



<b>Category:</b>	Order Management										
<b>Policy:</b>	<b>Unit Load Design Policy (UL)</b>										
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<b>Applies To:</b>	Grocery/Club /Mass	Drug	Value	Ltd. Asst.	Military	C-Store	Food Service	BU	Churny	Exports	
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## **I. Overview**

### **Purpose**

To ensure that Kraft Foods' unit loads are designed to minimize product damage during shipping and handling, comply with voluntary industry guidelines, and to maximize the efficiency of supply chain operations.

### **Scope**

Applicable to all new and reconfigured finished goods produced and/or distributed by Kraft Foods globally, including dry, refrigerated and frozen products in retail and foodservice channels. This policy is also applicable to Sales modules, display packs, shippers and half/quarter pallet configurations, unless otherwise noted. This policy does not apply to non-food products or semi-finished goods unless otherwise noted. If policy compliance is not achieved, a unit load Deviation Approval Request (DAR) must be submitted accordingly by the Packaging R&D Developer.

### **Use**

Policy establishes mandatory minimum and maximum values for various case, shipper and pallet design measures, including case dimensions, case weight, pallet footprint (i.e., overhang and under-hang), pallet height, and pallet weight / warehouse stack-ability.

#### *New and Reconfigured Products:*

For the purpose of this policy, a new product\* is defined as an item introduced for the first time with unique primary packaging (i.e. consumer unit) and/or secondary packaging (trade unit, case or shipping unit). A reconfigured product meets one or more of the following:

- i. Change to the size, shape or dimensions of the primary package which results in dimensional changes to the case.
- ii. Change to the number of consumer units per case, or to the configuration of consumer units in the case which results in dimensional changes to the case.
- iii. New equipment or other capital investment is required to support a packaging related change.

\* Line extensions, which utilize existing equipment and primary/secondary packaging are not considered new products and are not subject to the requirements of this policy.

## **II. CASE PROPERTIES**

### **Case / Container Weight:**

The maximum gross weight of a case is 40 lbs. Cases weighing between 40-45 lbs. must have hand holds or other lifting aids incorporated into the case design. Existing products may weigh up to 50 lbs., new or redesigned products at or exceeding this weight must be moved mechanically.

Cases of non-food product, such as display racks, should also adhere to these same requirements.

### **Case / Container Dimensions**

Maximum length, width and height for cases are 36", 22" and 28" respectively as the case is oriented on the pallet.

## **III. UNIT LOAD PROPERTIES**

### **Standard Pallet Dimensions**

Standard pallet footprint dimensions incorporated into this document = **40" x 48"**

### **Pallet Pattern Standardization**

The number of cases per layer and layers per standard customer unit load for a given product *must not vary regardless of production facility or distribution location*. The layer pattern or arrangement may vary by plant due to production requirements.

### **Pallet Dunnage**

The use of foam panels, corrugated materials or other fillers/spacers with the sole purpose of meeting policy footprint requirements is to be avoided. These may be used to provide additional product protection, but only as needed.

### **Corner Posts / Top Caps**

Dimensions of corner posts and top caps must be incorporated into the pallet footprint dimensions accordingly.

### **Cooling Patterns**

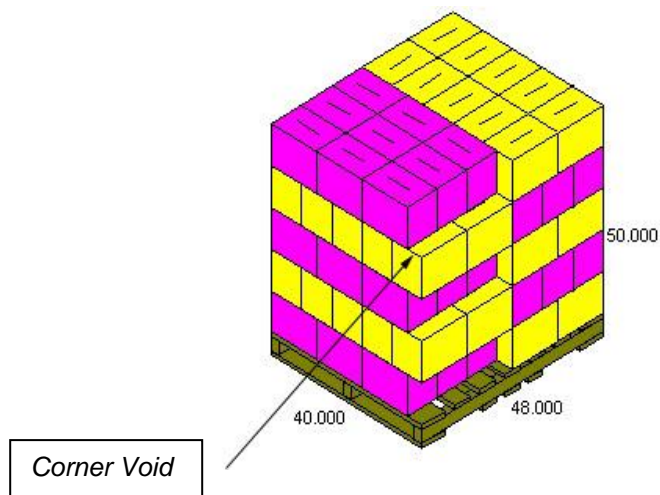
The pallet pattern for product shipped to mixing centers or customers should maximize pallet utilization and not result in significant gaps between cases. Hence, shipping in manufacturing cooling patterns is not allowed.

### **Overhang / Underhang**

Overhang in either the length or width dimension is not allowed. The maximum underhang allowed is 2" in either the length or width direction. (i.e. minimum footprint of 38" x 46")

### **Voids / Gaps**

Internal voids or gaps within a pallet pattern are a potential for product damage due to shifting. Patterns with voids that permit shifting of cases within a layer must be avoided. The maximum allowable void or gap is 5% of the total area of the product footprint. A Corner Void between alternating layers ( i.e. interlocking patterns) is also a potential for product damage, partially unsupported cases are susceptible to case crushing and overall unit load instability. The maximum allowable Corner Void is 2.0” from the product/case edge in no more than one pallet dimension. The area of a Corner Void is included in the 5% allowable void area of the total pallet.



### **Unit Load Weight**

The unit load weight (gross lbs.) should be designed in conjunction with unit load height in order to optimize trailer weight and/or cube.

### **Unit Load Height**

The standard unit load height should be designed to optimize truck weight and/or cube utilization during transportation and to maximize handling efficiencies.

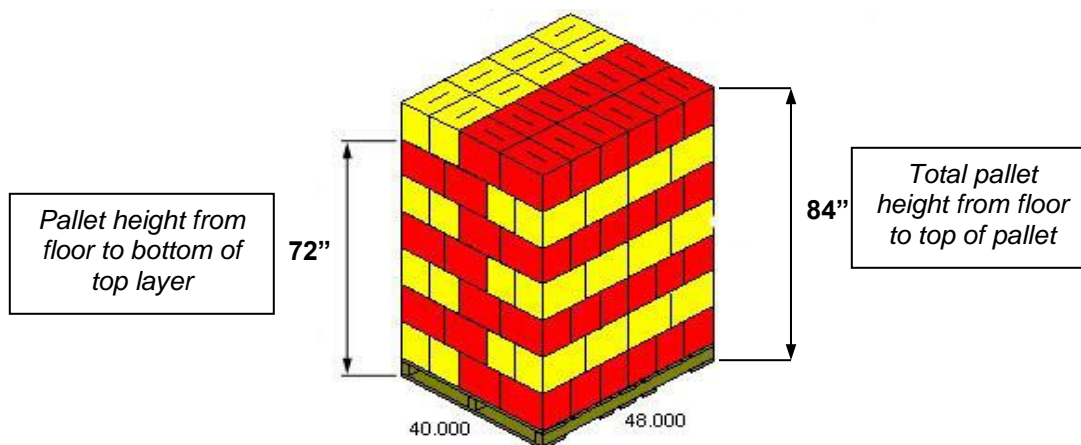
For the purpose of this policy, there will be a distinction between:

Ambient (i.e. dry or unprotected): No temperature storage / transportation restrictions

Temperature controlled (i.e. protected, frozen, and refrigerated): Requires specific temperature storage / transportations conditions to be met

Single Stacked Product: Product that must be single stacked during shipping and/or storage due to excessive weight must conform to the two restrictions regarding height that are based on publications by the Grocery Manufacturers Association (GMA):

- The maximum height for a single stack product is 84”. This is measured from the floor, including the pallet, to the top of the load.
- The maximum height to the bottom of the case on the top tier is 72”. This is measured from the floor, including the pallet, to the bottom of a case on the top layer of the load.



**Multi-Stacked Product:** Product that has sufficient strength to allow multiple stacking during shipping and/or storage. Multiple stacking is two or more unit loads.

**Unit Load Height Summary based on Temperature Class and Stack-ability**

	Dry (unprotected) Multi Stack	Dry (unprotected) Single Stack	Temp Controlled Multi Stack	Temp Controlled Single Stack
<b>Min Height</b> (incl. Pallet)	<b>44.0"</b>	<b>36.0"</b>	<b>41.0"</b>	<b>36.0"</b>
<b>Max Height</b> (incl. Pallet)	<b>52.0"</b>	<b>84.0" (72.0")</b>	<b>48.0"</b>	<b>84.0" (72.0")</b>

**Unit Load Stackability**

Stack-ability (including pallets) must be defined separately for shipping and storage. Some products can withstand multi-stacking during storage, but not during shipping.

- Min Warehouse storage (excluding Mods, Shipper, & PRD)
  - Multi - stack = 2 unit loads
  - Single stack = 1 unit load
  
- Min Shipping (excluding Mods, Shipper, & PRD)
  - Multi - stack = 2 unit loads
  - Single stack = 1 unit load

**Manufacturing Stacks**

For some businesses, product is produced in a tall stack, referred to as a manufacturing stack. Producing and shipping in manufacturing stacks is cost economical, due to improved trailer utilization on replenishment loads. Upon receipt at a distribution center, manufacturing stacks are broken down into standard unit load quantities (i.e. customer unit loads) before being shipped to customers.

The manufacturing stack should maximize truck weight and/or cube utilization for transportation from manufacturing plants/ buffers to mixing centers. Manufacturing

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stacks should be sized to a maximum height of 104.0” for dry product or 96.0” for temperature controlled product.

***NOTE:** If the manufacturing stack quantity differs from the standard unit load quantity, then this must be clearly designated on the R&D Packaging specification.*

### **Half (½) and Quarter (¼) Pallet Modules**

Half and quarter pallet modules are commonly developed for promotional purposes. Most often, two half pallets or four quarter pallets will be combined onto a single full pallet for shipments to customers. The same requirements apply to footprint designs for allowable overhang and under-hang.

When designing a new package or unit load, the possibility of the item being sold on half or quarter pallet configurations must be considered. Customers may require a half or quarter pallet design for display purposes. This potential option must be discussed with the business team before finalizing the package design.

Note that all of the unit load requirements identified in the policy apply to half and quarter pallets, unless otherwise indicated. Display shippers and/or modules must comply with all unit load properties identified in the policy.

## **IV. Transportation Parameters**

The following transportation parameters are intended to provide guidelines for designing optimal unit load configurations in order to minimize the cost of transportation.

### **Trailer Height & Width**

Trailer heights and widths will vary depending on the type of truck equipment used for delivery. Typical equipment height and width are as follows:

	<b><u>Dry / Unprotected</u></b>	<b><u>Temperature Controlled</u></b>
Actual Trailer Height	110 in.	100 in.
Usable Trailer Height *	108 in.	97 in.
Usable Trailer Width	98 in.	97 in.

*\* Usable dry trailer height (108”) may not be fully utilized due to low dock door clearances.*

### **Trailer Weight and Cube**

Trailer weight and cube will also vary depending on the type of truck equipment used for delivery. It is important to design shipping stacks and/or standard unit loads to maximize either the total trailer weight or total trailer cube. This ensures optimal use of equipment and minimizes the cost of transportation.

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Typical trailer weight and cube are as follows:

	<u>Dry /</u>		<u>Temperature</u>		
	<u>Unprotected</u>		<u>Controlled</u>		
Maximum Trailer Gross Wt	45,500 lbs.		44,500 lbs.		(including pallets)
Std. Footprints per Trailer	<u>48 ft.</u>	<u>53 ft.</u>	<u>48 ft.</u>	<u>53 ft.</u>	
<u>Straight Loaded</u>	24	26	24	26	
<u>Pinwheeled</u>	26	28	26	28	
<u>Double Pinwheeled</u>	28	30*	28	30*	

\* This standard is used in Transportation planning systems for non-customer equipment.

### **General Shipping Guidelines**

As a general guideline, single stack products (i.e. at least 1,570 lbs. per load for dry or 1,820 lbs per load for temperature controlled) should be evenly distributed throughout the floor of the trailer. Multi-stack products (i.e., less than 1,570 lbs per unit load) can double stacked or stacked onto single stack products, in order to maximize cube utilization.

## **V. Policy Deviations**

### **Overview**

Deviations from the unit load guidelines detailed in sections I, II III will require specific approval levels based on the deviation that is proposed. The Packaging R&D Developer is responsible to draft the Deviation Approval Request (DAR), route the document to the necessary approvers and submit to Log Ops for filing.

Reference the following related documents for further details:

- DAR Form
- DAR Instructions
- DAR Process Flow

DAR reviews will be completed 15 days from submission with all required information.

Exceptions to unit load guidelines will fall into the below classifications with set-forth approvals needed:

### **Tier 1 Deviations**

The following Case and Unit Load properties require a Tier 1 DAR to be approved.

#### Case Weights

- Gross case weight exceeding 40 lbs. without hand holds.
- Gross case weight exceeding 45lbs. with hand holds.
- Gross case weight exceeding 50 lbs. without mechanical assists.

#### Underhang (Length)

Pallet pattern footprint length measuring less than 46" and greater than 45.5".

#### Underhang (Width)

Pallet pattern footprint width measuring less than 38" and greater than 37.5".

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### Pallet Height Min (Single Stack)

Dry - Height measuring less than the minimum target of 36.0" including pallet

Temperature Controlled - Height measuring less than the minimum target of 36.0" including the pallet

### Pallet Height Min (Multi Stack)

Dry - Height measuring less than the minimum target of 44.0" including pallet

Temperature Controlled - Height measuring less than the minimum target of 41.0" including the pallet

## **Tier 2 Deviations**

The following Case and Unit Load properties require a Tier 2 DAR to be approved.

### Underhang (Length)

Pallet pattern footprint length measuring less than 45.5"

### Underhang (Width)

Pallet pattern footprint width measuring less than 37.5"

### Overhang (Length / Width)

Pallet pattern footprint exceeding 48" in length or 40" in width.

### Pallet Height Max (Single – Dry/Ref)

Single stacked pallet height exceeding 84.0" measured from the floor to the top of the load (including the pallet) and / or exceeding 72" measured from the floor to the bottom of a case on the top layer (including the pallet).

### Pallet Height Max (Multi Stack – Dry)

Pallet height exceeding 52.0", including the pallet.

### Pallet Height Max (Multi Stack – Ref)

Pallet height exceeding 48.0", including the pallet.

### Pallet Weight Max (Single Stack)

Dry - Exceeding the maximum of 2800 gross lbs. including the pallet

Temp Controlled - Exceeding the maximum of 2800 gross lbs. including the pallet

### Pallet Weight Max (Multi Stack)

Dry - Exceeding the maximum of 1570 gross lbs. including the pallet

Temp Controlled - Exceeding the maximum of 1820 gross lbs. including the pallet