

# BW Quantity Conversion

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## 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

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**** Add VTN
IF <FS_MAT_UNT>-unit_ VTN IS INITIAL.
  L_SOURCE_PACKAGE-UNIT = 'VTN'. Initialize the unit to add
  L_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
  L_SOURCE_PACKAGE-uomz1d = <FS_MAT_UNT>-uomz1d_ VKG * 1000. Nominator (* factor if necessary)
  L_SOURCE_PACKAGE-uomn1d = <FS_MAT_UNT>-uomn1d_ VKG. Denominator (* factor if necessary)
  APPEND L_SOURCE_PACKAGE TO SOURCE_PACKAGE. Append in Result Package
  <FS_MAT_UNT>-UNIT_ VTN = L_SOURCE_PACKAGE-UNIT. Update the matrix
  <FS_MAT_UNT>-uomz1d_ VTN = L_SOURCE_PACKAGE-uomz1d. Update the matrix
  <FS_MAT_UNT>-uomn1d_ VTN = L_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 H2O2 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.

| X   | AUn | Measu...  | <... Y      | BUn | Measu... | EAN/UPC | Ct | Au | A | Length |
|-----|-----|-----------|-------------|-----|----------|---------|----|----|---|--------|
| 1   | KG  | kg        | <... 1      | KG  | kg       |         |    |    |   | 0,000  |
| 350 | 1KG | kg 100%   | <... 1.000  | KG  | kg       |         |    |    |   | 0,000  |
| 350 | VKG | kg % sale | <... 1.000  | KG  | kg       |         |    |    |   | 0,000  |
| 350 | KNS | KGH2O2    | <... 1.000  | KG  | kg       |         |    |    |   | 0,000  |
| 1   | TO  | t         | <... 1.000  | KG  | kg       |         |    |    |   | 0,000  |
| 10  | 1TN | t 100%    | <... 28.571 | KG  | kg       |         |    |    |   | 0,000  |

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.

|   |                                             |                                  |        |             |
|---|---------------------------------------------|----------------------------------|--------|-------------|
| ▼ | TRSF: IFS_MD_MATNR2_UOMCMAT2_01 -> UOMCMAT2 | 0478WJLT5B8AL0TQ3Q5B32291RT8YZOP | Change |             |
| ▼ | Infosource C_MATNR2 -> UOMCMAT2             | IFS_MD_MATNR2_UOMCMAT2_01        | Change | InfoSources |
| ▼ | TRSF: C_MATNR2 -> IFS_MD_MATNR2_UOMCMAT2_01 | 00MV0SZJYCQMYZ0T8AG4ZXJZG0TSDIY  | Change |             |
| ▶ | Material (Attributes)                       | ATTRIBUTES C_MATNR2              | Manage | InfoSources |

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

| Table: /BIC/PC_GLBFLT |               |             |               |         |         |                                                              |             |               |            |             |               |
|-----------------------|---------------|-------------|---------------|---------|---------|--------------------------------------------------------------|-------------|---------------|------------|-------------|---------------|
|                       |               |             |               |         |         |                                                              |             |               |            |             |               |
| 行                     | /BIC/C_STREAM | /BIC/C_RULE | /BIC/C_GLBFLT | OBJVERS | CHANGED | /BIC/C_DESC                                                  | /BIC/C_SIGN | /BIC/C_OPTION | /BIC/C_LOW | /BIC/C_HIGH | /BIC/C_ACTIVE |
|                       | C_MATNR2      | 155895      | 000           | A       |         | Material Alternative Units conversion in Base UoM (UOMCMAT2) | I           | EQ            | WD1_110    | IN          | Y             |
|                       | C_MATNR2      | 155895      | 001           | A       |         | Material Alternative Units conversion in Base UoM (UOMCMAT2) | I           | EQ            | WD1_110    | LB          | Y             |
|                       | C_MATNR2      | 155895      | 002           | A       |         | Material Alternative Units conversion in Base UoM (UOMCMAT2) | I           | EQ            | WD1_110    | M           | Y             |
|                       | C_MATNR2      | 156001      | 000           | A       |         | Material Alternative Units conversion in Base UoM (UOMCMAT2) | I           | EQ            | WD1_110    | IN          | Y             |

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\_GLBFLT.

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\_GLBFLT, 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\_GLBFLT, 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\_UNIT2 anymore in new ABAP code, since it is a previous uncomplete version of the Z\_MD\_CONVERT\_MATERIAL\_UNIT3.

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\_UNIT2 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 from **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 from **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.