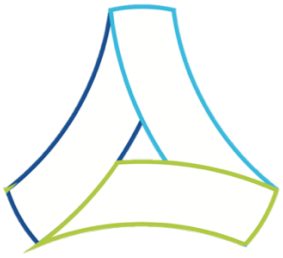

E002
Refrigerated vehicles

The products in this category include refrigerated vehicles of various sizes used for transporting vaccines and other temperature-sensitive biologicals, as well as related variations and options.

A refrigerated vehicle is a road transport vehicle such as a van, truck or semi-trailer whose isolated, thermostatically controlled cargo compartment is maintained at a temperature different (lower or higher) than the external ambient conditions.

Details regarding the products included in each sub-category of E002, as well as guidelines, performance specifications and verification protocols for this category, can be accessed through the drop-down sections below.

E002.1: REFRIGERATED VEHICLES

Refrigerated vehicles include vans, trucks and semi-trailers that have an insulated, thermostatically controlled cargo compartment and a dedicated refrigeration unit capable of maintaining a controlled temperature range.

Vans and small trucks typically have refrigeration units powered directly by the vehicle's engine. Larger trucks and semi-trailers have independent, diesel-powered refrigeration units. Both types may also have electrical backup so that they can be plugged into the main electric grid when parked.

Further guidance on how to transport vaccines using refrigerated vehicles is provided in WHO Technical Report Series, No. 961, Annex 9: Model guidance for the storage and transport of time- and temperature-sensitive pharmaceutical products, Supplement 12: Temperature controlled transport operations by road and by air (May 2015).

Guidance on the loading and operating of refrigerated vehicles is available in the generic operating procedure E7-05: Loading and operating refrigerated vehicles, issued by WHO's Effective Vaccines Management Initiative. National immunization programmes should review and adapt this guidance to the national vaccine handling procedure and to standardize procedures when using refrigerated vehicles.

E002.2: RELATED VARIATIONS AND OPTIONS

Temperature monitoring devices (TMDs) are a key component of a quality-assured, temperature-controlled transport system. TMDs are specified in the IMD-PQS performance specification E002/RV01.3: Refrigerated vehicles.

E002.3: CHOOSING REFRIGERATED VEHICLES

Guidance for the choice of appropriate refrigerated vehicles is forthcoming from WHO.

End-users of insulated containers and their procurement agents are advised to consider the following points when choosing vaccine storage equipment from this category:

- For each vehicle used to deliver vaccines, the routine trips must be mapped, recording the destinations, the typical time needed to complete the journey either as a "loop trip" or a "there-and-back trip" and, if needed, the location of power outlets 415/230-volt sockets for emergency back-up cooling. The time each vehicle will require to compete the delivery route should be estimated. (See WHO Technical Report Series, No. 961, Annex 9: Model guidance for the storage and transport of time- and temperature-sensitive pharmaceutical products, Supplement 14: Transport route profiling qualification (May 2015)).
- Any load sharing with vaccines and other temperature sensitive products should be agreed, as part of an integrated supply chain implementation. (See, for example, Optimize: Tunisia Report (April 2013) and a discussion facilitated by WHO, UNICEF and the GAVI Alliance (3 January 2014).
- Future load volumes should be estimated to the extent possible. See the Vaccine volume calculator 2012 and the Vaccine volume calculator manual.
- It is always important to adhere to the proper loading protocol of refrigerated vehicles, including any requirements to maintain a minimum distance from ceiling, walls and cooling units.
- During route planning and selection of refrigerated transport vehicles, it is important to verify that each vehicle will not only provide the net storage capacity needed for all the distribution points on a single route but also meet the needs of the operating environment. (See WHO Technical Report Series, No. 961, Annex 9: Model guidance for the storage and transport of time- and temperature-sensitive pharmaceutical products, Supplement 12: Temperature controlled transport operations by road and by air (May 2015).) When transporting by truck it is also important to estimate the weight of vaccine shipments to ensure that the maximum load limit of a vehicle is not exceeded and that roadway restrictions are observed to avoid delays or problems at checkpoints.

E002.4: HOW TO CALCULATE THE AVAILABLE CAPACITY OF A REFRIGERATED VEHICLE

Calculate net storage capacity by multiplying the gross volume by the standard utilization factor of 0.67.

CATEGORY DOCUMENTATION, GUIDANCE FOR MANUFACTURERS/SUPPLIERS & SUPPORTING INFORMATION FOR USERS

Performance specification

PQS performance specification E002/RV01.3: Refrigerated vehicles

Verification protocol

PQS type-examination protocol E002/RV01-VP.3: Refrigerated vehicles

Guidance for manufacturers/suppliers

Guidelines on the international packaging and shipping of vaccines

IMD-PQS Guidelines for Prequalification Holders

Supporting information for users

How to calculate vaccine volumes and cold chain capacity requirements

WHO Immunisation Devices - Performance, Quality & Safety

E002: Refrigerated Vehicles

Product name:	**CF850**
IMD-PQS Code:	E002-001
Status:	Prequalified
Date of acceptance:	03 Aug 2021
Appliance type:	E002
Product description:	Refrigerated Vehicle
Manufacturer:	Toyota Tsusho Corporation
Manufacturers Reference:	CF850
Country of Manufacture:	Japan
Address:	2-3-13 Konan Minato-ku Tokyo 108-8208 Japan Japan
Telephone:	+81-50-3176-0941
Email:	yuta_ohashi@toyota-tsusho.com
Website address:	www.toyota-tsusho.com
Supplied to WHO Regions:	AFRO
Valid until:	31 May 2025

Specifications

PRODUCT IDENTIFICATION

Supplied to WHO Regions	AFRO

PRODUCT SPECIFICATIONS - MAIN

Type of refrigerated vehicle	Standard Refrigerated Vehicle	**Smallest gross capacity m3**	0.85
Largest gross capacity m3	0.85	**Temperature readout and alarm in cab(°C)**	Yes
Downloadable temperature tracking	Yes	**Programmable temperature control**	Yes
Foaming Agent	Yes	**Type of Foaming Agent**	C5H10
Cold climate protection? (<4°C)	Yes	**Auto defrost**	Yes
Insulation 0.4/m2/ degrees C or better	Yes		

PRODUCT SPECIFICATIONS - ADDITIONAL

Type (Brand) supplied	For chassis: Toyota Land Cruiser 78	**Vehicle chassis manufacturer**	Toyota Motor Corporation
Fuel - Petrol option	Yes	**Fuel - Diesel option**	Yes
24 hour fuel standby / Failure backup	Yes	**Single Phase Electric Standby / Failure Backup**	Yes
Manual transmission	Yes	**Automatic transmission**	Yes
Vehicle speed limiter	Yes	**x-drive**	Yes
Backup cooling	Petrol backup cooling	**GPS vehicle tracking**	No
Left hand drive available	Yes	**Right hand drive available**	Yes

AVAILABLE OPTIONS

Tail lift available	No	**Cold strip curtain available**	No
Transvers movable partition	Yes	**Rear cab for overnight**	Yes
Storage	Foldable stacking boxes		

OTHER

Heat Extraction Capacity X2.25@30°C (J)	Yes	**Recent Montreal Protocol Refrigerant Gas Used**	Yes

Comments	Smallest gross capacity: 0.85 x-drive: 2 x 4

WARRANTY, INSTALLATION AND MAINTAINENCE

Warranty period (months)	12.00

QUALITY STANDARD

Specification Reference	Applicable PQS specification: E002/RV1.3Applicable PQS VP(s): E002/RV01-VP.3

PRODUCT SITES

Organization name	Toyota Tsusho Corporation
Address	2-3-13 Konan Minato-ku Tokyo 108-8208 Japan Japan

Current PQS status:	*Prequalified*	**Valid until:**	*31 May 2025*

Note: If Current PQS status is 'Suspended' or 'Withdrawn', this product is NOT to be purchased.