

# **Material Ledger Concept In S/4 HANA**



## Need of ML and Actual costing

In countries with stable inflation rate it is considered fine to have inventory valuated at standard cost. In such countries material inventory values are normally carried by the SAP system in one currency with raw materials valuated at moving average price and semi-finished and finished goods valuated at standard price.

In countries where currency is not stable and inflation rates are high it is pertinent to have inventory valuated at actual costs. In such countries it might also be required to record inventory valuation in more than one currency, usually a local currency and another more stable reporting currency like the USD to indicate the inflationary impact on the inventory values. SAP supports this requirement of showing inventory valuation in multiple currencies at actual cost using the functionality of material ledger and actual costing.



Material records pertaining to opening stock, goods receipt, invoice receipt, debits, credits etc get logged in the ledger along with the price and exchange rate differences throughout the month.

The currency translations for the three currencies happen at historical exchange rates available at the time of posting. This ledger with a complete record of each single transaction of the material forms the basis to calculate actual cost for the material at period end.

The actual price thus calculated in SAP is called the periodic unit price and can be used to revaluate inventory. This actual price can then also be treated as standard cost for the next month. A typical material ledger and actual costing flow in SAP is as shown below:



#### Material Master Price Control

#### Moving average price (V- Price)

- Adjusted with every receipt
- If at all, only to be used for raw materials and materials procured externally

#### Standard Price (S-Price)

- Constant
- Recommended for all material types



# **Costing Methodology**

# Moving Average Actual

Price that changes in consequence of usage and entry of invoices. Calculated by dividing the value of material by the quantity in stock. Automatically recalculated based on activity.



Constant price without considering usage or invoices. Material stock valued at the same price over an extended period. Price variances are posted to price difference accounts; not affecting the standard price.

The method of valuing inventory of a material is determined when extending/creating the material master.



# Moving average price – Stock Coverage

1. 2. 3. 4.	Begin. inv Goods Invoice Goods i	ventory: 100 PC receipt: 100 PC receipt: 100 PC issue: 150 PC a	c at 1.00 at 2.00 C at 3.00 t 2.00	Qty 100 200 200 50	<u>Stk.</u> 100 300 400 100	<u>/al</u> ) ) )		<u>V price</u> 1.00 1.50 2.00 2.00	
1.	Stock 1. 100 300 4.						GR/IR Account		
2. 3	200 100		lf the for 10 i	nvoice receipt is 0 units, the stock coverage s 200 units:	pt is tock	3.	200	200	2.
	Consumption all di			ferences goe	s on	Vendor			
4.	300			Stook				300	3.



# Characteristics of Price Control V

#### Moving average price

Advantages:

- The stock value is adjusted each time goods are received
- Real-time price fluctations are posted to stock
- Price difference postings only take place in exceptional cases

#### **Disadvantages:**

- Price fluctuations cannot be adjusted to the finished products of higher levels (S price)
- X Only recommended for raw materials or goods procured externally (realtime price for goods receipt known)
- × False entries with severe consequences (compounded errors)
- X Danger of incorrect valuations with delayed invoice receipt



# **Posting Example: Standard Price**

	Stock	Stock Value	Standard Price		
1 Opening stock:	100	400	4.00		
2 Goods receipt: 100 at 5	200	400	4.00		
3 Invoice receipt: 100 at 4.50	200	400	4.00		
Stock	_	GR/IR	GR/IR account		
1 400 2 400		3 500	500 2		
Price difference		Ver	Vendor		
<sup>2</sup> 100 <sup>50</sup> <sup>3</sup>			<b>450</b> 3		



## **Characteristics of Price Control S**

#### Standard Price

Advantages:

All stock postings take place at the standard price

Prices remain constant throughout at least one period

Price fluctuations do not debit/credit the cost objects (e.g. orders)

Calculation of the standard prices with cost component splits

Recommended for all material types

**Disadvantages:** 

Price differences cannot be subsequently adjusted to the ending inventories or the consumed products (sales, production withdrawals)



## Material ledger (ML): Provides following main features

•Multiple currency : Traditionally inventory is mainly valuated with a single currency in SAP ERP., ML allows valuation in two additional currencies.

Today's global organizations operating in different countries desire to valuate inventory in multiple currencies. Like for example, a company in Norway dealing with oil needs to maintain their books in Norwegian currency (NOK), they will also like to evaluate their inventory in USD as oil is traded in international market in USD.

This functionality is available in Release 1511 of S/4 HANA.



# Multiple valuations

ML offers the option of three different levels of valuations (Legal ,group and Profit center) for a corporate group operating in multiple countries. Generally legal valuations are stored in local currency, group & profit center valuations are stored in group currency (mostly in USD).

Parallel valuations support transfer pricing for internal sales between legal entities or profit centers within the group for worldwide supply chain. If a product is assembled in China with parts produced & procured from different units operating in different countries (within the same group), then final cost price may get added up to a very high value (due to internal profits in cross company sales).

If company wants to reduce this final cost price, then this multiple valuations help them to achieve that by eliminating internal profits for MNCs'.



# Actual costing

•Inventory and material movements are generally valuated either at Standard price (S) which is constant over a period of time or Moving average price (MAP) which gets adjusted (calculated) automatically based on every Goods receipt or Invoice receipt.

Both of these two methods have their own pros and cons. Actual costing combines the advantages of standard price with advantages of using MAP.

ML captures all price variances (like purchase price variances, production variances etc) and allows (as optional period end activity) revaluation of ending inventories at period end and releases it as standard price (generally) for next period. Actual costing is optional in S/4 HANA.

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# Challenges with ML in SAPERP

•Several configurations (perceived to be complex) Discipline in logistic process specially for actual costing and need for high quality master data (Material price can be changed at any time without ML, but there are restrictions in changing the price within a period if actual costing is active.

Material posting needs to happen in current period only, Goods receipt should be done before Invoice receipt for purchase order etc)

- •Production startup activity (Perceived to be complex with considerable business down time)
- •Additional period end activities (Specially when actual costing is active)
- •Performance (Transaction run time gets impacted due to update in several ML tables during goods movement, invoices and additional period end activities)

•Analytics (Analysis of price to be drilled down to individual document takes time)

# **Material Ledger Currency Settings**





# Simplified data model of S/4 HANA

•Data will now be stored mainly in universal journal table ACDOCA, several ML tables have been replaced with HANA views with same name.

So, existing customers using ML will be happy as bottlenecks with performance and analytics will be eliminated through simplified data model, higher throughput, 'on the fly' aggregates, real time reporting.

Some of the period end activities (for reconciliation etc) may not be needed with single table ACDOCA. But, other customer not using ML (for all of their plants) may not be happy for mandatory implementation of ML in all plants.

Undoubtedly ML has great features and global companies will reap benefits with parallel currency and parallel valuations with ML embedded in S/4 HANA, but many customers may like to get clarified on following questions



From a logistics perspective, there is a radical overhaul of the database architecture (just as we saw in finance with the release of Simple Finance).

In the Business Suite, inventory management consisted of multiple tables: document header, item level table, aggregated actual stock quantity tables, material attributes held across multiple tables and a valuation table.

Valuation switches to ML with the other tables replaced by MATDOC, a new table in which former header and item data of a material document as well as some material attributes are consolidated. Actual stock quantity data is therefore calculated on-the-fly from MATDOC.



# Material Ledger Configuration

- 1. Activate Valuation Areas for Material Ledger Spro: Controlling | Product Cost Controlling | Actual Costing/Material Ledger | Activate Valuation Areas for Material Ledger
- 2. Assign Currency Types to Material Ledger Type Spro: Controlling | Product Cost Controlling | Actual Costing | Material Ledger | Assign Currency Types to Material Ledger Type
- Assign Material Ledger Types to Valuation Area
  Spro: Controlling | Product Cost Controlling | Actual Costing / Material Ledger | Assign material Ledger Types to Valuation Area
- 4. Configure Dynamic Price Changes Spro: Controlling | Product Cost Controlling | Actual Costing / Material Ledger | Configure Dynamic Price Changes
- Define Movement Type Groups of Material Ledger
  Spro: Controlling | Product Cost Controlling | Actual Costing / Material Ledger | Material Update | Define Movement Type Groups of material Ledger
- Assign Movement Type Groups of Material Ledger.
  Spro: Controlling | Product Cost Controlling | Actual Costing / Material Ledger | Material Update | Assign Movement Type Groups of material Ledger



- 7. Activate Actual Costing Spro: Controlling | Product Cost Controlling | Actual Costing / Material Ledger | Actual costing | Activate Actual Costing
- 8. Activate Actual Cost Component Split Spro: Controlling | Product Cost Controlling | Actual Costing / Material Ledger | Actual costing | Activate Actual Cost Component Split
- 9. Define productive start

SAP Menu: Accounting / Controlling / Product Cost Controlling / Actual Costing / Material Ledger / Environment / Production Startup / CKMSTART – Set Valuation Areas as Productive.



#### Account Determination in Material Ledger

The account determination for Material Ledger postings is made using Materials Management (MM) account determination (OBYC), It's important understand that are a link between Material Ledger and cost component structure (OKTZ) in product costing planning configuration – that is used to update standard cost.

#### Revenue/Expense from Revaluation (UMB)

The Material Ledger closing entries (CKMLCP) will use transaction key UMB, and is used when a material price is changed and/or revaluate.

#### **Price Differences for Material Ledger (PRY)**

The system uses transaction key PRY during the Material Ledger closing entry, as well as during the roll-up of single-level price differences. Material Ledger does not use the PRD transaction key configuration to transfer the price variance from an input material to an output material. Instead, the system uses the PRY assigned account.







# Material Price Analysis-Price History View: CKM3



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## Actual cost update based



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# **Settings and Configuration**

- Activate Valuation areas for Material Ledger (T.Code: OMX1)
- > Assign Currency Types to Material Ledger Type (T.Code: OMX2):
- > Assign Material Ledger Types to Valuation Area (T.Code: OMX3):
- > OBYCSettings (Regular setup+ material ledger cost price difference setup etc)
- Define Movement Type Groups of Material Ledger (T.Code: OMX7)
- Material update structure (T. Code: OMX9)
- > Assign Movement Type Groups of Material Ledger (T.Code: OMX0)
- > Assign Material Update Structure to a Valuation Area (T.Code:OMX8):
- Activate actual costing
- Activate Actual Cost Component Split
- Check Material Ledger Settings (T.Code:CKM9)
- > Production Startup (CKMSTART): do a test run initially
- > Production Startup (CKMSTART): The expected results of a good material ledger
- > production startup is as shown below



# Material Ledger Overview

- > You want to perform actual costing for materials.
- > You want to carry your material stock in multiple currencies.
- > You want to valuate your material stock each posting period.
- You are active as a corporate group in several countries and you use multiple valuations.







#### S4 Hana – Material Ledger



S4 Hana Simplificaiton Material Ledger



# Material Ledger's two main objectives are:

(1)Inventory Valuation in up to three currencies and valuation methods

(2) Performing Actual Costing for Materials

The real beauty of material ledger is number (2). This is because it takes the variances that occur from inventory transactions and post them back to ending inventories in order to value them at an actual cost.

It does this while retaining the standard cost of the material as a benchmark. You also have the option of revaluing the current standard cost with the periodic unit price (which is the actual cost calculated by material ledger). The two types of price determination that occur with material ledger:



(1)<u>Single-level price determination</u>: This takes the variances that occur for an individual material and roll them back into its ending inventory.

(2)<u>Multilevel price determination</u>: This takes the variances that occur for a lower-level product (e.g. raw material) and roll them (in the proportion of consumed quantity) into a higher-level product (e.g. finished product).

You can choose to roll the variances that relate to sold inventory, into the cost of sales account in order to value COS at actual costs. This involves using Material Ledger's "Revaluation of Consumption" functionality.

With Material Ledger, you can therefore achieve actual costs for ending inventory of single and multilevel products and cost of sales, and still measure your procurement processes according to standard costs.







Actual Costing uses the Material Ledger to store material prices in up to three currencies and according to three valuation strategies (group, legal and profit center).

Actual Costing aims to provide the actual costs for each material at period close.

Each material movement is recorded in the Material Ledger together with the preliminary valuation and any variance (from invoice or order settlement). Material settlement is used to integrate this variance into the material price at period close.

Both single -level and multi-level material settlement are available. Multi-level settlement is used to reconstruct the quantity structure based on the material movements for the period, and assign variances for the raw materials to the finished and semi-finished products as follow-up costs.

The actual price for each material can be updated to the material master for the closed period.











