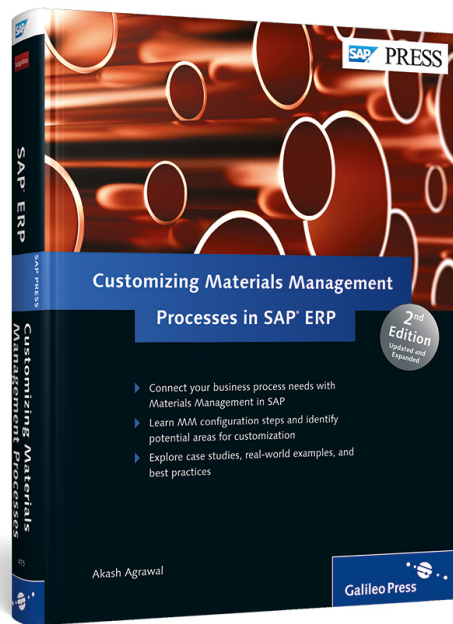


Akash Agrawal

# Customizing Materials Management Processes in SAP® ERP



  
**Galileo Press**

Bonn • Boston

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# Preface

First of all, thank you for the overwhelming response for first edition. I would like to thank those readers who sent me various positive responses and let me know which areas could be improved in the second edition.

Now I would like to welcome you to the second edition of *Customizing Materials Management Processes in SAP ERP*, a compilation of business processes and configuration techniques. During my work on various materials management (MM) implementation projects, I always wished for a good resource that could help offer quick solutions and easy-to-follow guidance. That wish has come true with the completion of this reference book. This book will enhance your knowledge of Materials Management in SAP by providing process steps and configuration details for essential business processes.

## **Who Needs This Book**

The main purpose of this book is to explain the various industry best business processes used in MM. As such, it's a reference book for MM consultants to use during their SAP implementation, rollout, and support projects. This book will help consultants find quick solutions for their clients.

This book is also useful if you're an end user who wants to become familiar with common MM functionalities. If you're working on Sales and Distribution (SD) in SAP, for example, this book will help you understand MM-SD integration by covering intercompany stock transfers via SD, inventory management for goods issue to customers, special stock handling, and more. Similarly, if you are working on SAP ERP Financials Financial Accounting, this book will offer you a greater understanding of MM-FI integration. Topics covered in this area include automatic account determination and general ledger account posting during various business transactions.

## How to Use This Book

Each chapter in this book focuses on business processes, explaining the business scenario and the step-by-step procedures—supplemented by screenshots—needed to execute the scenario in SAP.

Here's a brief overview of what each chapter covers.

► **Chapter 1: Introduction**

This chapter starts with the importance of an ERP system and SAP. It explains the SAP system landscape, which is very important for every SAP professional. It will also give you an overview of how different functional areas of SAP software are integrated.

► **Chapter 2: The SAP Organizational Structure**

This chapter explains the various elements of an organizational structure and provides you with in-depth knowledge of all possible organizational structure scenarios.

► **Chapter 3: Master Data**

This chapter describes the importance of master data and how different master data such as material master, vendor master, and purchasing info records are maintained at different organization levels. Various important elements of master data, such as material type and vendor account group are covered in detail.

► **Chapter 4: Procurement Processes**

This chapter is the heart of the book because it covers various procurement processes across industry verticals. You will obtain in-depth knowledge of procurement processes and their configuration.

► **Chapter 5: Inventory Management Processes**

This chapter explains the inventory management functionality. It also explains the inbound and outbound process in inventory management and describes various stock types in inventory management and physical inventory processes.

► **Chapter 6: Invoice Verification**

This chapter explains different invoice processing scenarios and the general ledger account postings in each scenario.

► **Chapter 7: Inventory Valuation**

This chapter starts by explaining the importance of inventory valuations and then explains various methods of stock valuation. It also describes the functionality of split valuation and how this can be used in different industry scenarios.

▶ **Chapter 8: Key Configurations in Materials Management in SAP**

This chapter describes the pricing procedure and automatic account determination functions in SAP. It also explains the step-by-step configuration of these key areas. In addition, this chapter explains the release strategy and version management functionality configuration for various purchasing documents.

▶ **Chapter 9: Material Classification**

This chapter explains the importance and use of the classification technique and how this is used for material classification. It also describes the step-by-step process to classify materials.

▶ **Chapter 10: Batch Management**

This chapter talks about the usage of batch management, how the batch management process works in SAP, and provides configuration steps.

▶ **Chapter 11: Material Requirements Planning**

This chapter explains various types of MRP and how each type of MRP can be used in a real-world scenario. This chapter also explains step-by-step MRP configuration.

▶ **Chapter 12: Enhancements in Materials Management**

This chapter is a good starting point for consultants who don't have a technical/programming background. Here, we discuss the various types of development objects in SAP and how they can be used in real time.

▶ **Chapter 13: Conclusion**

This final chapter reviews the content covered in each chapter and provides you with lessons learned.

Let's get started. In the next chapter, you'll get an overview of SAP ERP and MM.



**Change View "Assignment of Partner Schemas to Account Groups":**

Group	Name	PS EKO	PS VSR	PS Pit
0001	Vendor	L1	L2	L3
0002	Goods supplier			
0003	Alternative payee			
0004	Invoicing Party			
0005	Forwarding agent			
0006	Ordering address			
0007	Plants			
0012	Hierarchy Node			
0100	Vendor distribution center			
CPD	One-time vend.(int.no.assignmt)			
CPDL	One-time vend.(ext.no.assignmt)			
DARL	Lender			
KRED	Vendor (int.number assignmt)			
LIEF	Vendor (ext.number assignmt)			
MNFR	Manufacturer (ext.no.assignmt)	L4		
REIS	Commercial traveller			
VEND	Overseas Vendor Account Group			

**Figure 3.14** Assign Partner Schema to Vendor Account Group

In this section, you've learned about the essential characteristics and functions in vendor master records. In the next section, we'll move on to discuss material master records.

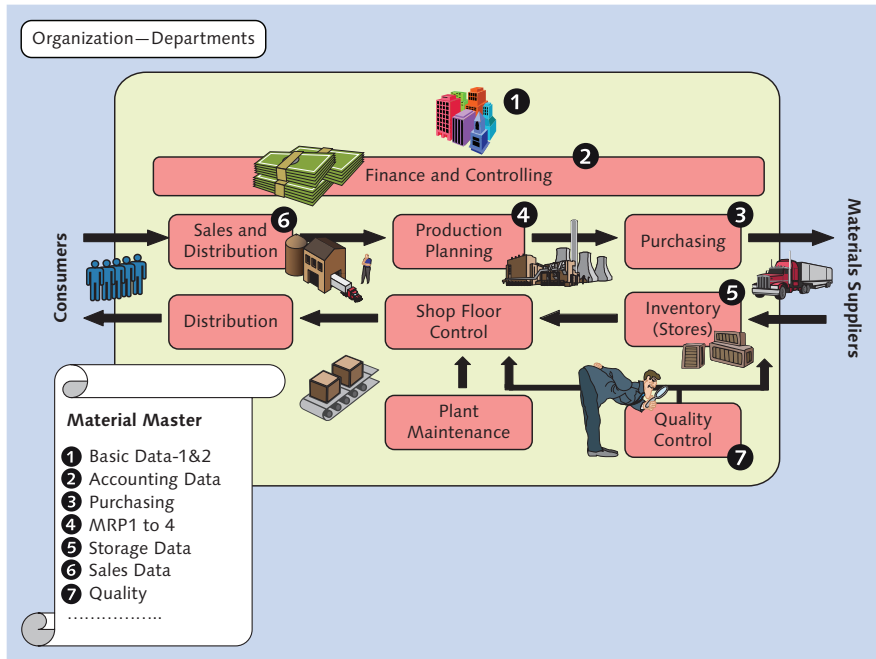
### 3.2 Material Master Records

Material master records are the key element of MM. In this section, we'll discuss how material master records are created at different organizational levels and how different department-specific data is maintained in different views. We'll also discuss the main controlling elements of material master records such as material type.

Material master records are a company's main source for material-specific data. The transaction codes for material master records are as follows:

- ▶ Transaction MM01: Create material
- ▶ Transaction MM02: Change material
- ▶ Transaction MM03: Display material

Material master data has different views for each department, which are the same as tab pages. For example, the PURCHASING view is used for ordering, the ACCOUNTING view is used for material valuation, and the MRP view is used for planning (Figure 3.15).

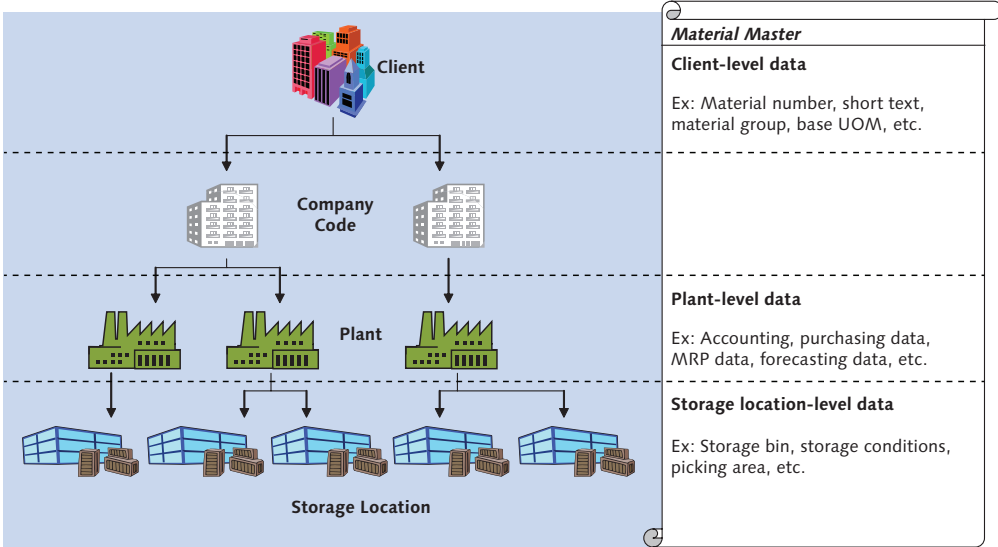


**Figure 3.15** Material Master Views for Different Department Data

The material master code is created centrally, and each department can maintain department-specific data in the material master record (just as with the vendor master record). This concept is illustrated in Figure 3.16.

General data that are valid enterprise-wide are stored at the client level, and plant-relevant data is maintained at the plant level. Similarly, data that is valid for a particular storage location is maintained at the storage location level.

Alternatively, storage location data for a material can be created automatically at the time of goods receipt. This is applicable when, for the first time, a material is being received in a storage location for which data isn't maintained in the material master record.



**Figure 3.16** Material Master Organizational Level Data

To enable this functionality, maintain the following configuration in Customizing. Go to SAP IMG • MATERIALS MANAGEMENT • INVENTORY MANAGEMENT & PHYSICAL INVENTORY • GOODS RECEIPT • CREATE STORAGE LOCATION AUTOMATICALLY.

Here, you specify whether the automatic creation of storage location data is allowed for goods receipts. We'll go over the following steps to learn how to define this:

1. As shown in Figure 3.17, define which plant and for which movement type you want to enable this functionality.

### Create Storage Loc. Automatically

---

Process the objects in the specified sequence

Plant

Movement Type

**Figure 3.17** Create Storage Location Automatically

- Click on PLANT, and then select the plant for which you want to enable this functionality; for example, PLANT 0001 and PLANT 1000 are selected for automatic creation of storage location view for a material in Figure 3.18.

**Change View "Autom. Creation of SLoc per Plant": Overview**

Plant	Name 1	Create SLoc. automat.
0001	Werk 0001	<input checked="" type="checkbox"/>
1000	Plant 1	<input type="checkbox"/>
1010	Plant 3	<input type="checkbox"/>
1100	Plant 2	<input type="checkbox"/>
1111	TEST	<input type="checkbox"/>
2000	PLANT 1	<input type="checkbox"/>
P001	Corp Quality Data Plant	<input type="checkbox"/>
TES1	Plant 1	<input checked="" type="checkbox"/>

**Figure 3.18** Automatic Creation of Storage Location per Plant

- Define the movement types for which automatic creation of storage location is allowed as shown in Figure 3.19. For this example, select movement types 101, 105, 109, 123, and 125 for this functionality by clicking the checkbox. Whenever you post the goods receipt for a material with movement type 101 and plant 1000, a storage location view will be created automatically for the material.

**Change View "Autom. Creation of Stor. Loc. for Mvt": Overview**

MvT	Movement Type Text	Create SLoc. automat.
101	GR goods receipt	<input checked="" type="checkbox"/>
102	GR for PO reversal	<input type="checkbox"/>
103	GR into blocked stck	<input type="checkbox"/>
104	GR to blocked rev.	<input type="checkbox"/>
105	GR from blocked stck	<input checked="" type="checkbox"/>
106	GR from blocked rev.	<input type="checkbox"/>
107	GR to Val. Bl. Stock	<input type="checkbox"/>
108	GR to Val. Bl. Rev.	<input type="checkbox"/>
109	GR fr. Val. Bl. St.	<input checked="" type="checkbox"/>
110	GR fr. Val. Bl. Rev.	<input type="checkbox"/>
121	GR subseq. adjustm.	<input type="checkbox"/>
122	RE return to vendor	<input type="checkbox"/>
123	RE rtn vendor rev.	<input checked="" type="checkbox"/>
124	GR rtn blocked stck	<input type="checkbox"/>
125	GR rtn blkd stck rev	<input checked="" type="checkbox"/>
161	GR returns	<input type="checkbox"/>

**Figure 3.19** Automatic Creation of Storage Location for Movement Type

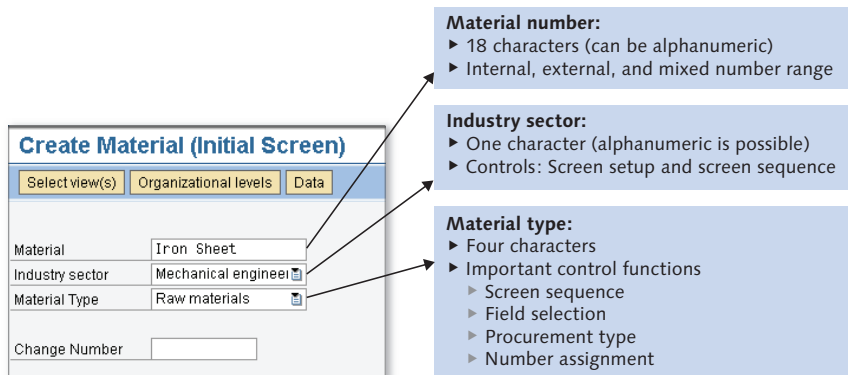
**Note**

The storage location data is only created if the quantity is posted to standard storage location stock. It isn't created for receipts into a special stock (e.g., into sales order stock). The standard system is set in such a way that the storage location data is created automatically for all types of receipts (goods receipt with/without reference, stock transfers, initial entry of stock balances, reversal of goods issues, etc.).

In the following sections, you'll learn about the main attributes and configurations of material master data.

### 3.2.1 Main Attributes

The main attributes of material master data are the material number, industry sector, and material type, as shown in Figure 3.20.



**Figure 3.20** Main Attributes of Material Master Data

The *material number* is a unique 18-character field that can be entered manually or can be created automatically by the system, based on the type of number assignment. For an external number assignment, you can enter the material number manually; for an internal number assignment, the system creates the material number automatically when you save the material master record.

The *industry sector* controls the screen setup and screen sequence. The SAP system includes predefined industry sectors, but if any specific requirement doesn't match these predefined sectors, you can create your own.

*Material types* have many controlling functions, including the following:

- ▶ Number assignment
- ▶ Number range
- ▶ Procurement type
- ▶ Screen setup (i.e., allowed views, field selection, and screen sequence)
- ▶ Price control
- ▶ Account determination
- ▶ Quantity and value updating in plants

SAP provides preconfigured material types, but you can also create your own by copying the standard material types and making the required changes. Some of the SAP-provided material types are:

- ▶ ROH: Raw material
- ▶ HALB: Semi-finished material
- ▶ FERT: Finished material

### 3.2.2 Configuring a New Material Type

To configure a new material type, go to SAP IMG • LOGISTICS-GENERAL • MATERIAL MASTER • BASIC SETTINGS • MATERIAL TYPES • DEFINE ATTRIBUTES OF MATERIAL TYPES (Figure 3.21).

Here, you can either make changes to an SAP-provided material type (such as DIEN, HALB, or FERT), or you can create a new one. To do the latter, click on the NEW ENTRIES button or copy an existing material type and make the required changes.

#### Note

If you want to create a new material type, we recommend copying an SAP-provided material type and then making changes, instead of starting from scratch. Otherwise, you need to maintain multiple settings and screens, which can be very time consuming.

For additional settings, select the material type from the MTYP column, and click on the DETAILS button. You'll see the details of the selected material type as shown in Figure 3.22.

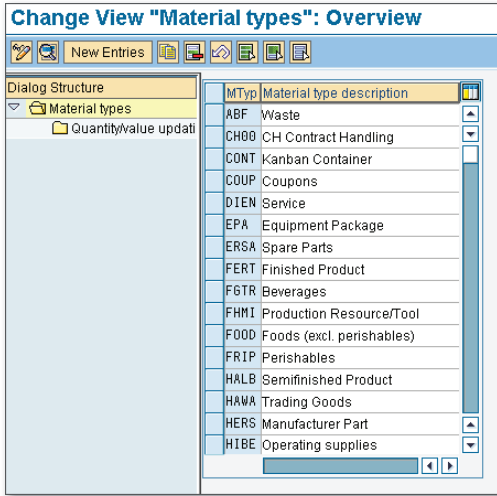


Figure 3.21 Material Types

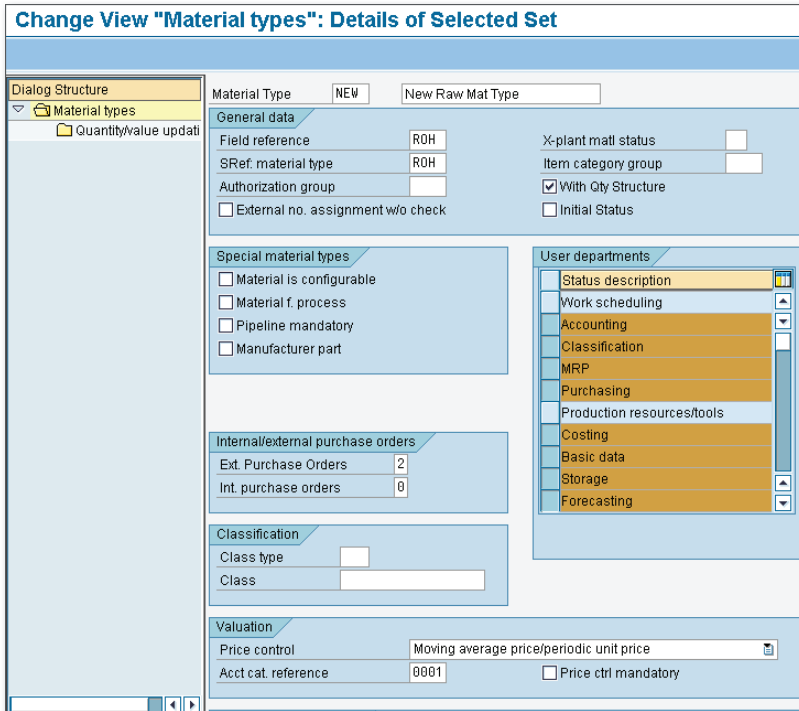


Figure 3.22 Material Type Creation

You need to make the following key settings in material types as shown in Figure 3.22, depending on your business needs:

- ▶ **FIELD REFERENCE** (field reference key)  
This determines the field status such as required, hidden, display, and optional. In Figure 3.22 you can see ROH is the field reference.
- ▶ **USER DEPARTMENTS** (views in the material master)  
User departments such as purchasing, sales, and production are referred to as views in the material master. This determines which views can be selected for the material type. For example, a sales view is essential for finished goods because you need to maintain data specific to the sales department to sell the materials.
- ▶ **PIPELINE MANDATORY**  
This determines whether pipeline handling is possible or mandatory. It also determines whether it's possible to set external and internal purchase orders, as well as quantity and value updates. Pipeline materials are used in continuous process chemical industries, such as oil refinery. Crude petroleum is issued to production for refining via a pipeline.
- ▶ **EXT. PURCHASE ORDERS/INT. PURCHASE ORDERS** (type of procurement)  
This determines whether internal procurement, external procurement, or both are allowed.
- ▶ **PRICE CONTROL**  
You can select **STANDARD PRICE** or **MOVING AVERAGE PRICE/PERIODIC UNIT PRICE** for a material type, as shown in Figure 3.22. (Price control is discussed in Chapter 7, Section 7.3.) The selected price control is copied (defaulted) when you create a material master record, but you can change the price control from standard price to moving average price and vice versa. If the **PRICE CTRL MANDATORY** checkbox is activated, the price control method selected in the material type can't be changed while creating a material master record.

After you've selected the material type, click on the **QUANTITY/VALUE UPDATING** folder (on the left side of the screen). As Figure 3.23 illustrates, you need to select **QTY UPDATING** and **VALUE UPDATE** in each valuation area. The significance of these fields is as follows:

- ▶ **QTY UPDATING**  
Specifies that the material is managed on a quantity basis in the material master record for the relevant valuation area.



► VALUE UPDATE

Specifies that the material is managed on a value basis in the material master record for the valuation area concerned. The values are updated in the respective G/L accounts at the same time.

Quantity/value updating						
Val...	Matl	Qty updating	Value Upda	Pipe.mand.	PipeAllowed	
0001	NEW	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

**Figure 3.23** Quantity/Value Updating for Material Type and Valuation Area

### 3.2.3 Defining a Number Range for a Material Type

In this step, you define the type of number assignments and the number of range intervals for material master records. When creating a material master record, you must assign it a unique number. There are two ways of doing this:

► **Internal number assignment**

A number within the defined number range is assigned by the SAP system.

► **External number assignment**

You can assign a number within the defined number range interval. You can define the intervals for external number assignments numerically as well as alphanumerically.

You can also define both an internal and an external number range interval for the material type.

In real-time scenarios, most companies use internal number assignment when they want numerical number ranges for materials, so that the system automatically assigns the unique material number serially. In cases where they want to define alphanumerical number ranges, they use external number assignment.

To configure a number range for material types, go to the menu path SAP IMG • LOGISTICS-GENERAL • MATERIAL MASTER • BASIC SETTINGS • MATERIAL TYPES • DEFINE NUMBER RANGE FOR EACH MATERIAL TYPE.

Click on MAINTAIN GROUP to maintain a new group for the new number range; you will then see another screen as shown in Figure 3.24. In the top screen menu, go to GROUP • INSERT to open the screen shown in Figure 3.25. Enter the group name in the TEXT field and a new number range in the FROM NUMBER and TO NUMBER fields, and then click SAVE.

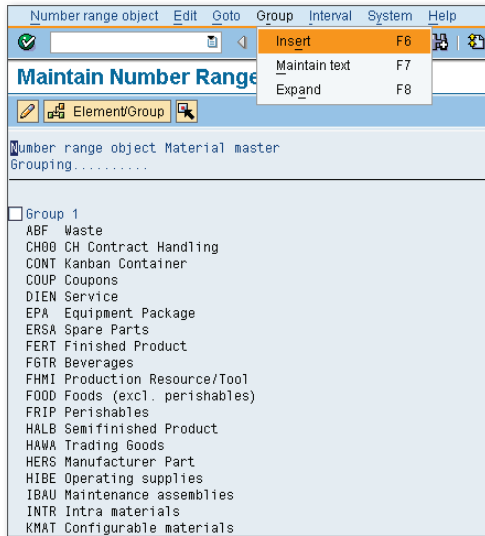


Figure 3.24 Number Range for Material Types

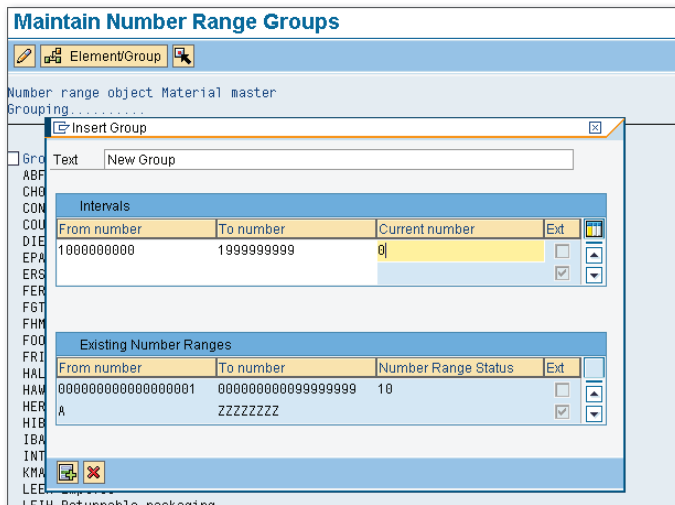


Figure 3.25 Number Range and Number Range Groups for Material Type

### 3.2.4 Defining Field Selections

The field status of a field in material master data is controlled by the following:

- ▶ Material type
- ▶ Transaction code
- ▶ Industry sector
- ▶ Plant
- ▶ Procurement type (internal/external)

Similar fields are organized under different groups called *field selection groups*. For example, FIELD SELECTION GROUP 1 contains two fields, BASE UNIT OF MEASURE and UNIT OF MEASUREMENT TEXT, as shown in Figure 3.26.

A field reference key is assigned to each of the different controlling units such as material types, transaction codes, industry sectors, plants, and procurement types. For example, field reference keys DIEN and MM03 are assigned to the service material transaction and the display material transaction, respectively.

Maintain the field status for the combination of field selection group and field reference key, as shown in Figure 3.26.

**Change View "Field Selection for Data Screens": Overview**

New Entries

Field sel. group: 1

Fields (Field selection group 1)	
Field name	Short Description
MARA - MEINS	Base Unit of Measure
T006A - MSEHT	Unit of Measurement Text (Maximum 10 Charact

Field selection (Field selection group 1)					
Field ref.	Hide	Display	Reqd Entry	Opt. entry	
0001	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="radio"/>	
MM03	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	
SAP1	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="radio"/>	
DIEN	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="radio"/>	
E	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="radio"/>	
F	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="radio"/>	

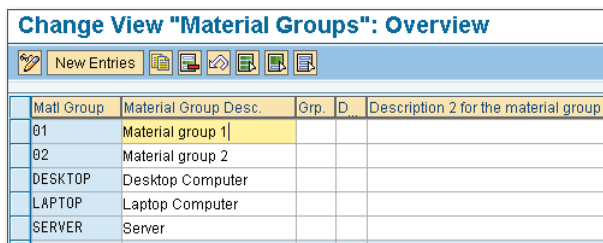
**Figure 3.26** Field Selection in Material Master

### SAP Recommendations

- ▶ The field status of a field selection group for the field reference key prefixed with "SAP" must not be changed.
- ▶ The field reference key for transaction codes and procurement type (E – internal procurement, and F – external procurement) are already configured and can't be changed.
- ▶ New field reference keys must begin with Y or Z.
- ▶ New field selection groups, if required, can be taken from those that aren't preconfigured. For example, 206 through 240 are available.
- ▶ The system determines how the field status should be set, as follows:
  - ▶ The field status `HIDE` has the highest priority, followed by `DISPLAY`, `REQUIRED (MANDATORY)`, and `OPTIONAL`, in that order.
  - ▶ As shown in Figure 3.26, while in Transaction `MM03` (Display Material), all fields in `FIELD SELECTION GROUP 1` have a status of `DISPLAY`.

### 3.2.5 Defining Material Groups

You can define different material groups to distinguish various materials. For example, an enterprise that manufactures computers can classify computers as desktops, laptops, and servers; each of these would be its own group. To define material groups, go to `SAP IMG • LOGISTICS – GENERAL • MATERIAL MASTER • SETTINGS FOR KEY FIELDS • DEFINE MATERIAL GROUPS`, as shown in Figure 3.27. You can define the material group by copying the existing material group or by clicking on the `NEW ENTRIES` button. After clicking on the `NEW ENTRIES` button, enter the material group code and materials description in their respective fields.



The screenshot shows the SAP 'Change View Material Groups: Overview' interface. It features a toolbar with icons for 'New Entries', 'Copy', 'Paste', 'Delete', 'Save', and 'Print'. Below the toolbar is a table with the following data:

Matl Group	Material Group Desc.	Grp.	D...	Description 2 for the material group
01	Material group 1			
02	Material group 2			
DESKTOP	Desktop Computer			
LAPTOP	Laptop Computer			
SERVER	Server			

**Figure 3.27** Material Groups

The benefits of material groups are in reporting such as spent analysis, distribution of roles and responsibilities in purchasing and inventory departments, and so

on. For example, some companies have buyers based on the material group. One buyer is responsible for procuring only materials under material groups Stationery and Repairs. The other buyer is responsible for procuring materials under material group Steel, and so on.

#### Note

Organizations such as the United Nations Standard Products and Services Code (UNSPSC) offer precodification of materials and services. UNSPSC provides an open, global multisector standard for efficient, accurate classification of products and services. You can configure materials groups in line with UNSPSC codes (from its provided list). Many companies use UNSPSC for classifying their products and services.

You've now seen how different departments maintain material master data at different organizational levels, and we've gone through the main attributes and configurations of material master data. In the next section, we'll move on to discuss info records.

### 3.3 Purchasing Info Records

In vendor and material master records, you maintain vendor- and material-specific information. In purchasing info records, you maintain information about the relationships between vendors and their material. For example, each vendor may have specific terms and conditions of purchase for each material—this information is stored in purchasing info records.

As shown in Figure 3.28, purchasing info records contain the information for material and vendor combinations. This information is defaulted (copied) during the purchase order creation.

You can maintain the following data in purchasing info records:

- ▶ Current and future prices and conditions (gross price, freight, and discounts)
- ▶ Delivery data (planned delivery time and tolerances)
- ▶ Vendor data (vendor material number, vendor material group, etc.)
- ▶ Texts

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