The following is an excerpt from Scott Hamilton’s book

**Managing Process Manufacturing Using Microsoft Dynamics AX 2009**

*Provided Courtesy of Scott Hamilton, Ph.D.*

Scott is a Chief Solution Architect at Solugenix Corporation, a Microsoft Dynamics AX partner with offices around North America and a well-known reputation as a trusted advisor for AX implementations.

Scott can be reached at Scott.Hamilton@Solugenix.com.
Chapter 6

Batch Tracking Considerations

Process manufacturing often requires the tracking of batch-controlled items via an internal batch number. The terms batch tracking and batch numbers are used because Dynamics AX employs the term “lot number” as a system-assigned internal identifier for inventory transactions.

The internal batch number for a batch-controlled item is typically assigned upon receipt, such as the receipt of a purchase order or the finished quantity of a batch/production order. An internal batch number may require vendor batch information, shelf life information, batch attributes to characterize the material, and/or disposition codes to indicate restricted usage. For explanatory purposes, these four aspects can be collectively termed batch-related information. The chapter contains the following sections:

1. Batch tracking
2. Vendor batch information
3. Shelf life information
4. Batch attributes
5. Batch disposition codes and restricted usage

Many of these topics also involve quality management considerations, such as receiving inspection and quarantine orders, product testing and quality orders, and nonconformance reports about quality problems. For example, the test results associated with a quality order can be used to populate the batch attributes for an item’s batch. These quality management considerations apply to items with and without batch tracking requirements, and build on topics covered throughout the book. Chapter 15 provides further explanation of quality management.

6.1 Batch Tracking

Batch tracking provides the foundation for handling batch-related information such as shelf life dates, batch attributes, and disposition codes. It
involves two sets of policies. The first set of policies indicates which items have batch tracking requirements; these are embedded in the dimension group assigned to an item. The second set of policies indicates how and when the batch numbers are assigned; these are embedded in the batch number group assigned to an item. Batch numbers frequently have significance, which requires careful consideration of batch number creation and assignment.

**Batch Tracking Policies**  Batch tracking is defined by the dimension group assigned to an item, where the inventory dimension includes the batch number. The batch number dimension has several policies that enforce batch tracking for issues and receipts, and optionally support unique requirements such as batch-specific costing and pricing.

**Batch Numbering Policies**  A second set of policies (termed the batch number group) determines how batch numbers are created and when they are assigned to inventory transactions for received material. A batch number can be created manually or automatically, with two basic timing variations for automatic assignment to received material. An additional consideration includes the quantity associated with an automatically assigned batch number.

- **Manual versus automatic creation.** Automatic creation allows specification of a batch number mask, such as a prefix and counter. The mask can also include the date, order number, and/or system-assigned lot id. Other approaches to a batch number mask may need to be customized to meet requirements for a meaningful batch number.

  Manual creation means that you define an item’s batch number prior to using it on an inventory transaction, and the batch numbering mask does not apply. For example, an item’s batch numbers may be created in advance and then assigned to receipts.

- **Timing variations on automatic creation of a batch number.** Batch numbers can be automatically created during or after reporting the inventory transaction. Most firms employ automatic creation during transaction entry when registering received material. Registration represents one step in the basic model of purchase order processing (described in Chapter 12), batch order processing (described in Chapter 13), and positive inventory adjustments and customer returns (described in Chapter 16). This policy is termed “assignment on inventory transaction.”

  When a registration step is not performed, automatic creation can occur after posting the physical update, such as posting the packing slip for a purchase order receipt, or posting the finished quantity for a batch/
production order. This policy is termed “assignment upon physical update.”

❖ **Quantity associated with an automatically assigned batch number.** A single batch number is normally created for each receipt transaction. For example, the order quantity for a batch/production order may represent several batches produced in a kettle, and you would report the finished quantity for each individual batch so that the system automatically creates separate batch numbers. However, some scenarios may just report one receipt transaction for the entire order quantity, which can result in a single batch number. In these scenarios, you can manually split the received quantity so that separate batch numbers will be automatically created, or you can use a “per quantity” policy (within the Batch Number Group) to automatically create separate batch numbers. This per quantity policy represents a fixed increment of the item’s inventory UM, such as assigning unique batch numbers for every 100 units received when receiving a quantity of 1000.

The quantity associated with an automatically assigned batch number does not consider the formula size for an item’s formula version.

❖ **Applicability of the Batch Number Group policies.** The set of policies associated with a batch number group can be applied (aka activated) to one or more types of transactions. The types include purchase orders, batch/production orders, sales orders, and inventory journals, and you indicate the applicable types as part the group’s policies.

Another approach can be used regardless of the policies, where you manually assign a batch number to a purchase order line or a batch production order, and the batch number will apply to all transactions for the line item. Information about each internal batch number can include descriptive text, a vendor batch number and related information (for purchased material), shelf life dates, batch attributes, and a batch disposition code. Subsequent sections explain these aspects of batch-related information.

**Viewing the Internal Batch Numbers** The key form for batch information—termed the Batch Details form or Batch form for short—provides a list of all internal batch numbers and the related items. It also displays the batch-related information such as shelf life dates and batch attributes.

**Combining or Changing Batch Numbers of On-Hand Inventory** You can change or combine the batch number for an inventory quantity by using the Transfer Journal, much like you would change or combine inventory in a bin location. You transfer the inventory quantity from one batch
Batch Tracking on Intercompany Orders  When using intercompany orders in a multicompany operation, the batch numbers assigned to the shipped material (on the intercompany sales order) can automatically apply to the received material (on the intercompany purchase order). Chapter 14 explains intercompany orders.

Printing Batch Numbers on Documents  The batch numbers can be printed on sales and purchase documents based on the form setup policies. For example, the batch numbers can be printed on the sales order packing slip and invoice.

Historical Information about Batch Number Tracking  The batch-trace history is automatically maintained based on receipt and issue transactions. Using the Batch form, you can view historical information about a specified item or batch number, and the on-line inquiry avoids the need for extensive printed reports. In a manufacturing environment, you can view forward or backward trace information using a multilevel indented format that reflects the product structure. Each entry in the indented format indicates a receipt or issue. For example, the batch number for a sales order shipment can be traced backward through the batch order(s) to purchase order receipts. A receipt can also be traced forward.

Batch Tracking and Sub-Batches (aka Lot/Sublot Tracking)

A few scenarios involving batch-controlled items require additional granularity for tracking the inventory of a given batch. The industry term lot/sublot tracking applies to these scenarios. The AX solution approach to lot/sublot tracking employs the batch number and serial number fields, where an item-specific policy enables the serial number to refer to quantities greater than one. A hierarchical relationship does not exist between a batch number and serial numbers, and the batch-related information described in this chapter only applies to the batch number. One example of lot/sublot tracking involves the individual hams within a tote (see Case 17). Another example involves a batch number that represents an entire production run across multiple shifts, where the production quantity for each shift is identified by a sublot number (aka the serial number).

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1 The policy is termed the Serial Number Control checkbox embedded within the Dimension Group assigned to the item.
6.2 Vendor Batch Information

The vendor batch information normally applies to a purchased item, but it can also be used for other items. The information includes a vendor batch number, two dates about the vendor-specified manufacturing and expiration dates, and two fields for capturing country of origin information. The information is typically assigned at the time of receipt, but you can also update the information on the Batch Details form by accessing the Reset Vendor Batch Details form.

The two shelf life dates within the vendor batch information are typically used as the basis for updating the manufacturing date and expiration date of the internal batch number. These two dates can also be assigned to a purchase order line item prior to receipt. The next section explains the use of shelf life dates.

6.3 Shelf Life Information

Shelf life information only applies to batch-controlled items. For a given batch number, you can assign a manufacturing date (termed the batch date) and three additional dates concerning its expiry date, best before date, and shelf advice date. The three additional dates are termed shelf life dates. The manufacturing date is typically assigned at the time of receipt, and the other dates are initially calculated based on item-specific default values (expressed as a number of calendar days). These dates for a batch can be subsequently reset.

The shelf life information for a batch of purchased material includes two additional dates about the vendor-specified manufacturing and expiration dates, as described in the previous section. These two dates are typically assigned at the time of purchase order receipt, and you normally indicate that the vendor-specified dates should act as the value for the batch’s manufacturing date and expiration date. These two dates can also be assigned to a purchase order line item prior to receipt. The dates for a vendor batch can be subsequently reset just like the other shelf life dates.

The key form for batch information—termed the Batch Details form or Batch form for short—provides a list of all batch numbers and the related items, along with information about shelf life dates for each batch.

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2 The best before date means that the material is good through midnight of the day before. The expiry date means that the material is good though midnight of the specified expiration date.

3 A basic rule is that the default days for the expiration date must be greater than the defaults for shelf advice and best before.
Initial Assignment of Shelf Life Dates

The shelf life dates (and manufacturing date) are typically assigned to a batch at the time of receipt, such as a purchase order receipt or the finished quantity of a batch/production order. The initial assignment reflects the manufacturing date plus the item-specific default values (expressed in calendar days) for the three shelf life dates. With a purchased item, the initial assignment typically reflects the values for the vendor-specified manufacturing and expiration dates, as noted above.

Resetting the Assignment of Shelf Life Dates

You can optionally override the dates for a selected batch by accessing the Reset Shelf Life Dates form. It can be accessed from several starting points, including (1) a line on the Purchase Order form, (2) the Batch Order or Production Order form, (3) the Transfer Order form, and (4) the Batch Details form. A basic rule is that the expiration date must be greater than today’s date. After changing the expiration date, an infolog provides a prompt to automatically update the best before and shelf advice dates.

A mass-update approach can also be used to override the dates. Three different periodic tasks correspond to changing (1) the expiration date, (2) the best before date, and (3) the shelf advice date to a specified date based on selection criteria such as the batch number, item number, and/or batch date.

A manually created batch number may be created without a manufacturing date. When receiving this batch number, an infolog message will prompt the user to update the empty manufacturing date with the current date.

Inquiries/Reports about Shelf Life Dates

Three different inquiries display a list of batches based on a comparison between a user-specified date and (1) the expiration date, (2) the best before date, and (3) the shelf advice date that occurs on or before the specified date. For example, the expiration inquiry can display all batches that expire on or before the user-specified date. Each inquiry form displays the current inventory for a batch, and provides access to the Reset Shelf Life Dates form in order to change information. In a typical scenario with an expired batch, you might change the batch disposition code or scrap the inventory to prevent further usage.

Three different reports (corresponding to the three different dates) can also be generated, where the selection criteria define the basis for the report contents (such as a date criteria of “<01/01/20XX”). The reports contain the same information as the inquiries. One other report displays a list of batches with expiration dates that have already been exceeded.

Creating a Cycle Count Report for Expired Batches

You can optionally access the Create Counting Journal of Expired Batches form as
part of creating the lines for a cycle count journal. Using this form, you specify selection criteria about the date range for batch expiration dates so that the batches will be included as line items in the cycle count journal.

**Generating Quality Orders for Batches Based on Shelf Life Dates**
You can manually create a quality order for a batch in order to perform additional tests. Alternatively, you can use a periodic task as a mass-update approach to generating quality orders for multiple batches. As part of the periodic task, you specify selection criteria such as the batch number, item number, and batch date.

**Reservation Logic Concerning Shelf Life Dates**
The reservations of an item’s batches can reflect First-Expired-First-Out (FEFO) logic based on the expiration date or best before date, as specified by a policy embedded in the Inventory Model Group assigned to the item. This approach helps ensure that batch-controlled items will be used prior to expiration.

**Sales Order Reservation Logic and Customer Requirements about Shelf Life Days**
The reservation logic for a sales order line considers the requested receipt date at the customer site, so that batches expiring on or before that date will not be reserved. However, a customer may have requirements about shelf life days that need to be enforced on sales orders to the customer. For example, the customer may not accept a batch with less than 10 days remaining until its expiration date. A customer’s specified time horizon can be defined on the Sellable Days by Customer form (accessed from the Customer form). The horizon can be specified for individual item numbers, a group of items (based on the item group), or all items. Batches will only be reserved when they satisfy the customer requirements about sellable days after the requested receipt date.

If you change a sales order’s scheduled receipt date so that it is beyond the expiration date of a reserved batch (per above reservation logic), you will receive a prompt to remove the reservation, keep the reservation and allow you to ship the expired batch, or return the date to its previous value.

**Shelf Life Dates in Master Scheduling Logic**
Shelf life dates are considered in master scheduling logic when you specify the *consider shelf life* policy for the master plan. The calculations assume that a batch’s inventory will no longer be available after its expiration date. For example, master scheduling will generate a planned order to replenish safety stock with a scheduled receipt date on the batch expiration date. Master scheduling

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4 Master scheduling will consider the best before date (rather than the expiration date) when this has been specified as the basis for an item’s FEFO logic.
also considers the expiration dates of batch inventory in suggesting planned orders to satisfy demands such as sales order, sales forecasts, or dependent demands. The dates are also considered in capable-to-promise logic for a sales order line, since this generates planned orders that mirror the master scheduling logic.

The physical expired quantity of an item’s inventory can be viewed on the On Hand form.

### 6.4 Batch Attributes

One or more batch attributes can be assigned to a batch-controlled item, and actual values recorded against an item’s batches. The actual values can then be used to search for applicable batches, such as searching for and reserving an applicable batch during order entry. Further explanation can be segmented into the setup information for batch attributes, the recording of actual values, and searching based on batch attributes.

**Setup Information for Batch Attributes**

The setup information consists of the following steps:

- **Define batch attributes.** The identifier and description of a batch attribute are user-definable, and the attribute can be designated as an integer, fraction, date, string, or enumerated list (which requires definition of possible values in the list). When designated as an integer or fraction, the batch attribute must also be assigned values for a minimum, maximum, and increment as well as a tolerance policy. The tolerance policy has two options—provide warning or prevent entry—concerning the actual values for the batch attribute.

- **Define a group of batch attributes.** This approach provides a shortcut for assigning multiple batch attributes to an item, and represents an optional step. The identifier and description of a batch attribute group are user-definable, and one or more batch attributes can be assigned to the group. When an assigned attribute consists of an integer or fraction, the values for the minimum, maximum, increment, and tolerance policy are inherited but can be overridden. For example, the attribute’s minimum and maximum values can be overridden each time it is assigned to an attribute group.

- **Assign batch attributes to an item.** One or more batch attributes or groups can be assigned to a batch-controlled item using the Batch Attributes by Item form. Those attributes consisting of an integer or
fraction will inherit values (such as the minimum and maximum) from
the definition of the batch attribute, and these can be overridden to
indicate item-specific values.

- Define a set of customer requirements for batch attribute values. As an
  optional step, you can specify a customer’s requirements for an item’s
  batch attributes (consisting of an integer or fraction), so that you can use
  the information as part of batch attribute searching during order entry.
  These requirements are defined on the Batch Attributes by Item and
  Customer form. The attributes will inherit the item-specific values (such
  as minimum and maximum), and these can be overridden to indicate
  customer-specific values for the item.

An additional setup step is needed when using the test results from
quality orders to update a batch attribute value, since the test must be mapped
to the batch attribute. Chapter 15 provides further explanation of quality
orders and their test results.

Recording Actual Values for Batch Attributes The actual value for
an item’s batch attribute can be recorded after creation of a batch, and
subsequently viewed for the batch. When the batch attribute reflects an
integer or fraction, the system provides a warning or prevents entry (based
on the tolerance policy) when the actual value exceeds the minimum or
maximum.

Batch Attribute Searching You can search for an appropriate batch
based on actual values of the item’s batch attributes. This is termed a batch
attribute search. The search criteria consist of an operator (such as =, != >
and <) and a specified attribute value for every batch attribute assigned to the
item. You can automatically populate the search criteria based on the item’s
attributes, or the customer-specific item attributes. After defining the search
criteria, you can optionally save the information in a template with a user-
defined name so that you can easily reuse the template. Use of the search
criteria will result in a displayed list of applicable batches.

Batch Attribute Searching During Order Entry You can initiate a
batch attribute search during order entry to find and manually reserve an
applicable batch. For a selected line item, you first access the Batch Reser-
vations form and then access the Batch Attribute Search form. The search
criteria will be automatically populated by the customer-specific item attrib-
utes (if specified), along with their values for a required minimum and
maximum. Alternatively, the search criteria can be automatically populated
by viewing and then selecting a previously shipped batch, reflecting situa-
tions in which the customer wants the same criteria on a new sales order. Use of the search criteria will result in a displayed list of applicable batches that meet the customer’s requirements, so that you can reserve an applicable batch.

When using an automatic reservation policy on sales orders, the system can automatically apply the customer-specific batch attributes to reserve the applicable batches. In this case, you can view the automatically reserved material on the Batch Reservations form and (if needed) optionally override the reservations.

**Batch Attribute Searching in Other Contexts** You can access the Batch Reservations form and initiate a batch attribute search in other contexts (other than order entry), as summarized below.

- When picking or shipping a line item on a sales order
- For a component in the order-dependent formula/BOM of a batch/production order
- When picking a component on a batch/production order
- For a line item on a transfer order that needs to be shipped
- When picking or shipping a line item for a transfer order shipment

### 6.5 Batch Disposition Codes and Restricted Usage

Disposition codes represent an optional approach for managing the inventory of batch-controlled material, since the policies associated with a disposition code can enforce restricted usage. This section describes the setup information for disposition codes, the assignment (and reassignment) of a disposition code to an item’s batch, and the impact on planning calculations. Those scenarios that do not require enforcement of restricted usage can define and use a single disposition code that reflects available material without restricted usage.

**Setup Information for Disposition Codes** The user-defined disposition codes must be set up on the Disposition Master form. One disposition code should reflect available material, where the disposition status is designated as available. The number of additional codes will depend on the

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5 This approach involves two policies for a sales order: the “Automatic Reservation” policy and the “Auto Batch Reservation” policy. Both policies must be assigned to the sales order header, and they initially default to the company-wide policies (defined on the A/R Parameters form).

6 A separate set of disposition codes applies to the use of return orders from customers. These RMA disposition codes are described on pages 197-199 in the book *Managing Your Supply Chain Using Microsoft Dynamics AX 2009.*
desired variations in restricted usage, where the disposition status is designated as unavailable. The typical requirements for two additional disposition codes include (1) quarantined material treated as non-nettable and with all usage restrictions, and (2) QC hold material treated as nettable and with some usage restrictions to prevent sales order shipments, production picking, and transfer orders.

The following policies can be assigned to a disposition code with an unavailable disposition status, where the policies indicate aspects of restricted usage:

- **Nettable.** This policy determines whether inventory will be considered available by planning calculations.

- **Restricted usage for sales orders.** You can designate one or more of the following policies on restricted usage:
  - Block reservations. This policy prevents reservation of the batch inventory.
  - Block picking. This policy prevents picking of the batch inventory.
  - Block shipping. This policy prevents shipment (aka packing slip update) of the batch inventory.

- **Restricted usage for transfer orders.** You can designate one or more of the following policies on restricted usage:
  - Block reservations. This policy prevents reservation of the batch inventory.
  - Block picking. This policy prevents picking of the batch inventory.
  - Block shipping. This policy prevents shipment (aka packing slip update) of the batch inventory.

- **Restricted usage for batch/production orders.** You can designate one or more of the following policies on restricted usage:
  - Block reservations. This policy prevents reservation of the batch inventory.
  - Block picking. This policy prevents picking of the batch inventory.

### Assignment of a Disposition Code to an Item’s Batch Number

The initial value of the disposition code is automatically assigned to a batch number based on two different approaches, as described below.

- Default value specified for the item, as defined in the Inventory Model Group assigned to the item.
Default value related to the use of quality orders (if applicable). This approach builds on the use of test groups and quality orders described in Chapter 15. When defining a test group, the default value for a disposition code can be defined for an open quality order, and for the outcome of a failed or passed quality order.

Once an internal batch number has been created, you can manually override the disposition code by accessing the Reset Disposition Code form. A history of changes to a batch’s disposition code is automatically maintained by the system, and viewable on the History of Disposition Inventory form.

**Impact on Master Scheduling and Capable-to-Promise Logic**

Master scheduling and capable-to-promise logic will ignore non-nettable inventory, as identified by the disposition code assigned to a batch. The physical non-nettable quantity of an item’s inventory can still be viewed on the On Hand form.

**Case Studies**

Some case studies about batch tracking considerations are covered in other chapters. These include batch attributes for cobalt products (Case 7) and scrap metal (Case 18), master scheduling with shelf life expiration dates (Case 36), and reservations based on shelf life dates (Case 45) or batch attributes (Case 46).

**Case 19: Batch Attributes for Cheese**  A dairy products company produced a blended cheese from several types of purchased cheeses. The batch attributes for each cheese included salt content, moisture and milk solids. Each attribute was identified as an integer with a target value and the acceptable range of values. The actual values were assigned to the batch numbers for blended cheese and for the incoming raw materials (based on lab results or the vendor-provided information). A custom report provided a comparison between actual and target values for each batch number, and a batch disposition code was assigned to an out-of-tolerance batch in order to restrict its usage.

**Case 20: Order Entry and Food Expiration Dates**  The purchased batches of a food product were assigned an expiration date reflecting the vendor-specified expiry date. When entering sales orders for the item, the batches of available material were automatically reserved based on first-
expired-first-out (FEFO) logic and the customer’s requirements about
sellable days after they receive the product. Batches not meeting these
requirements were not considered in the automatic reservation logic. The
expiration dates were also considered in capable-to-promise logic, so that a
batch’s inventory was not considered available after its expiration date.

**Case 21: Batch Attributes for Coal**  A mining company produced
and sold a mining product (coal), and employed batch tracking for all items
from raw materials to finished goods. A quality template for each item
defined the standard tests (and acceptable target values) for more than 50
batch attributes, such as the percentage of ash content and volatile matter.
Actual values for each batch’s attributes were determined by independent
testing agencies. Prior to producing a blended coal product from different
coal components, the quality manager could calculate the projected batch
attribute values based on the weighted average of the component’s batch
attribute values.

**Case 22: Customer-Specific Batch Attributes for a Mining Pro-
duct**  The customer contracts for a mining product specified the batch
attribute requirements, consisting of a target value and an acceptable range
of values for each attribute. A typical contract specified 15 batch attributes
for a given product (such as the percentage of molybdenum content and
sulphur dioxide), which were defined as customer-specific attributes. The
actual values for the product’s batch attributes were recorded during produc-
tion. When entering a sales order for the product, the customer-specific
attributes were used as the basis for batch attribute searching, so that appli-
cable batches of inventory could be identified and reserved, and then shipped
to the customer.

**Case 23: Regulated Environment for Pharmaceutical Products**
A process manufacturing company produced pharmaceutical products with
stringent quality criteria concerning compliance to regulations and require-
ments for a validation audit. Starting with various batch-controlled ingre-
dients, a batch was mixed, made into tablets, and then packaged in a bottle
with a label. Each batch required a unique batch number. Tablets were
treated as phantoms since the material produced at the tablet machine flowed
immediately into packaging.

The quality criteria in this regulated environment impacted system usage
in several ways. Systems security played a larger role, such as authorized
access to update information about formulas, batches, inventory dispositions,
and transaction audit trails. Each product’s formulation could only be
changed using electronic signature capabilities, and the document manage-
ment system ensured that the approved R&D formula matched the production formula. The planning and scheduling tools assured that the batches recommended and produced reflected the validated formula sizes. Quality management also required strict label control, batch disposition codes that enforced restricted usage, and batch-tracking data for historical analysis purposes.

**Case 24: Inheriting Batch Attribute Values for a Co-Product**
Several manufacturing scenarios involve the concept of a co-product inheriting the batch attribute values of its parent item. The industry term of lot inheritance refers to this concept, which reduces the number of transactions for updating batch attribute values of the co-products. One scenario involves the batch order for slitting a rolled product such as jumbo reel, where the rolls of slit items are identified as co-products (described in Case 13). In this scenario, the slit rolls would inherit the characteristics such as coating, color, texture, and permeability. A second scenario involves the batch order for cutting a steel beam, where the cut lengths are identified as co-products. The smaller beams inherit the characteristics such as malleability or tensile strength. A third scenario involves a batch order for producing cell cultures from skin tissue, where the various cultures are identified as co-products. The resulting cultures inherit characteristics such as blood type.

**Case 25: Handling Potency Issues**
Potency represents the strength of a product’s active ingredient, and potency issues apply to several manufacturing scenarios. Examples include the alcohol percentage in batches of an alcoholic beverage or the butterfat percentage in batches of milk. In these cases, the physical units multiplied by the potency percentage equals the potent units. The potency issues must be reflected in inventory balances, inventory value, purchasing, and other areas, as described below using examples for an orange juice processor and a milk processor.

- Inventory balances in physical units and potent units of a batch
- Inventory value based on the potent units of a batch. For example, a batch of milk with 3.6% butterfat is worth more than a 3.2% batch because more value-added products can be produced with higher butterfat content.

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7 See www.Fullscope.com for additional information about their add-on module supporting lot inheritance.
8 See www.Fullscope.com for additional information about their add-on module supporting potency issues.
Purchasing in physical units and potency. The purchase price may reflect the potency of received material. For example, an orange juice processor may pay for purchased oranges based on the brix (sugar content), or a milk processor may pay for purchased milk based on the butterfat content of the milk. The receipt of a less potent material may result in a credit.

Formulations based on the potency of ingredients. Using the example of an orange juice processor, two lots of purchased oranges may have a brix content of 15% and 20%, so that the component quantities must be adjusted to achieve an 18% target brix. The same result can be obtained by adding water and just the 20% brix oranges, which is termed batch balancing.

Batch balancing between the active ingredient and a compensating ingredient in a batch order, such as diluting the batch of an alcoholic beverage by adding water.

Executive Summary

Batch tracking involves the creation and assignment of batch numbers to an item’s inventory. Each batch may also require batch-related information, such as disposition codes to indicate restricted usage, batch attribute values, or shelf life dates. This information serves multiple purposes. During sales order entry, for example, batch attribute information can be used to identify and reserve inventory that meets customer specifications, and shelf life expiration dates (plus customer requirements for remaining shelf life) can be considered by automatic reservations using FEFO logic. The chapter included several case studies about these batch tracking considerations, such as batch attributes for coal, cheese, and mining products. The case studies also covered regulated environments, inheritance of batch attribute values, and potency issues.