Certified in Planning and Inventory Management

Inventory Storage, Flow, and Handling

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Inventory Storage, Flow, and Handling

1. Principles of Inventory Storage

Effective inventory storage ensures materials are kept in locations that maximize space utilization, safety, and accessibility. CPIM emphasizes understanding how storage layout, product characteristics, and demand patterns influence storage decisions. Proper storage minimizes handling costs, reduces search time, and supports accuracy in picking and replenishment. The principles also involve zoning, consolidation, and ensuring compliance with safety and regulatory requirements. Good storage design improves operational efficiency and supports lean and continuous improvement initiatives.

2. Warehouse Layout Design

Warehouse layout determines how inventory flows from receiving to storage, picking, and shipping. CPIM stresses mastering slotting, aisle width optimization, staging areas, and equipment pathways. A well-designed layout reduces travel time, improves throughput, and enhances worker safety. Layout decisions must support the organization's product mix, demand patterns, and handling equipment. Flexibility to scale and adapt to changing inventory needs is also essential.

3. Material Flow Concepts

Material flow describes how goods move through the facility—both physically and through the information system. CPIM highlights continuous flow, minimal touches, and elimination of non-value-added movements. Smooth material flow reduces delays, bottlenecks, and handling

costs. Understanding flow methods like cross-docking, forward picking zones, and replenishment strategies is crucial for efficient operations.

4. Types of Storage Systems
Storage systems—such as pallet racks, shelving, bins, flow racks, and automated systems—support specific product characteristics and throughput needs. CPIM requires understanding each system's strengths, cost implications, and suitability based on product weight, size, velocity, and fragility. Selecting the right storage system improves space efficiency, accessibility, and labor productivity.

5. FIFO, LIFO, and FEFO Strategies
FIFO (First-In, First-Out), LIFO (Last-In, First-Out), and FEFO (First-Expired, First-Out) guide how inventory is rotated. CPIM emphasizes choosing the appropriate strategy based on product attributes like shelf life, obsolescence risk, or cost valuation preferences. FIFO is typical in most operations, LIFO might be used for specific accounting purposes, and FEFO is critical for food, pharmaceuticals, and perishable items.

6. Slotting Optimization
Slotting determines where each SKU is placed in the warehouse. CPIM requires understanding how to assign locations based on velocity, size, weight, and handling frequency. Well-designed slotting reduces picking time, improves ergonomics, lowers labor cost, and increases overall efficiency. Dynamic slotting adjusts assignments based on seasonal or demand changes.

7. Inventory Handling Equipment

Handling equipment includes forklifts, pallet jacks, conveyors, cranes, AS/RS systems, and picking carts. CPIM stresses understanding capability, cost, safety requirements, and limitations of each equipment type. Correct equipment selection enhances flow, reduces labor effort, and prevents product damage. Equipment decisions must align with storage system choices and layout design.

8. Receiving and Put-Away Processes

Receiving is the first step in warehouse operations and impacts overall flow. CPIM requires mastery of receiving best practices: verification, inspection, labeling, and system updates. Put-away processes ensure inventory is stored quickly and accurately. Efficient receiving and put-away reduce congestion, errors, and delays and strengthen inventory control.

9. Picking Methods

Picking methods—such as single-order picking, batch picking, zone picking, and wave picking—affect labor productivity and order accuracy. CPIM emphasizes selecting methods based on SKU volume, order profiles, and equipment infrastructure. Efficient picking reduces customer lead times, minimizes travel distance, and improves accuracy.

10. Packaging and Unitization

Unitization involves combining items into a single handling unit, such as pallets, cartons, or totes. CPIM highlights how standardization of packaging simplifies handling, protects products, and enhances stacking efficiency. Proper

packaging ensures damage prevention, smooth flowthrough conveyors, and alignment with transportation requirements.

11. Cross-Docking

Cross-docking allows incoming goods to be transferred directly to outbound shipping, bypassing storage. CPIM emphasizes its benefits: reduced inventory, faster response times, and improved flow. It is ideal for fast-moving goods and synchronized supply chains. Successful cross-docking requires precise coordination and accurate information systems.

12. Inventory Accuracy and Control

Accurate inventory records support efficient flow, picking, and replenishment. CPIM stresses methods such as cycle counting, location audits, barcoding, RFID, and disciplined transaction processing. Accurate data prevents stockouts, overstocks, and mispicks and improves planning reliability.

13. Space Utilization and Cube Optimization

Efficient use of warehouse space reduces storage cost and improves accessibility. CPIM trains you to analyze vertical and horizontal space, product stacking rules, and aisle-to-storage ratios. Cube optimization ensures maximum storage density without sacrificing safety or efficiency. Good utilization lowers facility expansion needs and operating cost.

14. Safety and Regulatory Compliance

Safety is essential in storage and material handling environments. CPIM emphasizes understanding OSHA

guidelines, equipment operation rules, hazardous material storage standards, and ergonomic practices. Safe handling prevents accidents, inventory damage, and regulatory risks. A culture of safety protects productivity and workforce morale.

15. Environmental Conditions and Inventory Preservation
Certain products require controlled environments—temperature, humidity, ventilation, or protection from contaminants. CPIM stresses understanding product-specific requirements to prevent spoilage, corrosion, or degradation. Proper environmental control ensures quality, reduces waste, and meets regulatory or customer specifications.

16. Lean Warehousing Concepts
Lean warehousing aims to eliminate waste in storage and handling operations. CPIM highlights techniques like 5S, visual management, standard work, and waste reduction. Lean improves space utilization, reduces travel distance, minimizes defects and delays, and enhances overall flow. It supports continuous improvement and operational excellence.

17. Automated Storage and Retrieval Systems (AS/RS)
AS/RS involves robotics and automated systems that store and retrieve goods with minimal human involvement. CPIM emphasizes benefits such as accuracy, high-density storage, reduced labor needs, and improved safety. Automation supports high-throughput environments and improves inventory traceability.

18. Yard and Dock Management
The flow begins and ends at docks. CPIM stresses understanding dock scheduling, staging areas, trailer positioning, and yard operations. Efficient dock management reduces bottlenecks during receiving and shipping and enables smoother material flow throughout the warehouse.

19. Replenishment Strategies within the Warehouse
Internal replenishment ensures forward pick locations are kept at optimal stock levels. CPIM covers methods such as min-max, demand-based replenishment, and scheduled replenishment. Effective internal flow prevents picking delays, congestion, and stockouts in the picking area.

20. Handling Fragile, Hazardous, and High-Value Items
Special categories require unique handling procedures. CPIM stresses understanding labeling, segregation, protective packaging, and storage rules for hazardous materials, fragile goods, or high-security items. Specialized handling reduces risk, prevents damage, ensures compliance, and protects workforce safety.

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7. Supply Chain Risk Management
8. Supply Chain Performance Metrics (KPIs)
9. Lean Supply Chain Practices
10. Agile and Responsive Supply Chains
11. Sales and Operations Planning (S&OP)
12. Supply Chain Network Design
13. Supply Chain Digital Transformation
14. AI and Data Analytics in Supply Chain
15. Supply Chain Sustainability and Green Logistics
16. Reverse Logistics and Returns Management
17. Supply Chain Collaboration and Integration
18. Supplier Relationship Management in SCM
19. Global Supply Chain Strategy
20. Transportation Management Systems (TMS)
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23. Blockchain Applications in Supply Chain
24. Supply Chain Cost Reduction Techniques
25. SCOR Model and Process Improvement

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27. Managing Supply Chain Disruptions
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30. Supply Chain Compliance and Ethics
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32. Managing Third-Party Logistics (3PL) Providers
33. Supply Chain Collaboration Technologies
34. Production Planning and Scheduling
35. Strategic Supply Chain Design Using Case Studies
36. Circular Economy in Supply Chain
37. Vendor-Managed Inventory (VMI)
38. Transportation Optimization Techniques
39. E-Commerce Supply Chain Models
40. Omni-Channel Fulfillment Strategies
41. Warehouse Automation and Robotics
42. SCOR DS Roadmap for Supply Chain Excellence
43. Customer-Centric Supply Chain Strategies
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45. Supply Chain Data Visualization Using Power BI
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Micro-Learning Programs in Procurement …

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30. Procurement in the Digital Supply Chain
31. Vendor Consolidation Strategies
32. Spend Analysis and Optimization
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36. Procurement in Project-Based Organizations
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38. Procurement Market Intelligence
39. Measuring Supplier Innovation
40. Procurement in Times of Supply Disruption
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46. Performance-Based Contracting
47. Procurement Leadership and Strategic Influence
48. Cost Avoidance and Value Creation in Procurement
49. Managing Procurement with Power BI Dashboards
50. Future Skills and Trends in Procurement

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www.Fhyzics.net

ASCM Referral Code

XEFHYZ88

Certifications@Fhyzics.net

+91-900-304-9000

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