BW Quantity Conversion

About refresh on WBP

About refresh of unit please check the page below :

Unit of measure / Quantity unit / UOM -> RSIMPCUST

Conversion Unit C_MATNR2 - UOMCMAT2 - Specific rules

The recursive transformation **TSRF : UOMCMAT2 -> UOMCMAT2 (recursive)** add conversion factors to missing units : KG / LB / TO / VKG / VTN

Program Steps

1. Generate a matrix of unit per LogSys/Material/BuoM

	KG Unit	KG Nom	KG Dén	TO Unit	TO Nom	TO Dén	1KG Unit	1KG Nom	1KG Dén	...
WP1/Material 1/KG	KG	1.000	1.000	TO	1.000.000	1.000				...
WP1/Material 2/KG	KG	1.000	1.000				1KG	1.000	277	...

2. Add KG unit
    a. Read TO unit if available
    b. Read LB unit if available
3. Add TO unit
    a. Read KG unit if available
    b. Read LB unit if available
4. Add LB unit
    a. Read KG unit if available
    b. Read TO unit if available
5. Add VKG unit
    a. Read by priority VTN > 1KG > 1TN > KGW > TOP > KRE > KG > TO if available
6. Add VTN unit
    a. Read by priority VKG > 1KG > 1TN > TOP > KGW > KRE > KG > TO if available

> **Units and Conversion exit**
>
> A Unit has only one internal code and is corresponding to one or more external code (country specific display and other reasons ...)
>
> For example :
>
> - KGW (Internal) is corresponding to KAI / KMA / KGR ... (External)
> - TOP (Internal) is corresponding to AIT / ... (External)
>
> **Only the Internal code need to be check during the process.**

Example of conversion bloc.

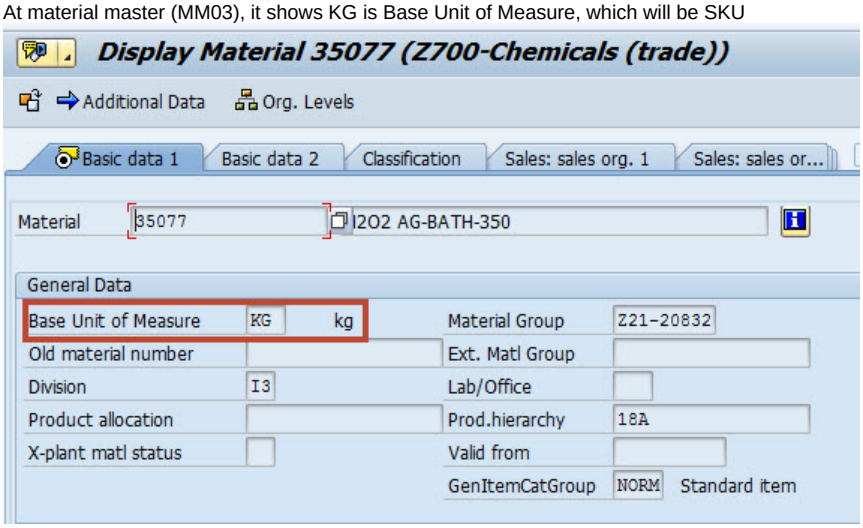
> Legend:
>
> - **GREEN** : Current unit to add, don't change in a global IF.
> - **RED** : Unit to check if available, change at each IF/ELSEIF

```
**** Add VTN
    IF <FS_MAT_UNT>-unit_VTN IS INITIAL.
      I_SOURCE_PACKAGE-UNIT = 'VTN'.  Initialize the unit to add
      I_SOURCE_PACKAGE-record = lv_tabix + 1.  Change the record number
      IF <FS_MAT_UNT>-unit_VKG IS NOT INITIAL.  Check if the corresponding Unit is filled in the matrix
        I_SOURCE_PACKAGE-uomz1d = <FS_MAT_UNT>-uomz1d_VKG * 1000.  Nominator (* factor if necessary)
        I_SOURCE_PACKAGE-uomn1d = <FS_MAT_UNT>-uomn1d_VKG.  Denominator (* factor if necessary)
        APPEND I_SOURCE_PACKAGE TO SOURCE_PACKAGE.  Append in Result Package
        <FS_MAT_UNT>-UNIT_VTN = I_SOURCE_PACKAGE-UNIT.  Update the matrix
        <FS_MAT_UNT>-uomz1d_VTN = I_SOURCE_PACKAGE-uomz1d.  Update the matrix
        <FS_MAT_UNT>-uomn1d_VTN = I_SOURCE_PACKAGE-uomn1d.  Update the matrix
      ELSE/ENDIF.   Next unit in the priority list or end of process
```

SKU vs RU (VKG)

SKU = Stock-keeping unit, a unique identifier for each distinct product and service that can be purchased / sales in business. It bases on material master

RU = Reporting unit, it is a conversion unit called VKG, which used for displaying as of product 100% and reporting in order to align unit of measure to calculate sub total
For example, material 35077 (H2O2 AG-BATH-350)
At material master (MM03), it shows KG is Base Unit of Measure, which will be SKU



In order to converse to RU (VKG), go to 'Basic Data Text' on 'Basic data 1' tab

Go to 'Units of measure' tab, at row AUn = VKG, it shows calculation between VKG and base unit of measure in this case is KG
It means 1000 KG (SKU) of H202 AG-BATH-350 (35077) equals to 350 VKG (RU), which contain 350 KG of H2O2 and mix with something else like water 750 KG for example.

See below a technical documentation about the routines that load data in UOMCMAT2, including a recursive transformation used to load special units like VKG and VTN.
See below example about the end routine of recursive transformation to load special unit like VKG and VTN:

Conversion Unit C_MATNR2 - UOMCMAT2 - Enhancement from Global Filter list

Dynamic conversion in queries (using Conversion Types) is only working if source and target units are in the same Dimension.

Otherwise a flow of conversions is done with Base UoM as pivot unit, by using factor from T006 table.

When all units of this flow are not provided by SAP Material alternative units, the missing unit must be added to the UOMCMAT2 ADSO.

(in KG = in M and M KG)

Transformation **TRSF: IFS_MD_MATNR2_UOMCMAT2_01 -> UOMCMAT2** is used to add specific Unit conversions for a list of Materials.

The Infosource IFS_MATNR2__UOMCMAT2_0001 allows to create another flow from Master Data C_MATNR2, with a dedicated logic in Transformation.

The Materials/units to convert must be populated into the Master Data Global Filter C_GLBFILT, in each BW system to process.

C_STREAM : Always value 'C_MATNR2' to select all records during Transformation Start Routine
C_RULE : Material value
C_LOW : Logical system compounding Material
C_SIGN : Value 'I' to input record in UOMCMAT2, value 'E' to delete a record in UOMCMAT2
C_OPTION : Always 'EQ'
C_HIGH : Unit to add for conversion in Base UoM in UOMCMAT2 => Unit value in INTERNAL format (PC => ST, GAL => GLL, "2 => IN2, in => IN….).
C_ACTIVE : If not equal 'Y', the record is not selected during loading

Transformation logic :

Start Routine
Select all records with C_STREAM = 'C_MATNR2' from Master Data Global Filter C_GLBFILT.
Select all records from table /BI0/SUNIT (Unit SID) to populate in End Routine

End Routine
For each Logsys/Material record from source C_MATNR2 (use DTP filter to limit Materials to extract), a loop is done to process each Unit from Global Filter for this Logsys/Material.

The conversion added into UOMCMAT2 is from the Unit selected in C_GLBFILT, into the Base UoM of the Material from C_MATNR2.
If the Base UoM is empty (should occurs in Dev only !!), the target Unit is forced to 'KG' for conversion.

The conversion is done through the Function Module Z_MD_CONVERT_MATERIAL_UNIT3 which is the one used in BW data flows to convert units properly.
Conversion is working fine in this FM even if Units are in different dimensions.
The result of the conversion becomes the Numerator to add in UOMCMAT2 for the Unit converted.
The Input quantity to convert (1000) becomes the Denominator.
No matter the value to convert, the Factor result Numerator/Denominator will always be the same (at least a value of 1000 for accuracy purposes).

If C_SIGN = 'E' in Master Data Global Filter C_GLBFILT, the RECORDMODE is set to 'D' to delete the relevant record in UOMCMAT2.

Function Module Z_MD_CONVERT_MATERIAL_UNIT3

Material unit conversion in ABAP code can be handled by two Function Modules.

Z_MD_CONVERT_MATERIAL_UNIT retrieving alternative units **without** source system (0LOGSYS), based on ODS Object **ODS_MARM**.

Z_MD_CONVERT_MATERIAL_UNIT3 retrieving alternative units **with** source system (0LOGSYS), based on ODS Object **UOMCMAT2**.

Do not use Z_MD_CONVERT_MATERIAL_UNIT**2** anymore in new ABAP code, since it is a previous uncomplete version of the Z_MD_CONVERT_MATERIAL_UNIT**3**.

This previous version can still be found anyway in a lot of ABAP code, as long as the Materials are not dealing with different alternative units in several source systems.

Function Module Logic

Same logic is used in both Function Modules.

Source unit is first converted into Material Base Unit of Measure, and then result is converted into target unit if different from Base Unit.

Statics variables are used to keep Material already processed across several calls of FM, preventing new DB access to get conversion factors.

> => This is where inconsistency is noticed in Z_MD_CONVERT_MATERIAL_UNIT**2** with System not taken into account when checking Material already processed.
>
> (Check reference NGC20220308 for updated code in Z_MD_CONVERT_MATERIAL_UNIT3)

Chronology of process :

1. Convert the input Unit in Basic UoM according to logic below
    1. Conversion factors have already been determined for Material in last call
    2. Else search for Material conversion factors from buffer table
    3. Else determine data from the DB
        1. Search first with the last Material read (small buffer)
        2. Else try it in all Material processed (large buffer)

3. Else read valid Mat Units from **UOMCMAT2** for the Material/System (Z_MD_CONVERT_MATERIAL_UNIT3), or read valid Mat Units fr om **ODS_MARM** for the Material (Z_MD_CONVERT_MATERIAL_UNIT).

4. Else read all units from T006 table to get conversion factor from the Material Base UOM into the System International Unit of the same Dimension.

2. Convert the Basic UoM into target unit (if different from Base UoM) according to logic below.

1. Conversion factors have already been determined for Material in last call

2. Else search for Material conversion factors from buffer table

3. Else determine data from the DB

1. Search first with the last Material read (small buffer)

2. Else try it in all Material processed (large buffer)

3. Else read valid Mat Units from **UOMCMAT2** for the Material/System (Z_MD_CONVERT_MATERIAL_UNIT3), or read valid Mat Units fr om **ODS_MARM** for the Material (Z_MD_CONVERT_MATERIAL_UNIT).

4. Else read all units from T006 table to get conversion factor from the Material Base UOM into the System International Unit of the same Dimension.

Rounded Factors :

When the target unit is not the Basic UoM, and the conversion is done through the Basic UoM, it leads sometimes to a rounded factor used to convert from source unit to target unit.

This can raise differences between conversion done with the Function Module Z_MD_CONVERT_MATERIAL_UNIT3, and conversion done directly in a query with conversion types (RSUOM) where factor is not rounded.