



Corn Dog Manufacturing

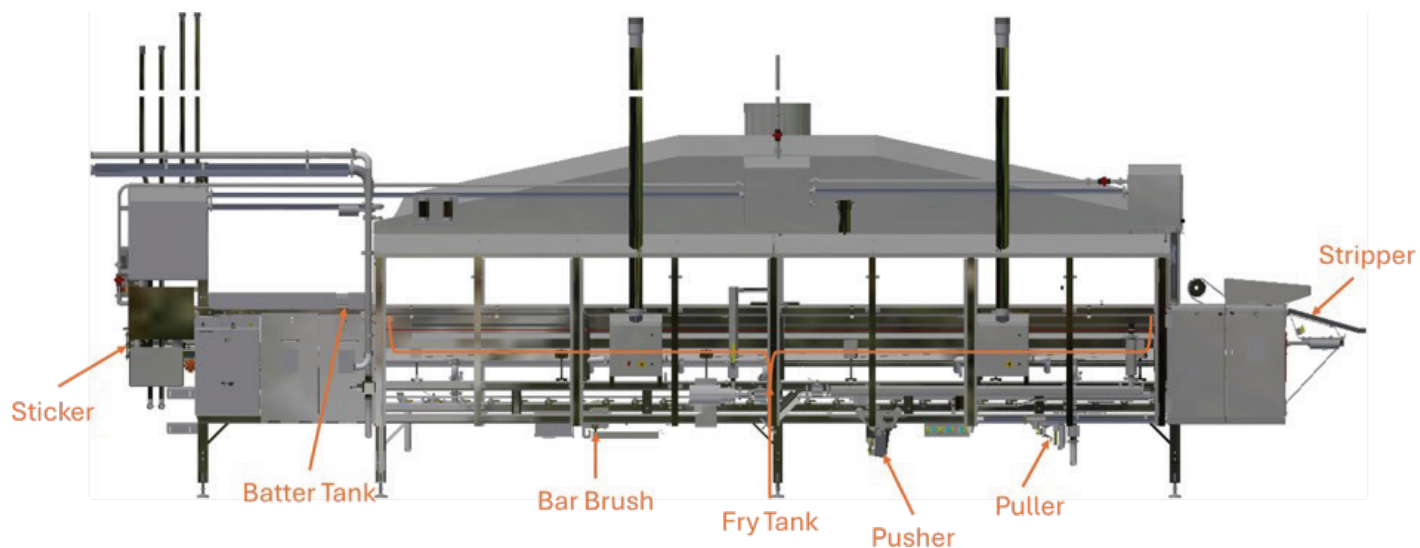
FOREIGN MATERIAL PREVENTION BEST PRACTICES

PURPOSE

The purpose of this document is to provide a series of best practices to prevent, detect, and respond to broken, misapplied, or misaligned sticks during the corn dog production process. This document is organized to follow production flow from receiving inputs through finished product inspection. The suggested industry best practices as outlined below are not requirements, nor are they binding. Establishments may implement alternate or additional controls that best complement their process. This document will be updated as additional information becomes available.

GUIDING PRINCIPLES

- Establish a baseline using robust data collection which may include a destructive sampling program. These frequency and scope of data collection can be modified once sufficient data is collected.
- Focus on prevention through supplier controls, equipment design, and setup.
- Detect potential issues early through robust visual inspection and documented monitoring programs.
- Verify performance using documented checks.
- Frequently analyze the data collected.
- Should a foreign material situation arise, respond immediately with potential product holds, root cause analysis, and corrective actions as necessary.
- All procedures should be designed and implemented to minimize risks to employees, ensure compliance with applicable regulations, and promote a safe working environment.



KEY STEPS IN THE CORN DOG MANUFACTURING PROCESS (Appendix 1)

Fryer: The entire corndog system equipment, companies may have multiple fryers.

Sticker: Module that inserts wooden sticks into franks *(Sometimes called stick insertion or plunger, however the plunger is the specific piece on the sticker that contacts the stick.)*

Stick Bar: Bar that carries sticks through the entire automated system
(Sometimes called fryer bar)

Batter Tank: Container holding the batter in which the franks are submerged for coating
(Sometimes called batter dip tank, dip tank, or batter well)

Fry Tank: Container holding the oil in which the coated franks are submerged for cooking
(Sometimes called fryer or fry vat)

Stripper: Mechanism that removes the cooked corn dogs (with sticks) from the stick bar
(Sometimes called exit stripper, stick remover, or puller, however, the puller is a different step)

Puller: Device that removes remaining sticks or stick fragments that may still be attached to the stick bar after the stripper
(Sometimes called stick stripper)

Pusher: Pins that eject residual sticks or fragments from the stick bar
(Sometimes called stick pusher or purger)

Bar Brush: Brush roller that removes batter and debris from the stick bar prior to plunging

Monitoring

- *Batter Tank:* Visual or engineered inspection of the batter tank for stick remnants
- *Stick Bar:* Visual or engineered inspection of the stick bar for remaining sticks and stick fragments remnants

SUPPLIER CONTROLS AND RECEIVING

Approved Supplier Program

- Sticks are sourced only from approved suppliers.
- Defined specifications are required and maintained. Specification requirements may include, but are not limited to:
 - Material type
 - Dimensions
 - Defects (cracks, splits, warps, knots, weak points)
 - Push force
 - Break force/tensile strength
 - Bend/bow tolerance
 - Repeated quality issues trigger engagement with supplier for corrective action.

Receiving Inspection

- Prior to production, representative stick samples are inspected for defects and other parameters, such as:
 - Evaluation of break potential
 - Push force
 - Break force/tensile strength
 - Bend/bow tolerance
- Frequency of stick evaluation is determined by risk assessment, past performance, etc.
- Non-conforming lots should be retained for management to determine next steps, which may include stick sortation to remove defects, lot rejection, etc.

Stick Storage

- Sticks should remain packaged until ready for use and stored in cool, dry environments.
- FIFO should be followed

EQUIPMENT MODIFICATIONS

Shields and Physical Barriers

- Where used, shields and physical barriers should be constructed or positioned in a manner not to impede visual inspection.
- Example shields and physical barriers may include but are not limited to:
 - Shields are installed between the sticker and batter tank to deflect broken sticks, should they occur.
 - If operationally feasible, screens may be installed above batter tank while allowing appropriate product flow.

EQUIPMENT SETUP

Preoperational Inspection

- Trained designee inspects each fryer prior to startup and as needed. At minimum, inspection includes:
 - Sticker alignment and timing
 - If available, an alignment template provided by the equipment manufacturer should be used to assess alignment and chain stretch.
(Appendix 2: Examples of alignment templates)
 - Condition of all plungers (no missing, bent, or damaged parts)
 - Proper alignment, timing, and clearance of stripper, puller, and pusher
 - Shields and barriers that are removable are in place, if utilized

IN PROCESS MONITORING AND OPERATIONAL CONTROLS

Sticker Alignment

- Alignment is verified at a frequency specified by the producing establishment.
 - Alignment template developed by the equipment manufacturer may be used where available to assess alignment and chain stretch if alignment issues are identified in process.
- The establishment's program should include corrective actions if sticker misalignment is observed resulting in broken sticks, including but not limited to adjustment to the process to restore alignment.

Stick Insertion

- Any broken sticks observed are immediately removed.
- Stick bar is stopped if necessary to safely remove any broken sticks.

Batter Tank

- Monitoring should be conducted to ensure broken sticks or fragments do not enter the batter tank. This may be performed through manual/visual or technology-based monitoring capable of detecting the defect.
- The establishment's program should include corrective actions if an intact stick or stick fragment is observed entering the batter. Actions may include but are not limited to:
 - removal of the stick/stick fragment
 - verification the batter tank is free of stick/stick fragments
 - draining the batter tank if stick/stick fragment removal cannot effectively be completed
 - retention/destruction of product, as appropriate.

Other System Verification Activities

- Stripper, puller, and pusher systems are routinely verified as functioning appropriately by observing a representative sample of consecutive bars.
- Equipment malfunction that is suspected or confirmed to result in stick fragments in product requires corrective action. Actions may include but are not limited to:
 - retaining product back to the last acceptable check
 - confirming correction of the malfunction prior to line restart.

Critical operational monitoring should be conducted in a statistical process control program.

- Critical monitoring activities are defined by the establishment.
- Critical monitoring activities should be documented.
- Data should be collected to allow for trend analysis.
- The program should designate corrective actions to be taken if process control is not maintained.

DESTRUCTIVE SAMPLING AND PRODUCT CHECKS

Fryer Level Destructive Sampling

- Product exiting each fryer undergoes routine destructive sampling at a frequency specified in the establishment's program.
- Samples should be collected from different points across the width of the fryer.
- Corn dogs are disassembled to evaluate the potential of embedded sticks or stick fragments.

The establishment's program must include corrective actions for sampling failure. Actions may include but are not limited to:

- stopping the process
- retention of suspect product, typically back to the last acceptable check.

REWORK PRODUCT CONTROLS

- Rework product bins are designated, segregated, and controlled to prevent stick contamination.
- Shields or other barriers may be used to minimize potential introduction of foreign material or other items in rework bins.
- Rework should be inspected prior to being reintroduced to the production line.
- Observation of sticks or stick fragments in a rework bin will result in corrective action, which may include discarding the entire bin.

FINISHED PRODUCT INSPECTION AND PACKAGING

Packaging Line Checks

- Finished product inspections should include checks for broken or protruding sticks.
- The establishment's program must include corrective actions for sampling failure. Actions may include but are not limited to:
 - stopping the process
 - retention of suspect product, typically back to the last acceptable check.

DOCUMENTATION, DATA, AND REVIEW

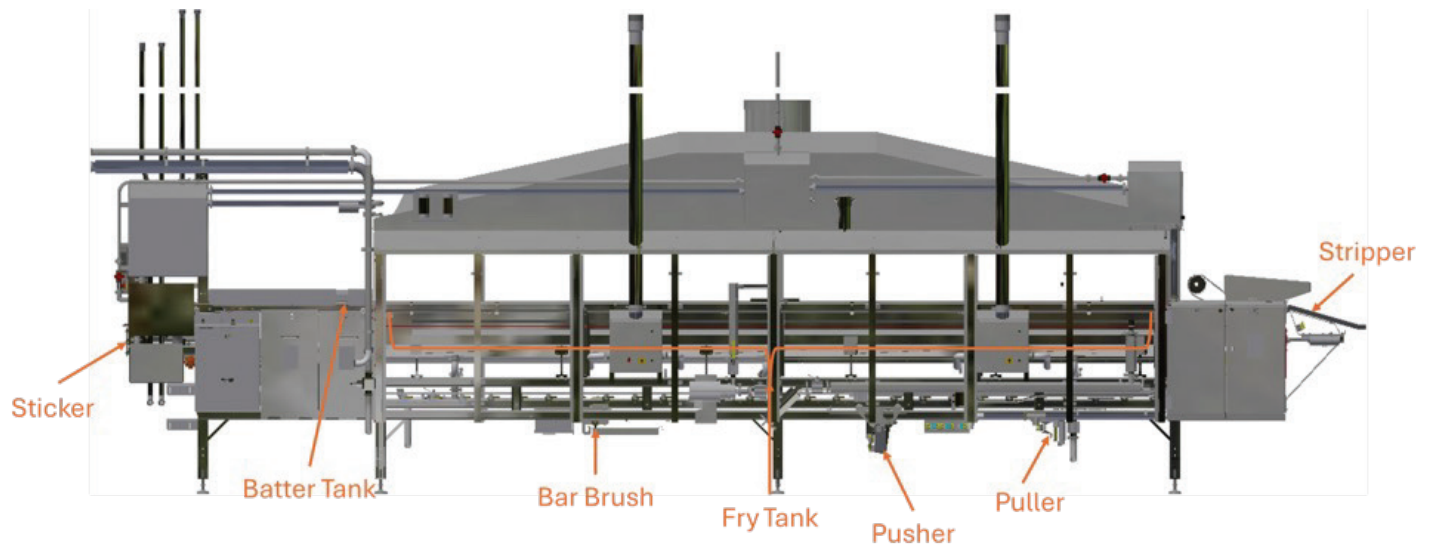
All monitoring activities and responsive actions to a failure (including but not limited to investigations for root cause, corrective actions, preventative measures, product disposition, etc.) should be documented. Identified process control and other relevant data should be routinely monitored, trended, and reviewed at a predetermined frequency by the establishment. Any findings should be used to refine controls and drive continuous improvement.

Other relevant sources of information may include customer complaints, consumer feedback, returned product information, regulatory feedback, and internal quality findings. This data should be similarly monitored and trended to identify emerging patterns that could be indicative of loss of process control or an emerging issue. An increase in complaints or other relevant information related to sticks or stick fragments should trigger follow-up activities, such as investigation, review of process controls, assessment of recent monitoring results, and implementation of corrective actions as appropriate.

Additional information can be found in the August 2018 [Industry Best Practices for Customer Complaints of Foreign Material in Meat and Poultry Products](#).

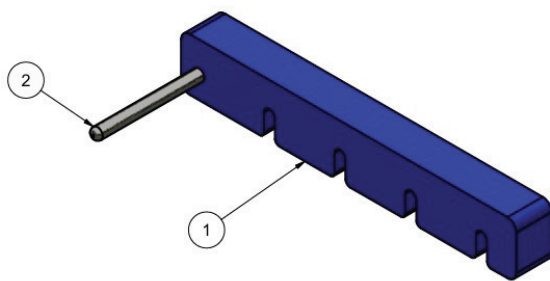
APPENDIX 1

Key Components of the Corndog Manufacturing Process

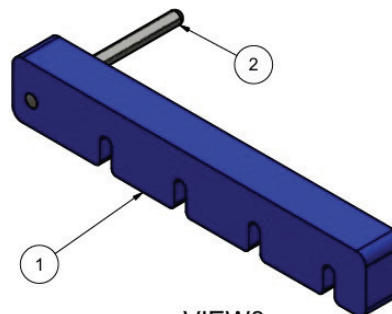


APPENDIX 2

Examples of Alignment Templates



VIEW3
SCALE 1 / 2



VIEW3
SCALE 1 / 2