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Government of Nepal
Nepal Agricultural Research Council
National Agricultural Research Institute

National Plant Breeding and Genetics Research Center, Khumaltar

Technical Specification of Cold Room

A cold chamber to store germplasm of cereal grain seeds in poly packs kept in crates. The cold storeroom will be insulated with sufficient insulation. The cold storeroom will be supplied with suitable capacity air cooling unit, and accessories to maintain the product temperature.

1.	Insulated Room	
	Room size	17 ft x 13 ft x 8 ft
	Required Temperature	+12°C±2°C
	Approx. Ambient Temperature	43°C
	Wall and Ceiling	75 mm prefabricated polyurethane insulating panels with cam locking, outer and inner 0.45 mm PPGI sheet.
	Door	Standard swing door with locks Door size: 1100 x 2300 mm Transparent PVC strip curtain 3 mm thickness 75 mm PUF insulated cladding with both side SS sheet and complete with its accessories like handle, hinges, rubber gasket.
	Floor	75 mm PUF Insulation board with cam locking system, outer and inner 0.45 mm PPGI sheet, 9 mm ply board and 2 mm heavy duty aluminum checkered plate on top.
	PVC Strip Curtain	Transparent PVC strip curtain 3 mm thickness
2.	Refrigeration System -1 sets	
	Refrigerant-1 sets	R 404 A
	Condensing Unit-1 sets	
i.	Compressor-1 sets	Greater than or equal to 5 TOR capacity each
	Type	Semi-Hermetic
	Supply Voltage	380V-440V, 3 phase, 50 Hz, AC supply.
	Make	Danfoss, Bitzer, Copeland or equivalent

ii.	Condenser-1 sets	Suitable capacity finned type air cooled fan with inner grooved tubing and fan motor for ambient temperature up to 43°C
iv.	Evaporator-1 sets	Suitable capacity-made of inner grooved copper tube with mechanically bounded aluminum fins. Unit is complete with external rotor fan motors and drain pan.
v.	Accessories	Thermostatic expansion valve, oil separator, liquid indicator, manometer for both HP/LP, liquid receiver, filter drier, solenoid valve, sand valve, sight glass, copper pipe for suction and discharge.
v.	Defrosting Heater-1 sets	Suitable capacity electrical heater defrosting system
vii.	Control Panel- 1 sets	AC 3 phase, 380V - 440V, 50 Hz, Compact sealed type electrical panel equipped with automatic digital control of refrigeration system with digital temperature display, Contactor, Timer, Overload Relays, Circuit breaker, Voltmeter, Amp. Meter, Phase preventer, Dual sensor, digital defrosting timer, cable trays, clips.
3.	Spare parts	Standard set of spare parts recommended by the manufacturer including Thermostatic expansion valve- 1 set Condenser fan-1 piece Evaporator fan-1 piece Contractor-2 piece Switches- 2 piece Indicator- 4 piece
4.	Manuals and Catalogues	2 sets to be supplied along with the machine
5.	Warranty	One year from the date of commissioning
6.	Performance Test	Check the overall functioning of the cold room. Check the cooling efficiency. Check the overall functioning of the dehumidifier. Check the dehumidification efficiency. Check the electrical and safety system. Check as per specification parameters.
7.	Scope of Supply	Installation and commissioning with necessary civil works- foundation or MS platform of condensing unit must be carried out by the supplier.

Layout of cold room

