

Application Specific Preservation, Vaccine Storage

SR-L6111W, SF-L6111W
MPR-1410/1410R
MPR-721/721R
MPR-214F, MPR-414F



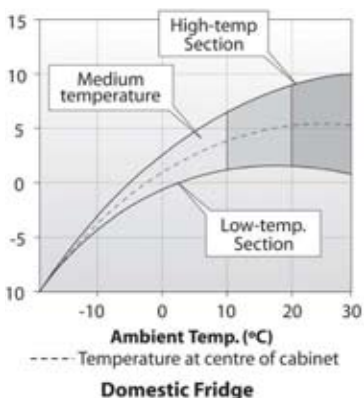
Ideally suited for vaccine storage in clinics, hospitals, retail pharmacies and laboratories. Size range includes compact undercounter freezers and refrigerators to large capacity combination units in upright configurations. SANYO provides purpose-built equipment to meet your requirements of precise and stable temperature control and monitoring of your vaccine supply.



Model: SR-L6111W & MPR-414F

Precise and Stable Vaccine Storage Environment

Globally, inadequate refrigeration and inadequate storage conditions have attributed to depleting our already diminishing vaccine supply. This decrease in critical vaccine levels can be particularly high when multi dose vials are used and where there is poor stock and clinic management. WHO and UNICEF have estimated that vaccine wastage rates in developing countries can reach as high as 50% for specific vaccines such as the 10-20 dose lyophilised vaccines. According to the CDC, improper storage is the most common vaccine delivery problem they encounter. Cold chain errors affect up to 44 million doses, costing between \$433 and \$481 million.



Accurate and uniform temperature distribution in a refrigerator plays a key role in ensuring the life of your vaccines, reagents and other biologicals. Research has shown that minor variances in temperatures such as those in a household refrigerator can compromise the effectiveness of your biologicals, risking up to thousands of dollars in valuable contents.

Household Refrigeration

Household refrigerators for the storage of vaccines, reagents and biologicals are no longer deemed adequate by medical professionals. These types of refrigerators do not offer precise temperature setpoint, hold, uniformity or recovery after door openings. So, while household refrigerators appear to be cost effective, initially, the long-term costs associated with variable temperature and lost biologicals can be significant.

Key Disadvantages of Household Refrigerators

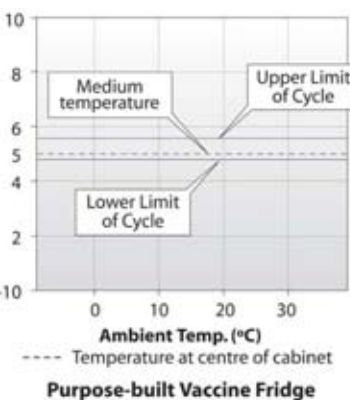
- Thermal mass is required to stabilize temperatures
- Numerous temperature zones restricts vaccine storage to certain areas of the refrigerator
- Air from evaporator is below 0°C, so any vaccines near air vents can be exposed to these temperatures. Air vent locations differ between manufacturers and models.
- Type and location of thermostat differs between manufacturers and models.
- Generally slow to react to increases in temperature and have a wide temperature tolerance.
- Temperature controller dial has arbitrary scale. Difficult to accurately set desired temperature.
- Change in ambient temperature affects internal temperatures.
- Poor temperature monitoring capabilities
- Defrost function can cause temperature fluctuations
- Poor temperature recovery.

- Large temperature fluctuations
- Inefficient use of cabinet and shelving space
- Strict loading requirements
- No alarms

Application Specific Preservation

SANYO offers a selection of Pharmaceutical Refrigerators and Freezers that include significant design and performance properties which differentiate them from conventional household refrigerators that are not suitable for pharmacy use.

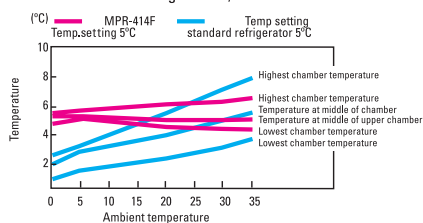
Key Advantages of SANYO Application Specific Refrigeration



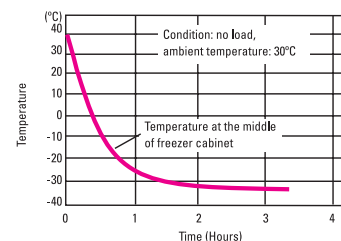
- Digital temperature sensors inside the fridge and controllers built specifically to maintain a set temperature within the 2°C to 8°C temperature range
- Evaporator operates at 2°C, therefore preventing vaccines from freezing
- Alarms and temperature monitoring for quick notification of adverse operating conditions
- Separate temperature monitor probe

- Fan-forced air circulation for precise temperature uniformity
- Efficient temperature recovery properties.
- Built to handle changes in ambient temperatures
- External digital temperature display
- Minimal temperature fluctuations around set point

Relationship between chamber temperature and ambient temperature change (compared to standard home-use refrigerators)



Freezer pull-down characteristics



Regulations and Requirements

Variations in temperature and failure to follow storage and monitoring requirements can drastically affect the effectiveness of vaccines through non-compliance of regulatory standards of governing agencies. Sanyo designs equipment for specific applications while meeting the standards of the Food and



Drug Administration (FDA), American Association of Blood Banks (AABB), Joint Commission on Accreditation of Healthcare Organizations (JCAHO), International Committee for Harmonization (ICH), and United States Department of Agriculture (USDA).

efficient, cost-effective cabinet design to deliver both refrigeration and freezer capacity in a single unit. With increasing federal regulations, storing your valuable vaccines, reagents and other biologicals will not suffice; see the comparison on the table below.

Vaccine	Storage Requirements
H1N1	2°-8°C (35°-46°F). Do not freeze.
DTaP, TdDt	2°-8°C (35°-46°F). Do not freeze.
Hepatitis A & B Vaccines	2°-8°C (35°-46°F). Do not freeze.
H. influenza type B	2°-8°C (35°-46°F). Do not freeze.
Haemophilus (HiB)	2°-8°C (35°-46°F). Do not freeze.
Influenza Vaccine	2°-8°C (35°-46°F). Do not freeze.
IPV	2°-8°C (35°-46°F). Do not freeze.
MMR, MR	2°-8°C (35°-46°F). Protect from light. (MMR Virus may be frozen.)
Measles Virus	2°-8°C (35°-46°F). Protect from light.
Rubella Virus	2°-8°C (35°-46°F). Protect from light.
Mumps Virus	2°-8°C (35°-46°F). Protect from light.
Pneumoccal	2°-8°C (35°-46°F). Do not freeze
Varicella Vaccine	Freeze immediately upon arrival. Store at or below -15°C (+5°F). Diluent can be stored at room temperature. Do not freeze diluent. May be stored at refrigerator temperature (2°-8°C - 35°-45°F) for up to 72 hours prior to reconstitution. Vaccine stored at 2°-8°C which is not used within 72 hours of removal from -15°C storage must be discarded.

Features	MPR Series	Domestic Refrigerator
CFC-Free, reliable temp. control not affected by ambient temp	yes	no
Digital Display of chamber temp.	yes	no
Precise temperature setting of chamber with microprocessor control	yes	no
Variable temp. control of Refrigerator (2-4°C)	yes	no
Variable temp. control of freezer (-20°C to -30°C)	yes	Max/Mid/Min
Uniform temp. at all shelf levels	yes	no
Separate operation of Refrigerator and Freezer	yes	18°C
Window for viewing	yes	no
Racks (SUS-304, MPR-41R)	yes	no
Monitoring hole/port	yes	some models yes
Temperature recorder (option)	yes	no
Door ajar option with indicator light and audible alarm	yes	some models yes
High/low alarm and under cooling and overheating protection	yes	no
Remote alarm terminal	yes	no
Set temp. deviation	yes	no
Self diagnostic function	yes	no
Unique automatic defrost system	yes	no
Condensate evaporator	yes	yes

Vaccine Storage Requirements

- Maintain required temperature range throughout the year
- Separate doors for refrigerator and freezer
- Large enough to hold year's largest vaccine inventory
- Dedicated to biologics*

*Recommended by the Centers of Disease Control

Effect of Temperature on Vaccines

Vaccines need to be kept in refrigerators or freezers at certain temperature ranges to remain potent.

Live vaccines

- Tolerate freezing
- Deteriorate rapidly after removal from freezer

Inactivated vaccines

- Damaged by exposure to freezing temperatures
- Tolerate short time out of refrigeration

MPR-Series Pharmacy Refrigerator

With the growing emphasis on proper storage of laboratory and pharmacy materials, SANYO MPR-Series Pharmacy Refrigerators with Freezer combine high performance refrigeration, control and alarm/monitoring systems with energy-

■ Necessary function, construction or performance for preservation of reagents and pharmaceuticals.

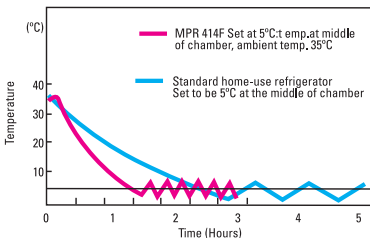


Refrigerators and Freezers Designed for Precise and Stable Vaccine Storage

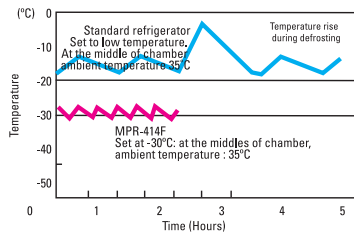
Specifications



Refrigerator pull-down data



Freezer chamber temperature cycle of MPR-414F compared to standard home-use refrigerators



Quiet, Energy Efficient Performance

- Two specially designed SANYO hermetically sealed compressors operate with quiet efficiency; two compressors allow independent cooling of both refrigerator and freezer compartments.
- Four door design reduces cold air loss during door openings; makes most efficient use of available space.
- Hot gas heated mullion prevents condensation and icing, maintains integrity of door gasket seal.
- SANYO developed CFC-free refrigerants are specially formulated for laboratory use.
- CFC-free foamed-in-place insulation minimizes performance variations due to ambient temperature changes.

Built-in Under the Counter Scientific Grade Laboratory Refrigerator, SR-L/SF-L Series

SANYO undercounter refrigerators and freezers feature stable temperature and uniformity with convenient door mounted temperature controls. Doors have key locks for added security.

- Superior temperature control and uniformity via a door mounted microprocessor controller and interior forced air circulation.
- Safe and secured storage behind a keyed locking door and optional padlock hasp.
- Laboratory-Ready™ with integrated alarm functions, remote alarm contacts and monitoring probe access port.
- Meets JCAHO standards for controlling medication access.

The cabinet offers superior temperature control and uniformity required for short-term and long-term storage of biologicals, reagents and other temperature sensitive materials. Compact and space efficient, the 6.1 cu.ft. undercounter refrigeration and the 5.4 cu.ft. undercounter freezer cabinets include a door-mounted microprocessor temperature control and digital display module with integrated alarm, monitoring and remote data functions.

Cabinet features include positive chamber air circulation for maximum temperature uniformity, and an access port for independent monitoring probe(s). The flat profile inner door enhances interior storage volume on adjustable open wire shelves.

Security considerations for protection of high value items include a controller lock-out function to prohibit unauthorized setpoint changes, and a keyed locking door with optional padlock hasp.

Door Mounted Controller



- Digital input of temperature with setpoint range from 1°C to 14°C (SR), -15°C to -25°C allows end user temperature flexibility
- Automatic tracking alarm +/-3°C around setpoint monitors critical temperature variances
- Door ajar alarm with alarm delay timer eliminates nuisance alarms
- Easy to read, angled L.E.D. display and keypad
- Remote alarm contacts for connecting to a centralized alarm monitoring system.

Vaccine Storage Unit Capacities

Model	Type	Capacity	Temperature
SR-L6111W	Undercounter Refrigerator	6.1 cu.ft.	-1 to -14°C
SF-L6111W	Undercounter Freezer	5.4 cu.ft.	-13 to -25°C
MPR-1410/1410R	Biomedical Freezer	48.4 cu.ft.	2 to 23°C
MPR-721/721R	Biomedical Freezer	24.2 cu.ft.	2 to 23°C
MPR-514/514R	Pharmaceutical Freezer	17.2 cu.ft.	2 to 14°C
MPR-1014/1014R	Pharmaceutical Freezer	36.5 cu.ft.	2 to 14°C
MPR-214F	Refrigerator/Freezer Combination	(R) 6.2 cu.ft. (F) 1.4 cu.ft.	2 to 14°C -20 to -30°C
MPR-414F	Refrigerator/Freezer Combination	(R) 12.0 cu.ft. (F) 2.9 cu.ft.	2 to 14°C -20 to -30°C



SANYO is committed to developing green technologies that provide energy efficiency resulting in lower operational costs with less impact on the environment.

Product conforms to RoHS (European Restriction of Hazardous Substance directives)



SANYO North America Corporation
Biomedical and Environmental Solutions Division
1300 Michael Drive, Wood Dale, IL 60191 USA

SANYO Canada, Inc.
201 Creditview Road, Woodbridge, Ontario L4L 9T1

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