Organization and apply for a GS1 Company Prefix. A brand owner typically owns the label for the product that is sold; this may also include non-branded packaging. The GS1 Company Prefix uniquely identifies your organization globally and serves as the basis for each individual product number assigned. Your company then assigns a GTIN to each one of your products and every packaging configuration using the GS1 Company Prefix. (If your company is not the brand owner, then use the brand owner's GTIN.)

To learn more about GTIN assignment visit www.gs1us.org.

2.3 PRODUCT HIERARCHY AND BARCODE USE

There are a number of symbologies or data carriers used today in the meat and poultry industry to support the barcoding of products. The level of information encoded into the barcodes differ dependent on the barcode symbology used. All barcode formats with the exception of the UPC-Type 2 barcode, which is used on variable-weight consumer level products, contain a GTIN. The UPC-Type 2 barcode contains a retailer specific item reference and is not globally unique. For purposes of this document the U. S. meat and poultry supply chain utilizes the following barcodes at each level of the product hierarchy:

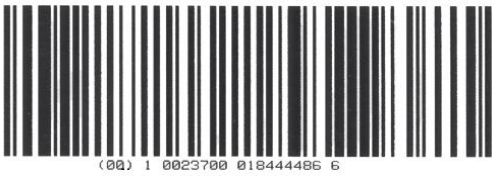
PALLET *Fixed-Weight and Variable-Weight*	SSCC (Serial Shipping Container Code) GS1-128 with AI (00)	
CASE *Fixed-Weight and Variable-Weight*	GS1-128	
CASE *Fixed-Weight*	ITF-14	
CONSUMER ITEM *Fixed-Weight*	UPC-A	
CONSUMER ITEM *Variable-Weight*	UPC-Type 2	
CONSUMER ITEM *Fixed and Variable-Weight*	GS1 DataBar®	 (01) 00614141000039 (3202) 000123 (15) 020101(3922) 567

Table D. GS1 Barcodes & Identifiers Table

2.4 GENERAL GTIN ALLOCATION RULES

GS1 publishes general guidance on GTIN allocation. The meat and poultry supply chain has product characteristics that are different from general grocery items, so additional GTIN allocation guidance is necessary. In addition to the general allocation guidelines, meat and poultry suppliers and brand owners should also allocate GTINs in accordance with the following rules:

- Assign separate GTINs for each different packaging type such as case-ready, tray-ready, and store-processed product.
- Assign separate GTINs for each primary refrigeration state in which a product is marketed (e.g., if product is normally marketed in both a chilled and frozen state, assign different GTINs to each refrigeration state).
- Assign separate GTINs to product lots that have different marketing claims or production methods when such characteristics are an important marketing feature to buyers (e.g., free-range versus conventional poultry).
- Assign separate GTINs for each different pallet and case configuration.

To learn more about GTIN allocation rules visit www.gs1us.org.

2.5 USE OF THE GTIN INDICATOR

Within a GS1-128 barcode, the trade item's GTIN must be in a GTIN-14 data structure. A product with a GTIN-12 or GTIN-13 will require leading zeroes be included in the GTIN portion of the GS1-128. The first position of the 14-digit GTIN is used to indicate the packaging hierarchy level. The GTIN indicator value for consumer item items is always 0, and the packaging indicator for a variable-weight case must always be 9. Otherwise, the indicator may be any value between 1 and 8 for identification of the product hierarchy when packaging levels are traded in the supply chain.

2.6 USE OF BATCH/LOT NUMBERS AND CASE SERIAL NUMBERS

All suppliers should assign Batch/Lot Numbers (the terms batch and lot as defined here are interchangeable) or Serial Numbers to case-level products they create. The content, syntax, and format of the batch or lot number itself typically varies from one company to another, depending on company practice and the precision desired. For example, a lot can represent all product produced in a day at one facility or the product produced in one hour from an individual packing line or it could represent a unique recipe run. In addition to the Batch/Lot Number, some suppliers also assign a unique Serial Number to each case and record the beginning and ending case Serial Numbers for each batch or lot.

It is important to remember that the range of product assigned to a single Batch/Lot Number also defines the minimum amount of product that may be need to be removed from the supply chain in the event of a recall. This needs to be considered when defining your company's standard practice for setting the scope of each Batch/Lot Number for each type of product that it produces.

Case Serial Numbers can be assigned to each case at the time of packing by the supplier. The format of the Serial Number may include a code representing the production facility and production date and time followed by a unique sequential number. Serial Numbers may also be generated without any intelligent prefix (e.g., a simple sequential number without any production facility or production date and time reference).

2.7 HOW DOES MY COMPANY UNIQUELY IDENTIFY PRODUCTS IN THE SUPPLY CHAIN?

Many companies use a stock keeping unit (SKU) to identify a product within their distribution network. The SKU is not a globally unique product identification however. Thus it should not be used to identify traceable products moving within the supply chain.

The best practice is to assign a GTIN for each traded item and to generate a unique batch or lot number for each production run of a given product. A GTIN may be assigned at any level of the packaging hierarchy, for instance to a pallet, case or consumer item, in order to make that level of the product hierarchy globally unique.

2.8 USE OF GLOBAL LOCATION NUMBERS

A Global Location Number (GLN) is a unique location identification number for a physical or legal entity. A GLN is a globally unique number that is assigned by the owner of the physical or legal entity using their GS1 Company Prefix.

The GLN used at a very high level to represent an entire corporation but can also be used at a granular level to represent a specific warehouse receiving door. It is recommended that trading partners in the meat and poultry industry at least assign GLNs to all of their physical locations to provide globally unique location identification for their traceability processes.

To learn more about GLN assignment visit www.gs1us.org.

3 TRACEABILITY PRINCIPLES

Implementing a traceability system within a supply chain requires all parties involved to link the physical flow of products with the flow of information about them. Adopting industry standards for traceability processes ensures agreement about identification of the traceable items. This supports the visibility and continuity of information across the supply chain.

Supply chain traceability is the net result of two complementary business processes, referred to as external and internal traceability. External traceability involves the communication of product identity and transport information between trading partners, while internal traceability involves the association of input products with output products when a trading partner creates a new product.

External Traceability - All traceable items are uniquely identified and this information is shared between all affected supply chain partners. External traceability for the meat and poultry industry is primarily based on the case level of the product hierarchy. At a minimum, the identification of products for the purpose of traceability needs:

- The assignment of a unique GTIN; and
- The assignment of a Batch/Lot Number.

To maintain external traceability, communicate traceable item identification numbers to trading partners on product labels and related paper or electronic business documents. This ties the physical products with the information necessary for traceability.

Internal Traceability - Processes that parties maintain within their organization to link the batch identity of raw materials to the batches of the finished goods are those that enable internal traceability.

When a product is combined with others, processed, reconfigured, or re-packed, the new product needs its own unique product identifier (i.e., GTIN). Maintain the linkage between this new product and its original inputs to maintain traceability. The label showing the lot identification of the traceable input item should remain on the packaging until that entire traceable item is consumed. This principle applies even when the traceable item is part of a larger packaging hierarchy.

Internal and External Traceability - End-to-end traceability depends upon the processes of internal and external traceability being effectively conducted. Each traceability partner should be able to identify the direct source and direct recipient of traceable items. This is the "one step up, one step down" principle. This depends upon supply chain partners collecting, recording, storing, and sharing minimum pieces of information for traceability that are described in the sections that follow. To have effective traceability system across the supply chain:

- Any item that needs to be traced forward or backward should be globally and uniquely identified; and
- All supply chain parties should implement both internal and external traceability practices. Implementation of internal traceability should ensure that the necessary linkages between inputs and outputs are maintained.

The figure below represents the interaction of internal and external traceability among trading partners:

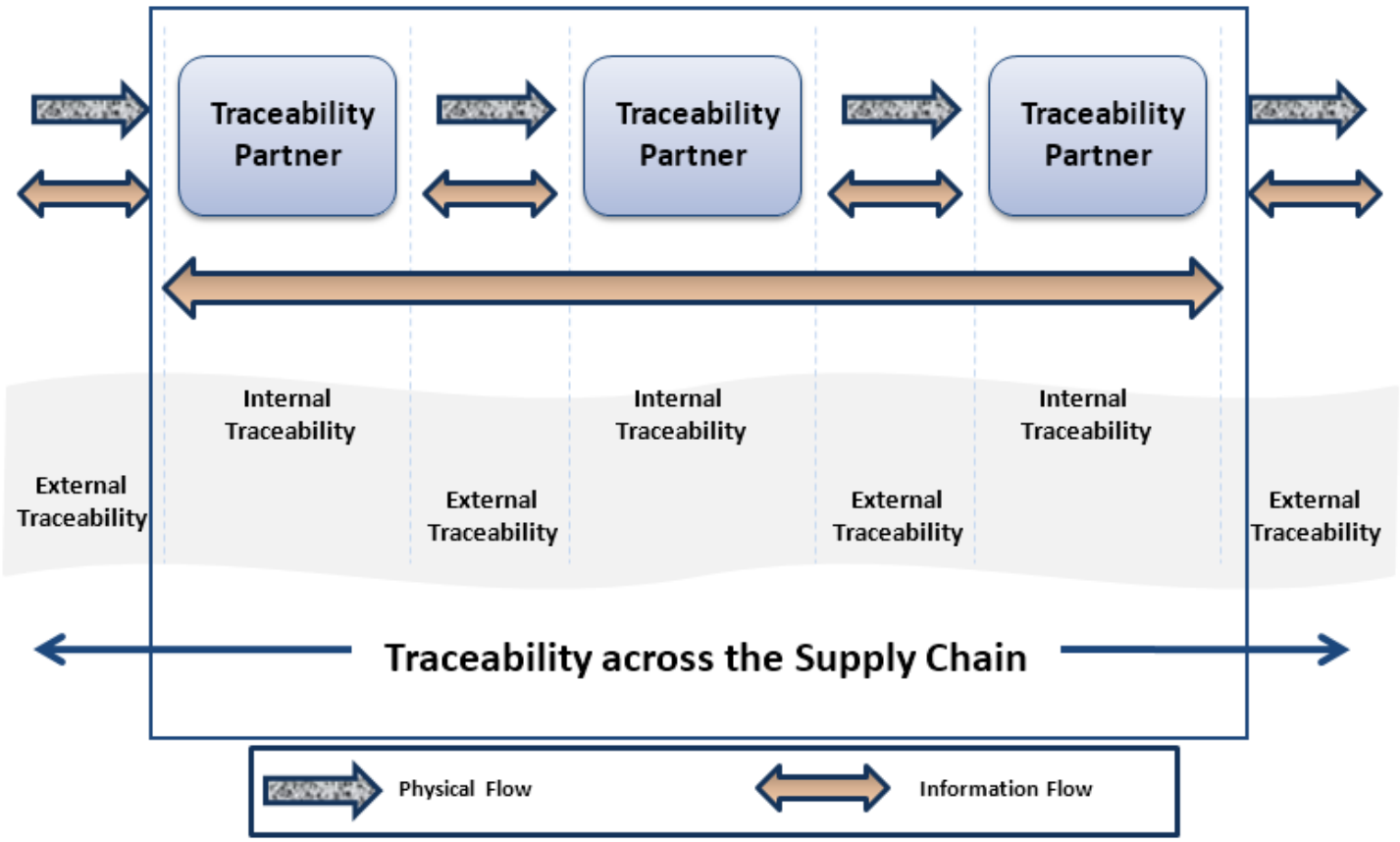


Figure 1. GS1 Traceability Model

3.1 IMPLEMENTING TRACEABILITY PROCESSES

In order to support best practices for maintaining a traceability process there are five basic business processes that should be put in place amongst trading partners. They include:

1) Plan and organize how to assign, collect, share, and maintain traceability information.

2) Determine how to align master data for all products and trading partners and other physical locations.

3) Record traceability information as products are created and shipped and modified in form.

4) Request a trace using at least one of the four information sources listed:
   - GTIN or some form of the item identification;
   - GLN or some form of the traceability partners' name or attribute;
   - GLN of the physical location for the targeted product;
   - Dates or time periods for targeted product.

5) Use the information provided to take the appropriate action as required.

3.2 TRACEABILITY DATA RETENTION

All companies are expected to maintain records that will facilitate timely and accurate traceability and support any product recalls. It is recommended that your company establish an internal data retention policy based on the following considerations:

1) The 2002 Bioterrorism Act* requires that records must be maintained for up to two years based on the type of product.

2) Length of time product may exist in the supply chain beyond two years. This is based on the type of product (chilled, frozen or shelf stable).

3) The needs to promptly retrieve data in the event of an epidemiological event which may, or may not implicate your product.

4) Industry agreements or customer requirements.

For more details go to http://www.fda.gov/RegulatoryInformation/Legislation/ucm155733.htm

3.3 TRACEABILITY DEFINITIONS

TERM	DEFINITION
APPLICATION IDENTIFIER (AI)	The field of two or more characters at the beginning of an Element String that uniquely defines its format and meaning.
ASSET	An entity that is part of the inventory of a given company that has financial value (e.g., a product or a pallet).
BATCH/LOT NUMBER	A batch unites products/items that have undergone the same transformation processes. Batch and Lot are considered synonyms. Batch and lot number assignment is part of the manufacturing process. The format and application are defined by the supplier. GS1 Global definition: Reference number assigned by manufacturer to a series of similar goods or Meat and Poultry under similar conditions.
CONSUMER ITEM	The trade item intended to be sold to the end customer.
EXTERNAL TRACEABILITY	External traceability takes place when instances of a traceable item are physically handed over from one trading partner (traceable item source to another (traceable item recipient).
FIXED-WEIGHT	A term used to denote that a product's weight is constant from case to case or from item to item. It is sometimes known as set weight or fixed measure. USDA defines fixed-weight as "Standard Weight." A fixed-weight product is typically priced per selling unit rather than per weight.
GLN (GLOBAL LOCATION NUMBER)	The GS1 Identifier comprising a GS1 Company Prefix, Location Reference, and Check Digit used to identify physical locations or legal entities. GS1 Global definition: The globally unique GS1 Identifier for legal entities, functional entities, and physical locations. The Global Location Number is 13 digits, which comprise a GS1 Company Prefix, Location Reference, and Check Digit.
GSIN (GLOBAL SHIPMENT IDENTIFICATION NUMBER)	The GS1 Identifier comprising a GS1 Company Prefix, Shipment Reference, and Check Digit used to identify unique shipments.

TERM	DEFINITION
GTIN (GLOBAL TRADE ITEM NUMBER)	The format in which Global Trade Item Numbers (GTINs) must be represented in a 14 digit reference field (key) in computer files to ensure uniqueness of the identification numbers. GS1 Global definition: The globally unique GS1 Identifier used to uniquely identify a trade item. A trade item is any trade item (trade item or service) upon which there is a need to retrieve pre-defined information that may be planned, priced, ordered, delivered and/or invoiced at any point in any supply chain.
INTERNAL TRACEABILITY	Internal traceability takes place when a trading partner receives one or several instances of traceable items as inputs that are subjected to internal processes, to produce one or several instances of traceable items as output.
LABEL/CASE MARKINGS	A tag, sticker, or printing on product packaging that provides information about the product inside.
LOT CONTROL DATE	A date reference used in accordance with the product type to assign a date value to lots of product for inventory management and as a general lot control reference. When referring to a date used for this purpose, this guide will use the term “Lot Control Date” as a general reference to either the Sell-By Date, Use-By Date, Production Date, or Packaging Date that is used by the supplier for this purpose.
SERIAL NUMBER	A code, numeric or alphanumeric, assigned to an item for its lifetime. A unique individual item may be identified with the combined Global Trade Item Number and Serial Number.
SSCC (SERIAL SHIPPING CONTAINER CODE)	The globally unique GS1 Identifier for logistic units. The Serial Shipping Container Code is an 18-digit number comprising an extension digit, GS1 Company Prefix, Serial Reference, and Check Digit.
TRACEABILITY	Traceability is the ability to track forward the movement through specified stage(s) of the extended supply chain and trace backward the history, application or location of that which is under consideration.(GS1 Global Traceability Standard)
VARIABLE-WEIGHT	A term used to denote that a product’s weight varies from case to case or from item to item. It is sometimes known as random weight, catch weight, or variable measure. A variable-weight product is typically priced on the true weight of the item rather than per selling unit.

Table E. Traceability Definitions

4 THE MEAT AND POULTRY SUPPLY CHAIN

The figure below shows an overview of the meat and poultry supply chain and the key roles played by various supply chain parties.

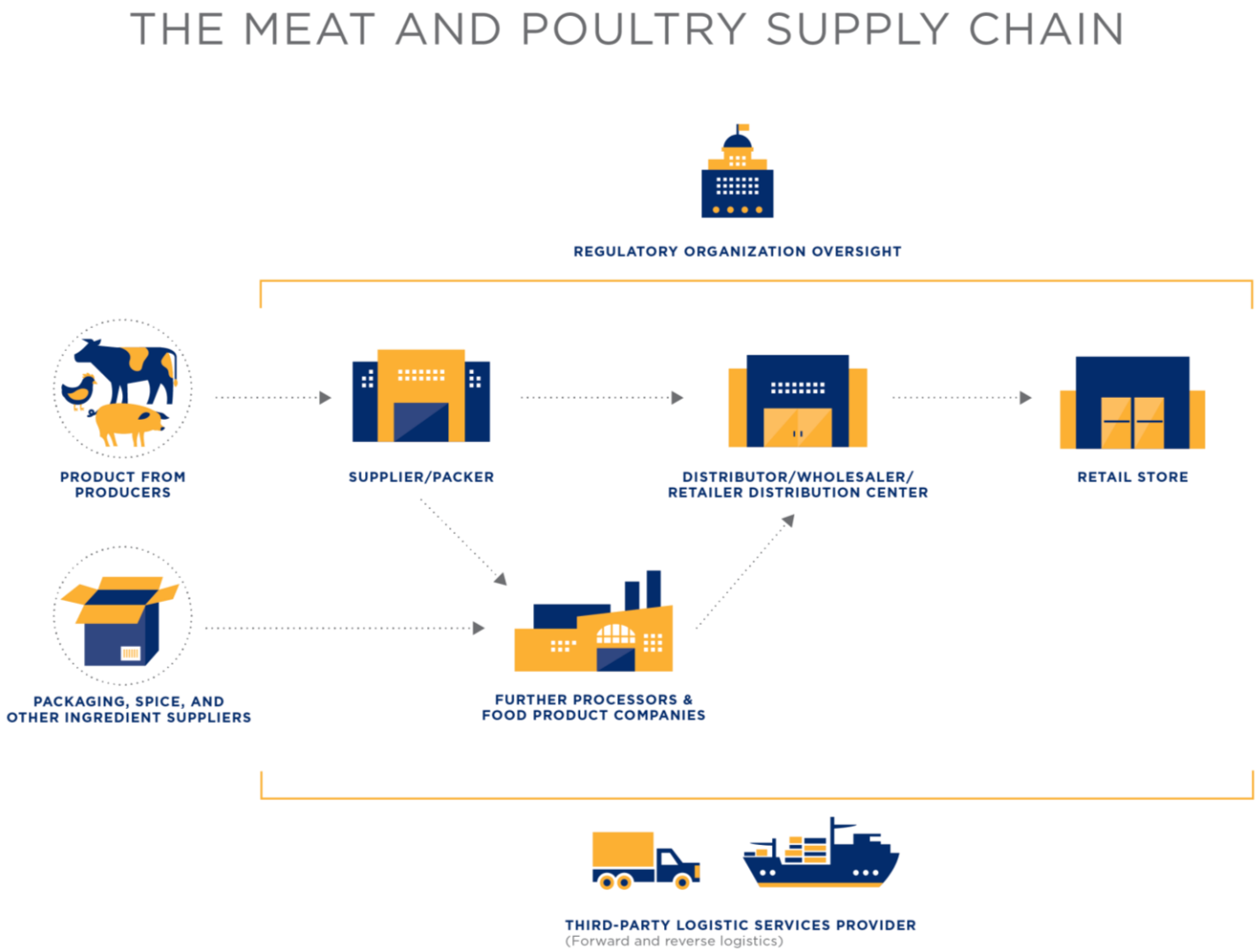


Figure 2. Meat & Poultry Supply Chain

4.1 ROLES IN THE SUPPLY CHAIN

The table below provides a list of the primary and support roles found in the meat and poultry supply chain and, if covered, where traceability guidance is provided in this document for each role.

	ROLE	ACTIVITIES	ALIAS / EXAMPLES
Primary Roles	LIVESTOCK PRODUCER (SUPPLIER OF LIVE ANIMALS)	Grow and ship	Suppliers of animal
	MEAT AND POULTRY SUPPLIER	Harvest, Process, Package, Label, Store, Sell, Ship	Meatpacker, Supplier
	RETAIL STORE	Receive, Store, Process, Package/Label, and Display; Sell to Consumer	Grocery Store, supermarket, grocery chains.
	RETAIL DISTRIBUTOR OR WHOLESALER	Receive, Store, Sell, Ship	Retail distribution center, Distribution Center, Import/Export warehouses, wholesaler warehouses
Support Roles	PACKING MATERIAL SUPPLIER	Produce and ship	Suppliers of packing material (crates, bags, boxes, labels, bins, clamshells, etc.)
	INGREDIENT SUPPLIER	Produce and ship	Breading and spice manufacturers
	THIRD PARTY LOGISTICS SERVICE PROVIDER	Transport, Store	Truck / Rail / Ship / Air
	REGULATORY ORGANIZATIONS	Compliance oversight	Customs, Inspection, and Grading agencies

Table F. Table of Roles

4.2 HOW IS MY COMPANY UNIQUELY IDENTIFIED?

A best practice for traceability is to use the GLN for company and location identification. A GLN is based on your company's GS1 Company Prefix number, thus ensuring global uniqueness. Individual GLN's should be assigned to represent your company as well as any individual trading subsidiaries. GLN's should also be used to identify production, storage, shipping or receiving locations within your company to distinctly identify physical locations associated with traceability processes.

To learn more about GLN assignment visit www.gs1us.org.

4.3 PRODUCT AND PACKAGING SCENARIOS

Within the U.S. meat and poultry supply chain, products are segmented between fixed-weight and variable-weight products. As previously defined, a fixed-weight product is always produced and sold in the same weight. A fixed-weight product is typically priced per selling unit, rather than per weight. A variable-weight product is a specific product for which the weight and price typically varies from unit to unit. A variable-weight product is typically priced on the true weight of the item, rather than per selling unit.

Retail fixed-weight case-level products are encoded with an ITF-14 (Interleaved Two of Five) barcode or a GS1-128 barcode. Variable-Weight case-level retail products should be encoded with a GS1-128 barcode. The GS1-128 barcode format is recommended format to adopt to support electronic data encoding within the barcode for traceability for both fixed and variable weight cases as it is the barcode format that enables the encoding of the GTIN and Batch/Lot or Serial Number.

Fixed-Weight products sold at retail use a UPC-A barcode. The UPC-Type 2 barcode is the commonly used format for variable-weight consumer items today. For products sold at retail, best practice is to use a GS1 DataBar® barcode which allows for additional item attributes to be included in the scanning of the product.

Generally, products are delivered by suppliers to retailers, wholesalers, or distributors in one of the following package types:

PACKAGE TYPES	DEFINITION	PRODUCT EXAMPLES
FIXED-WEIGHT CASE-READY	Consumer level items ready for sale to the consumer. Product is processed, packaged, and labelled for consumer sale by supplier.	Ready to Eat chicken nuggets, Heat & Serve roast beef, smoked pork tenderloins
VARIABLE-WEIGHT CASE-READY PRE-PRICED	Consumer level items ready for sale to the consumer. Product is processed, packaged, labeled, and pre-priced for consumer sale by supplier.	Chicken leg quarters, pork tenderloins, ground beef chubs
VARIABLE-WEIGHT CASE-READY UN-PRICED	Processed, packaged, and partially labeled for consumer sale by supplier. Final pricing for consumer sale is done by the retailer.	Hams, whole turkeys, chilled meat cuts, marinated poultry parts
TRAY-READY	Processed and bulk packed into variable-weight sealed bags by supplier. Packaged for consumer sale and labeled by retailer.	Bulk bacon, bulk sausage, smoked ham hocks, chilled and smoked turkey parts
STORE PROCESSED	Wholesale cuts of meat vacuum packed by supplier. Processed, packaged, and labeled for consumer sale by retailer.	Meat primals, sub-primals, ground beef

Table G. Meat & Poultry Package Types

When retailers, wholesalers, or distributors have suppliers provide them with “Private Label” branded product, the retailer, wholesaler, or distributor is the brand owner and is therefore responsible for identifying that product in the supply chain. The best practice is to identify these private brand items using the GTIN. In these cases, the retailers, wholesalers, or distributors will inform the supplier what GTIN to use on the product’s packaging.

If a company further processes and packages a product in the supply chain, such as the case with store-processed product, then that company becomes the manufacturer and is responsible for assigning a GTIN or item reference and traceability attributes. This may be achieved using a combination of human readable and scannable product information. This information should also be stored for future retrieval if necessary.

If a company modifies the basic characteristics of a trade item, a new GTIN or item reference is needed. Retailers, wholesalers, and distributors should be familiar with and use the same GTIN allocation rules that suppliers use if a GTIN is created. (These rules can be found in Section 2.4 above.)

A unique business process at the consumer item level that exists today in the meat and poultry industry is the use of a UPC-Type 2 barcode. As stated earlier in this document, this barcode does not contain a globally unique item number (GTIN). This barcode and its data structure are assigned by the retailer or wholesaler purchasing the product from a supplier(s). It contains a proprietary vendor or supplier reference number, a retailer-specific item reference, the extended price, and a price verifier digit. Because this data structure is retailer specific, it is not used in external traceability.

When using the UPC-Type 2 barcode, there are a variety of options for the retailer to use to identify store-processed product, such as the industry item reference for the product (e.g. PLU, URMIS, NAMPS, NCC codes) assigned by the retailer or the retailer product category name. The choice is the retailer’s to make and is dependent upon his requirements for granularity. But it is the retailer’s obligation to always correlate the

supplier's GTIN and Batch/Lot Number of the raw material to the product identity assigned by the retailer to the store-processed consumer item created from the supplier's raw material.

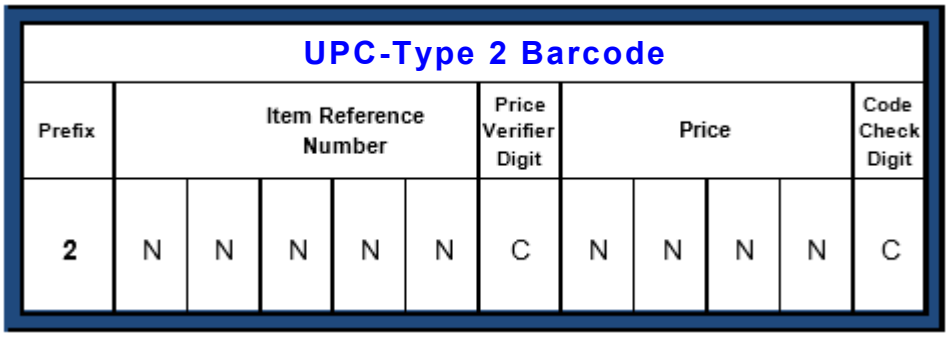


Figure 3. UPC-Type 2 Barcode Format

4.4 IMPACT OF BATCH/LOT AND SERIAL NUMBERS ON TRACEABILITY

Each partner in the supply chain shall provide and/or capture certain product information to enable forwards and backwards (one up/one down) traceability. It is imperative that the supplier establish a case-level product marking protocol that can be used for traceability by supplier, retailer, wholesaler, and distributor in normal business operations as well as used to locate specific product in the event of a product recall situation.

Of critical importance, should a product traceability or recall situation occur, is that the supplier be able to convey to their trading partner(s) the necessary information to enable a precise search for the identified product. It is incumbent upon the supplier to identify to their trading partners the type of data that will normally be provided for product traceability (i.e., Batch/Lot or Serial Number) as described in Table K.

As a minimum, a supplier assigns a Batch/Lot Number for case-level traceability. (In the GS1 System, a Batch/Lot Number is assigned an Application Identifier of 10). However, due to the wide spread use of serial numbering in this industry on variable-weight cases and the limited data carrying capacity of the GS1-128 barcode, a serial number will at times be substituted for the Batch/Lot Number in the barcode.

If a Batch/Lot Number AI (10) is present in the case barcode, the receiving partner should manage the traceability of the product using that value. However, if an AI (10) Batch/Lot Number is not present, then an AI (21) Serial Number should be present and that is the number the receiving partner should record to track the product. If both numbers are present, as sometimes happens on fixed-weight product, the receiving partner need only track the AI (10) Batch/Lot Number.

CASE BARCODE CONTENTS		NUMBER USED FOR TRACKING CASE
BATCH/LOT AI (10)	SERIAL AI (21)	
●		Batch/Lot Number
	●	Serial Number
●	●	Batch/Lot Number

Table H. Priority of Batch/Lot and Serial Numbers for Tracing Cases

Suppliers that use a case Serial Number for product tracking in place of a Batch/Lot Number should manage the Serial Number in a way that it affords a similar level of traceability as would be provided by a Batch/Lot Number.

4.5 INDUSTRY PRACTICE FOR PRODUCT DATE

Although the product date is not used at the case level for traceability, it is related to the product Batch/Lot number and because the product date is critical for inventory management, it typically appears on the case and consumer item label. You should select the date type used by the type of product you are packaging. Industry practices for product dating are:

By Product Type:

- Minimally Processed, Refrigerated or Frozen Meat – Use the Production Date AI (11).
- Further Processed Foods – If the process that you use alters the life of the product such as cooking or freezing a refrigerated product, the appropriate date is the Packaging Date AI (13).
- Cutup and Repacked Meat – Neither of these dates changes the useful life of the product and should not be used on the case label in place of the original Production Date as above. The process step of Cutup or Repack, however, should be traceable by the Batch/Lot Number AI (10).
- Ground, Chopped and Otherwise Blended Meat – These blends, intended for use in other processes, should be identified by a Use-By date, AI (17). By using a Use-By date, the items can be produced to satisfy volume needs without regard for final use. The Use-By date should be calculated based on the oldest meat used to produce the product.

By Date Type:

- Production Date – To represent the actual production date, you should use the Production Date AI (11). For uses that require you to know the age of refrigerated meat, this is an appropriate entry.
- Packaging Date – This type of dating should be used if the process that you use alters the life of the product such as cooking or freezing a refrigerated product. With this type of situation the appropriate date is the Packaging Date AI (13).
- Sell-By Date – This type of date, AI (15), should be used on product destined for and that will be viewed by end customers. Examples would be fresh tray pack items or frozen retail items.
- Use-By Date/Best-By Date – This type of date, AI (17), should be used in those industries where product is going to be used in another process. Its advantage is that it shows the user the last date a product can be used. In most cases a Harvest Date is best for refrigerated meat, but there are times when a use-by date may be a useful date for consumers in addition to the Sell-By Date.

Note that suppliers typically choose one of the above date references in accordance with the product type to assign a date value to lots of product for inventory management and as a general lot control reference. When referring to a date used for this purpose, this guide will use the term "Lot Control Date" as a general reference to either the Sell-By Date, Use-By Date, Production Date, or Packaging Date that is used by the supplier for this purpose.

5 MAINTAINING TRACEABILITY ACROSS THE PRODUCT HIERARCHY

The best practice for traceability is to identify traceable products by their GTIN and the associated production Batch/Lot or Serial Number information. This information should be available in human readable format, and best practices are that the information also be available in scannable format.

Products should have a standard identification at all levels of the product hierarchy (shipment, pallet, case, and item). The figure below identifies information that should be used to identify each level. Linking the standard product identification with human readable and potentially scannable traceability attributes for each level of the product hierarchy ensures traceability.

HIERARCHY LEVEL	HIERARCHY STANDARD IDENTIFICATION
CONSUMER ITEM	GTIN or Product Description and Brand Owner, **AND** Lot Control Date OR Batch/Lot Number
CASE	GTIN and Batch/Lot Number **OR** Serial Number
PALLET	Serial Shipping Container Code (SSCC)
SHIPMENT	Purchase Order Number(s) or Global Shipment Identification Number (GSIN)

Table I. Table of Hierarchy Levels

5.1 MINIMUM REQUIREMENTS FOR CONSUMER ITEM TRACEABILITY

The ultimate output of case-ready, tray-ready and store-processed product is consumer-packaged product sold to a final consumer. This section details how retailers, wholesalers, and distributors manage the minimum traceability data for these consumer item products.

Consumer item traceability should allow consumers to identify suspect product, so human readable information is vital. Therefore, the use of human readable information on both fixed-weight and variable-weight consumer items is essential to consumer item traceability.

Fixed-Weight consumer items have a scannable UPC-A barcode that includes a GTIN, but no additional traceability attributes. Variable-Weight consumer items have a scannable UPC-Type 2 barcode that includes an item reference. While the item reference provides the retailer with high-level information about the type of product sold, it fails to provide effective traceability with point of sale scanning. Therefore, retailers as well as consumers are largely dependent on human readable information for consumer item traceability for all items that have a UPC-A or a UPC-Type 2 barcode.

The party responsible for packaging, labelling, bar coding, and setting the shelf life date of the consumer items varies with the packaging type. The following section highlights for each packaging type whether the supplier or the retailer has responsibility:

PACKAGING TYPE	PACKAGING		LABEL PLACEMENT		UPC-TYPE 2 ITEM REFERENCE		SHELF LIFE DATING	
	SUPPLIER	RETAILER	SUPPLIER	RETAILER	SUPPLIER	RETAILER	SUPPLIER	RETAILER
FIXED-WEIGHT CASE READY	●		●		N/A	N/A	●	
VARIABLE-WEIGHT CASE READY, PRE-PRICED	●		●*	●*		●		●
VARIABLE-WEIGHT CASE READY, UN-PRICED	●			●*		●		●
TRAY READY		●		●		●		●
STORE PROCESSED (FULL SERVICE AND PACKAGED)		●		●		●		●

Table J. Responsible Party for Consumer Item Traceability Data

Fixed-Weight consumer items are packaged and labelled by suppliers and the traceability information for this packaging type is always the responsibility of the supplier. Although case-ready consumer items are always packaged by the supplier, they may be pre-priced or un-priced when delivered to retailers. In either case, the retailer always determines the Sell-By or Use-By Date and item reference number. When labelling is performed by the supplier, the retailer communicates this information to the supplier before the UPC-Type 2 barcode labels are printed. The following table shows the necessary traceability elements for consumer-item products:

DATA ELEMENT	SCAN LENGTH	CASE-READY		STORE-PROCESSED	
		HUMAN READABLE	SCAN	HUMAN READABLE	SCAN
BRAND OWNER/COMPANY NAME	N/A	●		●	
CONSUMER ITEM PRODUCT DESCRIPTION	N/A	●		●	
USDA ESTABLISHMENT NUMBER	N/A	●			
GLOBAL TRADE ITEM NUMBER (GTIN)	2+14		●*		●*
ITEM IDENTIFICATION NUMBER	5		●^		●^
LOT CONTROL DATE OR BATCH/LOT NUMBER	N/A	●		●	

Table K. Consumer Level Data Requirements for Traceability

Human Readable = Human Readable label text; Scan = Barcoded using the UPC-A;
*Only on fixed-weight items with a UPC-A barcode
^Only on variable-weight items with a UPC-Type 2 barcode

The figure below shows a consumer label that contains all the minimum traceability information for a case-ready fixed-weight product:

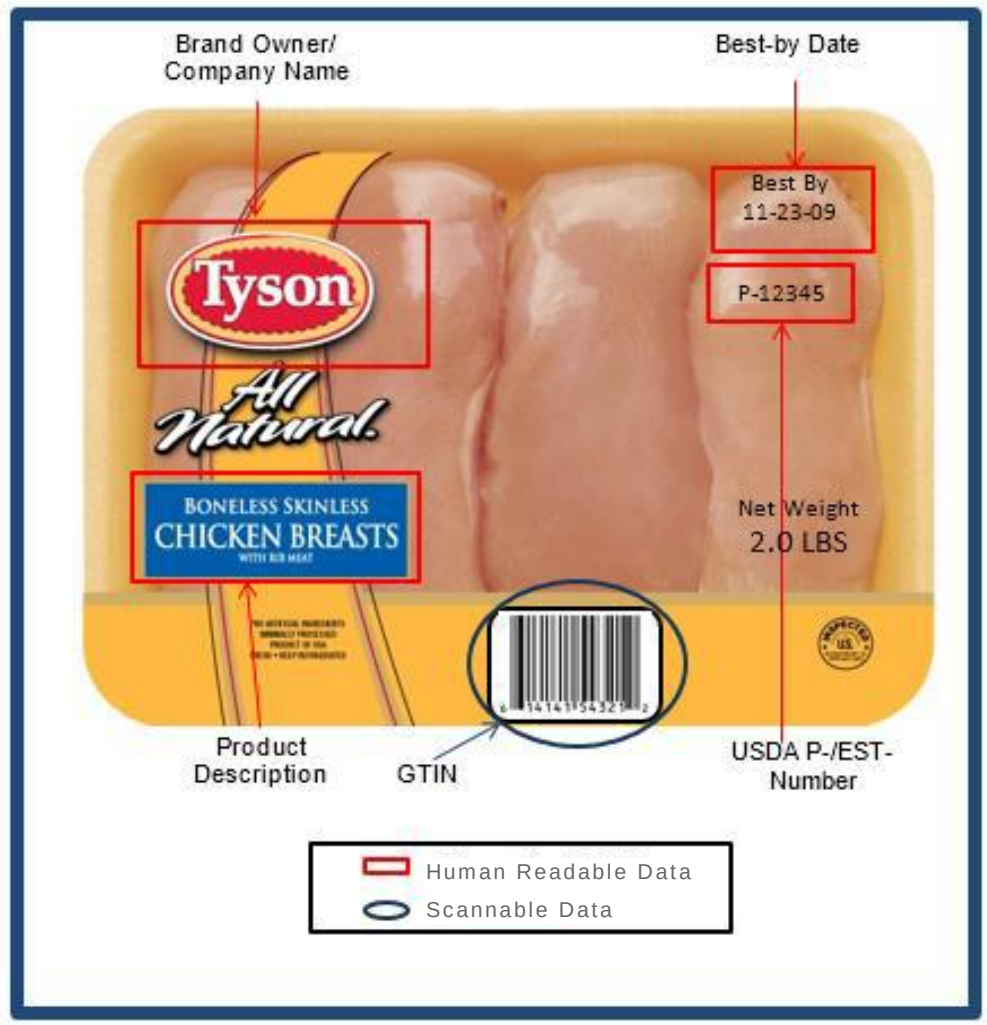


Figure 4. Case-Ready Fixed-Weight, Consumer Item Label

For case-ready, variable-weight packages, the UPC-Type 2 barcode does not contain the product GTIN but only the retailer's item reference number. For this reason, packages with the UPC-Type 2 barcode rely almost entirely on human-readable label information, typically the product description and the Lot Control Date, for traceability.

When suppliers label case-ready, pre-priced consumer items with a UPC-Type 2 barcode, they should manage traceability by associating the supplier's Batch/Lot number with the printed Lot Control Date on the label or by printing the Batch/Lot Number on the consumer item label. When retailers, wholesalers, or distributors label case-ready, un-priced consumer items with a UPC-Type 2 barcode, they should manage traceability by associating the supplier's Batch/Lot number with the printed Lot Control Date on the label or by accurately printing the supplier's Batch/Lot Number from cases onto the consumer item label.

The figure below shows a consumer label that contains all the minimum traceability information for a case-ready variable-weight product with a UPC-Type 2 barcode:

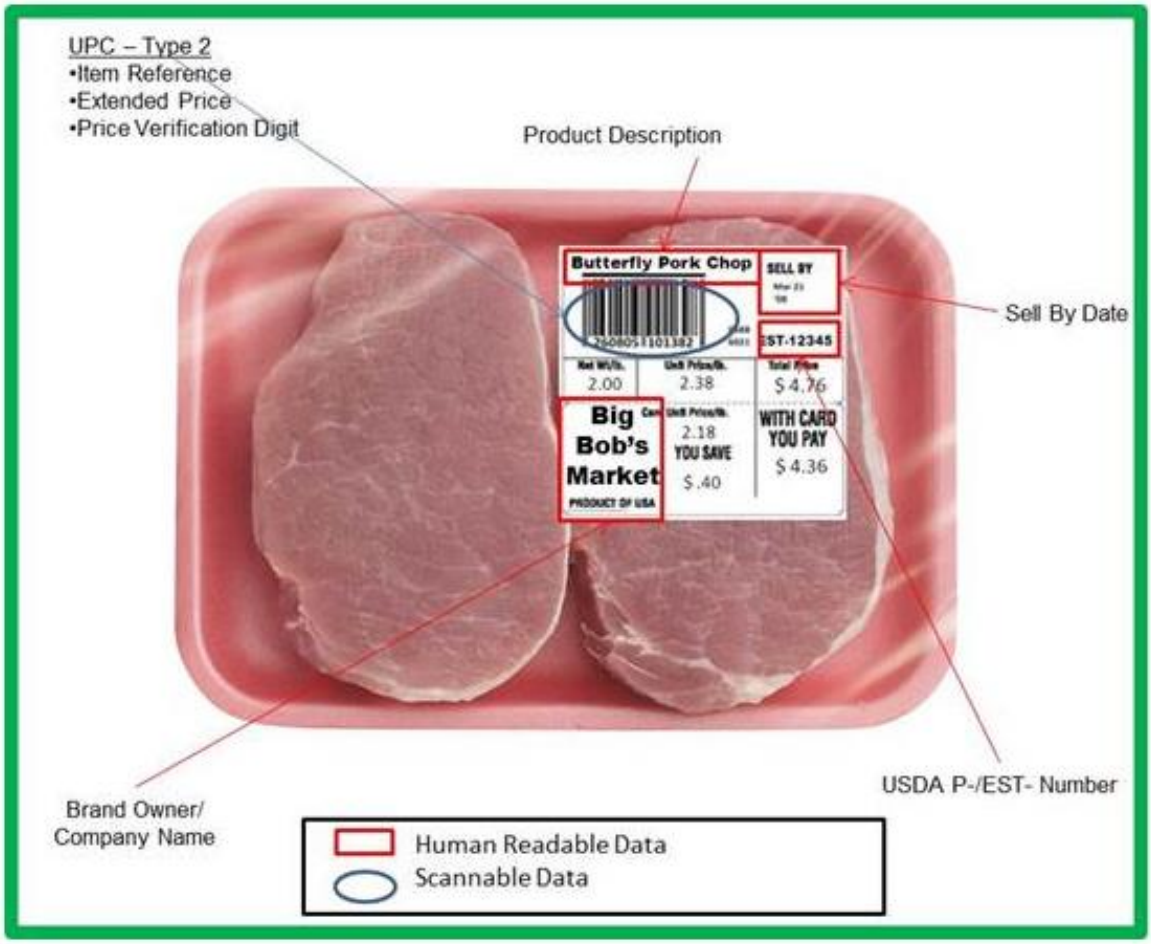


Figure 5. Case-Ready Consumer Item Label

When retailers, wholesalers, or distributors package and label store-processed and tray-ready consumer items, they should be able to associate the supplier's case GTIN and Batch/Lot Number or case Serial Number with the consumer item product name, retailer item reference, and retailer Lot Control Date or Batch/Lot Number that they apply to the consumer package. Maintaining this association makes store-processed and tray-processed product traceability a greater challenge than case-ready consumer items where product is processed only by the original supplier.

Labelling traceability markings on store-processed and tray-ready variable-weight consumer items is always the responsibility of the retailer. The retailer should determine the Lot Control Date and associate it with the supplier's Batch/Lot Number or case Serial Number.

The figure below shows a consumer label that contains all the minimum traceability information for a store-processed or tray-ready variable-weight consumer item:

Figure 6. Store-Processed/Tray-Ready Consumer Item Label

As seen in the examples above both the Sell-By Date and the Batch/Lot Number can be used to manage traceability on consumer level products using the UPC-Type 2 barcode. Although the Batch/Lot Number is used exclusively to identify product batches at the case level, the Lot Control Date is also effective for managing traceability at the consumer item level for the following reasons:

- The Lot Control Date creates a user-friendly human-readable product identity reference for consumers.
- The Lot Control Date offers a simple, consistent data point for withdrawing consumer items from public sale. Although the granularity of Batch/Lot/Serial numbers can be used to advantage at the case level to avoid returning case quantities of unadulterated product, this granularity is useful at the item level. The many Batch/Lot Numbers to one Lot Control Date value meets this aggressive withdrawal objective that retailers and suppliers prefer once product has reached the supply chain.

- Finally, the programming logic necessary to identify suspect product at point of sale is simpler using Lot Control Date than a specific Batch/Lot or Serial number or series of Batch/Lot or Serial Numbers. The Batch/Lot/Serial numbers do not have a standard syntax, often include alphabetic characters, and would typically require exact matching of scanned numbers to possibly hundreds of targeted Batch/Lot/Serial numbers to trap all recalled product. Lot Control Dates have a standard YYMMDD syntax and recalled product can be easily identified by matching its Sell-By or Use-By Date value to a single date or range of dates.

5.2 MINIMUM REQUIREMENTS FOR CASE TRACEABILITY

At a minimum, case level traceability relies upon a combination of the GTIN and Batch/Lot or Serial Number. The figure below provides a summary of scannable and human readable traceability attributes.

Because of differences in production practices and barcode size constraints, traceability labelling practices vary depending on the type of meat or poultry product produced. The primary difference is between variable-weight products and fixed-weight products, and between refrigerated and frozen or shelf-stable. These differences are summarized in the figure below:

DATA ELEMENT	SCAN LENGTH	VARIABLE-WEIGHT			FIXED-WEIGHT		
		HUMAN READABLE	SCAN	ASN	HUMAN READABLE	SCAN	ASN
SUPPLIER COMPANY NAME	N/A	●			●		
SUPPLIER PRODUCT NUMBER /ITEM REFERENCE	N/A	●			●		
CASE-LEVEL PRODUCT DESCRIPTION	N/A	●			●		
GLOBAL TRADE ITEM NUMBER (GTIN) AI (01)	2+14		●	●		●	●
BATCH /LOT NUMBER AI (10)	2+12 max	●	●*	●	●	●	●
SERIALIZED CASE CODE AI (21)	2+12 max			●^		●^	●^

Table L. Case Level Data Requirements for Traceability

Human Readable = Human Readable label text; Scan = Barcoded; ASN = Advance Ship Notice/Ship Notice Manifest; AI = Application Identifier
* = Use Serial Number when present on case and useful for traceability and use Batch/Lot Number if no Serial Number present on case.
^ = Include Serial Number when present on case and useful for traceability

Both variable-weight and fixed-weight product cases should be clearly labelled with the same human readable core traceability information. Human readable numbers should be clearly labelled data elements such as the text “Batch Number” followed by the batch number value. Human readable numbers located below each GS1 barcode should not be used for this purpose because they are not clearly labelled data elements. Even though logistics supply chain operators may be able to interpret application identifier code numbers (such as “10” for the Batch/Lot number), the application identifier is not a substitute for a clearly labelled data element.

In addition to the core traceability information in Table L above, case labels will also include:

- Net weight;
- USDA Establishment Number of the production facility, required by USDA regulation; and
- Lot Control Date (Sell-By Date, Use-By Date, Production Date, or Packaging Date), recommended for shelf-life management and used for consumer level lot management.

The methods manufacturers use to barcode fixed-weight products varies greatly in the industry. This can vary all the way from a barcode similar to frozen product above to a barcode with just the GTIN in an ITF-14 symbology. Note that the ITF-14 barcode does not include all of the minimum traceability data in a scannable form. The GS1-128 barcode format is the preferred format to be used at the case level to communicate critical traceability data elements. It should be adopted if not currently in use to best facilitate information sharing for traceability processes.

The GS1-128 barcode standards allow for the use of Application Identifiers (AI) to define different data elements in a barcode on each case. A fixed-weight product case should always contain a Batch/Lot Number AI (10) within the case barcode. Optionally, a Serial Number AI (21) can also be included. If both are available, the Batch/Lot Number should still be used for the traceability of fixed weight products. A date is also typically included in the barcode for shelf-life management. Net weight information is obviously not needed in the barcode, and its absence allows for the consistent inclusion of the Batch/Lot Number.

The figure below is an example of a fixed-weight case label that contains all of the necessary traceability information:

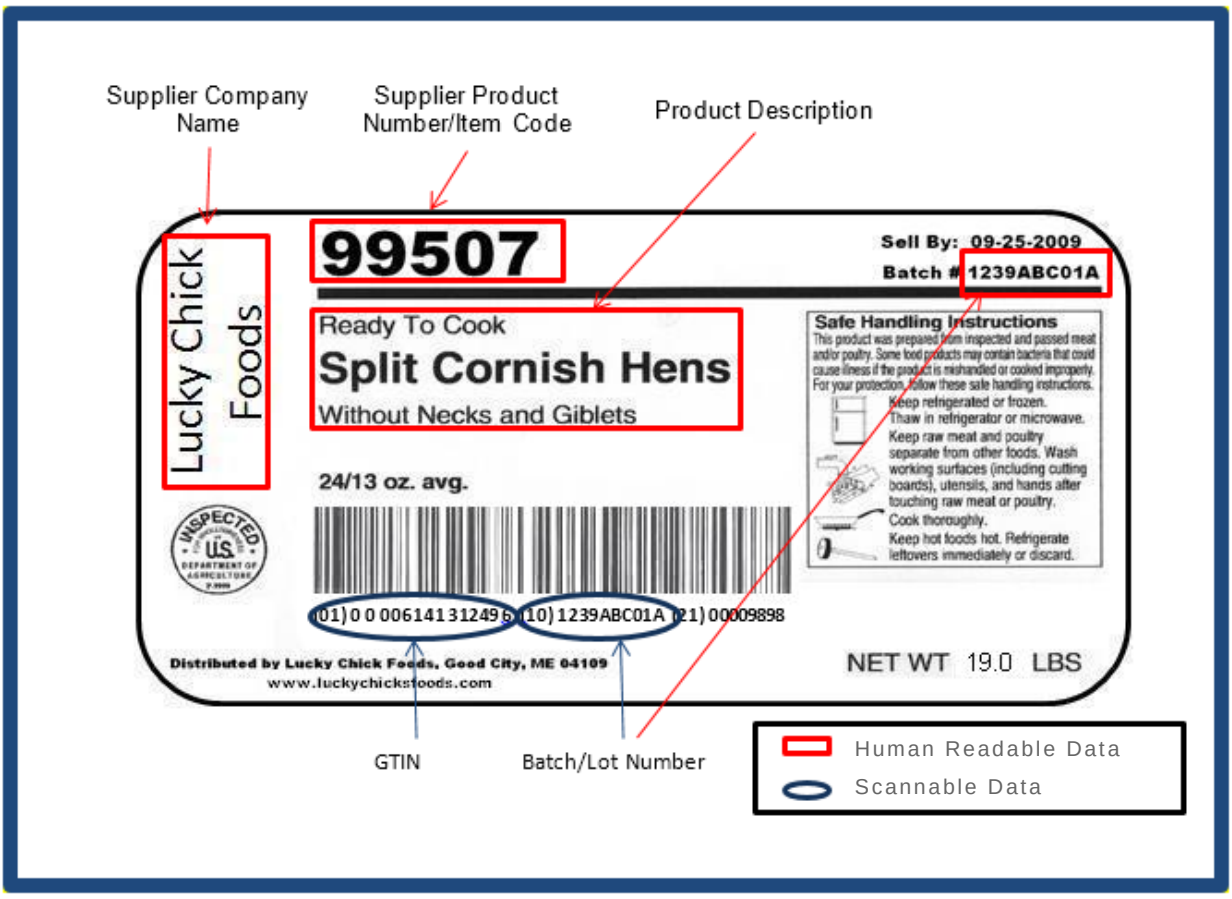


Figure 7. Fixed-Weight Case Label

Some suppliers assign a serial number to each variable-weight case to ensure that cases are not scanned more than once when loading pallets. When serial numbers are present on variable-weight cases and used for traceability of product, include the case Serial Number AI (21) in the GS1-128 barcode. If Serial Numbers are not used for traceability, then include the Batch/Lot Number AI (10). Ideally, both data elements would be included in the barcode. But because of the limited data carrying capacity of the GS1-128 barcode (48 digits), both a Serial Number and a Batch/Lot Number cannot be included in the barcode along with the GTIN, net weight, and product date that are also necessary for logistics management of variable-weight cases.

The type of product date used in the case barcode depends upon the business segment being served by the product. Most products destined for retail shelves use a Sell-By or Use-By Date. The use of dates by distributors and retailers is necessary to know how much shelf life the product has remaining. Customers interested in the age of the product, prefer a Production Date. For frozen products, some manufacturers use a Packaging Date AI (13) instead of a Production Date AI (11), as this is the date the product is stabilized in the frozen or shelf-stable form and the starting point for measuring shelf life. A complete discussion of industry product dating practices is found in Section 4.5 above.

The figure below is an example of a variable-weight case label with a case serial number that contains all of the minimally necessary traceability information:

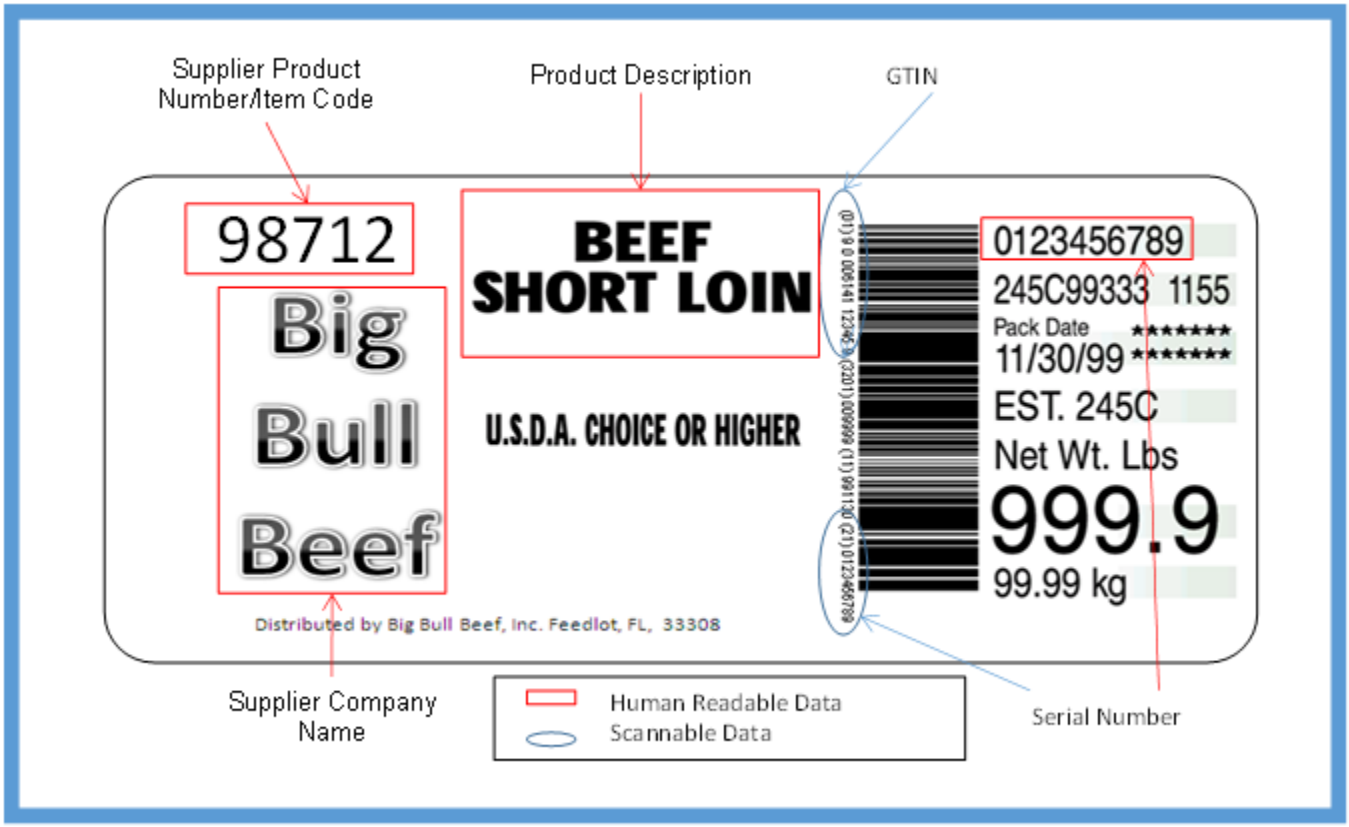


Figure 8. Variable-Weight Case Label

5.3 MINIMUM REQUIREMENTS FOR PALLET TRACEABILITY

The standard business practice is to assign a GS1 Serial Shipping Container Code (SSCC) to each pallet once all cases are in place. To manage product traceability at the pallet level, labels should be attached to the loaded pallet to provide a means of identifying that logistics unit to trading partners. The label should show a logistics unit identifier, such as the SSCC, in an easy-to-read human readable form as well as an optional scannable GS-128 barcode.

Typically, this shipment identification exists only for the duration of the shipment between trading parties, as shipments are broken down upon arrival it is not intended to be considered a primary identifier for product traceability. However, it can provide some links when contents are related to the larger shipment identifier. Unique shipment identification information may be used as a reference, along with other document identification like Bill of Lading, Manifests, Shipping Notice, etc.

Each SSCC number that is assigned is unique to the individual logistics unit and is based on your company's GS1 Company Prefix number. This ensures unique SSCC numbers world-wide.

The SSCC is typically part of a larger label affixed to the pallet. Additional information may be shown on the label, depending on the requirements of the trading partner. Most often the additional human readable information includes the shipper name and address, the carrier, and the delivery information.

Over time your company will exhaust its pool of available SSCC numbers. For this reason, it is important that your company manage the re-use of SSCC numbers so as not to conflict with logistics units already in the supply chain. The best practice is to not re-issue an SSCC number for a period of at least one year.

The figure below is an example of a pallet label with just the SSCC number:

Figure 9. Pallet Label

To fully utilize the SSCC barcode, the barcode should be used in conjunction with an EDI 856 Advance Ship Notice (ASN). The SSCC can then be used as a reference key to additional logistical information provided in the ASN.

Additional information about SSCC assignment may be found at www.gs1us.org.

5.4 MINIMUM REQUIREMENTS FOR SHIPMENT TRACEABILITY

Bills of Lading (BOL) and Manifests are paper-based documents created by a supplier or shipper and sent with a shipment or order to the product recipient. The Bill of Lading is the legal document summarizing information about the goods being transported. The Manifest document describes individual order details such as product GTINS, individual case weights, etc. Advance Shipping Notices (ASNs) are electronic messages created by a supplier and sent to a product recipient using Electronic Data Interchange (EDI) that communicate the same shipment information as the Bill of Lading and Manifest.

The traceability data elements are the same for all meat and poultry products, both variable-weight and fixed-weight, and refrigerated, frozen, and shelf-stable. Best Practices are that the following data elements are included in the paper-based Manifest and the electronic ASN:

- GTIN
- Batch/Lot or Serial Numbers

In addition, other useful information such as the following may be included:

- SKU or other supplier product identification reference
- Production Date IF Product is for retail store-processing or foodservice use
- Sell-By Date OR Use-By Date IF case-ready or consumer-ready product
- USDA Establishment Number
- USDA Country of Origin Labelling Statement OR ISO Country Number(s)

The shipment information includes the capability to define relationships between the shipment, purchase orders, pallets, and cases present in the order and the traceability and logistical management data for each. These relationships should be clearly defined in each electronic message.

The data model for traceability information and the relationship of this information to each level of the traceable item hierarchy is shown below.

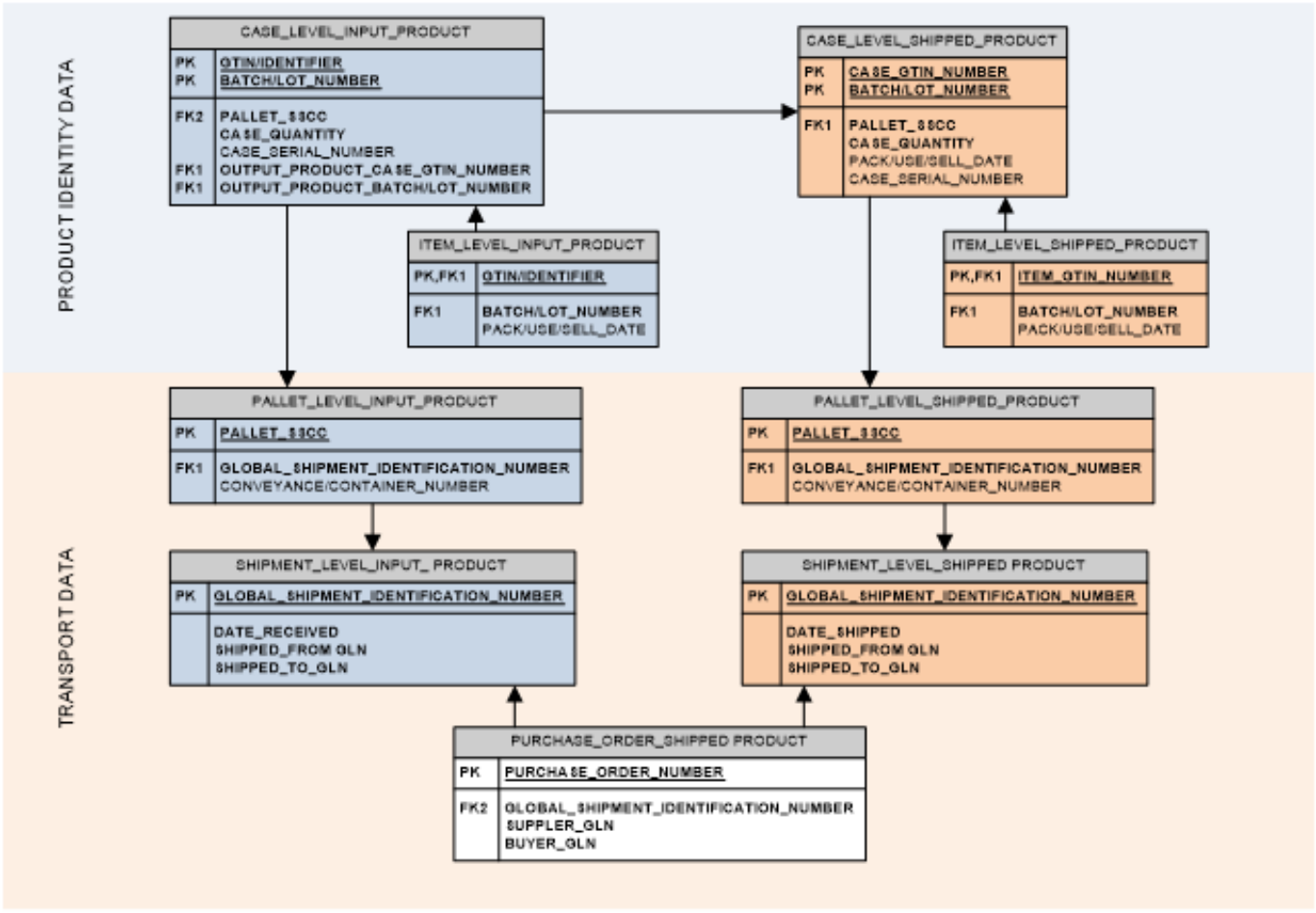


Figure 10. Data Model for Meat and Poultry Traceability

5.5 MAINTAINING TRACEABILITY FOR PRODUCT FROM LIVE ANIMAL PROVIDERS

Live animal providers deliver product in various logistic units. Each logistics unit should be individually traceable. Information used to insure traceability includes:

- Provider Identity
- Accurate herd/house/pen information depending on species of the animals received
- Purchase Order Number or Live Receiving Ticket of received animals
- Date of Receipt
- Carrier Name and Trailer Number
- Count of Animals

Live animal product lots should be traceable. This is accomplished by associating each animal lot identification number with the GTIN and Batch/Lot Number of the output product it is used to produce.

5.6 MAINTAINING TRACEABILITY FOR OTHER PRODUCT INPUTS

Packaging materials, seasonings, marinades, and other product inputs are used in the production process by suppliers and retailers. These product lots should be traceable. This is accomplished by associating each product lot identification number with the GTIN and Batch/Lot Number of the output product it is used to produce.

Product sourced from other suppliers should be identified by the GTIN and Batch/Lot Numbers provided by the supplier. The assignment of GTINs for each product traded (i.e., all product configurations) is the responsibility of the brand owner and should be recorded in the supplier's internal systems prior to being processed or traded.

GTIN and Batch/Lot or Serial Number information is shown on individual case labels. The GTIN and Batch/Lot or Serial Number of each input product should be associated with the GTIN and Batch/Lot Number of the output product.

6 BEST PRACTICES FOR MAINTAINING TRACEABILITY

Traceability processes are only as good as the weakest link. Therefore it is important for suppliers, retailers, distributors, and wholesalers to understand the value of collecting and maintaining product information that supports “one up/one down” traceability.

Best practices for maintaining traceability for the suppliers, retailers, wholesalers, and distributors is to capture all traceable information and store it within their systems by scanning the information directly from the case and/or consumer item barcodes. Scanning enables data to be captured, stored, and retrieved without the need to visually review the human readable information and manually key that information into systems.

While the process of scanning cases outbound from warehouse to a store is the exception today, more and more retailers, distributors and wholesalers are putting processes in place to collect and store at least the minimum product information needed to support traceability. Product can be scanned as it enters a distribution center, as it is shipped out of the distribution center, as it is received at a retailer store, or as it is opened for processing or consumer display.

Best practices would be for a retailer, wholesaler, or distributor to mimic the product information data elements recommended for the supplier traceability best practices. The more holistic the view of the product flowing within the supply chain, the more accurate the information used in traceability process.

Critical tracking events identify those core business processes where traceability data capture is vital to a successful traceability process. The following figure illustrates those key events for the meat and poultry supply chain.

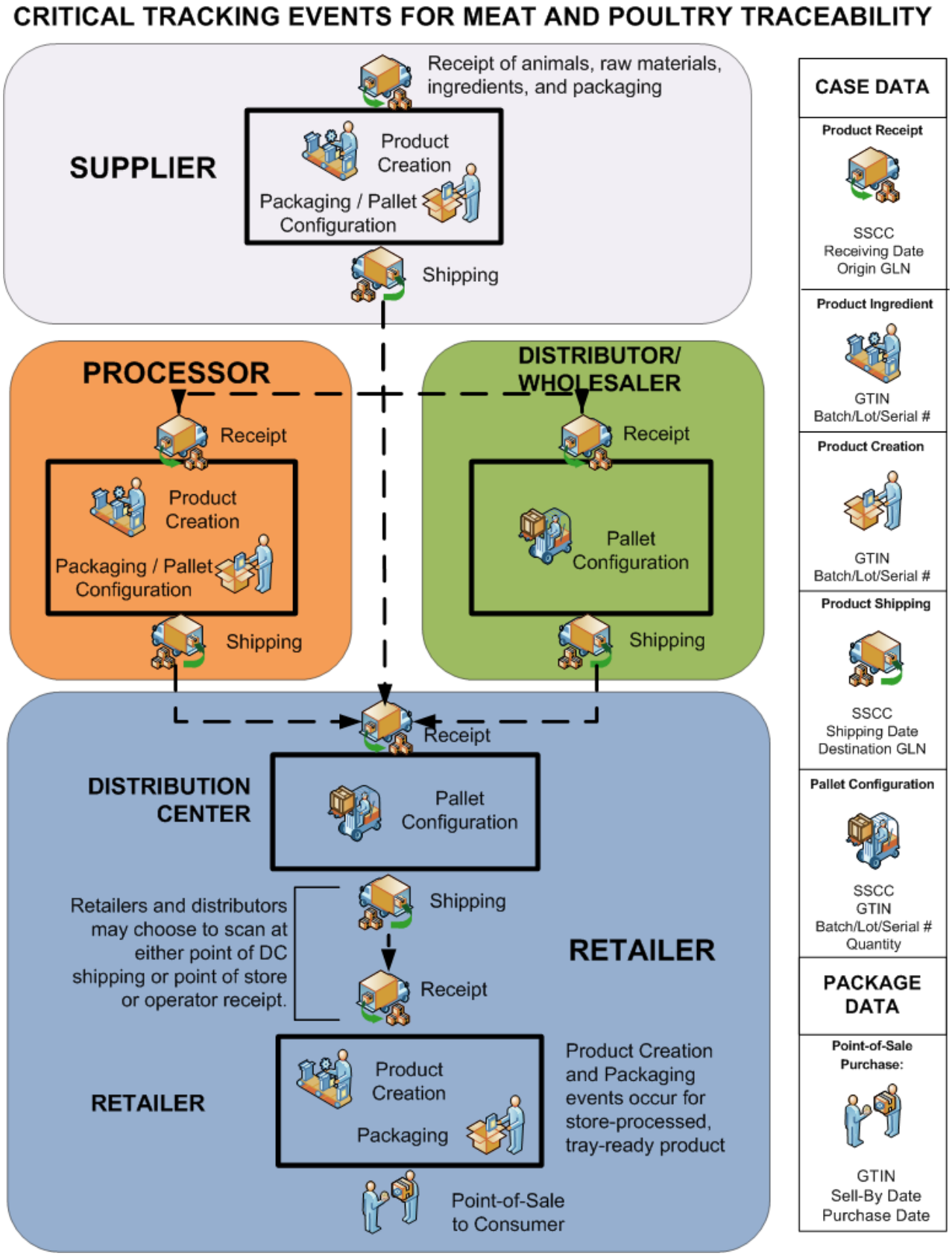


Figure 11. Critical Tracking Events for Meat and Poultry Traceability

The following diagram summarizes the traceability and logistical data that is typically collected and reported by the supplier to each customer for those critical tracking events noted above:

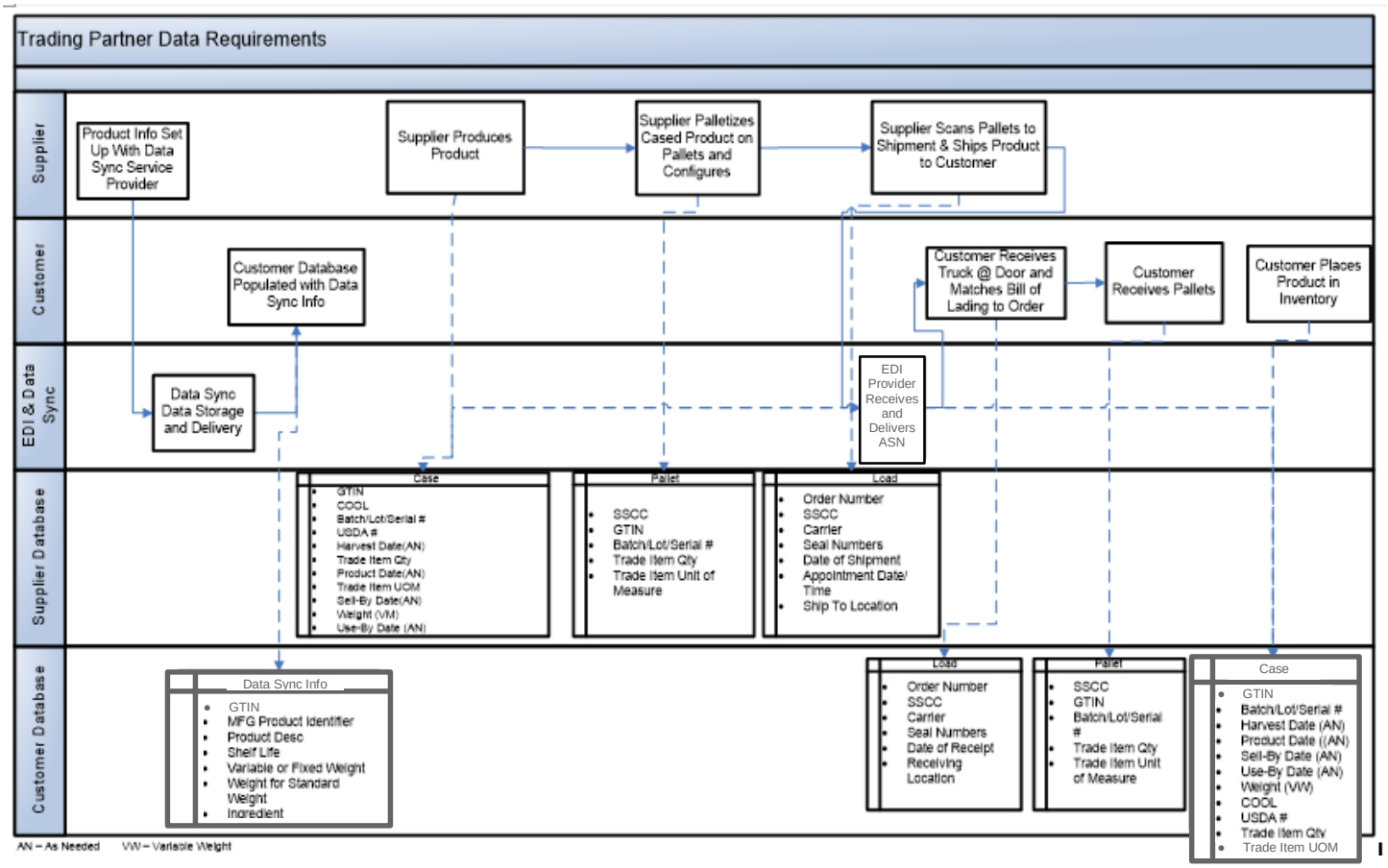


Figure 12. Trading Partner Data Requirements Diagram

6.1 BEST PRACTICES FOR CONSUMER ITEM TRACEABILITY

January 2010 is the sunrise date for the adoption of the GS1 DataBar. This new barcode symbology standard allows up to 74 numeric characters or 41 alpha/numeric characters of information to be included on a consumer item barcode. Once this symbology is adopted, all product information needed for traceability can be encoded into the barcode. The need to combine human readable information to the scannable information will no longer be necessary. Using the GS1 DataBar, the necessary traceability data can be included on each package.

Adoption timelines will occur between 2010 and 2014, depending on the product category. Perishables, pharmaceuticals, and coupons are being implemented first as work has been underway for a few years to develop their requirements. As GS1 Standards have been finalized for meat and poultry, adoption will begin.

The GS1 DataBar symbology will enable the meat and poultry industry to move away from the retailer specific UPC-Type 2 barcode which does not support the encoding of a GTIN and other data elements critical for traceability. Implementing the GS1 DataBar at the consumer item level will greatly aid in the ability to capture traceability information electronically as product flows from a retailer to the consumer.

Critical traceability data elements that should be encoded into a GS1 DataBar include:

- GTIN AI (01), and
- Lot Control Date [Sell-By Date AI (15), Use-By Date AI (17), Production Date AI (11), or Packaging Date AI (13)] OR Batch/Lot Number AI (10).

The table below summarizes the information needed to enable traceability in human-readable form, in scannable consumer item GS1 DataBar, and in the electronic commerce ASN:

DATA ELEMENT ● = MANDATORY	SCAN LENGTH	SCAN	ASN
GTIN [AI (01)]	2+14	●	●
SELL-BY-DATE (YYMMDD) [AI (15)] OR USE-BY-DATE (YYMMDD) [AI (17)]	2+6	●	●
OR BATCH/LOT NUMBER [AI (10)]	2+N	●	●

Table M. Best Practice Consumer Level Data Requirements for Traceability

Scan = Barcoded using the GS1 DataBar;
ASN = Advance Ship Notice/Ship Notice Manifest;
AI = Application Identifier

Note that both the GTIN and one of the Lot Control Dates will typically be included in the GS1 DataBar. The reason is the GTIN provides for product identification and the Lot Control Date for its value in managing product shelf life. But Lot Control Dates are also used effectively by suppliers to recall and trace fixed-weight and variable-weight products at the consumer level.

Some consumer-level products, such as fresh tray-packed poultry, often draw product from several different Batch/Lots and combine them into lots designated by a Sell-By or Use-By Date. In such cases, the Lot Control Date is the element a supplier uses to recall product. In these cases, the GTIN and the Lot Control Date are in the GS1 DataBar for traceability.

However, when a supplier uses a Batch/Lot number to recall and track product at the consumer level, the Batch/Lot Number should also be included in the GS1 DataBar and captured at the time of sale. In these cases, the GTIN and the Batch/Lot Number are in the GS1 DataBar for traceability, and a Lot Control Date will also be present for inventory management. The GS1 DataBar may contain other application identifiers for purposes unrelated to traceability, such as the weight and extended price of the item.

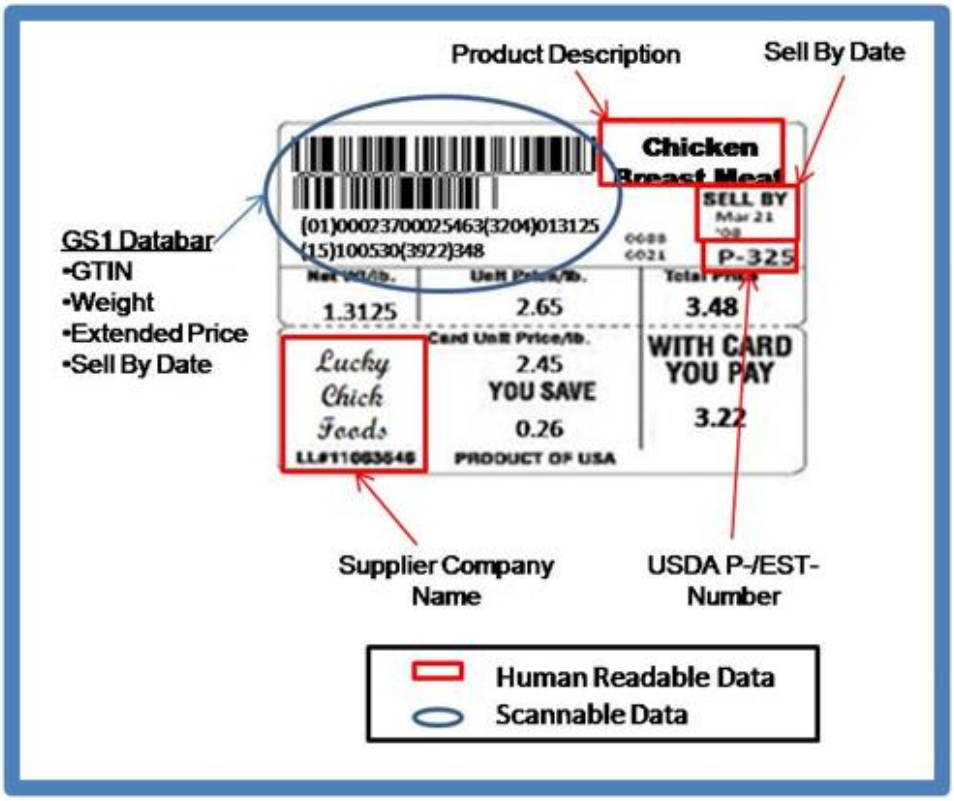


Figure 13. Best Practice Consumer Item Label with GS1 DataBar

For implementation information about the GS1 DataBar, go to www.gs1us.org.

6.2 BEST PRACTICES FOR CASE LEVEL TRACEABILITY

Best practices for case traceability for the retailer are achieved by electronically capturing the traceability information of the case and associating that information with all movements of that product across the supply chain. The case level traceability attributes that should be captured through the barcodes or ASNs, electronically stored, and retrieved upon demand are:

DATA ELEMENT	SCAN LENGTH	VARIABLE-WEIGHT		FIXED-WEIGHT	
		SCAN	ASN	SCAN	ASN
GTIN [AI (01)]	2+14	●	●	●	●
BATCH/LOT NUMBER [AI (10)]	2+12 max	●*	●	●	●
SERIALIZED CASE CODE [AI (21)]*	2+12 max		●^	●^	●^

Table N. Best Practice Case Level Data Requirements for Traceability

Scan = Barcoded; ASN = Advance Ship Notice/Ship Notice Manifest; AI = Application Identifier
* = Use Serial Number when present on case and useful for traceability and use Batch/Lot Number if no Serial Number present on case.
^ = Include Serial Number when present on case and useful for traceability

The figure below shows the best practice flow of traceability information for meat and poultry:

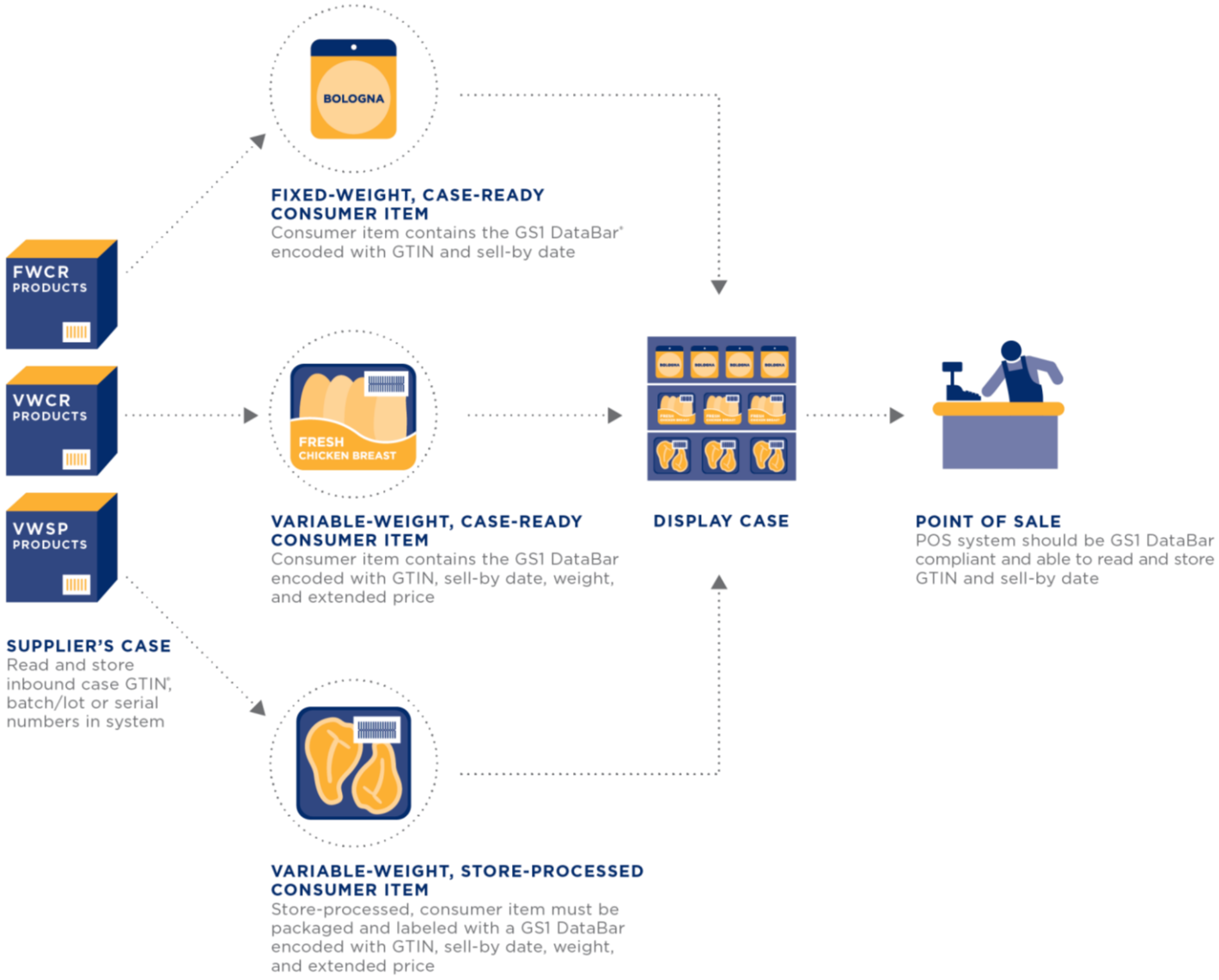


Figure 14. Traceability Best Practices'

6.3 CAPTURING SUPPLIER PRODUCT DATA

Best practices are for retailers, wholesalers, and distributors to capture logistics unit and product information electronically from their suppliers to maintain traceability and manage product inventory. The use of GS1 Standards for marking products (GTINs) and pallets (SSCCs) in the supply chain is a primary enabler for maintaining product visibility throughout the supply chain. The SSCC uniquely identifies each pallet, and using electronic Advance Ship Notice (ASN) information available from many suppliers, it can also be used to access information for all cases on that pallet.

When full pallet quantities are shipped from the warehouse to the retail store, scanning the SSCC from the pallet and using the information from the ASN provides traceability information for the wholesaler or distributor.

If that pallet has not been re-configured since it was received from the supplier, the original information collected during the receiving process (i.e., the scan of the SSCC tied to the ASN information) may be used to support traceability. It is the "owner" of the pallet configuration that is responsible for the accuracy and attributes that are associated with the product configured on the pallet.

In the meat and poultry industry the use of human readable information captured is used in conjunction with electronic scanning. As a result traceability processes are dependent on both electronic and human readable traceability information. The best practice is to scan the case when breaking the product down to a consumer item in order to tie the case to the consumer item.

6.4 OUTGOING PRODUCT TO STORES

Retailers, wholesalers and distributors should capture information about outbound product going from a warehouse to a store. This information may be captured at any point in the product movement such as from the warehouse outbound to the store, at arrival at the store, or when the product is being broken down to a new consumer item or is placed into self-service display cases. To enable traceability, retailers, wholesalers and distributors should identify the GTIN, Batch/Lot or Serial Number and quantity of cases in each order sent to a store. This supports the "one up/one down" principle of tracing a product's movement through the supply chain.

6.5 ADVANCE SHIP NOTICE

The Advance Shipping Notice (ASN), an electronic data file sent from suppliers to receivers, can be used as an efficient alternate to case scanning. Retailers can process the ASN to capture for each pallet identified by a SSCC, the GTIN, case Serial Number, and/or Batch/Lot Number of each case on the pallet. When a shipment is received, retailers that use ASNs only need to scan the SSCC of each pallet in the shipment rather than each case in the shipment individually.

Similarly, distributors or retailers that break down pallets and restack cases onto outbound pallets should scan case barcodes and create a new ASN to be sent to the subsequent receiver of the product. In this way, the flow of traceability information for that product is always efficiently available to all partners in the supply chain.

The figure below shows the best practice flow of traceability information at the case level for retailers using the ASN:

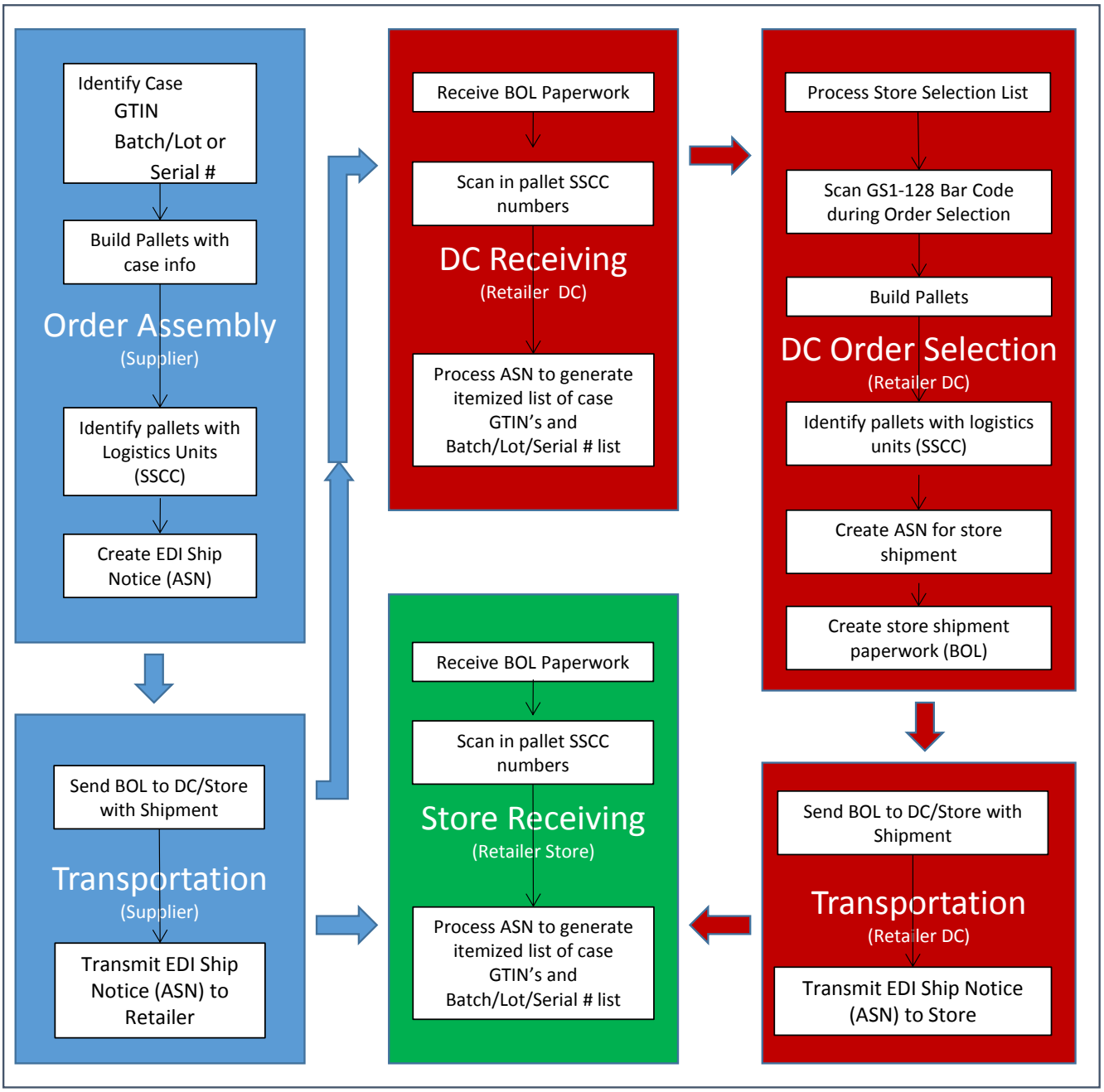


Figure 15. Best Practices for Case Level Traceability

6.6 POTENTIAL CONTRIBUTIONS OF RFID TECHNOLOGIES

Radio Frequency Identification (RFID) has made some inroads in the logistics area of the supply chain. RFID technology, when applied to the case level of the product hierarchy, has shown potential to be a contributing technology for enabling traceability.

One of the primary benefits of RFID is the ability to track product through the various points of the supply chain in a passive nature. RFID technology has the ability to see movement of product during normal business actions without the labor and special effort of scanning by logistics personnel.

The technology involves a combination of passive RFID tags and tag readers placed at critical points in the logistics chain to capture data from the tags. Using data captured from these critical control points, the business user can track the movement of product through the supply chain without human intervention.

6.6.1 ELECTRONIC PRODUCT CODES

RFID tags that use a standardized method to identify products and to read and write tag information as those tags progress through the supply chain are designated Electronic Product Code (EPC®) compliant tags. EPC/RFID Tags can contain a number of different types of data including:

- SSCC
- GLN
- Serialized versions of a GTIN (SGTIN)
- Global Returnable Asset Identifier (GRAI)

Of the data types available for use with EPC/RFID Tags, the Serialized GTIN is probably the most likely to bring benefit for the tracking and tracing of meat and poultry products.

6.6.2 SERIALIZED GTIN

A serialized GTIN, or SGTIN, is a combination of a GTIN and serial number. By its nature an SGTIN identifies a specific instance of a product, not just the product as a GTIN does. In other words, instead of identifying a generic case of the product, an SGTIN identifies a specific case of a specific product.

6.6.3 ELECTRONIC COMMUNICATIONS FOR RFID

In order to get full benefit of RFID technologies, all trading partners should freely exchange information about tags in the supply chain. With the free flow of RFID tag information, all trading partners can know at any given time the location of product for which they have responsibility.

6.6.4 RFID CONCLUSIONS

While RFID has many potential benefits in the future, it is not presently considered to be a viable method of tracing product at the global level because of both the operational and implementation costs. However, this technology may become a viable alternative in the future as these costs go down.

7 MEAT AND POULTRY RECALLS

7.1 RECALL GOALS

The primary objective of traceability is prompt and accurate product recall. The overriding goal of any recall is to ensure that targeted product is quickly and easily removed from the supply chain and not consumed by consumers. A secondary goal is to minimize the amount of non-targeted product that is also removed from the supply chain as part of a recall. Efficient trace or recall requests identify the target items using their unique identifier numbers.

Note that USDA defines a product recall and a market withdrawal as two distinct situations as described in Section 7.2 below. This section of the document will incorporate guidance for both situations under the term "Recall."

7.2 RECALL DEFINITIONS

Case end label is a printed label affixed to a case of product that denotes lot-specific information about the product placed in the case.

Case end panel is the side of a case to which the case end label is affixed, which is typically the shortest vertical surface of the case. The case end panel may also contain printed, non-lot specific information such as the supplier's name and address.

Case product is product that has not been removed from the supplier's shipping container, which is typically a case.

Human readable information is print on the case end label or case end panel of a size sufficient to be readily noticeable, legible, and understandable without special training or knowledge of code values or syntax.

Market Withdrawal is a firm's removal or correction of product that involves minor infraction that does not cause product to be adulterated or misbranded.

Recall is a firm's removal of distributed meat or poultry products from commerce when there is reason to believe that such products are adulterated or misbranded under provisions of the Federal Meat Inspection Act (FMIA) or the Poultry Products Inspection Act (PPIA).

Recall notice is a notification from a supplier to a retailer or distributor that provides sufficient product identification information to allow the retailer or distributor to effectively identify and remove target product from the supply chain.

Scannable information is information that is encoded in a barcode.

Scope is the range of the product being recalled.

7.3 RECALL PRINCIPLES

In general, suppliers should provide to wholesalers, distributors, or retailers the information needed to quickly and effectively remove the targeted product from the supply chain regardless of the technological level of the retailer or distributor. The information should be specific enough to accurately delineate the scope of the recall, meaning what product and/or what Batch/Lot of product, or what location the product was delivered to and when.

To ensure preparedness in the event of an incident, every company should have a traceability team in place and simulate recall events regularly to test the effectiveness and timeliness of their traceability processes and systems.

7.4 GENERAL RECALL STEPS

Trading partners who wish to initiate a recall request should communicate to their trading partners at least the product identification and as much of the additional information listed below when available to aid in the retrieval of the target products:

- Product identification or an attribute of the product
- Trading partners affected
- Location of the product
- Delivery date/time period

Notification to trading partners should include all the necessary information to help the partner identify where product is in their distribution system. In turn, trading partners should identify to the supplier how far into the supply chain the product has gone, and specifically if any of the targeted product has reached consumers.

If targeted product has reached consumers, public notification of a recall should be initiated. It is assumed that if targeted product has reached store shelves, it has reached the consumer. If possible, supply chain partners should directly contact purchasing consumers. Guidance for disposition of any target product remaining in the supply is determined by the supplier. It generally involves destruction of the product or return to a supplier facility.

7.5 SCOPE OF RECALL

The scope of a recall notice can be as specific as a single product produced at a single facility on a specific date and time or as broad as all products produced by a supplier. As an example, a recall could include:

- All products of a given facility, regardless of GTIN or production date
- All products of a given GTIN, regardless of production date
- Products of a given GTIN, produced within a specific date range
- Products of a given GTIN, produced within a specific date range at a specific facility
- Products of a given GTIN, produced within a specific date range at a specific line at a facility
- Products of a given GTIN of a given Batch/Lot Number or range of Serial Numbers

A combination of product and party data such as the product GTIN and the trading partners' GLNs along with transactional data about the physical flow of the products will best enable the successful retrieval of the target product.

The granularity of the product information needed is dependent upon the scope of the recall request. It is recommended that at minimum the information include the GTIN and Batch/Lot Number(s) or Serial Number(s).

For retailers, wholesalers, and distributors usually two methods may be used to identify targeted product:

1. Human readable identification, in which an employee is responsible for visually identifying which cases or retail packages that need to be removed typically from a store, cooler, service case, or freezer.
2. Electronic identification, in which the information captured from case barcodes or from a supplier electronic message is used to identify which cases or consumer packages need to be removed typically from a warehouse or distribution center (DC) or store.

Typically a combination of human readable and electronic identification is used to find all products in the supply chain. As an example, for a recall of a given Batch/Lot or Serial Number of a given GTIN, employees of the retailer, wholesaler, or distributor may visually review product cases in a cooler or warehouse to locate targeted product or a warehouse manager will use the warehouse inventory management system to locate targeted product in storage.

Retailers will typically use a combination of human readable and electronic identification to find all products in the supply chain. As an example, for a recall of a given Batch/Lot or Serial Number of a given GTIN, employees of the retailer may visually review product cases in a store cooler to locate targeted product, and a warehouse manager will use the warehouse inventory management system to locate targeted product in storage.

Electronic identification can, in theory, be implemented as part of a regular inventory management process, depending on the extent of scanning within the retailer's operations. If the retailer scans cases leaving the retailer's distribution center, scans cases before product is further processed and packaged at the retailer's store, and also scans a GS1 DataBar on consumer items at the point of sale, the retailer would have high visibility to the presence and location of targeted product throughout the retailer's distribution system.

A more likely scenario is a combination of human readable and electronic identification, or even human identification only. Identification will be fully human readable if a retailer lacks scanning ability within their DC or production center. Further, if retailers have not implemented the use of the GS1 DataBar at the point of sale then removal of product from service cases should be through human identification.

It is the responsibility of the supplier initiating the recall to provide all trading partners with both human readable and scannable product identification information to support the use of both human readable and electronic identification of recalled product.

7.6 LOGISTICS INFORMATION

For all product recalls regardless of scope, the supplier should provide to the wholesaler, retailer, or distributor logistics information on product deliveries. Suppliers should provide the following logistics information for all recalls:

- Name and address of transporting company;
- GLN of store or DC delivered to, on a facility by facility basis;
- Total logistics units delivered to each; and
- Delivery date, and if available delivery time and dock door.

7.7 SCANNABLE DATA

For all product recalls regardless of scope, the supplier should provide the wholesaler, distributor, and retailer the information for the recalled product that is contained on the applicable barcode, for all product hierarchy levels.

HIERARCHY LEVEL	BARCODE TYPE	BARCODE DATA
CASE	GS1-128	GTIN **AND** Batch/Lot/Serial Number
FIXED-WEIGHT CONSUMER ITEM	UPC-A	GTIN
VARIABLE-WEIGHT CONSUMER ITEM	UPC-Type 2	Item Reference Number
FIXED-WEIGHT AND VARIABLE-WEIGHT CONSUMER ITEM*	GS1 DataBar	GTIN **AND** Lot Control Date **OR** Batch/Lot Number

Table O. Scannable Recall Data

*Available after GS1 DataBar adoption

7.8 BATCH/LOT AND SERIAL NUMBER RANGES

In a recall situation a supplier will provide either Batch/Lot or Serial Numbers to the wholesaler, distributor, and retailer. A supplier should ideally provide the starting and ending Batch/Lot or Serial Numbers when the suspect values are part of a range of numbers. The effectiveness of any recall is in part dependent upon the ease with which recalled product can be identified. Providing non-sequential Batch/Lot or case Serial Numbers instead of sequences of Batch/Lot or Serial Numbers will significantly increase the complexity of a visual recall of product. It also increases the likelihood of all recalled product not being removed from the supply chain.

If a supplier is unable to provide a single or a limited number of numeric sequences to the distributor or retailer, other traceability information such as Lot Control Date (e.g. Production or Sell-By Date), or an establishment number should be provided. While this will increase the likelihood of removing unrecalled product, retailers, distributors, and wholesalers need manageable product information that ensures the complete recall of all target products and the safety of all consumers.

7.9 HUMAN READABLE INFORMATION

The human-readable information a supplier will need to provide in a recall varies depending on the scope of the recall. Suppliers should provide to wholesalers, distributors, and retailers the consumer item information, in addition to case information, that is needed to quickly and effectively identify and remove targeted product from store coolers and consumer display cases. Supplier-provided information should be specific enough to accurately delineate the scope of the recall while respecting the staffing challenges that retailers face in recall situations. The following shows the human readable information that would typically be provided for each type of product recall at the case or consumer item level:

- Supplier Company Name
- Supplier Product Number or Item Code
- Case-Level Product Description
- Establishment Number
- Date Information

8 SUMMARY

Traceability in the meat and poultry industry can be implemented at a fundamental level across the supply chain when each trading partner can identify itself by GLN and its product by GTIN and Batch/Lot or Serial Number. GS1 Standards facilitate the ease of managing this traceability information electronically, and the adoption of case scanning, the use of Advanced Shipping Notice electronic messages, and the use and scanning of the GS1 DataBar on consumer packages at point of sale will dramatically enhance the effectiveness of supply chain to trace and recall meat and poultry products.

Adoption of the GS1 DataBar and the GS1-128 barcode formats encoding both the GTIN and Batch/Lot or Serial Number for traceability processes provide the foundation for a successful traceability system. Additionally, capturing, storing, and sharing that information with your trading partners promotes timely and accurate traceability processes.

To be successful in this process a trading partner that processes, packages, and/or labels product should ensure that all inbound product batches are linked to outbound product batches so that there is no breakdown in the ability to trace product flow through the supply chain. Minimum requirements for traceability may always depend to a certain extent on human readable information, but the best practice for all supply chain partners is to build a traceability process that allows for electronic data capture, storage, and retrieval of critical product traceability information for all product hierarchy levels throughout the supply chain, from the farm to the ultimate consumer.

9 ADDITIONAL RESOURCES

Global Traceability Standard

http://www.gs1.org/docs/gsmp/traceability/GS1_Global_Traceability_Standard_i1.pdf

Model for the Adoption of Critical Tracking Events in the Meat and Poultry Supply Chain

http://www.gs1us.org/industries/fresh-foods/meat-and-poultry

Implementation Guide for GDSN Data Alignment of Meat and Poultry Trade Items

http://www.gs1us.org/industries/fresh-foods/meat-and-poultry

Produce Traceability Guidance Documents

http://www.producetraceability.org

Building the Fresh Foods Supply Chain of the Future

http://www.fmi.org/forms/uploadFiles/28DBC00000008.toc.RoadmapFinal_exec.pdf

GS1 DataBar

http://www.gs1.org/barcodes/databar

10 APPENDIX A: GS1 APPLICATION IDENTIFIERS

Application Identifiers Relevant for the Meat and Poultry Supply Chain

Notes: (*): The first position indicates the length (number of digits) of the GS1 Application Identifier. The following value refers to the format of the data content.

(**): If only year and month are available, DD should be filled with two zeroes.

(***): The fourth digit of this GS1 Application Identifier indicates the implied decimal point position.

Example:

- 3100 Net weight in kg without a decimal point
- 3102 Net weight in kg with two decimal points

(FNC1): All GS1 Application Identifiers indicated with (FNC1) are defined as of variable length and must be limited by a Function 1 Symbol Character unless this Element String is the last one to be encoded in the symbol.

AI	DATA CONTENT	FORMAT*	FNC1 REQUIRED
00	SSCC (Serial Shipping Container Code)	n2+n18	
01	Global Trade Item Number (GTIN)	n2+n14	
10	Batch or Lot Number	n2+X..20	(FNC1)
11 (**)	Production Date (YYMMDD)	n2+n6	
13 (**)	Packaging Date (YYMMDD)	n2+n6	
15 (**)	Best Before Date (YYMMDD)	n2+n6	
17 (**)	Expiration Date (YYMMDD)	n2+n6	
254	GLN Extension Component	n3+X..20	(FNC1)
30	Count of Items (Variable Measure Trade Item)	n2+n..8	(FNC1)
310 (***)	Net weight, kilograms (Variable Measure Trade Item)	n4+n6	
320 (***)	Net weight, pounds (Variable Measure Trade Item)	n4+n6	
330 (***)	Logistic weight, kilograms	n4+n6	
390 (***)	Applicable Amount Payable, local currency	n4+n..15	(FNC1)
391 (***)	Applicable Amount Payable with ISO Currency Code	n4+n..15	(FNC1)
392 (***)	Applicable Amount Payable, single monetary area (Variable Measure Trade Item)	n4+n..15	(FNC1)
393 (***)	Applicable Amount Payable with ISO Currency Code (Variable Measure Trade Item)	n4+n3+n..15	(FNC1)
410	Ship to - Deliver to Global Location Number	n3+n13	
411	Bill to - Invoice to Global Location Number	n3+n13	
412	Purchased from Global Location Number	n3+n13	
413	Ship for - Deliver for - Forward to Global Location Number	n3+n13	
414	Identification of a Physical Location - Global Location Number	n3+n13	
415	Global Location Number of the Invoicing Party	n3+n13	
422	Country of Origin of a Trade Item	n3+n3	(FNC1)
423	Country of Initial Processing	n3+n3+n..12	(FNC1)

AI	DATA CONTENT	FORMAT*	FNC1 REQUIRED
424	Country of Processing	n3+n3	(FNC1)
425	Country of Disassembly	n3+n3	(FNC1)
426	Country Covering full Process Chain	n3+n3	(FNC1)
7002	UN/ECE Meat Carcasses and Cuts Classification	n4+X..30	(FNC1)

Table P. GS1 Application Identifiers Relevant for the Meat and Poultry Supply Chain

11 APPENDIX B: GLOSSARY

TERM	DESCRIPTION
ACTOR	An actor is a role that a user plays with respect to a system.
APPLICATION IDENTIFIER (AI)	The field of two or more characters at the beginning of an Element String that uniquely defines its format and meaning.
BATCH/LOT NUMBER	A batch unites products/items that have undergone the same transformation processes. Batch and Lot are considered synonyms. GS1 Global definition: Reference number assigned by manufacturer to a series of similar goods or Meat and Poultry under similar conditions.
CONSUMER ITEM	The trade item intended to be sold to the end customer.
EVENT	Is an occurrence of a process in a specific time or a period of time?
EXTERNAL TRACEABILITY	External traceability takes place when instances of a traceable item are physically handed over from one trading partner (traceable item source to another (traceable item recipient).
GLN (GLOBAL LOCATION NUMBER)	The GS1 Identifier comprising a GS1 Company Prefix, Location Reference, and Check Digit used to identify physical locations or legal entities. GS1 Global definition: The globally unique GS1 Identifier for legal entities, functional entities, and physical locations. The Global Location Number is 13 digits, which comprise a GS1 Company Prefix, Location Reference, and Check Digit.
GSIN (GLOBAL SHIPMENT IDENTIFICATION NUMBER)	The GS1 Identifier comprising a GS1 Company Prefix, Shipment Reference, and Check Digit used to identify unique shipments.
GTIN (GLOBAL TRADE ITEM NUMBER)	The format in which Global Trade Item Numbers (GTIN's) must be represented in a 14 digit reference field (key) in computer files to ensure uniqueness of the identification numbers. GS1 Global definition The globally unique GS1 Identifier used to uniquely identify a trade item. A trade item is any trade item (trade item or service) upon which there is a need to retrieve pre-defined information that may be planned, priced, ordered, delivered and/or invoiced at any point in any supply chain.
GRAI	Global Returnable Asset Identifier.
GS1 SYSTEM	The specifications, standards, and guidelines administered by GS1.
IDENTIFICATION	The identity assigned to an item or party that is needed to access other relevant information about the item or party.
IDENTIFICATION CARRIER	Mark/tag/label/accompanying document sometimes called "passport" or "identity card" in some industry sectors.
INTERNAL PROCESS	A series of actions, changes or function(s) within a company or organization that brings about a result.
INTERNAL TRACEABILITY	Internal traceability takes place when a trading partner receives one or several instances of traceable items as inputs that are subjected to internal processes, before one or several instances of traceable items are output.
LINK	Recording the information necessary to establish the relationship to other relevant information.
LOCATION	A place where a traceable item is or could be located [ISO/CD 22519]. A place of production, handling, storage and/or sale.
LOGISTIC UNIT	An item of any composition established for transport and/or storage that needs to be managed through the supply chain.

TERM	DESCRIPTION
LOT CONTROL DATE	A date reference used in accordance with the product type to assign a date value to lots of product for inventory management and as a general lot control reference. When referring to a date used for this purpose, this guide will use the term “Lot Control Date” as a general reference to either the Sell-By Date, Use-By Date, Production Date, or Packaging Date that is used by the supplier for this purpose.
MASTER DATA	Master Data describes each item and party involved in supply chain processes. Master data is defined as data having the following characteristics: Permanent or lasting nature Relatively static, not being subject to frequent change Accessed/used by multiple business processes and system applications Can either be neutral or relationship-dependent.
PARTY	A party (or) location is any legal, functional or physical entity involved at any point in any supply chain and upon which there is a need to retrieve pre-defined information. A party is uniquely identified by a GS1 Global Location Number.
PROCESS	A series of actions or steps towards achieving a particular end. Examples of common processes include Production, Transformation, Quality Control, Storage, Transportation, Movement, Recycle, Return, Packing, Receiving, Traceability . . .
PRODUCT DESCRIPTION	GS1 Global definition: A piece of information reflecting a characteristic related to an identification number [e.g., an expiration date or a product description related to a GTIN®].
QUANTITY	A precise number of articles, pieces or units. Used in conjunction with Unit of Measure.
RECEIPT DATE	GS1 Global definition: Date/time upon which the goods were received by a given party.
RECORD	Act of creating a permanent piece of information constituting an account of something that has occurred.
SSCC (SERIAL SHIPPING CONTAINER CODE)	The globally unique GS1 Identifier for logistic units. The Serial Shipping Container Code is an 18-digit number comprising an extension digit, GS1 Company Prefix, Serial Reference, and Check Digit.
SGTIN (SERIALIZED GLOBAL TRADE IDENTIFICATION NUMBER)	SGTIN is a method of identifying unique items at the unit or retail level as well as at the case and carton levels. It is composed of a GS1 Company Prefix and Item Reference (GTIN), combined with a Serial Number. Where UCC/EAN barcodes have traditionally been used, the SGTIN specification combined with an RFID tag can give visibility beyond the Item Reference right down to the exact Serial Number of the item.
SHARE	Act of exchanging information about an entity or traceable item with another Trading Partner.
SHIP DATE	GS1 Global definition: Date on which goods should be shipped or despatched by the Supplier.
SHIP FROM LOCATION	GS1 Global definition: Identification of the party from where goods will be or have been shipped.
SHIP TO LOCATION	GS1 Global definition: Identification of the party to where goods will be or have been shipped.
SHIPMENT	An item or group of items delivered to one party’s location at one moment in time that have undergone the same despatch and receipt processes.
SHIPMENT REFERENCE NUMBER	GS1 Global definition: The reference number assigned to a shipment.

TERM	DESCRIPTION
TRACEABILITY	Traceability is the ability to track forward the movement through specified stage(s) of the extended supply chain and trace backward the history, application or location of that which is under consideration.(GS1 Global Traceability Standard, issue 2) [ISO 9001:2000] Traceability is the ability to trace the history, application or location of that which is under consideration.
TRACEABILITY DATA	Any information about the history, application or location of a traceable item. This may be either Master Data or Transactional Data.
TRACEABLE ITEM	A physical object where there may be a need to retrieve information about its history, application or location. The level at which the traceable item is defined within a product packaging or logistical hierarchy is dependent on the industry and degree of control required. Could be tracked, traced, recalled or withdrawn. Could exist in multiple locations at the same time (for example, if identified at the trade item and batch level). A traceable item may be related to another traceable item. See also definition for process.
TRACE REQUEST	A formal inquiry about the history, application or location of a traceable item. A request can trigger subsequent trace requests up or down the supply chain in order to fulfil the original request. The requesting party requires a response from the data source.
TRACING (TRACING BACK)	The ability to identify the origin attributes, or history of a particular traceable item located within the supply chain by reference to records held. “Tracking back” and “tracking forward” are the preferred terms used in this document.
TRACKING (TRACKING FORWARD)	The ability to follow the path of a traceable item through the supply chain as it moves between parties.
TRADE ITEM	Any item (product or service) upon which there is a need to retrieve pre-defined information and that may be priced, or ordered, or invoiced at any point in any supply chain.
TRADING PARTNER	Amy Supply Chain Partner that has a direct impact on the flow of goods through the supply chain. Examples include Third Party Logistics Provider, Manufacturer, Retailer, wholesaler, distributor, and Grower.
TRANSFORMATION	A change to the nature of a traceable item that changes the identity and/or the characteristics of the traceable item. The act of changing the item such as combining ingredients to make a finished product or case picking to create a new pallet. Transformation can be production, aggregation, grouping, splitting, mixing, packing and repacking traceable items.
TRANSPORTER	The party that handles and or stores the traceable item from one point to another without transforming the item. Receives, carries, and delivers on or more traceable items. The Transporter may only have “possession, custody, control” of a traceable item, as distinct from ownership.
UNIT OF MEASURE	The unit of measure relating to a specific quantity.

Table Q. Glossary

12 APPENDIX C: LIST OF TABLES AND FIGURES

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