

Technical Specifications

Ice Line Refrigerator- ILR (small)

1. Description of Function:

- 1.1 Ice-lined refrigerators maintain temperatures of $+2^{\circ}\text{C}$ to $+8^{\circ}\text{C}$. Not more than 8 hrs continuous or intermittent power should be sufficient per 24 hrs. to maintain vaccine temperature below 8 deg. C.
- 1.2 Ice-lined refrigerators are required at district, regional and PHC levels, since electricity supplies are rarely perfect and standby electricity supplies may not be available.

2 Operational Requirements:

- 2.1 Vaccine storage is required for RI, Campaign and new vaccine introduction.
- 2.2 Designed for tropical climates.
- 2.3 Target holdover time should be 20 hrs or more in a continuous external temperature of 43°C .
- 2.4 Hot and cold compressor starting at 172 volts (22% below rated voltage).
- 2.5 Manufacturing process of the product should not use or produce hazardous chemicals-gases.
- 2.6 Provision for drainage for the waste water.
- 2.7 Should have legs in the base with rotating screw type height adjustments to balance the weight on uneven floor.
- 2.8 The unit should have ground clearance of minimum 100 mm.

3 Technical Specifications:

- 3.1 Net Vaccine Storage Capacity: 90 to 105 liters within basket in place.
- 3.2 Construction:
 - 3.2.1 Internal: Stainless 304 grade steel
 - 3.2.2 An additional special ice lining consisting of icepacks covered by strong plastic shell.
- 3.3 External: Corrosion Resistance
- 3.4 Chest type with CFC – free insulation
- 3.5 Should have horizontal water cool pack covering the top of the basket.
- 3.6 Solid door with lock and handle
- 3.7 Type: Compression Cycled, CFC-Free (both for refrigeration and insulation) All system tubing (suction tube, freezer tube and condensing tube) should be of minimum 99.97% of pure copper coil.
- 3.8 Temperature of a full vaccines to remain $+2^{\circ}\text{C}$ to $+8^{\circ}\text{C}$ during continuous availability of energy at ambient temperature $+5^{\circ}\text{C}$ to $+45^{\circ}\text{C}$ with intermittent/continuous electricity supply 8 hrs in a 24 hrs cycle. The temperature difference between any two points in the cabinet should not be more than $+2^{\circ}\text{C}$ once stabilized.
- 3.9 Inlet of Capillary should be outside the PUF body.
- 3.10 ON/OFF Switch and power indicator should be available
- 3.11 A Micro-processor based control unit should be provided for setting of temperature and display following features:

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- 3.11.1 3 digit digital display (to one decimal point) of cabinet temperature. The sensor should be placed 25 to 50 mm above base of storage chamber.
- 3.11.2 Power on LED/LCD indicator
- 3.11.3 Audio (minimum 65 dBA) and visual alarm against the violation of temperature range (less than +2 and more than +8 degree C)
- 3.11.4 Min. & Max. cabinet temperature digital display of last 24 hrs. and breaches during last 24 hrs.
- 3.11.5 The unit should be sealed protected from dust, moisture or condensed water falling over it.
- 3.12 Accuracy for digital controller ± 0.5 degree centigrade.

4 System Configuration

- 4.1 Programmable Micro-processor control unit with child lock facility.
- 4.2 Should have provision to set minimum and maximum temperature at 0.1 degree Centigrade to programme the unit for continuous operation.
- 4.3 Should have provision for defrosting program.

5 Accessories, spares and warrantee:

- 5.1 The equipment should have minimum warrantee including comprehensive maintenance of sixty months after installation or sixty six months after the supply whichever is later.
- 5.2 Vaccine Storage Basket allowing free circulation of air, having the size to be able to accommodate 4 to 6 of them in the unit and suitable to match the net volume requirement. It should be minimum 5 wire basket.
- 5.3 Stem Alcohol thermometer (specifications and standard as per MOHFW approved **Annexure-1**) - one piece per unit range of -30 to $+50$ degree centigrade.
- 5.4 The supplier is required to maintain all the spare parts throughout the warrantee period and not less than ten years.

6 Environmental factors:

- 6.1 The unit shall be capable of being stored continuously in ambient temperature of 0 to 50deg C and relative humidity of 95%
- 6.2 The unit shall be capable of operating continuously in ambient temperature of 5 to 45 deg C and relative humidity of 90%
- 6.3 The plug should be flexible and unbreakable sealed rubber type.

7 Power Supply:

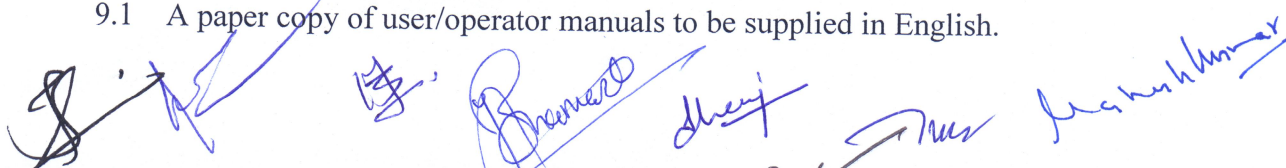
- 7.1 Power input to be 220-240VAC, 50Hz as appropriate fitted with Indian plug
- 7.2 Voltage stabilizer as per the MOHFW approved specifications and standard enclosed as **Annexure-2**

8 Standards and Safety

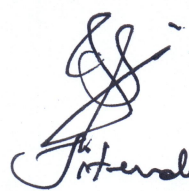
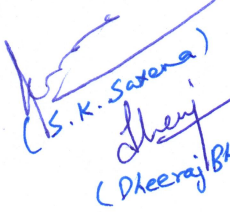


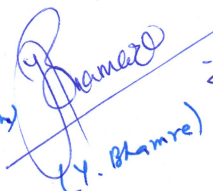
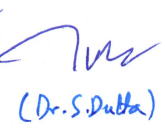
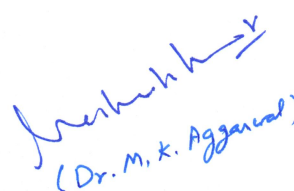

- 8.1 Product should be FDA or CE approved.
- 8.2 Should meet WHO/UNICEF Standard WHO/PQS/E03/RF03.1.for Ice Lined Refrigerators.
- 8.3 Test and inspection as per WHO procedure reference WHO/PQS/E03/RF03-VP.1 Testing should be carried out from WHO certified lab/NABL/ILAC/STQC Labs.
- 8.4 Colour code : WHITE

9 Documentation:

- 9.1 A paper copy of user/operator manuals to be supplied in English.



- 9.2 A paper copy of technical/wiring diagram/maintenance manuals to be supplied in English.
 - 9.3 Certificate of inspection for technical compliance from an independent laboratory approved /recognized by WHO certified /National Accreditation Board for laboratories/ILAC/STQC Labs is essential. Certificate of testing should be currently valid till the supply and same must be verified by inspecting authority.
 - 9.4 List of important spare parts and accessories with their part number and costing.
- 10 Packing of the equipment during shipment:
- 10.1 The supplier should provide strong and sufficient packing to ensure safe arrival of goods at the destination free from loss or damage.
 - 10.2 A vertical arrow should be marked at the all sides of packages to ensure transportation of equipment in vertical position. TOP and BOTTOM should also be written.
 - 10.3 To put label and signage's for HANDLE WITH CARE ON ALL SIDES OF THE CRATES as per packing & shipment norms.
11. Following messages should be written at the Top of the ILR
- 11.1 Place refrigerator at least 10 cms away from the wall and 20 cms away from other equipment for free air circulation.
 - 11.2 Use voltage stabilizer provided with the ILR
 - 11.3 Safe temperature range +2 to +8°C
 - 11.4 Store all UIP vaccines in ILR at CHC/PHC (OPV should be stored in deep freezer at State/Regional and district vaccine store)
 - 11.5 Open the lid, only when needed
 - 11.6 Store only UIP vaccines (at PHCs store vaccines and diluents).
 - 11.7 Keep all vaccine in wire baskets provided.
 - 11.8 Leave space between the vaccine boxes for air circulation.
 - 11.9 Place a thermometer in the basket in between the vaccines.
 - 11.10 Keep freeze sensitive and closer expiry vaccines at TOP of the basket
 - 11.11 Keep heat sensitive and further expiry date vaccines in the bottom of basket.
 - 11.12 Avoid removing thermometer from the unit while reading temperature.
 - 11.13 Net vaccine storage capacity in Litres
 - 11.14 Hold over time in hrs.


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