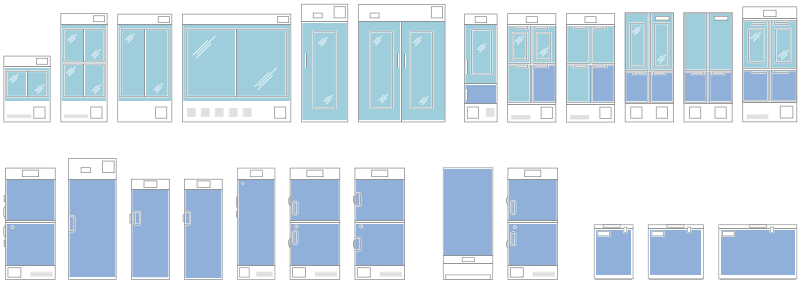
Quality of Cold:
What it Means and Why it Matters.

PRODUCT SELECTION:

The PHCbi pharmacy storage product line offers a range of pharmaceutical refrigerators and freezers and combination refrigerator/freezer cabinets.



PHC Corporation, Biomedical Division

Life Science Innovator Since 1966

Vaccine potency relies on protection against temperature extremes through proper storage at every level of the cold chain[1].

While the focus of temperature control is often on overheating, vaccines can be just as susceptible to freezing risks.

To help ensure vaccine efficacy, the US Center for Disease Control and Prevention (CDC) has established guidelines for temperature control necessary to protect vaccines.
The CDC has published guideline evidence to confirm that vaccines stored in refrigerators that deviate from suggested operating ranges (2°C to 8°C) can destroy efficacy and potency of temperature-sensitive vaccines.

These standards for pharmaceutical storage are expected to be implemented in the near future and will effectively eliminate vaccine and specialty pharmaceutical storage in household, commercial and dormitory style refrigerators.

Though this threat is often overlooked, temperature-sensitive vaccines represented over 31% of the $439 million UNICEF spent on all vaccines in 2005.[2]

In 2015 UNICEF acquired $1.724 billion worth of vaccines. It was determined that many vaccines, including influenza vaccines, were rendered ineffective due to improper storage.[3]

Our pharmacy storage cabinets are designed to meet current CDC pharmacy guidelines and anticipated future standards for vaccine storage.

Dedicated equipment for vaccine storage is the only way to ensure cold chain performance. While frozen products typically tolerate a broader temperature environment, refrigerated products must be kept from warming up or freezing.

It is this quality of cold that characterizes the PHCbi pharmacy storage line as a reliable and safe commitment to the protection of the health of the public.

Use of non-compliant household or domestic refrigerators for pharmaceutical storage is unsafe and costly. It creates liabilities for any audited dispensing pharmacy or health agency that cannot assure the efficacy of vaccines associated with government funded programs or other public health initiatives.

MEETS CDC PHARMACY RECOMMENDATION

MEETS CDC VACCINE RECOMMENDATION

Proper Vaccine Storage Essentials:

- ☑ Protection from freezing
- ☑ Temperature control accuracy
- ☑ Interior temperature uniformity
- ☑ Quick recovery
- ☑ Resistance to high ambient temperature

Vaccine Cold Chain Management

The anticipated national standards for vaccine storage help tighten cold chain management by ensuring the use of high performance refrigeration systems with electronic temperature controls that provide precise cabinet temperature needed for specific vaccines.

Within cold chain management, the only step that can be controlled by pharmacies is the storage and handling of vaccines. Though storage is one small part of the vaccine cold chain, proper end storage and handling is crucial to the continued efficacy of vaccines.

Key factors that establish the ***Quality of Cold*** and ensure proper cold chain management in our refrigerators and freezers include accuracy, uniformity, recovery and ambient tolerance.

1 *Vaccine Manufacturer*

2 *Vaccine Distribution*

3 *Arrival at Provider Facility*

4 *Storage and Handling at Provider Facility*

5 *Public Administration*

It's the ***Quality of Cold*** that assures a safe storage environment.

Quality of Cold is based on temperature control accuracy, interior temperature uniformity, temperature recovery and tolerance for high ambient temperatures and fluctuating electoral conditions.

ACCURACY PHCbi pharmaceutical refrigerators are factory pre-set at 5°C to assure interior storage temperature is sufficiently above the risk point of temperature-sensitive vaccines and other water-based pharmaceuticals.

UNIFORMITY Quality of cold starts with interior temperature uniformity, which assures safety of stored products regardless of location within the refrigerator.

DEFROST The cycle defrost and evaporator temperature sensor system ensures that defrost occurs only when necessary and automatically, so there is no need to turn off the power for defrosting. Irregular temperature increase during defrost is minimal with no temperature spikes. The evaporation heater also doubles as protection against drops in cabinet temperature caused by a low ambient temperature.

AMBIENT TOLERANCE PHCbi pharmaceutical refrigerators and freezers are designed to maintain the quality of cold in warm ambient conditions where temperature recovery, tolerance for brown-out electrical supply on hot days, and busy door opening traffic are common.

* For more detail about the installation environment, please find user's manual or product brochure from our web site.

PHCbi pharmaceutical refrigerators and freezers are engineered from the inside out to create, maintain and restore precise temperatures. Such precision and quality of cold cannot be found in household or commercial cabinets.

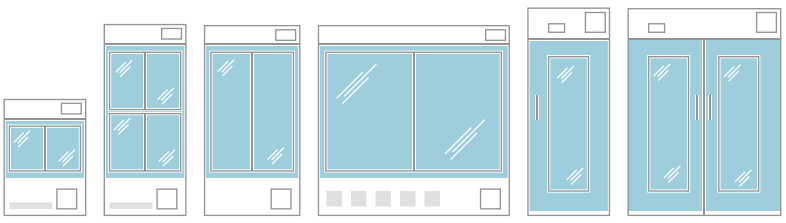
MPR-N450FH
Pharmaceutical Refrigerator with Freezer

MDF-U731M
-30°C Manual Defrost Biomedical Freezer

MPR-514
Pharmaceutical Refrigerator

PHARMACEUTICAL REFRIGERATORS

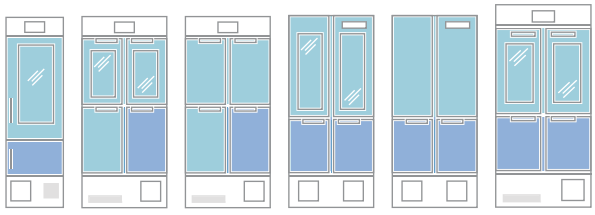
Refrigerator



MPR-S163 | MPR-S313 | MPR-514 MPR-514R | MPR-1014 MPR-1014R | MPR-722 MPR-722R | MPR-1412 MPR-1412R

PHARMACEUTICAL REFRIGERATORS with FREEZERS

Refrigerator
Freezer

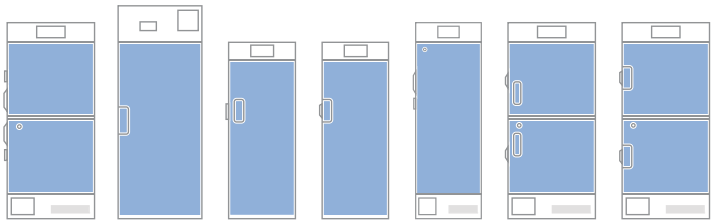


MPR-215F | MPR-414F | MPR-414FS | MPR-N450FH | MPR-N450FSH* | MPR-715F

*Limited countries and regions

-30°C, -40°C BIOMEDICAL FREEZERS

-30°C



MDF-MU539
MDF-MU539D
MDF-MU539HL

MDF-U731
MDF-U731M

MDF-U334

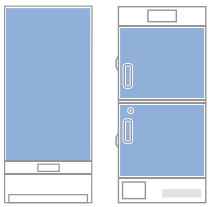
MDF-MU300H

MDF-MU339
MDF-MU339HL

MDF-U5312

MDF-MU500H

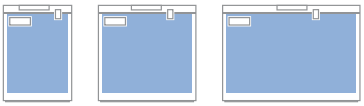
-40°C



MDF-U443

MDF-U5412

-30°C



MDF-137

MDF-237

MDF-437

1) "Module 2: The vaccine cold chain." World Health Organization (WHO). http://www.who.int/immunization/documents/IIP2015_Module2.pdf.

2) "Supply Annual Report 2005." UNICEF. http://www.unicef.org/supply/index_report.html.

3) "Supplies and Logistics." UNICEF. http://www.unicef.org/supply/index_immunization.html

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https://www.phchd.com/global/biomedical/