



Thermo Scientific
Guide for Vaccine Storage

4



Four steps for

safe and secure
vaccine storage

Thermo
SCIENTIFIC

Selecting the right cold storage equipment is a critical decision for vaccine storage

- Refrigeration problems have been cited as a major cause for the \$20 million wasted each year from ruined vaccines in the U.S. Federal Vaccines for Children Program.¹
- In addition, the accidental freezing of temperature-sensitive vaccines is pervasive. A published study showed between 14% to 35% of refrigerators or transport shipments were found to have exposed vaccines to freezing temperatures.²
- Pharmacies and clinics today are recognizing the key differences between standard refrigerators and freezers and those designed specifically for vaccine protection.

¹ Welte, Melanie. 2007. Vaccines ruined by poor refrigeration. USA Today. http://www.usatoday.com/news/health/2007-12-04-spoiled-vaccines_N.htm (accessed April, 2008).

² Matthias Dipika M., Robertson Joanie, Garrison Michelle M, Newland Sophie, Nelson Carib. Freezing temperatures in the vaccine cold chain: A systematic literature review. Vaccine 25 2007: 3980-3986.

Thermo Scientific high-performance refrigerators and freezers are designed for vaccine storage

- Unlike household or commercial models, Thermo Scientific™ high-performance refrigerators and freezers are specifically designed to store high-value, critical storage such as vaccines.
- Temperature fluctuations are common in household and commercial units and that can jeopardize temperature-sensitive vaccines.
- Time AND temperature-sensitive auto defrost cycling is important to keep temperature fluctuations within a tight range.
- Thermo Scientific high-performance refrigerators and freezers meet the storage requirements established by the U.S. Vaccines for Children program.
- For added peace of mind, Thermo Scientific high-performance refrigerators and freezers are lockable, compatible with remote monitoring and are available with an optional temperature chart recorder.

Four steps to find the refrigerator or freezer that's right for your vaccines?

To help you determine the right high-performance refrigerator or freezer for your vaccines, follow these 4 steps:

Step 01:

Determine the vaccine's temperature requirements

01

Warnings

Vaccine	Recommended Storage Temperature (°F)	Recommended Storage Temperature (°C)	Warnings	
DT DTaP DTaP/HepB/IPV H1N1 HBIG Hepatitis A Hepatitis A/B Hib IPV MMR MCV4 PCV	Rotavirus Vaccine Td DTaP/Hib Tdap Hepatitis B Hepatitis B/HIB HPV TIV MR MPSV4 PPV	+35 °F to +46 °F	+2 °C to +8 °C	Do not freeze or expose to freezing temperatures
LAIV Varicella (Chickenpox) Vaccine Zoster (Shingles) Vaccine	MMRV	0 °F to -58 °F	-18 °C to -50 °C	No freeze/thaw cycles are permitted with this vaccine

Step 02:

Determine the cabinet size for your annual doses

What type of provider (doses per year)	The cold storage equipment you'll need
Very high volume (10,000 doses per year)	Pharmacy-grade or refrigerator-only unit; stand-alone freezer unit.
High volume (2,000-10,000 doses per year)	Laboratory/pharmacy refrigerator only (11 cu. ft. minimum); stand-alone freezer unit.
Medium volume (500-2,000 doses per year)	Laboratory/pharmacy refrigerator only (11 cu. ft. minimum); stand-alone freezer unit. Or, pharmacy-grade or undercounter unit.
Low volume (500 or less doses per year)	Laboratory/pharmacy refrigerator only (11 cu. ft. minimum); stand-alone freezer unit. Or, pharmacy-grade or undercounter unit.

Refrigerator requirements

- The refrigerator(s) must be used only for vaccine storage. Other medications may be stored in the same units but only as space allows and in limited circumstances.
- Maintain the required vaccine storage temperature of 35 °F to 46 °F (2 °C to 8 °C) year-round.
- Have an automatic defrost so the unit is free of any water, ice, frost or coolant leaks.
- Manual defrost refrigerators with visible cooling plates/coiling in the internal back wall are not acceptable.
- With the exception of influenza, there must be enough space to store the largest number of doses expected at one time. Vaccine storage is to be 2-3 inches away from all walls, doors, boxes and cold air vents.
- Refrigerator must be reliable and not in need of frequent repairs. (We strongly suggest a high-performance laboratory refrigerator over a household or commercial model).
- Doors must close properly and have secure sealing. Spring-loaded, automatic closing doors are recommended.
- A separate or built-in temperature control is necessary.
- No convertible features that switch to an all-freezer unit.
- A working NIST (National Institute of Standards and Technology) traceable thermometer is to be placed centrally on the refrigerator.
- Refrigerators that need water bottles to enhance stability should be avoided as water is often removed and temperature control becomes poor.
- Dorm style refrigerators are not recommended as they have wide temperature variations.

Freezer requirements

- The freezer(s) must have enough space to store vaccines along with a sufficient amount of frozen cold packs.
- Maintain the required vaccine storage temperatures of 0 °F to -58 °F (-18 °C to -50 °C) or below year-round.
- Have an automatic defrost so the unit is free of any water, ice, frost or coolant leaks.
- Manual defrost freezers are acceptable only if the office has an alternate place to store the vaccines while defrosting.

Step 03:

Determine the maximum amount of vaccines your practice will store

For your convenience, we have provided the following process to estimate the maximum number of vaccines that your practice will store and the type of laboratory refrigerator and freezer you will need to meet VFC requirements.



Refrigerator

Add the number of doses on hand from your last order form.

Influenza vaccine +

Private vaccine +

H1N1 vaccine +

Total doses =

Multiply max inventory x 1.25

Maximum doses =

Freezer

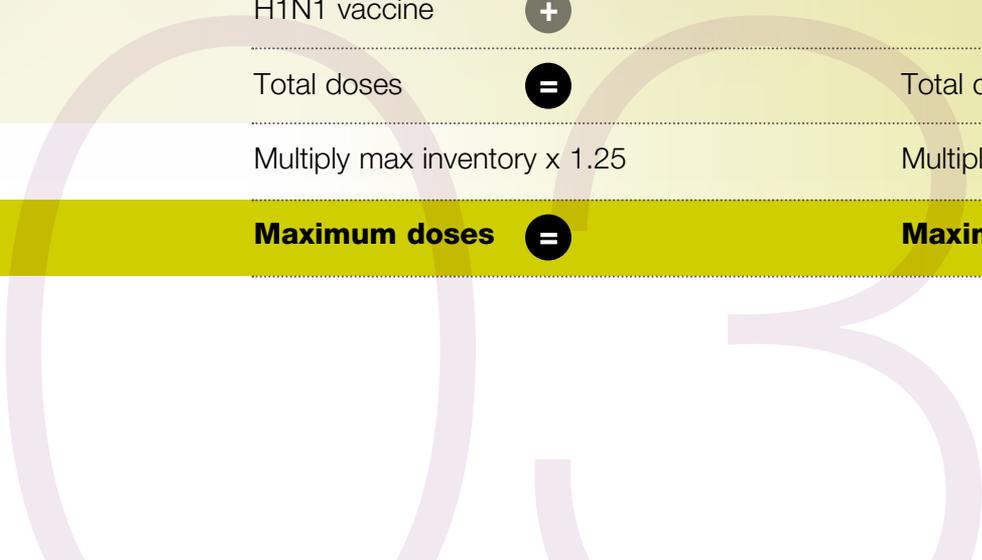
Add the number of doses on hand from your last order form.

Private MMR and Variella vaccine +

Total doses =

Multiply max inventory x 1.25

Maximum doses =



Step 04:

Choose your refrigerator or freezer

04



Refrigerators

Doses/ Capacity	Cu. Ft. (Liters)	Model No.	Thermo Scientific™ High-Performance Refrigerator	Defrost	Doors	Shelves/ Drawers	Average Stability (°C)	Average Uniformity (°C)	Chart Recorder
901-2000	40 (1133)	REL4504	Laboratory Refrigerator 45.8 cu. ft. (1297L)	Auto	2 sliding glass	8 shelves	4,2	2,6	Optional
701-900	21-23 (595-651)	JLR3004	Laboratory Refrigerator 29.2 cu. ft. (826L)	Auto	1 solid	4 shelves	3,3	1,2	Optional
		JRG3004	Laboratory Refrigerator 29.2 cu. ft. (826L)		1 glass	4 shelves			Optional
		JPR3004	Pharmacy Refrigerator 29.2 cu. ft. (826L)		1 glass	6 drawers			Optional
		JBB3004	Blood Bank Refrigerator 29.2 cu. ft. (826L)		1 glass	6 drawers			Included
		JLR2304	Laboratory Refrigerator 23.3 cu. ft. (659L)		1 solid	4 shelves			Optional
		JRG2304	Laboratory Refrigerator 23.3 cu. ft. (659L)		1 glass	4 shelves			Optional
		JPR2304	Pharmacy Refrigerator 23.3 cu. ft. (659L)		1 glass	6 drawers			Optional
		JBB2304	Blood Bank Refrigerator 23.3 cu. ft. (659L)		1 glass	6 drawers			Included
400-700	11-16.7 (311-473)	JLR1204	Laboratory Refrigerator 11.5 cu. ft. (326L)	Auto	1 solid	4 shelves	4,1	1,1	Optional
		JRG1204	Laboratory Refrigerator 11.5 cu. ft. (326L)		1 glass	4 shelves			Optional
		JPR1204	Pharmacy Refrigerator 11.5 cu. ft. (326L)		1 glass	6 drawers			Optional
		JBB1204	Blood Bank Refrigerator 11.5 cu. ft. (326L)		1 glass	6 drawers			Included
100-399	4.9-6.1 (139-173)	MR05PA-SEE-TS	Laboratory Refrigerator 5.4 cu. ft. (153L)	Auto	1 solid	2 shelves	3,6	1,1	Optional
		JLR404	Laboratory Refrigerator 4.9 cu. ft. (133L)		1 solid	3 shelves			Optional
		JRG404	Laboratory Refrigerator 4.9 cu. ft. (133L)		1 glass	3 shelves			Optional
		JBB404	Blood Bank Refrigerator 4.9 cu. ft. (133L)		1 glass	2 drawers			Included

Freezers

Doses/ Capacity	Cu. Ft. (Liters)	Model No.	Thermo Scientific™ High-Performance Freezers	Defrost	Doors	Shelves/ Drawers	Average Stability (°C)	Average Uniformity (°C)	Chart Recorder
201-6000	7-14.8 (198-419)	JLF1230	Laboratory Freezer 11.5 cu. ft. (326L)	Auto	1 solid	4 shelves	10,4	4,1	Optional
0-200	3.5-4.9 (99-139)	JLF430	Laboratory Freezer 4.9 cu. ft. (133L)	Auto	1 solid	3 shelves	7,9	1	Optional

Options and Accessories

Model No.	Description
6183-7	Factory-installed chart recorder (not available for 4.9 cu. ft./133L and 5.4 cu. ft./153L)
6383-7	Customer-installed, free-standing chart recorder (all models)
6184	Replacement chart recorder paper, -40 °C to +25 °C, box of 50
6402	Surge suppressor (specify voltage with order)
6224TA	Deluxe electronic remote alarm (requires dedicated telephone line)
5612-1A	Remote alarm module (specify voltage with order)
6903	Alarm delay module (specify voltage with order)
6907-1	4-20 milliamp transmitter for refrigerators (factory installed)
6907-2	4-20 milliamp transmitter for refrigerators (customer installed)
4706	4-20 milliamp transmitter for freezers

Checklist before purchasing your Thermo Scientific high-performance laboratory refrigerator or freezer

- ✓ The unit must be positioned in a well-ventilated area and away from direct sunlight
- ✓ There must be enough space around the unit so air can flow freely
- ✓ There must be an electrical outlet nearby devoted exclusively to the unit
- ✓ The unit's electrical outlet must not depend on a light switch
- ✓ Consider ordering the temperature/chart recorder accessory to archive temperature history

When your Thermo Scientific high-performance laboratory refrigerator or freezer arrives

- ✓ Plug the unit into the outlet (nothing else must share this outlet)
- ✓ Place the NIST traceable thermometer in the center of the unit (sold separately)
- ✓ Load refrigerated vaccines when the cabinet has reached the setpoint temperature of +4 °C
- ✓ Load freezer vaccines when the cabinet has reached the setpoint temperature of -20 °C
- ✓ Record the temperatures twice a day in a log book

Consider a wireless monitoring option

Thermo Scientific™ Smart-View™ wireless monitoring solution safeguards the integrity of precious samples by continuously monitoring critical parameters of laboratory equipment and securely logging data to give you peace-of-mind. This wireless solution features audit trail traceability to assist with conformance to 21 CFR part 11, and other regulatory requirements.

thermoscientific.com/smart-vue

thermoscientific.com/vaccinestorage



© 2013 Thermo Fisher Scientific Inc. All rights reserved. Sensaphone is a registered trademark of Phonetics, Inc. Cryo-Gloves is a registered trademark of Tempershield, Inc. Microsoft and Windows are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. All other trademarks are the property of Thermo Fisher Scientific Inc. and its subsidiaries. Specifications, terms and pricing are subject to change. Not all products are available in all countries. Please consult your local sales representative for details.

Australia +61 39757 4300
Austria +43 1 801 40 0
Belgium +32 53 73 42 41
China +86 21 6865 4588 or
+86 10 8419 3588
France +33 2 2803 2180
Germany national toll-free 0800 1 536 376
Germany international +49 6184 90 6000

India toll free 1800 22 8374
India +91 22 6716 2200
Italy +39 02 95059552
Japan +81 45 453 9220
Netherlands +31 76 579 55 55
New Zealand +64 9 980 6700
Nordic/Baltic/CIS Countries
+358 9 329 10200

Russia +7 812 703 42 15
Spain/Portugal +34 93 223 09 18
Switzerland +41 44 454 12 22
UK/Ireland +44 870 609 9203
USA/Canada +1 866 984 3766
(866-9-THERMO)

Other Asian Countries +852 2885 4613
Countries not listed: +49 6184 90 6000

Thermo
SCIENTIFIC

Part of Thermo Fisher Scientific