

Walk-In Cooler and Freezer Panels

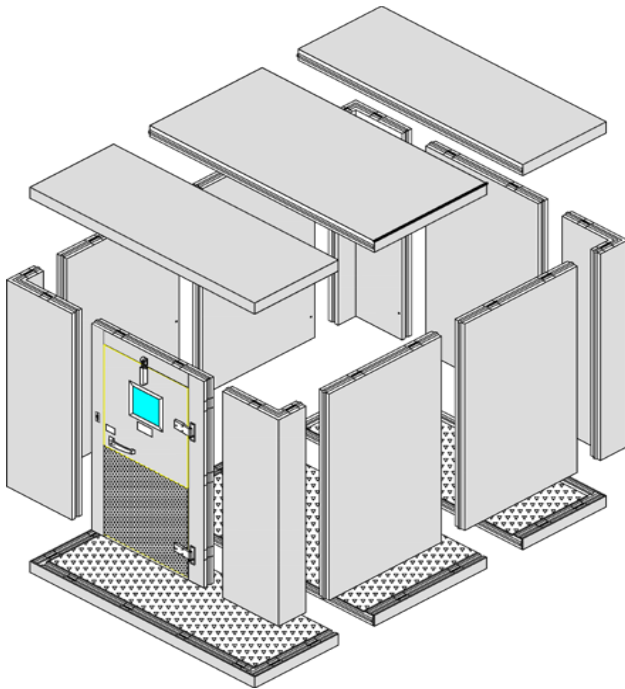


Engineering Reimagined™



Overview

Walk-in coolers and freezers manufactured by Arctic are of a modular design and construction, utilizing prefabricated insulated panels with metal skins. Modular panels allow for rapid, easy field assembly, disassembly, and modification by adding or exchanging for like panels. Assembly is accomplished by use of a standard 5/16" hexagonal (Allen) wrench rotating a cam-action hook-arm on the tongue side of the panel over the pin on the groove side of the adjacent panel which pulls and locks the panels together creating an airtight and vapor proof joint. Access ports for rotating the hook-arm are located on the inside of the walk-in.



Walk-in panels manufactured by Arctic meet or exceed federal energy efficiency requirements with an R-value for 4" thick panels of 29 for coolers and 32 for freezers. For the most demanding applications, Arctic manufactures 5-3/8" thick panels with an R-value of 39 for coolers and 43 for freezers.

Types Of Walk-In Panels

There are three common types of insulated modular panels in the walk-in cooler and freezer industry, which are listed below in order of popularity:

1. Hard rail foamed-in-place panels (also known as hard rail FIP or just FIP panels)
2. Soft rail foamed-in-place panels (also known as soft rail FIP or just FIP panels)
3. Soft rail glued panels (also known as laminated panels or lick and stick panels)

Arctic manufactures “hard rail foamed-in-place” panels in both its Florida and California factories.

HISTORICAL NOTE: Arctic’s Florida factory originally produced “soft rail glued panels”; purchasing blocks of premade foam and gluing metal to this foam to make walk-in panels. In 2018 Arctic acquired Duracold Refrigeration Manufacturing in California along with the exclusive rights to its leading edge hard rail foamed-in-place panel technology. In 2019 we made a significant capital investment to upgrade our Florida factory from legacy “soft rail glued panel” technology to modern hard rail foamed-in-place technology. Today, Arctic’s leading edge hard rail foamed-in-place panels produced in both California and Florida exceed even the most discriminating consultant specifications.

Hard Rail Foamed-In-Place Panel Advantages

Hard rail foamed-in-place panels offer a number of advantages to the end user:



1. 90-degree structural corners provide increased structural integrity. 90-degree structural corners are standard for walls up to 16 feet tall. Most walk-ins manufacturers produce low strength butt corners.

Hard Rail Foamed-In-Place Panel Advantages

2. Backing for shelving, tile, and other applications are foamed-in-place as an integral part of the structure and are not just “glued together”.
3. Galvanized steel backing for structural and seismic anchorage is foamed-in-place becoming an integral part of the walk-in structure allowing Arctic walk-ins to meet even the most stringent structural and seismic requirements. Arctic has 25 years of experience engineering walk-ins for seismic areas.
4. Galvanized steel backing for door hinges, handles, and other hardware is foamed-in-place becoming an integral part of the walk-in structure allowing for what we believe is the industry’s most robust door system.
5. Galvanized steel and wood backing for interior and exterior shelving and racking is foamed-in-place becoming an integral part of the walk-in structure forming a secure anchorage point.
6. Structural hard rail around the perimeter of each panel provides a level of structural integrity and panel strength not found in other technologies – allowing for taller wall panels and longer ceiling panel reducing the number of panel joints – ultimately leading to reduced installation costs and fewer air infiltration points.

Hard Rail Foamed-In-Place Panel Overview

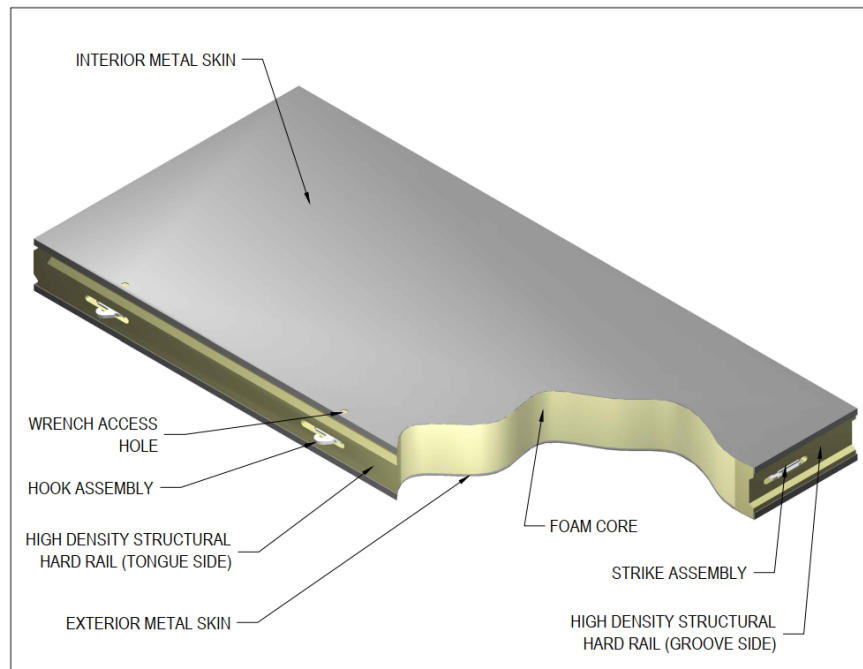
Arctic makes some of the longest panels available in the walk-in industry by offering 4” and 5-3/8” thick wall and ceiling panels up to 25 feet in length. The panels have undergone rigorous testing and analysis to demonstrate their compliance to regulations and recognized standards:

- International Energy Conservation Code (IECC)
- International Building Code (IBC)
- Energy Independence Security Act (EISA)
- Department of Energy (DOE) listed in CCMS database
- National Sanitation Foundation (NSF) Standard for Commercial Refrigerators and Freezers (NSF 7 / ANSI 7)
- ASTM E84 (UL 723) Standard Test Method for Surface Burning Characteristics of Building Materials
- State of Oregon PFC-Prefab
- Los Angeles Research Report (LARR)
- City of Houston Approved Fabricator

Additionally, our doors are certified to UL 471 Commercial Refrigerators and Freezers

Hard Rail Foamed-In-Place Panel Construction

Arctic's hard rail foamed-in-place panels are highly engineering and have been optimized over our 25 year + history of manufacturing this type of panel. The panels are constructed from the following components:



- **Foam Core:** This is the insulating foam of the panel. It is a polyurethane based insulation. The foam is environmentally friendly and does not contain any chlorofluorocarbons (CFCs) or hydrochlorofluorocarbons (HCFCs). Additionally, the foam chemistry incorporates flame retardants.
- **High Density Structural Hard Rail:** These rails make up the perimeter of the panel and provide a strong structural frame and anchorage point for the hook and strike assemblies making hard rail panels the strongest panels in the walk-in industry. Rails with tongues mate with rails with grooves to provide a secure connection between panels.
- **Metal Skin:** This is the material that we see when we look at a walk-in. Most walk-ins are made of 26-gauge galvanized steel. However, Arctic offers a wide variety of metal options including aluminum, stainless steel, and tile-ready in a near limitless range of thicknesses, finishes, textures, and colors.
- **Hook Assembly and Strike Assembly:** The hooks are installed on rails with tongues and the strikes are installed on the rails with grooves. During assembly of your walk-in, the hook rotates out and grabs the strike pulling the panels tightly together creating an airtight structural joint.

Hard Rail Foamed-In-Place Panel Construction



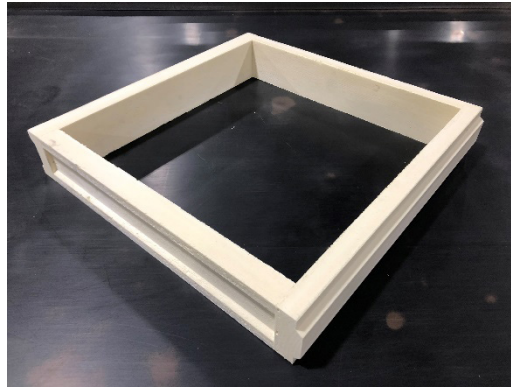
- Wrench Access Hole: Holes are added to the inside metal skin in order to allow the Allen wrench to access and turn the hook during assembly. These access holes are covered with plastic plugs once the installation of the walk-in is complete.

Hard Rail Panel Fabrication Process

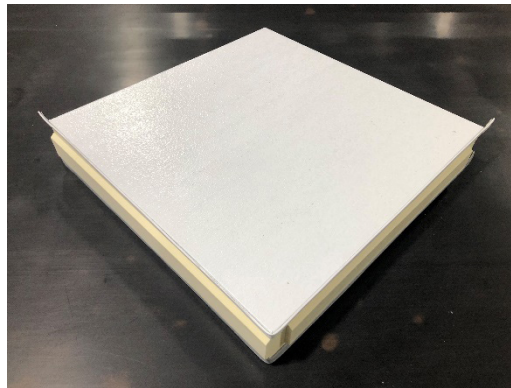


1. Hard rail is produced by injecting a 2-part structural foam mixture into metal molds. When the 2-parts of the foam mixture combine they chemically react to expand and fill the mold forming a solid structural foam. At Arctic we call them foam 2" x 4"s. Unlike a traditional wood 2" x 4", the strength of our foam 2" x 4"s is consistent throughout and they are not susceptible to mold, mildew, and rot.

Hard Rail Panel Fabrication Process



2. Hard rail is cut to size and used to construct the panel perimeter frame much like a “picture frame”.



3. Metal is cut and bent to size and placed over the hardrail “picture frame”. NSF/ANSI listed gaskets are adhered to the metal on the sides with tongued hardrail profiles. When assembled, the gaskets on the tongue side will make contact with the metal on the groove side providing an airtight seal.
4. The hardrail “picture frame” with metal assembly is placed in a panel press and a 2-part insulating foam mixture is injected into the panel. The foam mixture chemically reacts and expands to fill the panel and form a highly insulating light weight foam. If you have ever used insulating spray foams such as Great Stuff for DIY projects you have witnessed the expansion of insulating spray foam. We essentially use a very specialized formulation of spray foam at an industrial scale to manufacture walk-in panels. The expansion of our foam is controlled by injecting a precisely calculated amount of foam into the panel and containing it on four sides by the hardrail “picture frame” and two sides by the panel face metal while being held in-place by the panel press.

Hard Rail Panel Fabrication Process



The chemical reaction of the foam while in contact with the hardrail and metal provides an extremely tight bond – so tight that the foam separates from itself while adhering to the metal when tested as part of our quality control process.



The panel is removed from the press and inspected prior to assembling your new walk-in.