

# Packaging Requirements – Metal Bottle

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## Purpose

This document describes the requirements for metal bottle manufacturing, ensuring the quality and food safety of supplies to the Coca-Cola system. These requirements are in addition to those defined in Supplier Requirements - General (SU-RQ-005) and Supplier Requirements - Packaging (SU-RQ-020).

## Scope

These requirements apply to suppliers of metal bottles to the Coca-Cola system.

## Definitions

**D&I Bottle:** A bottle manufactured using a drawn and iron process, starting from aluminum coils.

**IE Bottle:** A bottle manufactured using an impact extrusion process, starting from aluminum slugs.

**The Coca-Cola system:** The Coca-Cola Company and its bottling partners.

## Requirements

- Follow the general requirements:
  - Supplier Requirements - General (SU-RQ-005)
  - Supplier Requirements - Packaging (SU-RQ-020)
- Suppliers must produce metal bottles meeting the Metal Packaging Master Specification (PK-SP-1125).
- The metal bottle manufacturer and the Coca-Cola business unit must agree on the following attributes. Once authorized, the metal bottle manufacturer cannot modify these attributes without prior notification and authorization by the business unit.
  - Dome reversal
  - Finished bottle height
  - Metal exposure
  - Top load
- The metal bottle manufacturing process must be stable, in statistical control, and capable of meeting the minimum Coca-Cola specifications.

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- Supplier facility shall have a Horiba Oil Content Analyzer OCMA-350 or equivalent at the facility or have availability at another laboratory to verify compliance with The Coca-Cola Company residual oil specifications.

## **Raw Materials**

- Guarantee the traceability for coils, slugs, lubricants, internal lacquers, inks, varnishes and washer additives.
- Provide confirmation that the neck lubricant is food grade.
- Utilize a dedicated storage area if the internal lacquer is received in totes.
- Employ a sample retention program for the internal lacquer, or formally agree on a sample retention program with the lacquer supplier.

## **Cupper/Body-Maker/Trimmer**

- Identify the body-maker on each bottle.
- Control the trim height for each trimmer head.
- Tool room:
  - Control temperature
  - Maintain calibration on the ring and punch masters
  - Maintain traceability for the rings and punches

## **Extruder/Trimmer (IE bottles)**

- Control the trim height for each trimmer head.
- Tool room:
  - Control temperature
  - Maintain calibration on the ring and punch masters
  - Maintain traceability for the rings and punches

## **Washer/Washer oven**

- Provide a full set of documented washer specifications, such as pressure, temperature, speed, and water flow rate.
- Identify all of the washer stages.
- Establish controls and monitor the washer and washer oven temperature limits.
- Cover all washer stages, including 100% coverage after the washer exit.

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- Equip the washer with a fallen bottle rejection system (not applicable for pin chain washers).
- Implement a routine cleaning and maintenance program for pins, chains, side covers and tanks in pin-chain washers.
- Equip the washer laboratory with the equipment needed to monitor each stage of the washer.
- Document the quality standards for washed bottles and monitor them at the exit of the washer oven for at least the following attributes:
  - Absence of residual water
  - Absence of spots
  - Amount of fallen bottles
  - Clean and dry bottles

## **Conveyors**

- Implement a formal program to detect and correct potential contamination sources.
- Cover the conveyors after the exit of last washing process.
- Employ a line clearance procedure to prevent mixing different bottles labels (foreign bottles), and verify its effectiveness.
- Ensure the conveying system does not damage the bottles.
- Employ a cleaning program for magnetic or vacuum conveyors (where the bottles are upside down in contact with the belt), and verify its effectiveness.
- Ensure the magnetic or vacuum elevators (from and to the mezzanine) do not transport fallen bottles.
- Ensure that there are no mixed labels on the accumulation tables (bi-di tables).
- Ensure that every can that enters the Inside Bake Oven (IBO) must exit.

## **Base Coater (if applicable)**

- Employ a visual inspection program at the exit of the base coater and record results.
- Confirm the cleanliness of the pin chain/covering/lubrication system.
- Confirm the cleanliness of the oven.
- Maintain proper in-feed.
- Maintain temperature control.

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## ***Decorator***

- Employ a formal sign-off process for new label introduction between the facility and the relevant Coca-Cola business unit.
- Confirm the cleanliness of the pin chain/covering/lubrication system.
- Confirm the cleanliness of the oven.
- Maintain proper in-feed.
- Maintain temperature control.
- Provide reference artwork for visual comparison.

## ***Lacquer Spray Machines (LSMs)***

- Ensure that a process is in place to detect and remove critical defects on bottles.
- Control and monitor the following:
  - Enamel rate (ER)
  - IBO temperature
  - Lacquer pressure and tolerances
  - Missed and partial spray detection systems
  - No idle bottles after LSMs
  - No-pressure and low-pressure detection systems for each gun head
  - No-spin control system
  - Spray application parameters and specifications
- Maintain consistent settings for gun angles, gun distance and gun height across LSMs and guns.
- Ensure that individual and average specifications are in place for ER.
- Ensure that ER warning levels are in place to initiate corrective actions.
- Ensure that lines with multiple LSMs are traceable via an ink dot system (UV or visible ink)

## ***Necker/Flanger (D&I bottles)***

Refer to the permissible internal bottle Residual Oil concentration in the Metal Packaging Master Specification (PK-SP-1125).

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## ***Necker/Flanger (IE bottles)***

- Refer to the permissible internal bottle Residual Oil concentration in the Metal Packaging Master Specification (PK-SP-1125).
- Control and monitor the following:
  - No excessive use of lubricants (inside/outside)
  - Neck lubricant
  - Condition of necker, safety guards
  - Condition of post-washer, safety guards
  - Water temperature
  - Oven temperature
  - Cleanliness of pin chain/covering/lubrication system
  - Post-washer water contamination control

## ***On-line Inspection***

- Fit each line with on-line light testers or on-line air pressure testers.
- Confirm that the light tester is capable of rejecting the following:
  - Pinholes
  - Cracked flanges
  - Short trims
  - Chipped flanges
- Implement a formal program for investigating the light tester rejects.
- Utilize standard check samples to verify the effectiveness of light testers (maximum of a 0.5 mm diameter pinhole).
- Fit each line with on-line vision inspection systems that are capable of rejecting the following:
  - Bottle finish damages and contaminations (internal and external)
  - Dome contaminations
  - Heel dents
  - Neck contaminations
  - Wall contaminations
- Utilize standard check samples to verify the effectiveness of the camera system (maximum 3 mm diameter for the simulated defects).

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- Utilize standard check samples to verify the effectiveness of the foreign bottle detector (if equipped) and ensure that zero foreign bottles pass the detector.
- Implement equipment effectiveness checks and routine monitoring for the shutter test on light testers for D&I bottle lines where the light tester is integrated in the necker flanger and cannot be checked via test samples.

## ***Palletizer***

- Cover sticks used by palletizer operators with a soft, clean material (such as flex plastic), to avoid damages and scratches to the inside of the bottles.
- Employ specific bottle handling rules (e.g. no touching inside the bottle), hair restrains and hand disinfection.
- Ensure the layer pads are clean and not deformed.
- Implement an inspection program for returnable layer pads.
- Verify barcode readability.
- Perform pallet condition verification (i.e. intact shrink wrap) during the final loading before delivery.
- Number each pallet and, when required, include the EAN 128 barcode on the pallet label.

## ***Off-Line Inspection***

- Cupper/Body-Maker/Extruder/Trimmer
  - Bottle weight
  - Bottom thickness (IE bottles)
  - Dome depth
  - Mid-wall thickness
  - Top-wall thickness
  - Trim height
- Base Coater
  - Base coat adhesion
  - Base coat weight
  - Visual inspection
- Decorator
  - Barcode readability (minimum D standard)
  - Mobility test

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- Production coding readability
- Rim coverage (copper sulphate test)
- Visual inspection
- Lacquer Spray Machines
  - Abrasive resistance (IE bottles)
  - ER measurements per LSM (check adequate filling of bottles with electrolyte during test)
  - Lacquer distribution (film distribution)
  - Lacquer weight (dry film weight)
  - Routine visual inspection of gun performance including, but not limited to spray pattern, uniform fan, wet bottles, and over spray
- Final Package
  - Curl flatness
  - Curl height
  - Curl ID
  - Curl OD
  - Dome growth
  - Dome reversal (buckle strength)
  - Final ER
  - Finished bottle height
  - Overvarnish abrasive resistance (IE bottles)
  - Particles test (IE bottles)
  - Tamper Angle (ROPP closure)
  - Tamper Bead Diameter (ROPP closure)
  - Tamper Groove Diameter (ROPP closure)
  - Thread Depth (ROPP closure)
  - Thread Major Diameter (ROPP closure)
  - Thread Minor Diameter (ROPP closure)
  - Top load
  - Overvarnish abrasive resistance (IE bottles)
  - Water bath test (IE bottles)

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## ***Final Packaging/Warehouse/Transportation***

- Mark the location for end-of-run production (partial pallets).
- Cover loading bays.
- Use enclosed trucks to transport bottles.

## **References**

Metal Packaging Master Specification	PK-SP-1125
Supplier Requirements - General	SU-RQ-005
Supplier Requirements - Packaging	SU-RQ-020

## **Revision History**

<b>Revision Date</b>	<b>Summary of Change</b>
27-Jun-2014	New KORE document that describes the requirements for metal bottle suppliers.