

A HEALTHCARE PROFESSIONAL'S

Guide to *safe and secure* vaccine storage



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Household and commercial-grade refrigerators and freezers are *not* for vaccine storage

- These models have defrost cycles that result in periods where temperatures inside the cabinet fall out of range of the temperature parameters required to keep vaccines effective
- In addition, household and commercial-grade models are not engineered to provide consistent temperatures throughout the cabinet. This could mean vaccines stored in the back of a refrigerator remain effective while those stored in the front are not
- There is the potential for icing—especially in the back of a refrigerator—which can be deadly for temperature-sensitive vaccines



Here is what the U.S. Centers for Disease Control (CDC) recommends for vaccine storage* and how Thermo Scientific™ high-performance refrigerators and freezers meet those requirements:

CDC recommendations*	Thermo Scientific high-performance refrigerators and freezers
Microprocessor-based temperature control with a digital temperature sensor (thermocouple, resistance temperature detector [RTD], or thermistor)	<ul style="list-style-type: none"> ✓ Microprocessor control allows users to set temperature range and setpoint; touch-screen control on TSX undercounter refrigerator ✓ Refrigerators and freezers are compatible with Thermo Scientific Smart-Vue™ and other wireless monitoring solutions
Fan-forced air circulation, with powerful fans or multiple cool air vents inside the unit that promote uniform temperature and fast temperature recovery	<ul style="list-style-type: none"> ✓ Powerful industrial compressors provide fast temperature recovery from door openings ✓ Positive-direction, forced-air circulation maintains temperature uniformity throughout the cabinet ✓ User interface alarms in the event of power failure, door ajar and other events that could threaten interior cabinet temperature stability
Use purpose-built units designed to either refrigerate or freeze (can be compact, under-the-counter-style or large units)	<ul style="list-style-type: none"> ✓ Full range of 2-8°C high-performance refrigerators; -20°C and -30°C freezers ✓ Undercounter models up to spacious double and triple door upright models for large dosage requirements

*Vaccine & Storage Handling Toolkit, pages 13-14. U.S. Dept. of Health and Human Services, Centers for Disease Control. June 2016.

Before selecting a high-performance refrigerator or freezer for vaccines:

Review the CDC vaccine storage recommendations*

- Refrigerated vaccines should be stored at temperatures between 2°C and 8°C (36°F and 46°F)
- The thermostat should be set at midrange to achieve a temperature of about 5°C (40°F), which will decrease the likelihood of temperature excursions
- Vaccines stored in the freezer should maintain temperatures between -50°C and -15°C (-58°F and +5°F). The thermostat should be at the factory-set or midpoint temperature setting to assure appropriate frozen storage temperatures



Know your maximum dosage requirements





For refrigerated vaccines, add the number of doses from your last order form

Influenza vaccine	+	
Private vaccine	+	
H1N1 vaccine	+	
Total doses	=	
Multiply doses	x 1.25	
Maximum doses	=	

For vaccines requiring freezer storage, add the number of doses from your last order form

Private MMR	+	
Varicella vaccine	+	
Total doses	=	
Multiply doses	x 1.25	
Maximum doses	=	

Find the *right* refrigerator for your 2°C to 8°C vaccines

Type of vaccine needing refrigeration (2°C to 8°C with no freezing temperatures)	TSX undercounter refrigerator	GP undercounter refrigerator	Revco RGL1204 refrigerator	TSX pharmacy refrigerator	Revco REL4504 refrigerator
DT DTaP DTaP/HebB/IPV H1N1 HBIG Hepatitis A Hepatitis A/B Hib IPV MMR MCV4 PCV Rotavirus Td DTaP/Hib Tdap Hepatitis B Hepatitis B/HIB HPV TIV MR MPSV4 PPV					
Model number	TSX505GA (glass door) TSX505SA (solid door)	MR05PA-SEEE-TS	RGL1204A	TSX2305PA	REL4504A
Max doses	100-399	100-399	400-700	701-900	901-2000
Refrigerator style	Undercounter	Undercounter	Upright single door	Upright single door	Upright sliding 2-door
Exterior dimensions (H x W x D)	31.8 x 23.6 x 26 in. (81 x 60 x 66 cm)	34.7 x 24 x 24.1 in. (86.7 x 61 x 61.3 cm)	73.6 x 24 x 29.3 in. (186.9 x 61 x 74.3 cm)	78.6 x 28 x 37 in. (199.6 x 71.1 x 94 cm)	79.1 x 56.6 x 34.5 in. (201 x 143.5 x 87.6 cm)
Interior storage capacity	5.5 cu. ft. (156 L)	5.4 cu. ft. (153 L)	11.5 cu. ft. (326 L)	23 cu. ft. (650 L)	45.8 cu. ft. (1297 L)
Shelves/drawers	3 shelves	2 shelves	4 shelves	6 wire basket drawers	8 shelves
Door security	Password protected	Key lock	Key lock	Key lock	Key lock
Setpoint interface	Touch-screen	Digital	Microprocessor	Micorprocessor	Microprocessor
Weight	155 lbs. (70 kg)	210 lbs. (95 kg)	280 lbs. (127 kg)	490 lbs. (222 kg)	670 lbs. (304 kg)

Find the *right* freezer for your vaccines requiring frozen storage

Type of vaccine needing a freezer (-15°C to -50°C with no freeze/thaw cycle)	GPF countertop manual defrost -20°C freezer	Revco -30°C auto-defrost freezer	TSX -30°C auto-defrost freezer
LAIV MMRV Varicella Zoster			
Model number	MF02PA-SAE-ES	ULT430A	TSX2330FA
Max doses	0-200	100-399	201-6000
Refrigerator style	Undercounter	Undercounter	Upright single door
Exterior dimensions (H x W x D)"	20.8 x 18.7 x 19.7 in. (52.8 x 47.5 x 50 cm)	28.9 x 24 x 24 in. (73.4 x 61 x 61 cm)	78.6 x 28 x 37.5 in. (199.6 x 71.1 x 95.3 cm)
Interior storage capacity	1.13 cu. ft. (32 L)	4.9 cu. ft. (139 L)	23 cu. ft. (650 L)
Shelves/drawers	1 shelf	3 shelves	4 shelves
Door security	Key lock	Key lock	Key lock
Setpoint interface	Digital	Microprocessor	Microprocessor
Weight	44 lbs. (20 kg)	212 lbs. (96 kg)	88 lbs. (176 kg)

Consider digital datalogging or wireless monitoring for your vaccine refrigerator or freezer

- The CDC recommends the use of a continuous monitoring and recording digital data logger (DDL) with a current and valid Certificate of Calibration Testing (also known as a Report of Calibration), set at a minimum recording interval of at least every 30 minutes
- Unlike a simple minimum/maximum thermometer, which only shows the warmest and coldest temperatures reached in a unit, continuous monitoring and recording DDLs provide detailed information on all temperatures recorded at preset intervals

Your facility should have a DDL for:

- Each vaccine storage unit
- Each emergency transport unit (this is particularly important if there are more transport units than storage units)
- At least one backup DDL in case a primary device malfunctions or is out for calibration testing (make sure the backup device has a different calibration testing schedule than the primary device so it is available when the primary device is being tested)

Thermo Scientific Smart-Vue™

- Smart-Vue is a wireless monitoring solution, designed to help safeguard the integrity of vaccines by continuously monitoring the critical parameters of refrigerators and freezers and securely datalogging
- Smart-Vue notifies you remotely in the event of an event such as a power or mechanical failure, requiring immediate attention
- For regulated environments, Smart-Vue features audit trail traceability to assist with conformance to 21 CFR, part 11, and other regulatory requirements

Checklist before purchasing a vaccine storage refrigerator or freezer

- ✓ Have a space for the unit ready in a well-ventilated area, away from direct sunlight
- ✓ Make sure there is enough space around the unit so air can flow freely
- ✓ Have an electrical outlet devoted exclusively to the refrigerator or freezer
- ✓ Make sure the electrical outlet is not dependent on a light switch
- ✓ Determine your maximum dosage requirements and appropriate refrigerator or freezer
- ✓ Consider a Smart-Vue wireless monitoring solution with your purchase



Find out more at thermofisher.com/vaccinestorage

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