

TECHNICAL SPECIFICATION OF SUB ZERO TREATMENT CHAMBER

S.No.	Description	Technical specifications	Remarks
1.	Sub zero treatment chamber		
a.	Type	Horizontal – Top opening or Vertical type – Front opening	Essential Please specify
b.	Temperature range	Amb to -80 °C	Essential
c.	Temperature sensitivity	Temperature inside the chamber controlled with in $\pm 1^{\circ}\text{C}$	Essential
d.	Chamber size	Minimum 600 x 600 x 600 (WxHxD)mm	Essential
e.	Load Capacity(Mass)	Minimum 50 kg	Essential, Please specify
f.	Power requirement	--	Please specify
g.	Power consumption	--	Please specify
2.	Instrumentation		
a.	Data recording system	Capable to display and record the graph of temperature vs time in a real time	Essential
b.	Controller	Programmable digital microprocessor	Essential
c.	Sensor	To be Provide (Resistance Temperature Detector) RTD sensor with digital temperature indicator.	Essential
		Digital pressure indicators for High and low stage refrigeration system	Essential
		Mimic panel to show process and faults	Essential
d.	Display	LCD / LED	Please specify
		Display temperature vs time graph and ambient temperature	Essential
e.	Display resolution	Minimum 0.1 °C	Essential
f.	Panel	Provide control panel with temperature controller programmer, Mimic panel, Buzzer, Emergency switch, ON/OFF switch and pilot lamps	Essential
		Provide safety locks such as MPCBs(Motor Protection Circuit Breaker), MCBs(Miniature Circuit Breaker), etc	Essential Please specify
g.	Connectivity	Provide RS232 interface and USB read out to record the temperature vs time graph	Essential

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3.	Refrigeration system		
a.	Compressor	Two stage(High and low stage) cascade refrigeration system.	Essential Please specify
b.	Compressor make and model	--	Please specify
c.	Refrigerants	Should be environmentally friendly CFC free refrigerants	Essential Please specify
d.	Refrigerants - Make and model	For high and low stage refrigeration system	Please specify
e.	Condenser	Should be air cooled	Essential Please specify
f.	Cool down rate	Ambient temperature to -80 °C at rate of 1°C per min having load of 50 kg including component and fixtures	Essential
4.	Chamber		
a.	Interior material	Stainless steel 304 grade, duly polished	Essential
b.	Exterior material	Mild steel / CRCA sheets with powder coating	Essential Please specify
c.	Insulation	Polyurethane foam (PUF) insulation to prevent loss of temperature	Essential
d.	Chamber door	To provide with handle and lock	Essential
e.	Door gasket	Triple layer magnetic gasket or silicon rubber gasket for door to withstand the temperature upto -100 °C	Essential
f.	Gasket	Make and model	Please specify
g.	Movement of chamber	Floor model with heavy duty wheels for easy movement of the chamber	Essential
5.	Alarm		
a.	Alarm	Provide temperature deviation alarm	Essential
		Provide door open alarm with cutoff for compressor when the door is open	Essential
		Provide power failure, probe failure alarm	Essential
		Provide a timer alarm	Essential
6.	Calibration		
a.	Calibration	Provide calibration certificate for equipment from NABL certified lab	Essential
7.	Installation and commissioning		
a.	Delivery period	8 to 10 weeks from the date of acceptance of purchase order	Essential
b.	Installation and commissioning	At CMTI must be done by OEM authorized personnel	Essential

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c.	Pre dispatch clearance	Supplier shall arrange for free dispatch equipment audit for two CMTI personnel on hardware and software, operation, maintenance application and safety at Supplier place	Essential
d.	Training	For batch of CMTI personnel after installation at CMTI	Essential To be provided by vendor
e.	Freight	To be provided free of cost by vendor	Essential
f.	Packing and forwarding	To be provided free of cost by vendor	Essential
g.	Insurance	To be provided by vendor	Essential
h.	Replacement of parts during warranty	To be provided by vendor	Essential
i.	Standard Warranty	24 months from the date of commissioning	Essential
j.	Service support in India	The firm should have well established Service Support Facility in India, preferably in Bangalore for Prompt after sales service support	Essential
k.	Break down support	Maintenance personnel to attend breakdown calls within 24 h of notification	Essential
l.	Certificate of origin	To be provided by vendor	Essential
8.	Document manual		
a.	Document manual	1 set of hard copy and 1 set of soft copy of operation, installation and service manual (English) to be provided including electrical and refrigeration circuit drawings.	Essential
b.	Warranty certificate	Manuals of bought out items incorporated in the system with applicable warranty certificate	Essential Please specify

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