

Chapter 3 Receiving and Put-away

- A crucial process in the warehouse.
- Supplier compliance: correct product in the right quantity, in the right condition at the right time. 供應商配合
- Once goods have arrived, it's too late to rectify most issues.
規格錯誤、品質不佳、或數量不符
人手與設備不足、作業程序有漏洞、人員訓練不足
- Many steps need to be taken before receiving.

Receiving and Storing
<https://www.youtube.com/watch?v=lrV6EYeaRGE>

1



Pre-receipt

進貨前準備工作

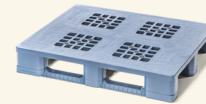
- Buyers may not have knowledge of the goods-receiving operation.
 - Must ensure products ordered are compatible with the storage facility.
確保進貨包裝不增加倉儲作業負擔
- | | |
|--|--|
| ✓ size and type of cartons. | ✓ specific <u>labelling</u> such as product description, barcode and quantities. |
| ✓ type of transit packaging – cardboard, plastic, totes, metal stillages, roll cages, pallets. | ✓ position of label on carton and pallet. |
| ✓ <u>palletized or non-palletized</u> delivery of product. | ✓ carton quantities (inner and outer carton quantities). |
| ✓ size (length, width and height) and type of pallets, e.g. euro pallet, <u>four-way entry</u> . | ✓ mode of transport, delivery quantity and frequency of delivery. |

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Pallet

- 木製棧板 (Wooden Pallet) 重量重、不易清潔、滋生細菌
- 塑膠棧板(Plastic Pallet) 適用於食品、易清潔、壽命長
- 瓦楞紙製棧板重量輕、較不能承重、亦難防水



four-way entry

- 鋁製與鐵製棧板可承受較大重量、造價最貴
- slip sheets
不占空間、重量輕、可堆疊
需專用堆高機



<https://www.youtube.com/watch?v=ZMVTDjsPzxE>

3



Benefits of Palletizing

- protection from loss or damage during handling and transportation
- reduction in the number of people required to load and unload containers 減少搬運人力
- The process of loading and unloading is speeded up 加速搬運
- space required at the loading and despatch bays is reduced.
- reduce injury to staff.

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Pallet Dimensions (ISO)

Dimensions in mm (W × L)	Dimensions in inches (W × L)	Country of use
1219 × 1016	48.00 × 40.00	North America
1000 × 1200	39.37 × 47.24	UK and Asia; pallet commonly referred to as a UK or industrial pallet
1165 × 1165	44.88 × 44.88	Australia
1067 × 1067	42.00 × 42.00	Most countries
1100 × 1100	43.30 × 43.30	Asia
800 × 1200	31.50 × 47.24	Europe; pallet commonly known as a euro pallet

- The size of pallet determines the rack configuration

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Pack Quantities 紙箱包裝

- Products delivered in outer cartons need to be labelled in such a way that they can be easily identified.
- pack quantities supplied, pack quantities stored, pack quantities sold. 供應商包裝、儲存包裝、販賣包裝
- Pack quantities depend on the value, weight and volume of the product.
- Cartons should not weigh in excess of 20 Kg (44 lbs) from a health and safety point of view. 重量限制
- There needs to be consistency by product line to ensure accuracy during stock counts and reduce picking errors. 10 or 12

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Preparation

Advanced Shipping Notice (ASN) 預先出貨通知

- ❖ 內容包含出貨與預計到達時間、車輛資訊、貨品資訊，直接送進WMS
- ❖ 應要求供應商事先預約時間並提供ASN，以預先準備進貨碼頭、人員、設備、儲位，減少擁擠與進貨等待時間。

Advance Shipping Notice

To:	Ship To:	Ship From:	From:
Demo Buyer Inc 1212 Las Vegas Boulevard Las Vegas, Nevada 89109 tel: 808 555 5555 fax: 877 555 1002 pouhainig@demobuyer.com	Demo Buyer Inc - LA Warehouse 1111 S. Figueroa Street Los Angeles, California 90015 United States tel: 1 800 555 5555	Demo Supplier Inc - San Pedro 555 Channel Street San Pedro, California 90731 United States tel: 310 121 1234	Demo Supplier Inc. 555 Channel Street San Pedro, California 90731 tel: 310 555 1002 fax: 310 121 1237 kullini@demosupplier.com

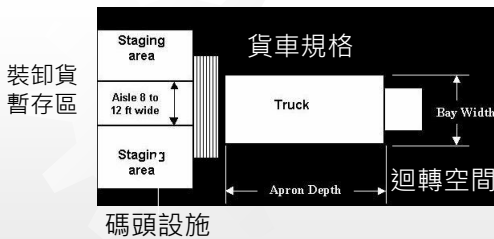
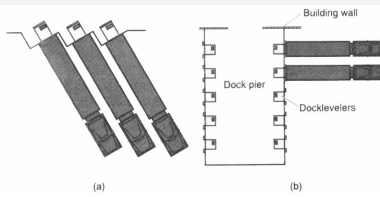
EDI Advance Ship Notice
https://www.youtube.com/watch?v=_8jGK5Eklsk

Line	Buyer Part#	Product Description	Service	Supplier Part#	Manuf Part#	QTY ordered	QTY shipping	Date available	Dimensions	Weight	BULK	Unit Price	Tax and Tariffs	Ext. price
1	111306CAA	deluxe thermo dispenser with gauge glass, 2.5 liter, 6 pack	No			10	10	11/23/2006	20 inch x 10 inch x 15 inch	15 Pounds	No	\$799.00 per	\$0.00	\$15,980.00

Commodity	Class	Special Instructions
	CSO	

Hazardous	Hazardous Code	UNNO	Schedule H Code	Freight Terms	Event Service	Transportation Service Level	Type of shipment	Domestic/Intl/Air	Equipment Grade
No				Domestic - FOB Origin	Inbound Freight	UPS Ground	TL (less than truck load)	Door to Door	No Special Req.

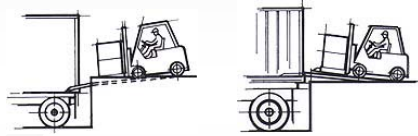
Loading Dock Design



Flexibility
Economy
Safety
Durability

Loading Dock Operation

dock leveler(月台架橋、校平器) 解決月台與貨艙上下落差的機械設備，可讓搬運車輛順利進出貨艙



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Unloading and Offloading

- ❖ Need appropriate labour and equipment.
- ❖ Unloading times will vary depending on the equipment used
包裝與設備影響卸貨時間
- ❖ powered pallet truck, hand pallet truck, pallet jack...



The best way to unload a container
<https://www.youtube.com/watch?v=Mc-1C1yclgU>

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量販店或便利商店的進貨觀點

- 製造商跳過DC，直接運送至店面，會造成運輸成本大增
- 連鎖店直接從製造商進貨，會造成進貨作業的繁複
- 零售商應有自營的DC或與專業物流合作，要求各製造商運送至DC，再合併配送至店面，以減少進貨作業
- 日常用品與生鮮食品種類多，商品特性差異大，通常由不同的DC或中盤商進貨
- 製造商可能因客戶眾多，堅持自營物流車隊直接配送
- 進貨量大的商品，也可由製造商直接進貨

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Recording and Quality Control

- Recording 入庫紀錄

Ex. product code, description, quantity on arrival, batch or lot numbers and serial numbers.

- Quality control

More checking: new suppliers, high-value items, food, hazardous goods, temperature-sensitive product and pharmaceuticals. 需特別檢驗

檢驗人員應使用行動裝置，確認檢驗方式與驗收標準，以及退貨的處理方式，檢驗後將檢驗結果上傳WMS，並通知供應商。

Most WMSs are able to block access to products on the system, making them unavailable for picking until cleared for sale.

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Consumer's Risk vs. Producer's Risk

假設某產品的不良率不得超過1%

如果進貨數量不多而且人手充足 ⇒ 全部檢驗

如果無法全部檢驗 ⇒ 抽驗多少個？通過的標準是甚麼？

1. 進貨10000個，神明知道不合格品有20個
抽驗50個，發現5個不良品，整批拒收 ⇒ 生產者(賣方)風險
2. 進貨3000個，神明知道不合格品有100個
抽驗60個，未發現不良品，整批允收 ⇒ 消費者(買方)風險

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Sampling Inspection

1. 確定品質檢驗標準–良品與不良品如何區分
2. 依據貨品決定允收水準高低–Acceptance Quality Level (AQL)
3. 根據時間或成本決定檢驗程度–減量、正常、增量檢驗
4. 決定檢驗水準(I, II, III)–控制檢驗誤判的機率，保障使用者
5. 查表找出檢驗的代碼 (code letter)–因檢驗水準不同而異
6. 決定抽樣計劃–導出抽樣數量與允收標準

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Sample size	減量檢驗 (reduced)				正常檢驗 (normal)		
	S-1	S-2	S-3	S-4	I	II	III
2-8	A	A	A	A	A	A	B
9-15	A	A	A	A	A	B	C
16-25	A	A	B	B	B	C	D
26-50	A	B	B	C	C	D	E
51-90	B	B	C	C	C	E	F
91-150	B	B	C	D	D	F	G
151-280	B	C	D	E	E	G	H
281-500	B	C	D	E	F	H	J
501-1200	C	C	E	F	G	J	K
1201-3200	C	D	E	G	H	K	L
3201-10000	C	D	F	G	J	L	M
10001-35000	C	D	F	H	K	M	N
35001-150000	D	E	G	J	L	N	P
150001-500000	D	E	G	J	M	P	Q
500001以上	D	E	H	K	N	Q	R

Single Sampling Plan (normal inspection) 單次正常檢驗

Sample size code letter	Sample size	Acceptable quality levels (normal inspection)														
		0.010	0.015	0.025	0.040	0.065	0.10	0.15	0.25	0.40	0.65	1.0	1.5	2.5	4.0	6.5
		Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re
A	2	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	0 1
B	3	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	0 1
C	5	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	0 1
D	8	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	0 1
E	13	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	0 1
F	20	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	0 1
G	32	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	0 1
H	50	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	0 1
J	80	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	0 1
K	125	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	0 1
L	200	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	0 1
M	315	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	0 1
N	500	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	0 1
P	800	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	0 1
Q	1250	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	0 1

Double Sampling Plan

Code letter	Sample size	Sample size	Total Sample size	Acceptance Quality Limits (normal inspection)																
				0.25	0.40	0.65	1.0	1.5	2.5	4.0	6.5	10	15	25	40	65				
				Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re				
A																				
B	First	2	2																	
B	Second	2	4																	
C	First	3	3																	
C	Second	3	6																	
D	First	5	5																	
D	Second	5	10																	
E	First	8	8																	
E	Second	8	16																	
F	First	13	13																	
F	Second	13	26																	
G	First	20	20																	
G	Second	20	40																	
H	First	32	32																	
H	Second	32	64																	
J	First	50	50																	
J	Second	50	100																	
K	First	80	80																	
K	Second	80	160																	
L	First	125	125																	
L	Second	125	250																	
M	First	200	200																	
M	Second	200	400																	
N	First	315	315																	
N	Second	315	630																	
P	First	500	500																	
P	Second	500	1000																	
Q	First	800	800																	
Q	Second	800	1600																	
R	First	1250	1250																	
R	Second	1250	2500																	

商品有效期限允收標準

Expiration date vs. Shelf life

- 0. 保存期限從製造日期起算，有效期限從進貨日期起算。
- 1. Domestic: 國內製造商品保存期限在一年以上時，允收標準通常為有效期限至少達保存期限2/3以上。
- 2. Import: 進口商品之允收標準較寬，例如有效期限至少達保存期限1/2以上。
- 3. 保存期限為數日或極短之商品，通常以製造日期D日起算，例如進貨日期不得超過D+2日
- 4. 若進口商品僅標示有效日期，則允收標準可定為距有效期限尚有6個月以上。

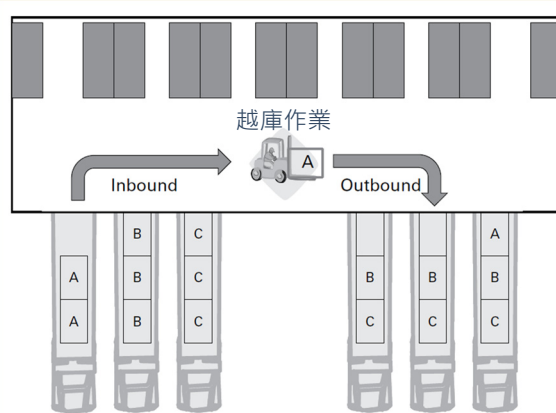
商品允收標準範例

保存期限	Domestic		Import	
	允收標準	DC庫存出貨期限	允收標準	DC庫存出貨期限
3年(含)以上	25個月	進貨後1個月內	21個月	進貨後3個月內
2年	17個月	1個月	14個月	2個月
18個月	13個月	1個月	10個月	1個月
1年	9個月	1個月	6個月	1個月
9個月	7個月	1個月	4.5個月	0.5個月
8個月	6個月	20天	4個月	0.5個月
6個月	160天	20天	85天	15天
4個月	4個月	10天	55天	10天
3個月	3個月	10天	45天	5天
2個月	50天	5天	25天	5天
1個月	35天	5天	-	-
16天 ≤ T < 30天	25天	2天	-	-
10天 ≤ T < 16天	D+4天	1天	-	-
6天 ≤ T < 10天	D+3天	1天	-	-
2.5天 ≤ T < 6天	D+1天	1天	-	-
鮮食商品 < 2.5天	當天	當天	-	-

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Cross Docking

- Receive products from multiple suppliers and sort and consolidate them for onward shipment to different stores



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Cross Docking

Process products are moved directly from goods-in to the despatch bays.	Goal increase throughput rates and reduce the amount of stock held.
Application perishable goods, Just-in-time systems.	Support Ex. clear labelling, advance notice of arrival, on-time delivery... Sufficient space is key to moving products quickly and safely.

Cross-Docking: Receiving Dock Direct to Shipping Dock

<https://www.youtube.com/watch?v=OS5CrureJoE>

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Put-away

一般進貨為入庫儲存或直接補貨到揀貨區，作業人員可由行動裝置與WMS雙向聯繫。

Information needs to be programmed into WMS : 入庫資料

- size, weight and height of palletized goods
- results of an ABC analysis or slotting
- current order data
- family product groups
- actual sales combinations
- current status of pick face for each product
- size of pallet locations
- weight capacity of racking

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Storage Location Assignment

儲位指派

依照貨品的數量、體積、重量、價值、化學性質、出貨頻率、有效日期等特性設定儲位指派法則，進貨前即可指派儲位，以加速入庫作業。

- **fixed locations** : designate a specific location for a particular product.
 1. enable the picker to memorize the actual location.
 2. speed up the picking process.
 3. reduce storage utilization.

random location: the pallet is placed in the most efficient slot available.	fastest-moving items: should be placed in the middle row of shelving
Slower-moving items: should be placed in the lowest and highest shelves.	Items should be stored in groups by similarity. 關聯性

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WMS Procedure for Receiving and Put-away

- | | |
|-----------------------------|-------------------------|
| ❖ 登入系統(輸入人員編號) | ❖ 登入系統(輸入人員編號) |
| ❖ Scan堆高機條碼 | ❖ Scan堆高機條碼 |
| ❖ 選擇作業類型(Receiving) | ❖ 選擇作業類型(Put-away) |
| ❖ Scan進貨單條碼 | ❖ Scan暫存區條碼 |
| ❖ Scan產品條碼、棧板條碼，由WMS確認規格與數量 | ❖ Scan產品條碼、確認產品數量 |
| ❖ Scan暫存區條碼(完成卸貨) | ❖ 確認指示的儲位 |
| | ❖ Scan儲位條碼 |
| | ❖ Scan產品條碼、確認產品數量(完成入庫) |



Receiving Checklist

- 貨物是否準時送達？文件是否齊全？
- 規格與數量是否正確？ 防止誤收、短缺、偷竊
- 品質與有效期限是否符合規範？ 防止誤收
- 送貨文件是否正確處理？
- 不合格貨物是否正確處理？
- 車輛離開時是否經過檢查？
- 貨物是否正確入庫？ 防止誤置或偷竊

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Summary and Conclusion

- Ensure that you have booked arrival slots for the majority of your suppliers. 預約進貨時間
- Reduce the amount of checking required on inbound deliveries 減少檢驗
- Have a system in place to prioritize inbound goods, eg. prioritize low-stock items and promotional items. 優先處理順序
- Plan your put-away meticulously and ensure product is located accurately and efficiently. 入庫規劃
- Cross dock as much as possible.
- 無紙化、行動傳輸

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