Unit of Measures

Explanation on how beas manages the different units

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ITEM MASTER: UNIT OF MEASURE

1. INTRODUCTION

A unit of measure (UoM) is generally assigned to all inventory items and should be defined before a product can be added. Each product can have an inventory, consumption, sales, and a purchasing UoM. Let us review how beas stores and manages different UoM. Then, we will analyze the impact UoM have on our manufacturing process.

Unit of Measure, enables you to quantify and track inventory items. You can use different UoM to conduct different types of transactions. Examples of common UoM are: each, piece, foot, lb, gallon, etc. Beas supports multiple UoM per product. There are many configuration options and there are no limits to the number of units that can be defined.

This allows an item stocked by Each to be purchased by Case, sold by Dozen, and packaged/shipped by Box. You can track all of these transactions in the system by setting up UoM for sales, inventory, shipping and more.

Having different units of measure within the process depends on the industry. For example, if an item is stored as individual pieces, but purchased by dozens, then a conversion factor of 12 will be used on the purchase order. This will help the process flow according to the quantities per transaction. A sales UoM is in use when you sell the item.

To facilitate processing, beas maintains conversion rates between the standard UoM and the various other UoMs.

2. GUIDE

We will first review where the unit of measure fields are in the item master data and then, we will describe in detail how to set up unit of measures and conversions in beas.

### 2.1. Unit of Measure in Item Master Data

PATH: Inventory > Item Structure > Double click an item

In item master data, there are 5 tabs in which we can store UoM information. The relevant fields are listed below.

Unit bom: This unit of measure defines how the item is consumed by the production process. It is located in the General tab.

Inventory UoM: The units of measure available here are the ones previously defined in SAP Business One. It is located in the Inventory tab.

PATH: Administration > Setup > Inventory > Unit of Measure
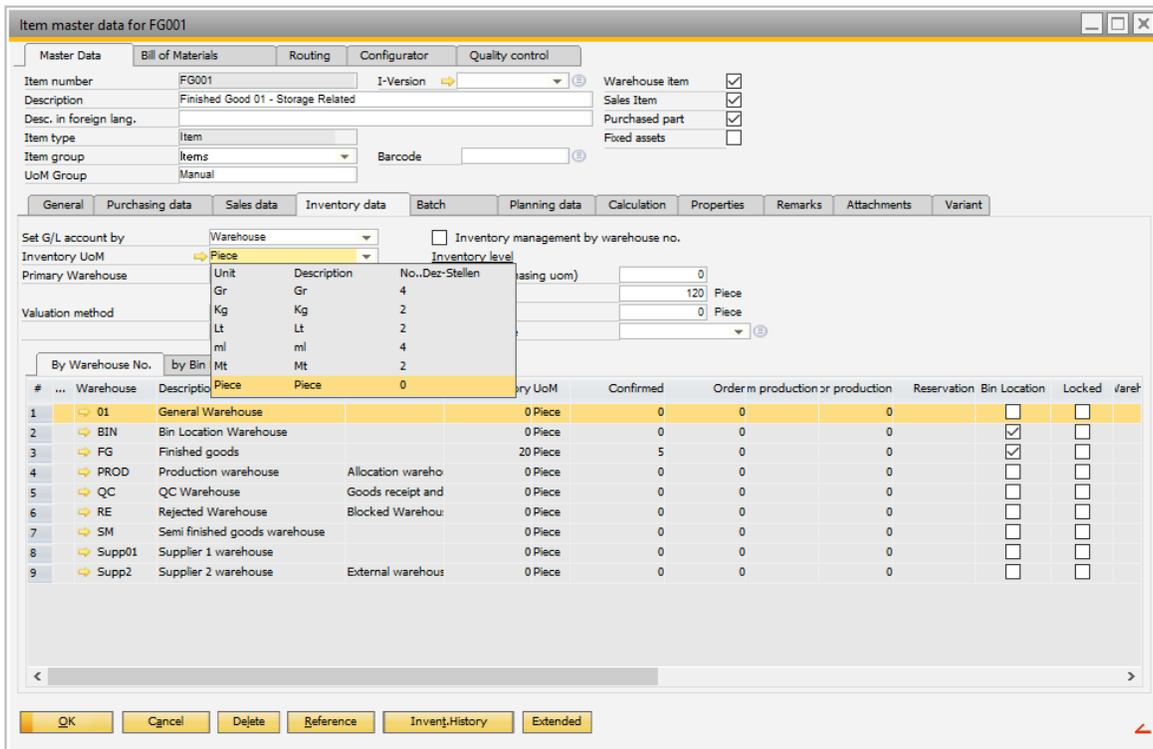
The Inventory unit of measure is the unit in which the item is stored. It is always used for transactions. If a posting is done through beas, we have the option to enter the quantity into consumption units or into inventory units in case they are different from each other. Consumption units are the units in which the item is used during the production process, depending on whether the item is consumed (e.g. raw material, part, or package) or received (e.g. finished good)

The conversion from inventory unit to consumption unit is defined in *Quantity units – Conversion* table.

Purchasing UoM: This unit is used both on purchase documents and in the MRP, when creating purchase orders. It is located in the Purchasing Data tab.

If the units defined here are different from those on the inventory tab, a conversion factor will have to be provided in the *Item per purchase UoM* field.

The same is the case for the *Packaging UoM*. Here the conversion factor will be defined in the *Quantity per packaging UoM*.

Sales UoM: This unit will be used in sales documents and in the MRP when converting sales order units into inventory units. It is located in the Sales Data tab.

Item master data for FG001

| Master Data | Bill of Materials | Routing | Configurator | Quality control |

Item number: FG001   I-Version: ⇨   Warehouse item ☑
Description: Finished Good 01 - Storage Related   Sales Item ☑
Desc. in foreign lang.:   Purchased part ☑
Item type: Item   Fixed assets ☐
Item group: Items   Barcode:
UoM Group: Manual

| General | Purchasing data | Sales data | Inventory data | Batch | Planning data | Calculation | Properties | Remarks | Attachments | Variant |

Sales UoM: Piece   Length: 0.000
Items per sales uom: 1.000000   Width / OD: 0.000
Packaging UoM (sales.):   Height / ID: 0.000
Quantity per packaging UoM: 1.000000   Volume: 0.000 ci
    Net Weight: 0.000

Factor 1: 1.000000
Factor 2: 1.000000
Factor 3: 1.000000
Factor 4: 1.000000

[OK] [Cancel] [Delete] [Reference] [Invent.History] [Extended]

If the sales unit of measure is different from the one on the inventory tab, a conversion factor will have to be provided in the *Item per sales UOM* field. Also, a sales packaging UOM is available with the conversion factor *Quantity per packaging UoM*.

Up until now, we have reviewed the settings defined in the Item master data for Unit of Measure, which is defined in SAP Business One. Now, we will review the UoM fields added by beas.

To sum up, the unit of measure will support industries where different units of measure are used on the same item. For example, if the purchase unit is a pallet, which contains 6 bulks of 20 Kg in packages of 1Kg. The inventory unit for this item is Kg, the packaging unit is bulk which has 20 as quantity per packaging UoM, and the purchasing unit is pallet and has 120 as quantity per purchase UoM.

Bill of Materials tab: In beas item master data screen, there is an additional tab called Bill of Materials. Once a new material is added to this list, the material copies the complete information from its master data, including the inventory unit of measure.

- If the item is a raw material, the UoM is used in the bill of materials
- If the item is a semi-finished good item, the UoM is used when we create a work order

Bill of Materials FG001

| Master Data | Bill of Materials | Routing | Configurator | Quality control |

#	...	Position	UoM	Item	I-Version	Description	Quantity	Manually	Routing pos	Active
1		10	Piece	SF001		Semi-finished 01	3	☐		☑
2		20	Piece	PK003		Package Item 03	1	☐		☑

Double clicking in one bill of material position, beas displays a detailed screen for the specific position. You can access also to this screen, by the *edit* button at the bottom of the *Bill of Material* tab.

Despite this definition, the user can define a different unit of measure. If a new unit is selected, the field *Factor* will become visible. The value from this field is pre-calculated, which means that no conversion formula is required.

This function allows you to define a production unit of a raw material when a certain item is produced that does not follow the general rule.

2.2. Unit of Measure Tab

Beas and SAP Business One share the same unit of measure data, it is always synchronized. However, in beas additional information has been included which is saved in the beas unit of measure screen.

PATH: Administration > Setup > Inventory > Unit of Measure > Right click a Unit of Measure and choose the "Extended" menu option.

ALTERNATIVE PATH: Inventory > Item Structure > Double click an item and click on the button next to the *Unit bom* field.

There is a list with all stored units of measure information. This is an extension of SAP Business One and it is therefore not possible to delete. In order to delete use SAP Business One - units of measure.

New: Button used to create a unit of measure. This button will open a new screen.

UoM Code: Field used for the name code of the unit of measure.

UoM Name: Field used for the description of the unit of measure.

UoM Name Plural: Field used for the description for this UoM when more than a single unit is chosen. For example, pack and packs.

Number of decimals: Field used to define how many decimals should be displayed for the UoM.

IMPORTANT: These settings are used for display purposes only. Therefore, if the number of decimal places has been set to 4 digits in beas but it has been set to 2 digits in SAP Business One, then we will see 4 digits on the screen, however, the transaction will be posted using only 2 digits.

Rounding for scheduling: Field used to assign the rounding type to use in the MRP run for the primary forecast requirement. The rounding types available are:

- Rounding at .5
- Round up: always round up
- Round off: always round down
- No rounding

Decimal places for scheduling: Field used to specify the number of decimals to include to the quantity.

To illustrate how these fields affects our system, let's take a look at the following example.

Here is a scheduling example: Let us say that in the current month we have to complete 50 pieces. Since we are in the 20th of the month already, we have completed already 33.3333 pieces. And now comes the question, how should we round this figure? We always have the possibility to choose not to round at all.

> For Example:
>
> "Decimal places for scheduling" = 2
>
> In this case, the requirement, after the calculation of the MRP is defined at 33.33 units. Choosing to round up, will turn this figure to 33.34, a round down will keep the figure of 33.33 and the commercial quantity, which is our option to rounding at 0.5 will be 33.35
>
> "Decimal places for scheduling" = 0
>
> If our requirement is set to 33.45, then choosing to round up will set the quantity to 34 and choosing the round down will set the quantity as 33 while our commercial quantity will be 33.

Bill of material predefined rounding: Field used to determine the rounding default to be used for this UoM when creating a new bill of material position.

Bill of material predefined decimals: Field used to define the decimal place to be set per inventory unit, not per piece or consumption unit.

IMPORTANT: Clicking on "extended" button will open SAP Business One unit of measure screen.

2.3. Conversion Tab

Previously, we have mentioned that if our sales, purchase, or bill of material UoM is different from the one defined in the inventory tab, we will have to define a conversion rate. Our main unit will be the *Inventory Unit*, therefore in beas we will have to convert *Sales or Purchase unit* into *Inventory unit*.

Beas will require a conversion to the inventory unit (main unit) if:

- If production unit is different from the inventory (For produced items)
- If sales unit is different from the inventory
- If consumption unit is different from the inventory (For raw material)
- If purchase unit is different from the inventory

PATH: Administration > Setup > Inventory management > Unit of measure

Click on the conversion tab and the screen displays all current unit conversion defined.

> IMPORTANT: While using conversion, our Inventory UoM remains constant and does not change. Sales and purchasing UoM will be based on the conversion defined in SAP Business One in the UoM screen. Therefore, this conversion screen will only affect our Bill of Material UoM information.
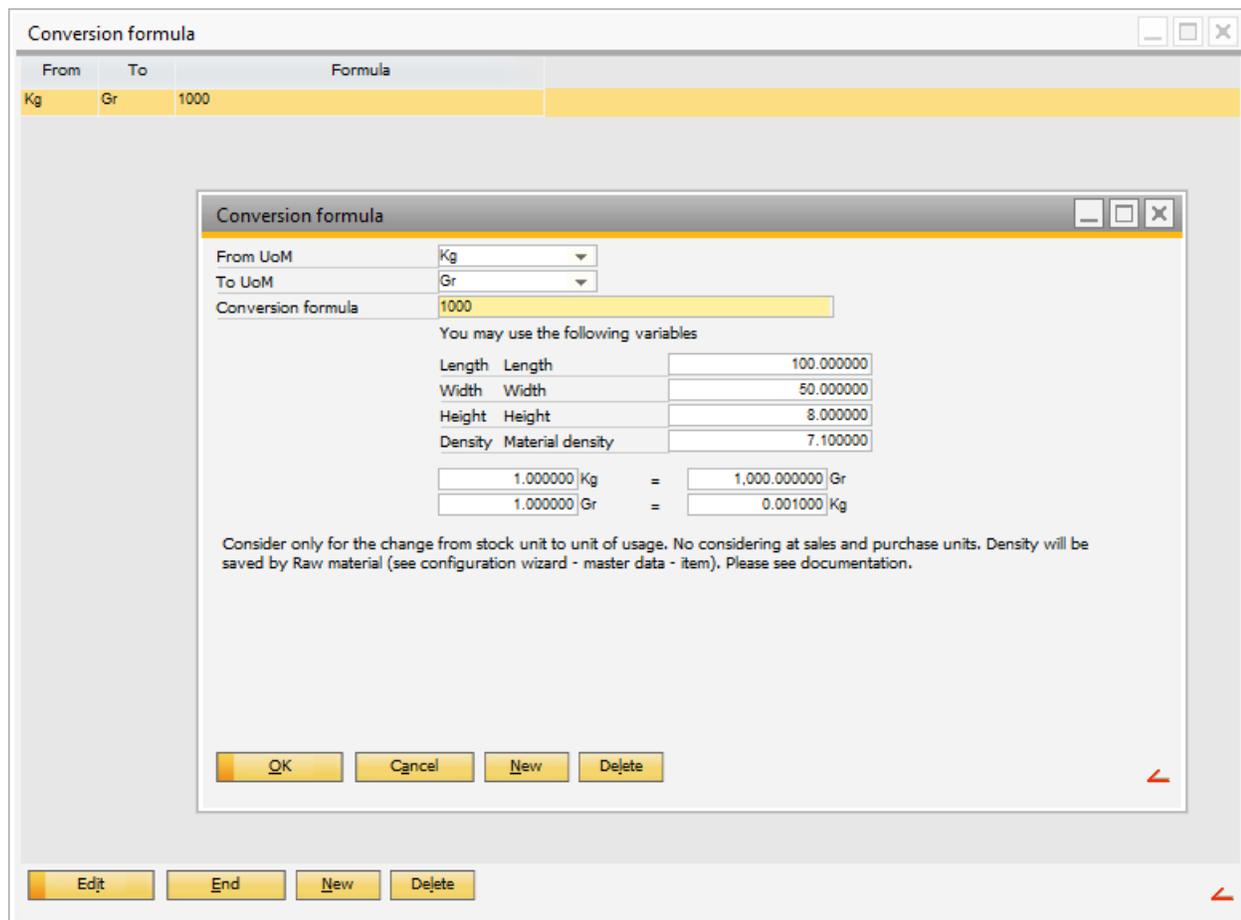
New: Button used to create a conversion formula. This button will open a new screen.

The conversion depends on the material's shape. The possible selections are: round, pipe, and square. Other dimensions are: Length, width, and height. Outside diameter and inside diameter. Density according to the item master or the density of the stored material.

Conversion formula: Field used to add mathematical operators or functions. There is a list of available operators and functions in the online documentation.

In the lower part of the screen you can see a two-way conversion calculation based on the formula you have just entered.

> *2.3.1.***Length:** Dimension defined by the item. The value is retrieved from the item master data in SAP. The value shown on the screen is only an example.

> *2.3.2.***Width:** Dimension defined by the item. The real value will be retrieved from the item master data in SAP.The value shown on the screen is only an example.

*Height***:** Dimension defined by the item. The value shown on the screen is only an example. The real value will be retrieved from the item master data in SAP.

*Density***:** Dimension defined by the item to be used as a conversion factor. This option is used when the conversion is not fixed as, for example, Kilogram to gram. In this case, we use variables. As Purchase and Sales units have a conversion factor in SAP, at beas we can use the variable *density* to define a factor to convert from Inventory unit to the bill of material unit.

Density can be defined by using the *raw material* field or the *specific weight* field from the item master data. Only one option is available and it will depend on a parameter from the configuration wizard.

Density can be defined in the *Spec. Weight* field. This is useful for conversion factor in a single item.

Density can also be defined in the *raw material* table. This is useful when the customers have groups of items using the same density value.

Master Data Setup: To use this functionality we must first create the raw materials.

PATH: Administration > Setup > Inventory > Raw Material

ALTERNATIVE PATH: Click in the list button right next to *Raw Material* field.

IMPORTANT: In the conversion formula, you can also access the length, width, and height of the item using a formula and calculate a conversion factor. Please consider that complex conversion formulas (with more than one variable) will directly affect system performance. This is due to a calculation being done every time beas finds a unit of measure conversion in a work order, consumption, receipt, MRP etc. In this case, we recommend calculating it beforehand and then use the result as a value directly in the *density* field.

IMPORTANT: It is also important, that the conversion created only works in one direction (from UoM1 to UoM2). If you also want to convert backwards (from UoM2 to UoM1), this conversion must be setup as well.

Example 1: Conversion from Kilogram to Gram.

In the field "Conversion formula", you can input the value 1000, at the bottom part you can see the conversion result From Inventory to BOM Unit, at this example 1 kg = 1000 gr. In addition, the opposite direction is displayed, only to test the formula, in case the Inventory unit is Gr and the BOM unit is KG another conversion formula must be created.

Example 2: Conversion from Kilogram to Meter, using the Spec. Weight field.

In the conversion formula, the variable "density" works as a conversion factor. The values on the dimensions are not real. It is only to check the results. The true values are from the item master data.

3. CONFIGURATION WIZARD

In this section contains configuration wizards for different scenarios to help you setup the appropriate parameters.

Density: