

The Cold Chain 101:

Where Does Cold Storage Fit Into The Cold Chain?

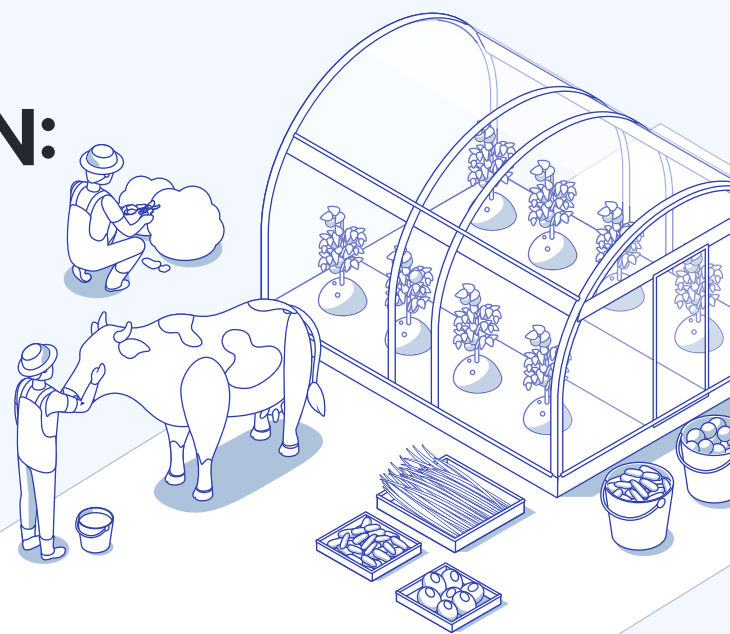
The cold chain is the series of steps frozen and refrigerated foods must go through starting with raw materials and ending as finished goods ready for consumption. Cold storage real estate is one crucial component, but not the only component of the cold chain.



STEP 1

START OF THE CHAIN: RAW INGREDIENTS

Raw ingredients can originate from domestic or international sources. Commodities may be imported through ports or sourced directly from local agricultural production sites.



- Produce, Grains, Nuts, Seeds
- Alternative & Emerging Ingredients
- Sugar, Oil, Spices, Coffee
- Seafood
- Dairy
- Livestock

STEP 2

RAW INGREDIENTS MOVE TO MANUFACTURING

Manufacturing facilities are typically heavy industrial operations that transform raw goods into finished or semi-finished products.



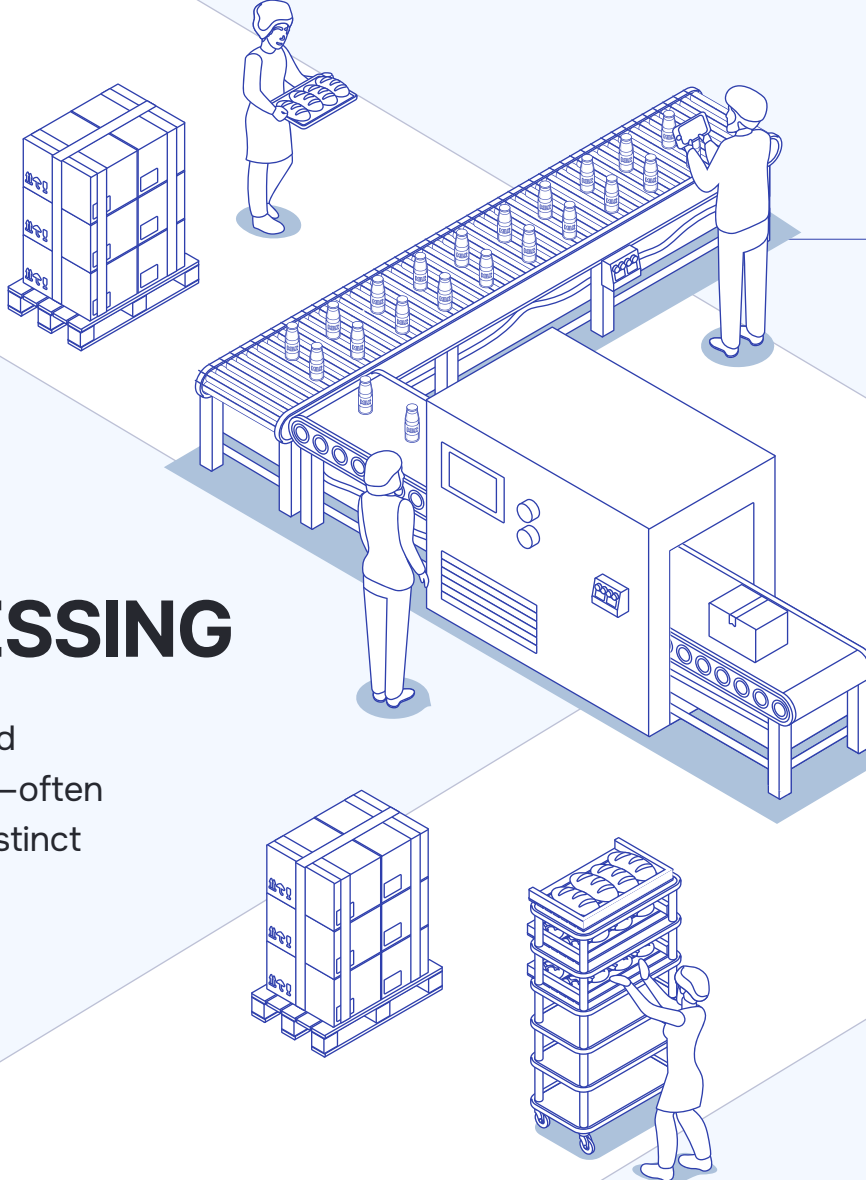
FOOD MANUFACTURING REAL ESTATE CHARACTERISTICS

- The facility and the manufacturing done inside cannot be separated. The facility is purpose-built for a specific workflow.
- Often include multiple temperature zones based on the state of the manufactured goods
- Frequently developed from the ground up, requiring significant upfront investment in equipment and MEP systems
- Typically require the most employee parking of the cold chain facility types
- Examples are slaughterhouses, dairy plants, and cooking oil refineries

STEP 3

SEMI-FINISHED INGREDIENTS MOVE TO PROCESSING

Processing facilities refine, prepare, and assemble food and beverage products—often overlapping with manufacturing, but distinct in their scale or operational focus.



FOOD PROCESSING REAL ESTATE CHARACTERISTICS

- The facility and the workflow done inside are generally separable. The building can be more easily adapted to different processes and products.
- Often integrated or co-located with storage facilities
- Require substantial employee parking
- Utilize high-throughput conveyor systems
- Generally feature lower clear heights than manufacturing facilities

STEP 4

FINISHED INGREDIENTS MOVE TO STORAGE

Storage facilities keep food and goods stable until they are ready for distribution. This is where inventory is built up. Subsegments include:

- Cold Storage
- Dry Storage
- Mixed Temperature
- Bulk Liquid



COLD STORAGE IN FOCUS

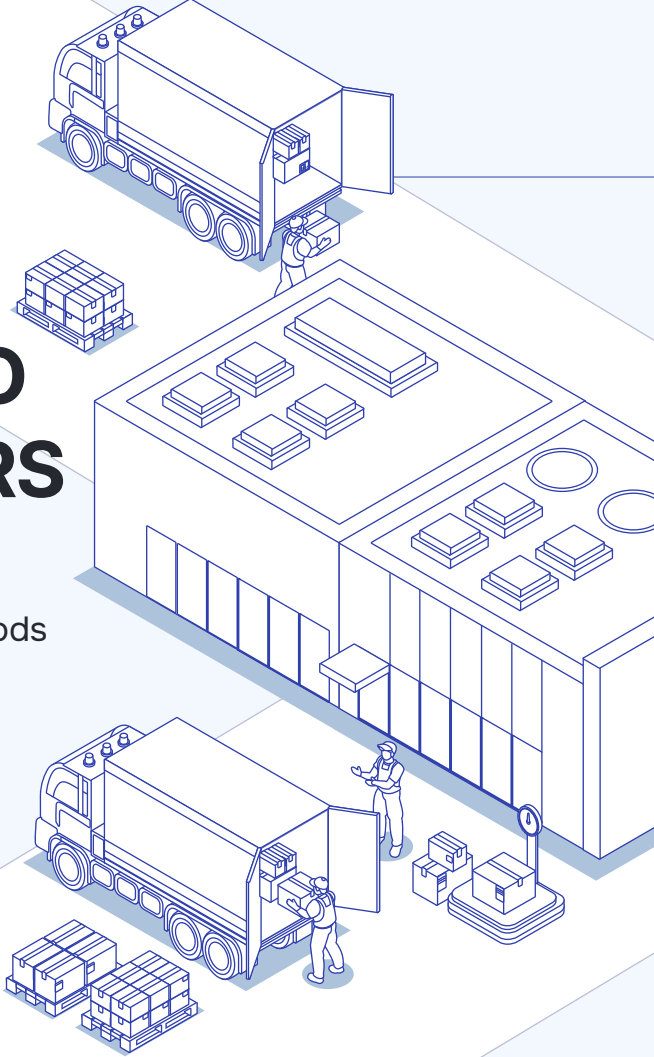
- Cold storage facilities are defined by size, temperature, and whether they are end-user occupied or Public Refrigerated Warehouses (PRs).
- PRSes are operated by third-party companies who take custody and store products for multiple brands. End-user occupied warehouses are occupied by a single food manufacturer or product owner.
- Features to consider: Rack-supported structures; ASRS & Automation; double-deep racking; clear heights (modern buildings for high-density storage) are typically 50' ; box-in-a-box construction; cross-dock design; solar power and sustainability factors

STEP 5

INVENTORY MOVED TO DISTRIBUTION CENTERS

Distribution centers serve as hubs for short-term storage and the efficient movement of finished goods to retailers or end users. Subsegments include:

- Grocery Distribution Centers
- E-Commerce Distribution Centers
- Cross-Dock Facilities



FOOD DISTRIBUTION REAL ESTATE CHARACTERISTICS

- Capable of handling a large number of SKUs
- Design driven by pallet positions and throughput requirements
- Incorporation of robotic automation for increased efficiency
- Often multi-temperature, with some utilizing box-in-box configurations
- Strategically located near major population centers
- Grocery distribution centers are the quintessential example, and include multiple temperatures in addition to specialty rooms such as ripening rooms.

STEP 6

FINAL DESTINATIONS FOR THE COLD CHAIN

Common endpoints include:

- Direct-to-Consumer home delivery
- Retail, Grocery or Specialty Stores
- Institutional settings (education, healthcare, etc)
- Restaurants and eateries

