



TITLE: Refrigerated vehicles – Performance specification

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1. Scope

This document provides a basic specification for all sizes of refrigerated vehicles onto which clients can select variations and add options.

2. Normative references

For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ATP (Agreement on the International Carriage of Perishable Foodstuffs and on the Special Equipment to be used for such Carriage).

Montreal Protocol - most recent standard on use of refrigerant gases.

EN 10152: Electrolytic zinc coated cold rolled steel flat products for cold forming; Technical delivery conditions.

EN 10169-1: Continuously organic coated (coil coated) steel flat products - Technical delivery conditions.

ISO 9001: Quality Management Systems – Requirements.

ISO 14001: Environmental management systems - Requirements with guidance for use.

ISO 20282-1: Ease of operation of everyday products - Part 1: Context of use and user characteristics.

EN 12830: 1999 (under revision), or equivalent: Temperature recorders for the transport, storage and distribution.

BS EN 3 Parts 1 to 6, or equivalent: portable fire extinguishers.

NFPA 1802: Standard on Personal Portable (Hand-Held) Two-Way Radio Communications Devices.

WHO/PQS/E006/TR03.1: Programmable electronic temperature and event logger

systems with integral alarm and auto-dialler options.

WHO/PQS/E006/TR03-VP2.1: Programmable electronic temperature and event logger systems with integral alarm and auto-dialler options – Quality Assurance protocol.

WHO/PQS/E006/TR05.1: User-programmable temperature data loggers.

Directive 2002/96/EC of the European Parliament and of the Council

Directive 2004/108/EC of the European Parliament and of the Council.

3. Terms and definitions

Annual review: The 12-monthly review which all PQS pre-qualified manufacturers and suppliers are required to pass in order to remain on the register of pre-qualified companies.

Cold climate freeze prevention: Any mechanism which prevents the temperature inside a refrigerated vehicle from dropping below +2°C, under low ambient temperature conditions, down to the temperature specified by the employer, at the time of procurement, subject to a minimum of -10°C.

Employer: The organization that contracts with the legal manufacturer or reseller who will supply the vehicle and maintenance advisory services described in the Performance specification¹.

Evaluator: An individual or organization (including a testing laboratory) responsible for evaluating the suitability of the components and services described in this specification for inclusion in the register of PQS pre-qualified products.

Hot zone: Hot zone units must operate at a steady +43°C ambient temperature and over a +43°C/+25°C day/night cycling temperature range.

In writing: means communication by letter, fax or email.

Legal Manufacturer or supplier: The natural or legal person with responsibility for the design, manufacture, packaging and labelling of a product or device before it is placed on the market under his own name, regardless of whether these operations are carried out by that person himself or on his behalf by a third party.

Maintenance Contractor: A person or organization contracted by the employer to maintain the installation.

Moderate zone: Moderate zone units must operate at a steady +27°C ambient temperature and over a +27°C/+10°C day/night cycling temperature range.

Montreal Protocol: Montreal Protocol on Substances that Deplete the Ozone Layer.

QA Assessor: the person or organization appointed by the employer to assess the suitability of candidate approved installers, to evaluate their proposals and to monitor the installation and commissioning of the installation on site.

QA: Quality Assurance.

Region: A contiguous geographical area within which the legal manufacturer or supplier has previously supplied vehicles in low and middle income countries.

Reseller: A commercial entity, licensed to act on behalf of a legal manufacturer, and which carries product liability and warranty responsibilities no less onerous than those carried by the legal manufacturer.

Temperate zone: Temperate zone units must operate at a steady +32°C ambient temperature and over a +32°C/+15°C day/night cycling temperature range.

User: The person responsible for the day-to-day operation and temperature monitoring of the vehicle.

¹ WHO PQS E002 Performance specifications 31July2017.doc

4. Vehicle Specifications

- 4.1 Base Vehicle: Chassis Cab with fixed refrigerated body.
- 4.2 Drive: 2X4.
- 4.3 Steering wheel: Left or right to be specified.
- 4.4 Transmission: Manual.
- 4.5 Fuel: Diesel.
- 4.6 Colour: White.
- 4.7 Air conditioning.
- 4.8 Front-towing hook.
- 4.9 Warning audible and visual signals when truck is reversing.
- 4.10 Lockable spare wheel.
- 4.11 Lockable doors to body (with top and bottom latches), glove box, and fuel cap.
- 4.12 Seat belts to be fitted to all seats.
- 4.13 Front air-bags to be fitted to both driver and passenger sides.
- 4.14 Side air-bags to be fitted for all seats.
- 4.15 Digital tachograph system.
- 4.16 Readout of temperature in the body to be visible to the driver with an audible alarm for temperature excursions below +2°C and above +8° (+/- 2° C.)
Temperature sampling to include measurement at least every 15 minutes.
- 4.17 Temperature readouts to be electronically recorded for a profile history.
- 4.18 A programmable controller that allows both auto and manual control of temperature and defrost status inside the body.
- 4.19 A lockable range of tools, a jack for vehicle, a reflecting warning triangle plus special tools needed for vehicle service, including at least one spare wheel.
Instructions including safety instructions should be provided in the most appropriate 'UN language': Arabic, English, French, Mandarin, Russian or Spanish.
- 4.20 A portable fire extinguisher to be securely mounted in the cab for the flammability classes A, B and C, with a minimum total capacity of 4 kg dry powder (or an equivalent capacity for any other suitable extinguishing agent).
- 4.21 Workshop manual, vehicle spare parts kit for three years or 100,000 km, or recommended list of spare parts to be provided.

5. Refrigerated body specifications

- 5.1 Body structure to be rigid and capable of withstanding vibrations and shocks from rough roads, while keeping the driver and load safe. Load tie-down eyes, hooks or rails fitted.
- 5.2 All walls and roof panels (internal and external), sub-frames, main-frames and chassis must be anti-corrosive treated.
- 5.3 The external surface of the body must be of a highly reflective finish (e.g. white) or more heat-reflective finish if available.
- 5.4 Materials:
 - 5.4.1 *Refrigerant*: CFC- and HCFC-free to comply with the requirements of the most recent [Montreal Protocol](#). The casing and/or the compressor body of each refrigeration unit must carry a permanent label clearly identifying the refrigerant used, and in letters not less than 10 mm high.

- 5.4.2 *Thermal insulation foaming agents:* CFC- and HCFC-free and complying with the limitations and deadlines set by the [Montreal Protocol](#) on the elimination of ozone-depleting chemicals.
- 5.4.3 *Other restricted materials:* The product and its constituent components, excluding batteries, must not contain lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated biphenyl ethers (PBDE).
- 5.5 Box body type with two doors at the rear for full width opening with at least three hinges per door. Hinges and closing mechanism must be of a robust design.
- 5.6 Emergency exit must be possible from the inside of the refrigerated compartment.
- 5.7 Mechanism required latching the door in open position, when swung open by 270 degrees against the side panels of the vehicle.
- 5.8 Cold strip curtain fitted behind the doors.
- 5.9 The body should be insulated to 0.4W/m²/°C (ATP heavily insulated specification), or better.
- 5.10 Refrigerated body to have four drains with U bend or rubber fishtail for release of water – one in each corner of the body.
- 5.11 Interior to have lighting to cater for loading.
- 5.12 Reinforced non-slip level flooring with no obstructions (such as wheel arches).
- 5.13 Gross body volume to be specified (anticipated volume of load plus 15% for air circulation (volume of load X 1.33)).

6. Refrigeration unit

Coefficient of Performance (COP) for the refrigeration units used:

- 6.1 For use in ambient temperatures of 30°C and internal temperature of 4°C heat, extraction capacity to be at least 2.25 times the heat flowing through the insulation.
- 6.2 In cold climates, heating capacity is required to provide low temperature protection if the temperature-controlled compartment needs to be maintained above 4°C.
- 6.3 Use a refrigerant complying with Clause 4.4.1.
- 6.4 Single phase 220V-240V motor compressor, or motor-driven refrigeration unit able to maintain a temperature of 2°C to 8°C (±2°C) in an ambient temperature of 43°C.
- 6.5 Generator for refrigeration unit to use a separate fuel tank from the engine tank with provision to pump fuel from the engine tank. Minimum fuel capacity to be at least 24 hours on full vaccine load (85% of body column).
- 6.6 At least two sensors to be fitted, one below the cooling unit (warmest returning air), the other located close to where the vaccine load will be closest to the cold air exit.
- 6.7 220V-240V electric standby for refrigeration unit. An automatic selector switch shall be provided to select power options between emergency generator power and 220-240V mains supply.
- 6.8 An extension 3-core, 15-amp cable of at least 20 metres shall be supplied to connect to the grid, with a plug for connecting the cable from the mains supply.

- 6.9 Electromagnetic compatibility (EMC) compliance: manufacturer to certify compliance with the latest edition of UNECE Regulations.
- 6.10 Auto defrost.

7. Warranty

Minimum three-years or 100,000 kms warranty, whichever is the shorter.

8. Local representation

Bidders should include contact details of the local vehicle representative and refrigeration units in their bid.

9. Optional variations and extras

- 9.1 4X4 or 4X6 drive.
- 9.2 Petrol engine.
- 9.3 Automatic transmission.
- 9.4 Cloud-based GPS/satellite vehicle tracking.
- 9.5 Cloud-based internal body temperature tracking.
- 9.6 Tail lift, if available for the size of vehicle needed.
- 9.7 Foldable stacking boxes, rolling cages or ventilated pallets (specify standard and dimensions).
- 9.8 Vehicle speed limiter.
- 9.9 Diesel or petrol fixed generator.
- 9.10 Transverse moveable partition with side door for access to refrigerated compartment.
- 9.11 Additional side door, if available for size of vehicle needed.
- 9.12 Rear cab-section for overnight and regulation rests.