

The Importance of Hygienic Plastic Pallets In Today's Supply Chain

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Presented by:

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*“The rule of thumb is that **anything** moving into the production area is moved on a plastic pallet. A plastic pallet can be cleaned and sanitized, and it eliminates the potential contamination from wood and metal (nails or staples) in a production area.”¹*

*--“Food Safety: Ode to the Pallet”, Richard Stier,
Food Engineering Magazine, October 1, 2011.*

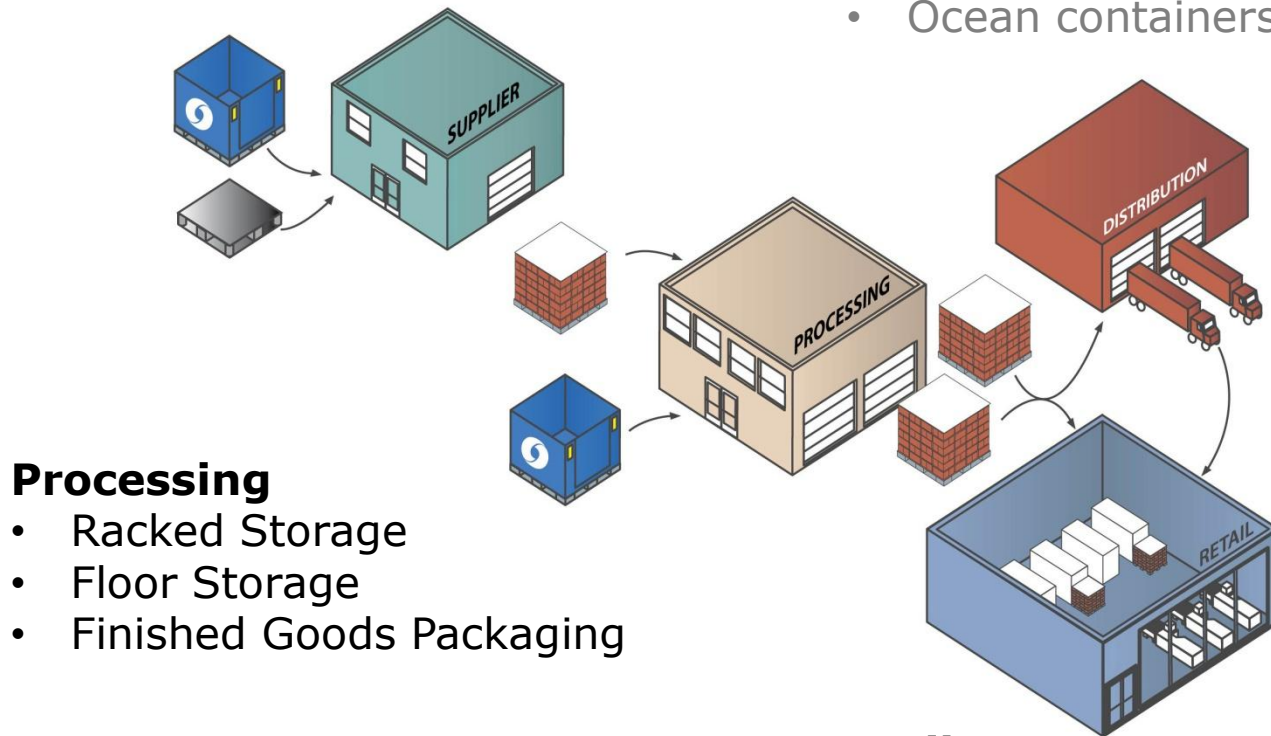
World-class food companies are seeking safe, hygienic and reliable solutions to store, handle and move product throughout their supply chain.

Warehouses/Distribution Centers

- Racked Storage
- Automated Systems

Transportation

- Standard 53' trailers
- Ocean containers



Processing

- Racked Storage
- Floor Storage
- Finished Goods Packaging

Retail

- Point-of-Purchase Displays
- End Caps

Hygienic Pallets: Defined



Easily sanitized, non-porous platform designed to cleanly move and store food product within a facility and support sanitary conditions.

Characteristics include:

- Minimized areas for contaminants to collect, with no hidden cavities or hollow areas. FDA approved material for direct food contact.
- Open deck for flow-through for easy cleaning and fast drying.
- Contoured surfaces/corners that lowers risk of product damage from punctures or snags.
- No rust, nails, staples or loose boards. Non-rusting.
- Does not absorb moisture or odor.

Food Safety Modernization Act (FSMA) and What It Means to You



- **WHAT is the concept behind FSMA?** Preventing production of contaminated food is much more effective than detection of contaminated goods once in distribution.
- **WHY FSMA?** Series of high profile food safety outbreaks²
WHO is affected? All registered facilities. Any facility engaged in the manufacturing, processing, packing or holding food for the consumption in the United States shall be registered. Includes foreign facilities. ³
- **WHO is implementing/enforcing?** FDA is the driving force behind FSMA and will have enhanced enforcement powers. ²
- **WHEN?** Rules estimated to go into affect in 2012. Compliance over the next two years. ⁴

Food Safety Modernization Act (FSMA): Four Main Elements²



- 1. Places New Responsibilities on Food Companies**
 - 1. Food safety plans/preventative controls*
 - 2. Supply chain management*
 - 3. Records maintenance/access*
 - 4. Food defense plans*
 - 5. Applies to all registered facilities and warehouses, including foreign*
- 2. New Controls over Imported Food**
- 3. Enhanced FDA Enforcement Powers**
- 4. Created New Fees on Food Companies and Importers**

Food Safety Modernization Act (FSMA): Food Safety Plans

- Sanitation for food contact surfaces and utensils, including food contact surfaces of equipment
- Food allergen control program
- Supervisor, manager, and employee training
- Environmental monitoring program
- Recall plan
- Current Good Manufacturing Practices
- Supplier verification activities that relate to the safety of food



Food Safety Modernization Act (FSMA): Supply Chain Mgt²



- Know your suppliers (not just distributors)
- Goal is to assure product is not adulterated or misbranded (due to undeclared allergens)
- Have a plan for assuring adherence to requirements
- Make risk-based plans according to product type and facility history

Food Safety Modernization Act (FSMA): Allergen Management⁴

- **Minimize cross-contact with:**
 - Separate storage
 - Careful and thorough cleaning
 - Appropriate production scheduling, controlled traffic patterns, equipment design and training.
- **Ensure labels reflect all allergens (Big 8)**
- **Companies should maintain allergen management programs to control allergens that may include: validation of cleaning procedures, prevention of cross contact and product label review.**



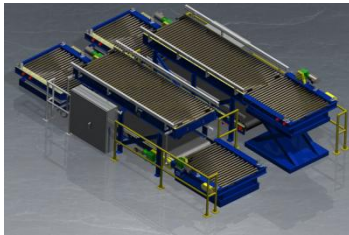
Food Safety Modernization Act (FSMA): FDA Enforcement



Enhanced Powers for FDA

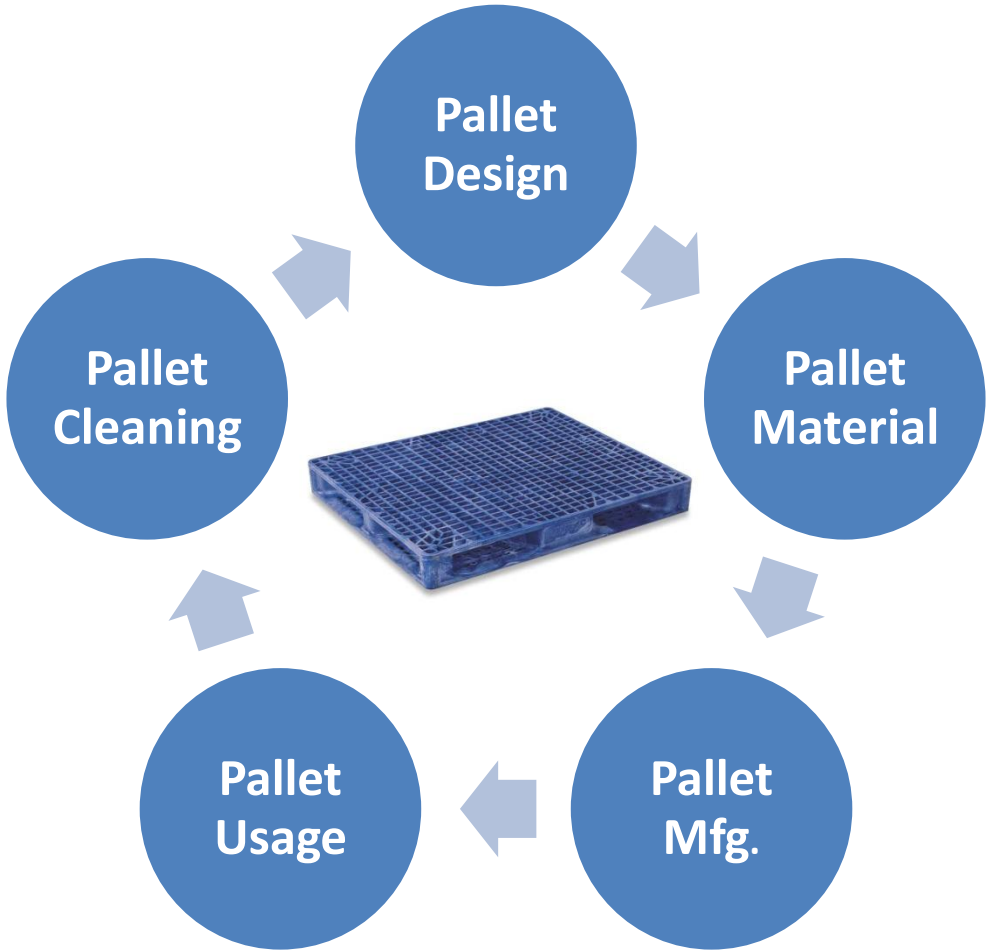
- Increases inspection frequency²
 - High-risk domestic – Every 3 years
 - Low-risk domestic – Every 5 years
 - Increased foreign inspections (600 to 9,600 over 5 years)
- FDA will have legal access to see and copy records² related to:
 - Food Safety Plans
 - Includes environmental and finished product testing
 - Includes corrective actions
 - Includes monitoring of supply chain

Other Food Plant Trends



- **Automation** – Design the automation around the pallet versus designing the pallet around automation.
- **Robotics** – Plants with robotics better equipped at tracing products. More accurate counts. ⁵
- **New plants** being built; older plants being retrofitted and renovated.
- **New Technology:**
 - Separation equipment, including metal detection equipment and X-ray detection equipment⁹
 - Rinsers
 - Allergen management processes
 - Tracking/identification/traceability
 - Antimicrobial materials
- **Plastic pallet usage** is up 6%. ⁶

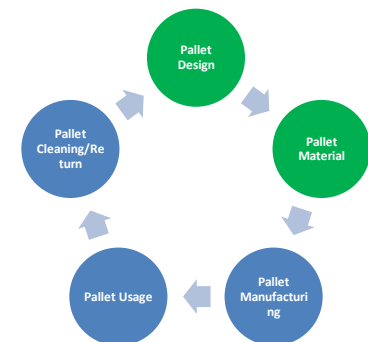
The Impact of the Pallet Life Cycle on Plant Cleanliness



The Impact of the Pallet Life Cycle on Plant Cleanliness

10 Principles of Sanitary Equipment Design³

1. Cleanable
2. Made of compatible materials
3. Accessible for inspection, cleaning and sanitizing
4. No liquid collection
5. Hollow areas sealed
6. No niches
7. Sanitary operational performance
8. Validated cleaning and sanitizing protocols
9. Separate processes wherever possible
10. Equipment and personnel meet hygiene and sanitation SOPs



The Impact of the Pallet Life Cycle on Plant Cleanliness

Pallet Design/Engineering

It is important to minimize the surface area to be cleaned. ⁴

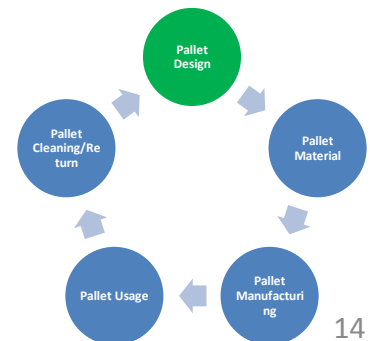
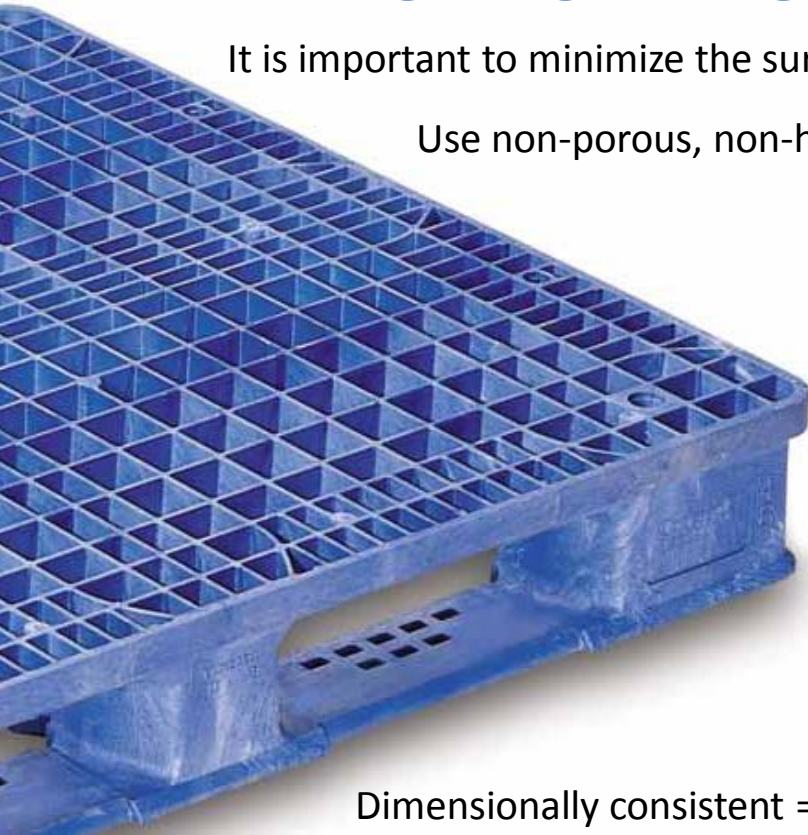
Use non-porous, non-hydroscopic material that not absorb moisture.

Create a one-piece design with no crevices, cells, hollow areas or cavities for contaminants to collect, regardless of pallet orientation (upright, on floor, etc.)

Avoid designing in sharp edges or protruding fasteners that can damage cases. No nails or staples

Design an open deck for flow-through cleaning and fast drying

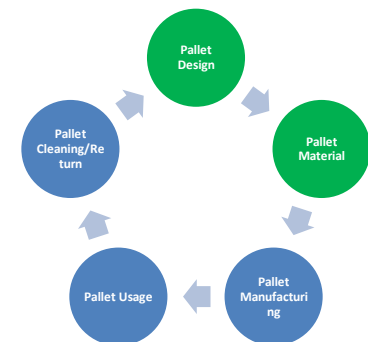
Dimensionally consistent = repeatable performance



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Pallet Material Innovations

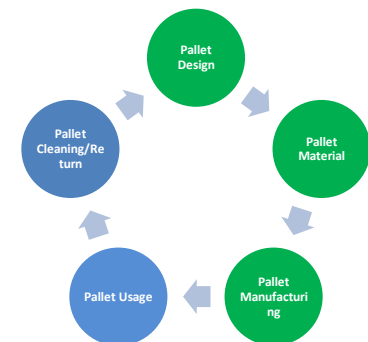
- FDA-approved material, for direct food contact. FDA-approved material has 100% virgin content
- Materials that do not readily absorb environmental contaminants like odors, bacteria, pesticides, etc
- Materials that allow for high-temperature washing
- Materials that are X-ray and metal detectable
- Custom colors to color code and segregate loads (allergen mgt, sorting lot #s, etc.)
- Labels/hot stamping to identify pallets for lot numbers



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Pallet Manufacturing

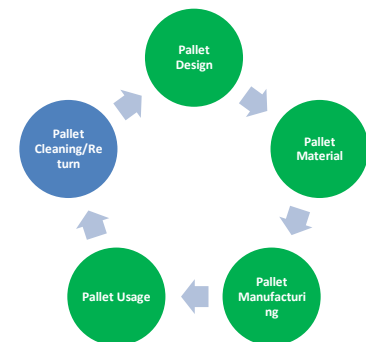
- Precise molding = dimensional consistency
- One piece pallet construction
- Solid walls
- Utilize ISO 9001 certified facilities



The Impact of the Pallet Life Cycle on Plant Cleanliness

Pallet Usage in Food Plants. Does Your Pallet...

- Allow for easy cleaning and sanitization?
- Keep equipment clean?
- Promote a clean environment (no dust, chips, etc.)
- Absorb moisture?
- Dry fast?
- Allow for temperature ranges from cold storage to high-heat washing?
- Support Good Manufacturing Practices (GMPs)?
- Have nails, splinters or loose boards to damage cases?



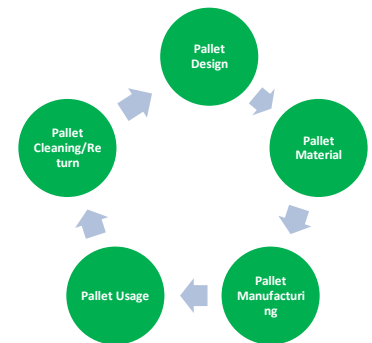
The Impact of the Pallet Life Cycle on Plant Cleanliness

Cleaning Options⁷

- *Microbiological Cleaning, or Industrial Sterilization*
 - High-heat cleaning process where a minimal temperatures of 165° F is sustained and sterile conditions are maintained in a designated cleanroom.
 - After cleaning, pallets are wrapped or bagged and stored in the cleanroom. Fully documented.
 - Most effective against a broad spectrum of impurities.
 - Examples:
 - Traditional pallet washers: Wash/rinse conveyor system.
 - UV or steam cleaning
- *Non-Microbiological Cleaning:*
 - Cleaning process where no minimal temperature or designated cleanroom is required. Examples:
 - Spray/power washing: Spot cleaning.
 - Manual cleaning: Hand washing.
 - Air compressor: To clean dust and debris.



Courtesy of CORBI Plastics



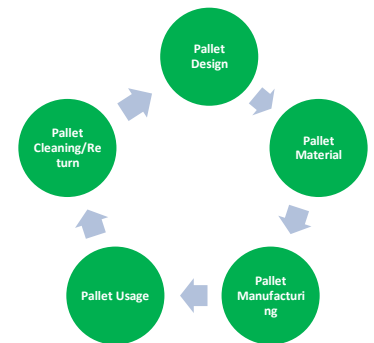
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Cleaning Trends

- Today there is no current standardized process, but retailers and food, beverage and pharma CPGs are looking for more standardization to preserve the supply chain.
- ISO22001 certification for cleaning operations
- Under the new FSMA, pallets should be easy to access and inspect⁴



Courtesy of CORBI Plastics



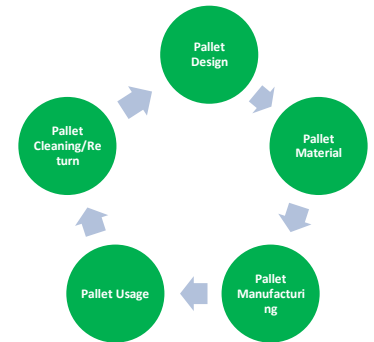
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Cleaning Considerations

- Determine cleanliness requirements (full sterilization or non-microbiological?)
- Determine if cleaning will be done in-house or outsourced
- Determine cleaning frequency
- Determine the documentation requirements (Date stamping, etc.)
- Determine storage practices (indoor versus outdoor)



Courtesy of CORBI Plastics



Pallet Implementation Best Practices

Step #1: Analyze

- Review your product's life cycle
- Identify product load characteristics: Type (boxes/cases, powder, liquid, etc.), Temperature requirements, Dimensions and weight, Value, Load distribution.
- Determine level of cleanliness needed

Step #2: Select/Design

- Determine required footprint: GMA, Euro-sized
- Determine pallet style: Rackable, nestable, stackable

Step #3: Justify

- Compare annual pallet costs
- Compare environmental impacts of pallet alternatives
- Compare hygienic characteristics of pallet alternatives

Step #4: Implement

- Get all stakeholders involved (material handling, maintenance, etc.)
- Conduct a small trial
- Train, train, train

Step #5: Evolve/Continuous Improvement

- Explore new materials
- Add facilities and expand pallet usage



Materials

Pallet
Design

Cleaning
Processes

What Questions Do You Have?

FSMA

Automated
Systems

Pallet
Usage

Implementation

*“It’s no secret that when the basic elements of good sanitation practices in the food manufacturing environment are consistently, even habitually, applied over time, all of the company’s food safety programs are enhanced. **The cleaner the facility and equipment at the outset of every product run, the better the assurance that potential food safety hazards are mitigated or eliminated** every time a shift begins and throughout the entire production cycle.”*

“Basic Elements of Effective Food Plant Cleaning and Sanitizing”, Food Safety Magazine, Rory Redemann, April 2005. ⁸

Sources

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