

Hazard Analysis and Critical Control Points (HACCP) Plan for Frozen Veggie Mix

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ABSTRACT

The production of frozen vegetable mix entails numerous potential hazards, ranging from microbiological contamination to physical hazards. To ensure the safety and quality of the final product, the implementation of Hazard Analysis and Critical Control Points (HACCP) principles and prerequisite programs is paramount.

Prerequisite programs form the foundation of the HACCP system, providing essential conditions and practices necessary for the implementation of effective food safety measures. These programs encompass Good Agricultural Practices (GAPs), Good Manufacturing Practices (GMPs), sanitation procedures, and employee training.

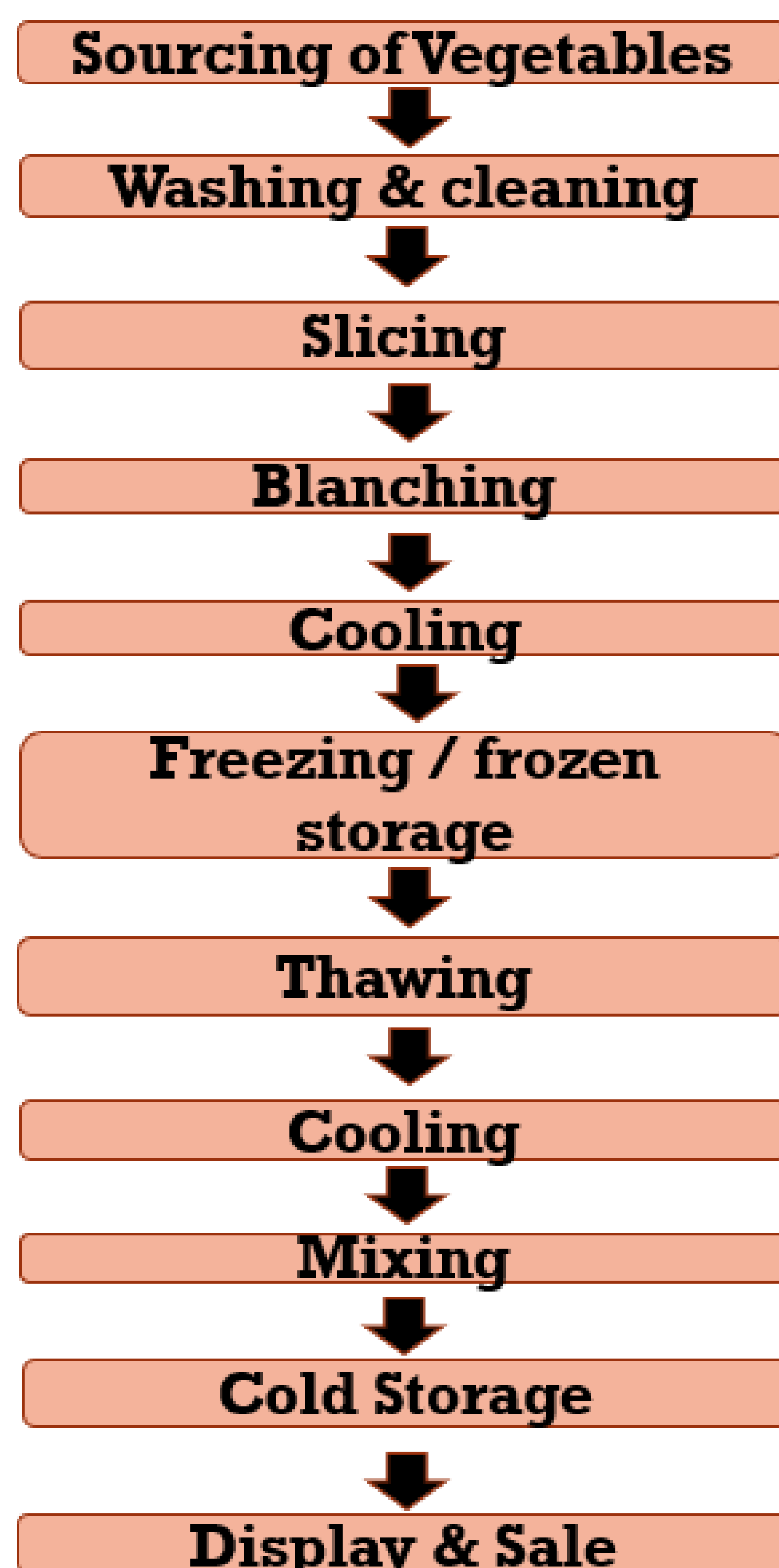
Frozen vegetable mix manufacturing involves various stages, including sourcing raw materials, processing, freezing, and packaging. Implementing Hazard Analysis and Critical Control Points (HACCP) principles and prerequisite programs is essential to identify and mitigate potential hazards such as microbiological contamination, chemical residues, and physical hazards. This abstract highlights the importance of adherence to Good Manufacturing Practices (GMPs), proper sanitation, quality control measures, and employee training to ensure the production of safe and high-quality frozen vegetable mix products.

INTRODUCTION

Frozen veggie mix are convenient and versatile option for incorporating a healthy and colorful varieties of veggies to one's meals. They are a combination of different types of fresh vegetables, typically used for cooking or consumption.

If the food is frozen way too much there can be chances for the destruction in vegetable tissue and can cause a loss in the sensorial quality.

PROCESS FLOW DIAGRAM



DETERMINATION OF CCPs

Critical Control Points	Potential Hazards	Prevention Measures
Blanching	Bacteria (Salmonella, E. coli, Listeria),	Heat treatment (82°-100°C for 1-5 minutes)
Cooling	Bacteria (Salmonella, E. coli, Listeria),	Rapid cooling to be done from 4°C or below withing 2 minutes of the blanching
Freezing/ Frozen storage	Temperature Abuse, Microbial Cintamination	Maintaining Temperature at 18°C or below, GMP, strict hygiene
Thawing	Temperature Abuse, Microbial Contamination by (Salmonella, E. coli, Listeria)	Rapid Thawing to 4°C or below withing 2 hours.
Cold storage and display	Pathogens (E. coli, Salmonella, Listeria), Cross Contamination.	Maintaining the temperature at 4°C or below and making sure of the GMP.

Table 1: Hazard analysis of each step of manufacturing process of Frozen veggie mix



Fig 1. Types of Frozen Veggie Mix

CCP & Monitoring	Corrective Actions	Verification
Temperature of the mixed veggie CCP 1	Adjust temperature or blanching time if critical limit is not met.	Visual inspection, temperature logs
Cooling Temperature and Time CCP 2	If cooling does not reach 4°C or below within 2 hours, Increase cooling rate or discard product if temperature remains above critical limit.	Temperature Checks and Time logs.by the QA technician.
Freezing Temperature CCP 3	Use temperature monitoring devices to ensure storage temperature remains at or below -18°C	Temperature checks, equipment calibration
Thawing Temperature 4°C (40°F) or below CCP 4	Increase thawing rate or discard product if temperature remains above critical limit	Periodic Temperature checks, time logs
Cold storage and Display : 4°C (40°F) or below CCP 5	Use temperature monitoring devices to ensure storage temperature remains at or below 4°C Adjust temperature settings or repair equipment if necessary	Continuous monitoring Temperature checks, equipment calibration and keeping a check on the maintenance records.

Table 2: HACCP Plan (Critical limit, monitoring Control, Corrective Actions and verification)

RECALLS

- Additional frozen vegetables recalled because of Listeria contamination
- Twin city foods inc. of Stanwood, WA, recalled not –ready to eat frozen corn and mixed vegetables in retail bags, due to a potential for them to be contaminated with Listeria monocytogenes.
- The affected brands are Kroger, food lion and Signature.
- Food lion posted its own recall of frozen mixed veggies and sweet corn products because of contamination.
- There have been no reports by the consumers yet
- “The recall has been initiated because finished products may potentially be contaminated with the Listeria monocytogenes, based on one customer’s third- party lab results for the IQF (individually quick frozen) sweet cut corn,” according to the recall notice.”**

[Additional frozen vegetables recalled because of Listeria contamination | Food Safety News](#)

MONITORING POINTS

Blanching Temperature: Strict temperature controls and quality checks.

Cooling : temperature monitoring to ensure that the food safety.

Thawing: Frequent checks to prevent the microbial contamination.

Cold storage: The temperature here should be checked to prevent pathogens.

Final Quality Control: Sensory analysis and packaging integrity assessment

RECORD KEEPING AND DOCUMENTATION

Maintaining detailed records of HACCP compliance, including temperature logs, batch codes, and cleaning schedules, is essential for traceability and food safety verification.

REFERENCES

- [\(PDF\) Impact of Processing Factors on Quality of Frozen Vegetables and Fruits \(researchgate.net\)](#)
- [Influence of Freezing Process and Frozen Storage on the Quality of Fruits and Fruit Products | Request PDF \(researchgate.net\)](#)
- [Frozen Storage & Shipping | Sartorius](#)
- [How To Store Frozen Vegetables \(savorysuitcase.com\)](#)