



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 complete 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](#)



E002: Refrigerated Vehicles



Product name:	CF850
IMD-PQS Code:	E002-001
Status:	Prequalified
Date of acceptance:	03 Aug 2021
Appliance type:	E002
Manufacturer:	Toyota Tsusho Corporation
Manufacturers Reference:	CF850
Country of Manufacture:	Japan
Address:	9-8, Meieki 4-chome Nakamura-ku Nagoya Aichi Japan
Telephone:	+81-50-3176-0941
Email:	yuta_ohashi@toyota-tsusho.com
Website address:	www.toyota-tsusho.com
Supplied to WHO Regions:	AFRO;AMRO;EMRO;EURO;SAERO;WPRO
Valid until:	31 May 2027

Specifications

PRODUCT IDENTIFICATION

Supplied to WHO Regions	AFRO;AMRO;EMRO;EURO;SAERO;WPRO
--------------------------------	--------------------------------

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

PRODUCT SITES

Organization name	Toyota Tsusho Corporation
Address	9-8, Meieki 4-chome Nakamura-ku Nagoya Aichi Japan

Current PQS status:	<i>Prequalified</i>	Valid until:	<i>31 May 2027</i>
---------------------	---------------------	--------------	--------------------

Note: If Current PQS status is 'Suspended' or 'Withdrawn', this product is NOT to be purchased.