



Critical
manufacturing
an ASM PT company

Containers

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Containers

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Overview

A **Container** is a standardized physical carrier used to hold, protect, organize, and move **Materials**, parts, or other containers throughout manufacturing and logistics processes.

A Container acts as the interface between production, storage, and transportation. It ensures that items can be handled safely, efficiently, and repeatedly across the shop floor.

Manufacturers design containers to match:

- The size and weight of the contents
- The sensitivity of the Materials
- The handling methods used on the shop floor, such as manual handling, forklifts, conveyors, AGVs, or robots

Industrial containers can be:

- Returnable or disposable
- Standard or custom-designed
- Made from plastic, metal, wood, or composite materials

Beyond simple storage, containers support lean manufacturing principles by enabling:

- Visual management
- Work-in-process control
- Ergonomic handling
- Quality protection
- Traceability

A container is therefore not just a box. It is a critical logistics and production asset that connects material flow, safety, efficiency, and quality across the industrial shop

floor.

Examples

FOUP for Semiconductor Wafers	SMT Board Magazine
	
Pallet	Trolley of Boxes
	
SMT Feeders Cart	ESD Box

	
Tray	Hopper
	

Containers in MES

A **Container** is an object of the **Container** entity that can hold **Materials**, **Resources**, or other **Containers**.

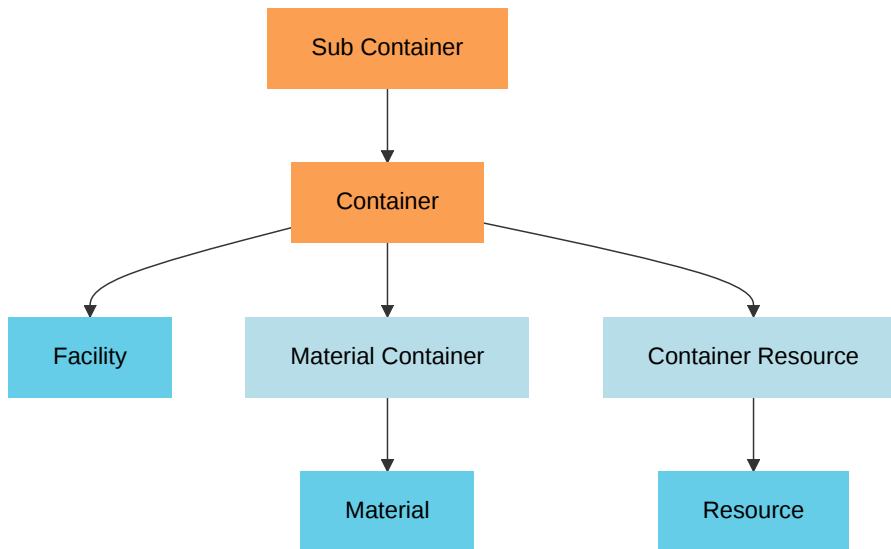
A **Material Container** has a capacity defined by positions available for a given **Material** unit. A **Container** can hold multiple **Materials**, but each position can contain only one **Material**.

Each position:

- Is identified by a unique number
- Has a defined capacity based on specific units

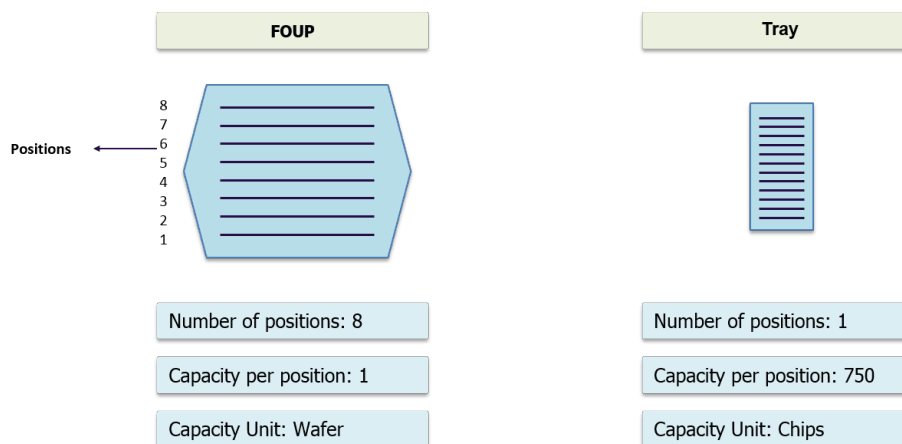
The same concept applies to:

- **Containers** that hold **Resources**
- **Containers** that hold other **Containers** (SubContainers)



A **Container** can be modeled in different ways:

- **Magazine** — one position with multiple units per position (for example, a tray holding several units of the same Material)
- **FOUP (Front-Opening Universal Pod)** — multiple positions with one unit per position (for example, a wafer carrier)
- **Hybrid models** — combinations of both approaches

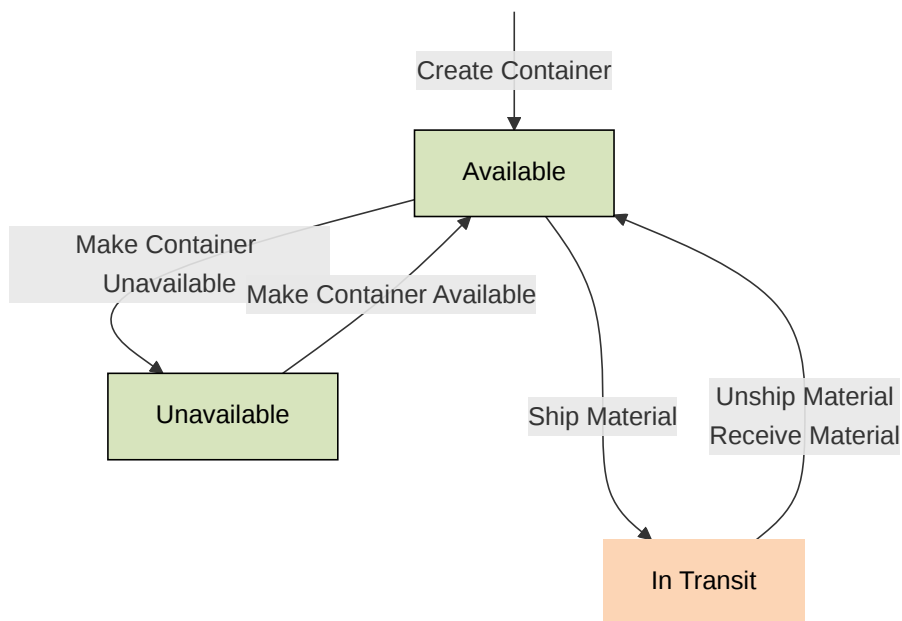


A **Container** can also be associated with a **Resource** when the Resource supports the position unit types defined in that Container type.

State Model

Containers have a system-defined state model:

- **Available** — the Container can be used (empty or full)
- **Unavailable** — the Container cannot be used
- **In Transit** — the Container is shipping Materials to another Facility



You can also create custom **State Models** for Containers.

Container Creation

The Container creation wizard includes several required fields:

- **Name** — identifies the Container
- **Type** — used in configuration tables for container restrictions
- **Facility** — defines where the Container will be used

Create Container

General Data

Name:

Description:

* Type:

System State:

Available

Information

* Facility:

Facility

Vendor:

Vendor ID:

Comments:

Cancel

Create

Additional configuration fields include:

- **Position Unit Type** — defines whether the Container holds Materials, Containers, or Resources
- **Total Positions** — defines the number of usable positions
- **Capacity Validation Mode** — available only for Material containers

If the **Capacity Validation Mode** is set to **Unit**, you can define the maximum Material quantity per position using **Capacity per Position**.

Info

For more information, refer to the User Guide: [Create Container](#)

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Create Container

Positions

Position Unit Type: ☒ Material
☐ Container
☐ Resource

Auto Generated: ☒

Unlimited: ☐

* Total Positions:

* Capacity Validation Mode: Units

* Capacity Unit:

* Capacity per Position:

* Orientation: None

Position Sorting: ☒ Ascending
☐ Descending

Comments:

Cancel

Create

Container Operations

Manage Positions

Use **Manage Positions** to add or remove objects from Container positions.

The operation works the same way for all **Container Position Unit Types**:

- Material
- Container
- Resource

For **Material** or **Container**:

Container Positions

Container of Material (Available)

Container Positions (Used 3/100)

Cookie01

Cookie02

Cookie03

Empty

Empty

Empty

Empty

Position Details

Material:

Cookie03

Product:

Belgas [A]

Product Description: Belgas Cookies

Step:

Mixing

Primary Quantity: 20 Kg

Secondary Quantity:

Comments:

Cancel

Update

For **Container of Containers**, define the relationship between the container and sub-container in the **Container Type Relation** Generic Table.

Container Type Relation (1)	
☐	MAIN CONTAINER TYPE
☐	Trolley
	Box

Container Positions

Container of Container (Available)

Container Positions (Used 1/100)

Container of Material

Empty

Empty

Empty

Empty

Empty

Empty

Position Details

Container: Container of Material

Description:

Type: Box

Comments:

Cancel

Update

For **Container of Resources**, define the relationship in the **Container Resource Relation** Generic Table.

Container Resource Relation (1)	
☐	CONTAINER TYPE
☐	Table

Container Positions

Container of Resource (Available)

Container Positions (Used 2/100)

Feeder01

Feeder02

Empty

Empty

Empty

Empty

Empty

Position Details

Resource: Feeder02

Description:

Type: Feeder

System State: Up

State:

Comments:

Cancel

Update

Empty

The **Empty** operation removes all objects from the Container.

Store

The **Store** operation places the Container in a **Storage Resource** located in any **Area** that belongs to the Container **Facility**.

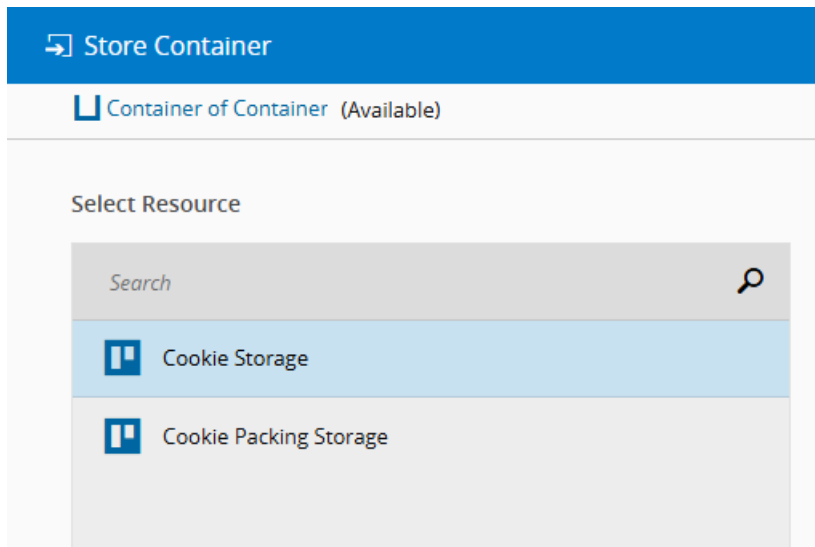
Precondition:

The Storage Resource must have **Position Unit Type = Container**.

 **Cookie Storage** (Active)

Positions

Position Unit Type: Container



Retrieve

The **Retrieve** operation removes the Container from storage.

Dock

Use **Dock** to dock a Container to a **Resource**.

Docking can occur on Resources with the following processing types:

- **Load Port**
- **Process**

Load Port Docking

Requirements:

- The Resource must have a **Load Port Type** selected
- The **Position Unit Type** must be **Container**

Edit Resource

GENERAL DATA
ADDITIONAL INFORMATION

Load Port Information

* Load Port Type: Input Output

Positions

* Position Unit Type: Container

Container Type:

Track Positions:

Auto Generate Positions:

Total Positions:

Other Information

Enable Request MAO on State Change:

Resource Group:

Comments:

Cancel
Save

Example:

In SMT lines, loader and unloader machines handle magazines of electronic boards.



Process Docking

Requirements:

- The Resource must have **Locations enabled**
- A valid **Location** must be selected

Dock Container

Cart1 (Available)

Resource

* Resource:

CM-Resource A

* SMT:

Loc1

Description:

System State: Up

Area: CM-Area

Priority: 5

Used Positions: 0

Total Positions: 10,000

Comments:

Cancel

Dock

When docking a **Container of Resources** (for example feeder carts), the system automatically considers the Resources as consumable feeds in the docking Resource.

Example:

In SMT lines, component placement machines can handle multiple feeder carts.





The docking Resource must have:

- **Has Resource Locations** enabled
- **Location Type** defined
- **Dimensions** configured

 Edit Resource

GENERAL DATA

ADDITIONAL INFORMATION

LOCATIONS

Locations

Has Resource Locations: ☒

Location Type:  SMT

* Dimension X Size:

* Dimension Y Size:

Locations must include:

- Location
- Position Count
- Position Consumable Feed Type
- Enabled status

Edit Resource ?

GENERAL DATA ADDITIONAL INFORMATION **LOCATIONS**

Locations + 🗑️

Loc1	🗑️
Description	
Loc2	
Description	
Loc3	
Description	
Loc4	
Description	

Locations Details

Name: Loc1

Description:

Barcode ID:

* Location X:

* Location Y:

* Position Count:

* Position Consumable Feed Type: Feeder × ▼

Enabled: ☒

Comments: ^

Cancel Save

Undock

The **Undock** operation removes the Container from the Resource.

Undock Container ?

📦 Cart1 (Available) ▼

Resource

Name: 🏢 CM-Resource A

SMT: 🏢 Loc1

Description:

System State: Up

Area: 🏢 CM-Area

Priority: 5

Used Positions: 0

Total Positions: 10,000

Comments: ^

Cancel Undock

Add

Use the **Add** operation to assign the current Container to a **Parent Container**.

Define the relationship in the **Container Type Relation** Generic Table.

Container Type Relation (1)	
MAIN CONTAINER TYPE	SUB CONTAINER TYPE
☐ Trolley	Box

Add Container to Container

Container of Material (Available)

Container Details

* Container:

Container of Container

Description:

Type:

Trolley

Position:

Auto Generated

Used Positions: 0/100

Vendor Id:

Comments:

Cancel

Add

Transfer

The **Transfer** operation transfers the contents of a Container to another Container.

The operation name varies depending on the **Container Position Unit Type**:

- Transfer Materials
- Transfer Resources
- Transfer Containers

You can transfer each position to a different Container.

Transfer Material Between Containers

Container of Material (Available)

Container Materials (5)

POS.	MATERIALS	NEW CONTAINER
1	MAT 0001.1	Container002
2	MAT 0001.2	Container003
3	MAT 0001.3	
4	MAT 0001.4	
5	MAT 0001.5	

Material Details

Material: MAT 0001.3
System State: Queued
Product: Product 01 Discrete [A]
Step: T_FeedA
Primary Quantity: 2,000 Kg
Type: Production
Facility: Cookie Factory
Flow: T_FlowA [A]

New Container

Container: Container
Position:
Copy Last Select Container

Comments:

Cancel

Transfer

Make Unavailable

Sets the **System State** of the Container to **Unavailable**. In this state, the Container is not visible in selection lists.

Make Available

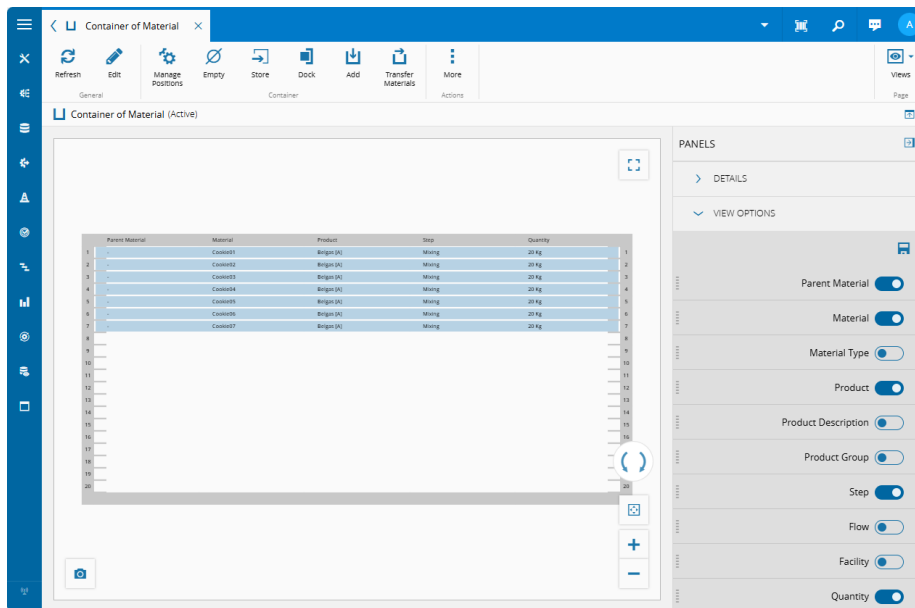
Changes the Container **System State** back to **Available**.

Container Tab

The **Container Tab** displays the Container layout and contents.

You can:

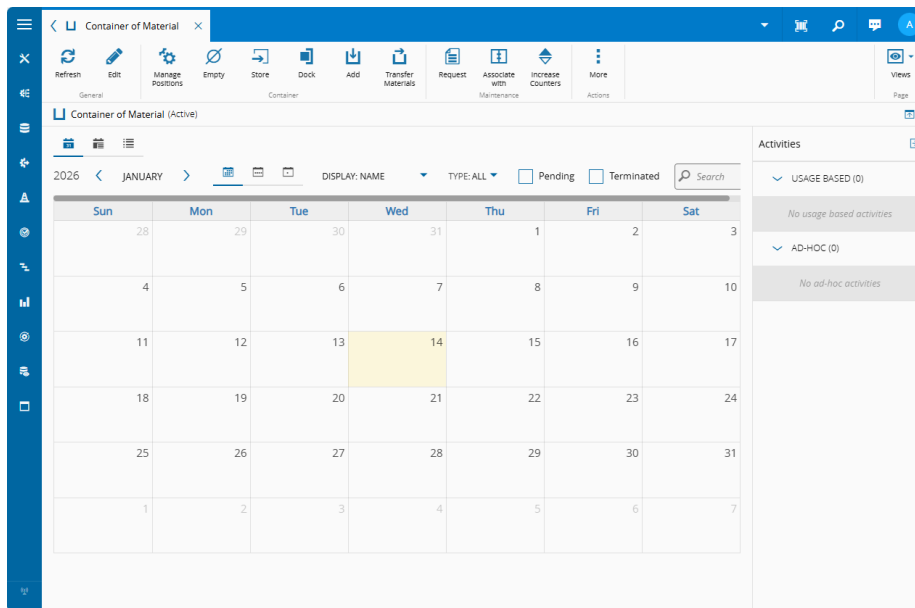
- Visualize positions and assigned objects
- View details of the selected position
- Customize visible columns in **View Options**



Maintenance Tab

The **Maintenance Tab** displays scheduled and ad-hoc **Maintenance Action Orders (MAO)** related to the Container.

For more information, refer to Maintenance Management.



Material Container Type Context

The **Material Container Type Context** Smart Table defines restrictions for container usage.

You can restrict container types based on:

- **Area**
- **Step**
- **Product**
- **Product Group**
- **Material Type**
- **Material Form**
- **Material State**
- **Capacity Class**

You can also define the **maximum number of usable positions** for a Container type.

Note

To select a Step in this Smart Table, enable the Use Container Restrictions property.

Example

Example configuration using **Step**, **Material Type**, and **Container Type**.

Material Container Type Context (1)

AREA	STEP	PRODUCT	PRODUCT G	MATERIAL TYPE	MATERIAL FORM	MATERIAL STATE	MATERIAL CAPAC	CONTAINER TYPE	CONTAINER MAX
	CM-StepA			Production				Box	

In this configuration, when you attempt to add a **Material** of type **Production** at the selected Step, only Containers of type **Box** appear in the selection list.

Add Material to Container

SMT Test1 (Queued) / CM-Product A [A] / CM-StepA / 500 EA

Container Details

* Container: Container

Position:

- Container of Material
- Container of Material1
- Container of Material2
- Container of Material3
- Container of Material4

5 results

Advanced

Comments:

Cancel Add

Container



Name: Container of Material

Description:

Type: Box

Universal State: Active

System State: Available



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