Standard Operating Procedure: Food Processing Line

Document ID: SOP-FOOD-003
Version: 4.1
Effective Date: September 21, 2025
Review Date: June 21, 2026
Approved by: Food Safety Director

1. PURPOSE AND SCOPE

This Standard Operating Procedure establishes comprehensive guidelines for the safe and hygienic processing of ready-to-eat frozen meals in compliance with FDA Food Safety Modernization Act (FSMA), HACCP principles, and SQF (Safe Quality Food) standards. This procedure covers all operations from ingredient preparation through final packaging and applies to all production personnel, quality assurance staff, sanitation teams, and maintenance technicians.

2. REGULATORY COMPLIANCE

This SOP ensures compliance with:

- **FDA Food Safety Modernization Act (FSMA) - Preventive Controls Rule**
- **USDA-FSIS regulations for meat and poultry products**
- **HACCP (Hazard Analysis Critical Control Points) principles**
- **SQF Code Edition 9.0 requirements**
- **FDA Food Code latest edition**
- **OSHA standards for food manufacturing safety**

3. PERSONNEL RESPONSIBILITIES

Production Manager: Overall responsibility for food safety, quality, and production efficiency
Line Supervisors: Monitor critical control points, ensure HACCP compliance, supervise staff
Processing Operators: Execute production tasks, maintain sanitary conditions, document CCPs
Quality Assurance Technician: Verify food safety parameters, conduct testing, review records
Sanitation Coordinator: Maintain cleaning schedules, verify sanitization effectiveness
Food Safety Specialist: HACCP plan maintenance, regulatory compliance, audit coordination

4. FOOD SAFETY AND HYGIENE REQUIREMENTS

Personal Hygiene Standards

Pre-Entry Health Requirements:

- **Daily health screening questionnaire completion**
- **Temperature check (must be <100.4°F to enter production)**
- **Visual inspection for cuts, wounds, or signs of illness**
- **Exclusion of personnel with communicable diseases per FDA Food Code**

Hand Washing Protocol:

1. **Wet hands with warm water (100-110°F)**
2. **Apply antimicrobial soap and scrub for minimum 20 seconds**
3. **Clean under fingernails with approved nail brush**
4. **Rinse thoroughly with warm water**
5. **Dry with single-use paper towels**
6. **Apply approved hand sanitizer (70% alcohol minimum)**
7. **Document completion on hygiene log**

Protective Clothing Requirements

Mandatory Garments:

- **Hair restraint (hair net or cap) covering all hair completely**
- **Beard restraint if facial hair extends beyond 6mm**
- **Clean uniform or disposable coveralls changed daily**
- **Non-slip, closed-toe shoes sanitized before entry**
- **Disposable nitrile gloves changed every 30 minutes or when contaminated**
- **Aprons for wet processing areas, changed between operations**

Prohibited Items:

- **Jewelry except plain wedding band**
- **Watches or fitness trackers**
- **False nails or nail polish**
- **Perfumes or strongly scented personal products**
- **Personal food or beverages in production areas**

5. FACILITY AND ENVIRONMENTAL CONTROLS

Facility Design Requirements

- **Physical separation between raw and ready-to-eat processing areas**
- **Positive air pressure in ready-to-eat areas relative to raw areas**
- **Non-porous, easily cleanable surfaces on all food contact areas**
- **Adequate lighting (minimum 540 lux at work surfaces)**
- **Hand washing stations within 25 feet of all work areas**

Environmental Monitoring

- **Temperature: Ambient temperature 50-70°F in processing areas**
- **Humidity: Relative humidity maintained below 50% to prevent condensation**
- **Air Quality: HEPA filtration with minimum 12 air changes per hour**
- **Water Quality: Potable water meeting EPA standards for all operations**
- **Pest Control: Integrated pest management with monthly monitoring**

6. HAZARD ANALYSIS AND CRITICAL CONTROL POINTS (HACCP)

Critical Control Point 1: Cooking/Heat Treatment

Hazard: Pathogenic microorganisms (Salmonella, E. coli, Listeria)
Control Measure: Thermal processing to eliminate pathogens
Critical Limit: Internal temperature ≥165°F (74°C) for minimum 15 seconds
Monitoring: Continuous temperature monitoring with data logging every 30 seconds
Corrective Action: Reject product if temperature not achieved; investigate cause
Verification: Weekly calibration of temperature probes; quarterly validation studies
Record Keeping: Continuous electronic records; manual verification every 2 hours

Critical Control Point 2: Cooling Process

Hazard: Pathogenic bacteria growth during cooling
Control Measure: Rapid cooling to prevent temperature abuse
Critical Limit: Cool from 140°F to 70°F within 2 hours, then to 41°F within 4 hours
Monitoring: Temperature monitoring every 30 minutes during cooling cycle
Corrective Action: Increase cooling rate or discard product if limits exceeded
Verification: Daily calibration of cooling system; monthly time/temperature studies
Record Keeping: Cooling curves documented for each batch

Critical Control Point 3: Metal Detection

Hazard: Physical contamination with metal fragments
Control Measure: Metal detection system with rejection mechanism

Critical Limit: No metal contamination >1.5mm ferrous, >2.0mm non-ferrous, >2.5mm stainless steel
Monitoring: Test detection sensitivity every 2 hours using certified test pieces
Corrective Action: Stop production, inspect rejected product, investigate source
Verification: Weekly sensitivity verification; annual system validation
Record Keeping: Detection tests logged; all rejections investigated and documented

7. INGREDIENT RECEIVING AND PREPARATION

7.1 Incoming Inspection Protocol

Delivery Vehicle Inspection:

- **Verify vehicle cleanliness and temperature maintenance**
- **Check driver health and hygiene compliance**
- **Inspect vehicle for signs of pest activity or contamination**
- **Verify delivery matches purchase order specifications**

Product Inspection Procedure:

1. **Check all packaging for damage, leaks, or contamination**
2. **Verify product temperatures using calibrated thermometers**
3. **Inspect labels for allergen information and expiration dates**
4. **Document lot numbers and supplier information**
5. **Take samples for microbiological and chemical testing if required**
6. **Accept or reject based on established acceptance criteria**

Temperature Requirements:

- **Frozen ingredients: 0°F (-18°C) or below**
- **Refrigerated ingredients: 41°F (5°C) or below**
- **Dry ingredients: Ambient temperature, protect from moisture**
- **Reject any products showing temperature abuse**

7.2 Ingredient Storage and Handling

Frozen Storage:

- **Maintain temperature at -10°F (-23°C) or below**
- **First In, First Out (FIFO) rotation system**

- **Store 6 inches above floor on approved shelving**
- **Separate raw and ready-to-eat ingredients**
- **Monitor and record temperatures every 4 hours**

Refrigerated Storage:

- **Maintain temperature 32-38°F (0-3°C)**
- **Store raw proteins below 35°F (2°C)**
- **Use within 7 days of receipt or by expiration date**
- **Cover all opened packages to prevent contamination**
- **Clean and sanitize storage areas weekly**

Dry Storage:

- **Store in cool, dry area with temperature <70°F (21°C)**
- **Relative humidity below 50% to prevent mold growth**
- **Elevate products 6 inches from floor and walls**
- **Rotate stock using FIFO system**
- **Inspect monthly for pest activity or package damage**

8. PRODUCTION PROCEDURES

8.1 Pre-Production Setup (45 minutes)

Sanitation Verification:

- **Inspect all equipment surfaces for cleanliness using ATP testing**
- **Verify cleaning chemical concentrations using test strips**
- **Check sanitizer solutions are within acceptable range (200-400 ppm)**
- **Document pre-operational inspection results**
- **Obtain approval from QA before production start**

Equipment Preparation:

- **Verify all equipment identification matches production schedule**
- **Check that preventive maintenance is current**
- **Test all safety systems (emergency stops, guards, alarms)**
- **Calibrate scales, thermometers, and timing devices**

- **Warm up cooking and cooling systems to operating temperatures**

Ingredient Staging:

- **Verify ingredient identity and lot numbers against formulation**
- **Check expiration dates ensure adequate shelf life**
- **Weigh ingredients according to batch sheet specifications**
- **Stage ingredients in order of addition to prevent errors**
- **Cover and label all prepared ingredients with batch information**

8.2 Mixing and Preparation Operations

Sauce Preparation Station:

1. **Verify recipe formulation and scaling calculations**
2. **Add ingredients in specified order according to batch sheet**
3. **Mix for specified time at designated speed settings**
4. **Monitor mixing temperature (maintain below 50°F during mixing)**
5. **Check viscosity using calibrated viscometer**
6. **Transfer to designated holding tank with batch identification**
7. **Sample for pH testing (target 4.2-4.8 for tomato-based sauces)**

Protein Preparation Station:

1. **Thaw frozen proteins under controlled conditions (38°F or below)**
2. **Inspect for foreign objects, abnormal appearance, or off-odors**
3. **Portion according to specification using calibrated scales**
4. **Season according to approved formulation**
5. **Transfer to cooking area within 30 minutes of preparation**
6. **Maintain cold chain during all handling operations**

Vegetable Preparation Station:

1. **Wash fresh vegetables in potable water with approved sanitizer**
2. **Inspect and remove damaged or deteriorated portions**
3. **Cut to specified dimensions using calibrated equipment**
4. **Blanch in boiling water (212°F) for specified time**

5. **Cool rapidly in ice water bath to halt cooking process**
6. **Drain thoroughly**