

KSS GLOBAL STANDARD						
Global Supplier Packaging Guidelines						
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Introduction

Supplier Packaging Guidelines-Global.

1 Purpose

This document has been prepared to assist in the development of standard quality packaging systems while maintaining the overall lowest cost.

2 Scope

This procedure addresses global supplier packaging for production parts.

3 Responsibility

Global Logistics

4 Definitions / Abbreviations

None.

5 Process Map

Please see details in procedure.

6 Procedure

6.1 INTRODUCTION

The word SHALL is understood as a requirement, the word SHOULD is understood as a recommendation.

Key Safety Systems (KSS) has a vital interest in quality and part protection, while utilizing the most cost effective packaging, handling and transportation solution. Supplier packaging shall comply with the standards described in these guidelines, KSS "Standard PO Terms and Conditions" and "Quality First Supplier Requirements Manual". Suppliers are responsible for shipping quality acceptable packaging and parts to the point of use within the KSS receiving facility.

All packaging shall be considered a contractual obligation and be approved by the affected KSS manufacturing plant, with assistance and coordinated through KSS Procurement & Global Packaging. Any deviations shall have written approval prior to implementation. KSS encourages supplier initiated packaging improvement ideas before or after launch.



KSS "Packaging Approval Sheet(s)" shall be submitted and approved during the Early Supplier Involvement phase (ESI) and the Production Part Approval Process (PPAP). The data sheets can be downloaded from the KSS website under the Supplier information tab at: www.keysafetyinc.com . Suppliers proposed packaging should involve selecting containers that minimize inventory levels and reduce non-value added packaging materials and motions for the KSS production team members.

6.2 GENERAL REQUIREMENTS

This section outlines the major elements for packaging development. When responding to a KSS Procurement request during early supplier involvement, all packaging components should be quoted as new expendable packaging unless otherwise directed by KSS.

- When there is a viable opportunity to utilize returnable packaging, the supplier, working with KSS personnel should investigate the viability of this option and present it to KSS for review and consideration.
- Suppliers are responsible for container design, development, testing and validation. Maximum air gaps of <1" at the top are allowed.

6.2.1 ENVIRONMENT

Packaging systems shall be designed and engineered for handling, transportation and storage conditions/environments. Temperatures ranging from -30F to +150F (-34.4C to +65.6C) and humidity conditions up to 95%. Duration is determined by supplier and KSS receiving plant.

6.2.2 DANGEROUS GOODS / HAZARDOUS MATERIALS

Packaging, marking, labelling and shipment of dangerous goods (hazardous materials) shall comply with applicable Federal and international regulations governing the transport of dangerous goods.

6.2.3 MATERIAL HANDLING

Manually handled containers should not exceed 16 kilograms / 35 pounds. Mechanically handled loads should not exceed 1,000 kilograms / 2204 pounds. For deviations, consult with the receiving plant as variations may exist depending on material handling methods and assembly process.

6.2.4 TRANSPORTATION / SHIPPING

Shipments shall be made in accordance with the data submitted on the approved KSS Packaging Approval Sheet. Standard pack quantities shall be determined and maintained for each part number. One part number shall be packaged per primary pack. Transportation methods shall be designated by KSS logistics and/or its logistics provider, unless the parties have agreed otherwise, in writing.

6.2.5 SUPPLIER TEST SHIPMENT

A test shipment may be requested for the following instances:

- 1. New suppliers
- 2. Change of part, packaging or shipping method
- 3. New parts (coordinated with pre-production builds)
- 4. As deemed necessary



Each test shipment shall be coordinated and approved with KSS Purchasing, Global Packaging and the receiving KSS Plant prior to being shipped.

Each test shipment shall be clearly labelled on all four sides as a Test Shipment and marked to the attention of a specific contact person (including phone number) at that facility. It is recommended that orange paper be used for these labels.

Receiving KSS locations <u>shall</u> be notified of a test shipment when tendered so they can be on the lookout for the shipment before it arrives. Test shipment quantities may or may not be included in the regular Key Safety Systems scheduled delivery.

6.2.6 ERGONOMICS

All containers and packaging shall be designed with consideration given to ease of handling and part removal. Consideration shall be given to weight restrictions, container opening, container disassembly and any other issues, which may affect worker safety. The supplier is responsible to ensure all material is packaged in such a way to ensure safety is maintained throughout the product distribution stream. The selection of packaging should consider the ergonomic parameters associated with the operator interaction with the container. For example, the removal of parts from containers shall take into consideration the proposed assembly process (For example - will a lift assist be used to access parts from the container?). In addition to the 16 kg / 35 lb weight limit for any manually handled containers, these primary packs should have the following dimensions:

- Length Should be no longer than 76 cm / 30" long
- Width Should be no longer than 51 cm / 20" wide
- Height Recommended maximum from bottom of container to handholds is 46 cm / 18".

However, if oversized containers (manually handled) are needed, the following ergonomic criteria shall be followed:

- Oversized for only length or width dimension
- Maximum weight limit of 13.6 kg / 30 lbs (lower maximum weight due to less optimal arm position to grasp container handles)

6.2.7 RIGHT-SIZED PACKAGING

Suppliers should create "right sized" containers or inner packaging when designing packages for all components and assemblies. Suppliers should match the container size to the rate of component usage, nominally represented by one hour of stock at the production line. Smaller, more frequent deliveries reduce batch build quantities which in turn reduce both work in process and end inventory levels. Due to part size, weight and usage, the one hour guideline may need to be adjusted, but should not exceed one full shift.

6.3 SUPPLIER PACKAGING APPROVAL SHEET

The KSS Supplier Packaging Approval Sheet is required to ensure efficient packaging and transportation at the start of delivery. It is used to collect packaging data for production parts. Suppliers shall complete and submit the Supplier Packaging Approval Sheet for approval during the Early Supplier Involvement phase (ESI) and the Production Part Approval Process (PPAP). The sheets are required for new production parts, new suppliers, changes to parts or changes to packaging. The data sheets can be downloaded from the KSS website under the Supplier information tab at: www.keysafetyinc.com . The KSS receiving plant may request changes to supplier proposed packaging prior to approval.



6.3.1 PACKAGING DISCREPANCY

All discrepancies will be documented and referred to KSS Purchasing & Global Packaging for further action. In the case of OEM directed sources, discrepancies will also be referred to the OEM buyer.

6.4 EXPENDABLE PACKAGING

This section assists suppliers in developing expendable packaging that complies with KSS requirements. All expendable packaging materials shall be legally, feasibly and economically recyclable or disposable.

6.4.1 PALLETS

Packaging failure is often attributed to poorly constructed or poorly sized pallets. Pallet selection should be according to the following guidelines. All pallets should be new or reconditioned, and can be either corrugated or wood, depending on the load and transportation mode(s). The shipment of wood pallets shall comply with the regulations for the country of destination. All recycled pallets must be inspected for damage prior to use and repaired as required. Pallet size should be selected to maximize cubic efficiency for the intended mode(s) of transportation. Consult with the KSS Packaging Engineer and/or receiving plant to determine transportation mode(s) and preferred pallet size.

6.4.2 KSS GLOBAL STANDARD PALLET DIMENSIONS

LENGTH	WIDTH
45"	45"
1143 mm	1143 mm

LENGTH	WIDTH
1000 mm	1200 mm
800 mm	1200 mm
48"	45"
48"	40"
32"	30" (fasteners footprint)
1140 mm	760 mm

KSS ALTERNATE PALLET DIMENSIONS

6.4.3 TOLERANCES

A tolerance of +0" / 0 mm, -38 mm / 1.5" is allowed. Pallet size deviations may be allowed only for unique part dimensions and with prior approval from the KSS receiving plant.

6.4.4 PALLET TYPES

All pallets should have four-way entry for maximizing material handling efficiency. Top deck-boards should support each corner of each container for maximum vertical support. Top deck-boards should cover 60% of the unitized footprint. No more than a 3" gap



between deck boards will be accepted. Bottom stringers must fully cover the outer corners of the pallets for maximum stacking support. Stringers should be a minimum of 3.5" wide



Stringer Pallet



Block Pallet

6.4.5 PALLET CONSTRUCTION

Pallets shall have a minimum of 3.5" (89 mm) fork height clearance on the primary side. For stringer pallets, the notched areas of the secondary sides should have 2.0" - 2.5" (51 - 64 mm) height clearance and should be 9" (229 mm) long. All pallets should be double faced and have sufficient deck-boards to support stacking. Stringer pallets should have three stringers. Pallets should be constructed with cement coated nails or twisted nails. Staples should not be used. Pallets shall be strong enough to support 2000 kg / 4410 pounds, or the total weight of the load, whichever is larger. Pallets should be constructed of hardwoods.

When applicable for international transport, wood pallets shall comply with International Standards for Phytosanitary Measures publication # 15 for Wood Packaging Material in International Trade.

6.4.6 EXPENDABLE CONTAINERS

Expendable containers shall be completely filled with parts to minimize transportation costs and to prevent collapsing due to excessive voids. Container sizes should be designed to be modular to the standard size pallet to be used for shipping. The use of half slotted containers (HSC) with covers, or common covers is recommended when practical for the



product, volume and distribution environment. Hand-holds should be considered for manually handled containers.

For containers designed to ship dangerous goods / hazardous materials, the UN Specification Packaging markings must be stamped or printed on the container. Refer to CFR49 for specific regulations related to your product.

For transportation within North America, corrugated containers should be stamped with a box manufacturer's certificate as defined in Rule 41 of the *Uniform Freight Classification* or item 222-1 of the *National Motor Freight Classification*.

6.4.7 EXPENDABLE CONTAINER CONSTRUCTION

Expendable containers shall have sufficient vertical strength to support unit load stacking and maintain pack integrity throughout the distribution system. Unit loads shall withstand stacking to 2684 mm / 106" in transit.

For overseas shipments, containers should be constructed with water-resistant adhesive to withstand extreme humidity/moisture conditions.

6.4.8 FASTENERS

Standard container styles for fasteners include Regular Slotted Containers (RSC), with inner liner when necessary or Full-Telescope Half-Slotted Boxes (FTHS). Maximum pallet load height should not exceed 838 mm / 33 inches.

Fastener carton sizes should be modular to the preferred fastener pallet size: 813 mm / 32" \times 762 mm / 30".

6.4.9 INNER PACKAGING

Fiberboard, plastics or a combination of materials may be necessary to prevent abrasion, part to part contact, provide internal support and provide for shock and vibration mitigation to eliminate in transit and handling damage. Container loading, unloading and waste disposal shall be considered when selecting inner packaging.

6.4.10 EXPENDABLE CONTAINER CLOSURES

Containers shall be sealed as necessary to avoid failure during normal handling, storage and transportation. Strippable reinforced tape or spot gluing should be used for container closure. Any glue transfer to the part shall be considered unacceptable. Asphaltic tape should not be used due to the adverse effect it has on corrugated recycling.

6.5 UNIT LOAD PATTERN

Containers shall be palletized in full layers only. When container quantities are insufficient to complete one full palletized layer, the additional containers may be consolidated onto a mixed load pallet with approval from the receiving location. Only one mixed load pallet is allowed per shipment, per KSS receiving location. Pyramiding shall not be acceptable for multiple pallets in the same shipment.

- Containers shall be columnar or vertically stacked one box directly on top of another.
- Interlocking or brick stacking shall not be acceptable due to a loss of 40% to 60% of compression strength of the corrugated containers. Brick stacking is only allowed for bags on pallets.
- Box overhang shall not be acceptable due to a loss of 20% to 40% of compression strength and the potential for damage in transit.



6.5.1 SECURING THE LOAD

Banding <u>or</u> Stretch wrap should be used to secure the load to the pallet. Using just one or the other helps to reduce disposal and recycling costs. Both may be used when necessary to secure the load and prevent shifting during transit.

6.5.2 STRAPPING

Non-metallic strapping (polyester or polypropylene) shall be used due the safety hazards associated with metallic strapping. The exception is for castings, sheet metal, or as approved by the receiving KSS plant. Edge protectors or angle boards shall be used when sheer/sharp edges are exposed on the metallic straps. A minimum of two bands in the length and width dimensions shall be used for multiple containers on a pallet. Fusing straps or crimp seals should be used to secure the banding. Buckles shall not be used. Banding shall be located clear of notched fork openings.

6.5.3 STRETCH WRAP

Three stretch wrap layers on the bottom and top and two in the center of the unit load should be used. Many other factors such as the material gauge, tension and unit load weight must also be considered. If double wing pallets are used, stretch wrap shall fully enclose the bottom of the wings. Stretch wrap shall be fully secured to 3 inches below the deck boards. Stretch wrap shall have enough clarity to enable bar code scanning. Mixed loads shall be stretch-wrapped.

6.6 BARCODE LABEL REQUIREMENTS

It is the responsibility of the supplier to provide bar-coded container shipping labels that meet KSS requirements, as defined in this document. There should be two labels per container, adhered to adjacent length and width panels.

Failure to comply with these requirements may result in rejection of the shipment. See below examples for specific information.

6.6.1 Unit Load Barcode Label

KSS Global Standard Global Supplier Packaging Guidelines







6.6.2 Master Barcode Label





6.6.3 Mixed Pallet Label

Mixed load Data= Mixed load Maximum length=2 lines of text to fill the label

MIXED LOAD

Code 128 Specification for Container and Master Label:

- Industry Standard is the Automotive Industry Action Group (AIAG)
- Use Code 128 Subset C for numeric characters
- Use Code 128 Subset A for alpha characters and ASCII symbols
- "X" Dimension shall be in the range of 0.33 MM (0.013 inch) to 0.43 MM (0.017 inch)
- Bar code height shall be a minimum of 13 MM (0.5 inch)
- Quiet zone (blank space at each end of bar code) shall be a minimum of 6.3 MM (0.25 inch)
- Bar code shall meet a minimum ANSI print quality grade of "C"
- Human readable data must be 0.25 inches or 20 points or 3 LPB
- Row/Block height must be 1 inch tall
- For certification purposes only, enter the maximum number of characters per block to ensure block size is large enough. Production B-10 labels (labels that are sent on inbound shipments to the plant) must accurately match the data from EDI or the purchase order. DO NOT ENTER additional characters (i.e. 0) to fill the block.



6.6.4 Mixed Master Barcode Label





6.6.5 Label Use and Placement

- Full pallet (i.e. pallet box) or skid of identical parts (no individual containers used) will require a Container label for the full container, pallet or skid. A Master label will not be required. See the "Pallet Box" illustration to the right.
- The Master label will be used for identical parts on the same pallet or skid where multiple containers are used that support that pallet or skid. Individual Container labels are required on the Containers that support the Master label on the pallet or skid. See the "Box or Carton" illustration on Page 7 and the "Identical Parts in Cartons on Pallet" illustration to the right.
- All pallets or skids that have non-identical containers of parts require a Mixed Load label. Containers that support the Mixed Load label require individual Container labels. See the "Box or Carton" illustration on Page 7 and the "Non-Identical Parts in Cartons on Pallet" illustration to the right.

6.6.6 Label Use and Placement

• All pallets or skids that have non-identical containers of parts require a Mixed Master label. Each part number/purchase Order number/packing list number combination must have a Mixed Master label. Containers that support the Mixed Load label require individual Container labels. Mixed Master labels are to be placed in an envelope and attached to the top of the pallet. See the "Box or Carton" illustration on Page 7 and the "Non-Identical Parts in Cartons on Pallet" illustration to the right.



PALLET BOX – Identical Container labels shall be located on two adjacent sides.

IDENTICAL PARTS IN CARTONS ON PALLET – Each carton shall be individually labeled as described above. Two identical Master labels shall be used on adjacent sides.

NON-IDENTICAL PARTS IN CARTONS ON PALLET – Each carton shall be individually labeled as described above. Two identical Mixed Load labels shall be used on adjacent sides.



NON-IDENTICAL PARTS IN CARTONS ON PALLET – Each carton shall be individually labeled as described above. Two identical Mixed Load labels shall be used on adjacent sides. All Mixed Master labels shall be placed in an envelope and attached to the top of the pallet.