

Wedge

COLD CHAIN & REFRIGERATION SOLUTIONS · EPC

Cold Storage, Mini Cold Storage & Cold Rooms

Product & Solutions Catalog

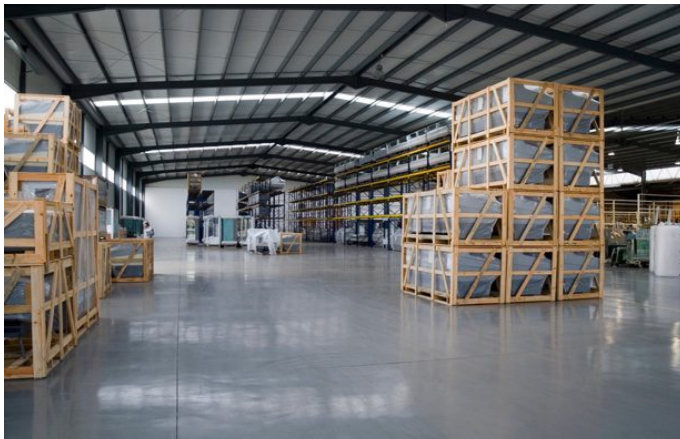


Turnkey Cold Chain Solutions

Wedge offers EPC contracting services for cold storage facilities globally. The Wedge group has established technology and manufacturing collaboration with high-quality, economical manufacturers of cold store components in India and China, and is engaged in manufacturing, sourcing and supplying high-performance insulation panels, steel structures and refrigeration systems for cold storages of every scale — from 2 MT farm-gate cold rooms to 5000 MT bulk warehouses.

Cold storage preserves perishable goods — fruits, vegetables, dairy, meat, seafood and pharmaceuticals — by slowing bacterial growth and enzymatic reactions. It extends shelf life, enables year-round availability of seasonal produce, reduces distress sale for farmers and supports modern retail and logistics supply chains.

Type	Used For
Cold Rooms	Small scale — farms, mandis, restaurants, labs
Cold Storage Warehouses	Large scale — industrial and commercial
Refrigerated Containers	Transport via truck, ship, rail
Blast Freezers	Quick freezing of products
Pharma Cold Storage	Medicines and vaccines (2°C to 8°C or sub-zero)



2 MT – 5000 MT

Capacities engineered to requirement

India + China

Manufacturing & sourcing network

EPC Turnkey

Design to commissioning, one contractor

Engineering, Procurement & Construction

The EPC approach for a cold storage facility is a turnkey solution where a single contractor manages the entire project from design to commissioning — one point of responsibility for schedule, quality and performance.

1 · Engineering

Site assessment & capacity planning
· PUF/PIR insulation design · ammonia or freon refrigeration · humidity & ventilation control · racking layout · IoT-based temperature and humidity monitoring

2 · Procurement

Compressors, condensers, evaporators · insulation panels & vapour barriers · steel structures · epoxy-coated flooring · control panels, backup generators · fire suppression and gas detection

3 · Construction

Civil work — foundation, walls, roofing · installation of refrigeration, insulation and electrical systems · testing & commissioning to temperature stability · FSSAI / ISO compliance



Key Considerations

Energy efficiency — inverter compressors to reduce power costs

Scalability — modular design for future expansion

Shelf-life extension — airflow design that minimises spoilage

Maintenance access — easy servicing of refrigeration units

PEB Structures for Cold Storage

A PEB cold storage is a steel-framed building pre-designed and manufactured in a factory, then assembled on site: primary rigid frames (columns and rafters), secondary members (purlins, girts, braces), insulated PUF/PIR sandwich panels for walls and roof, RCC floor with vapour barrier and insulation, and industrial-grade insulated doors.

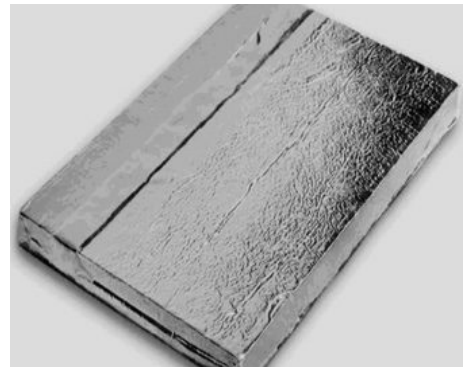
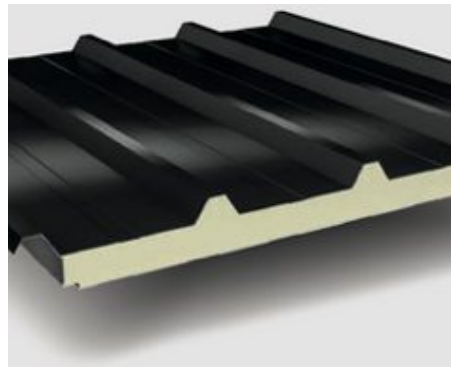
Benefit	Description
Fast construction	Fabrication and erection much faster than RCC buildings
Custom design	Temperature zones, loading docks and racking tailored to use
Thermal efficiency	Excellent insulation with PUF / PIR panels
Durability	Withstands humidity, chemicals and temperature fluctuations
Low maintenance	Galvanized steel resists rust and corrosion
Cost-effective	Lower cost per square foot than conventional construction



Wall & Roof Insulation — PIR · PUF · VIP · EPS

Insulation must deliver high thermal efficiency, moisture resistance, durability and hygiene. For standard produce cold storage, the most cost-effective choice is **PUF panels of 100–150 mm thickness** with vapour-proof facing, PU-sealed joints and B2/B1 fire rating.

Parameter	Wedge PIR	PUF	Wedge VIP	EPS
Insulation (R-value)	Best (6–7)	Very good (5.5–6.5)	Ultra (10–15)	Poor (3.5–4)
Thermal conductivity	0.022–0.025 W/m·K	0.023–0.028 W/m·K	0.004–0.008 W/m·K	0.033–0.038 W/m·K
Moisture resistance	Excellent	Excellent	Excellent	Poor
Fire safety	Best (B1/A2)	Good (B2/B1)	Varies	Flammable
Energy saving	High	Medium	Very high > 50%	Low
Durability	25–30 yrs	20–25 yrs	15–20 yrs	10–15 yrs
Cost	High	Medium	Very high	Low
Best for	Large, fire-safe	Standard	Premium, compact	Low budget



Refrigerants & Condensing Units

Recommended refrigerants: **R717 (ammonia)** for large stores — highest efficiency, zero GWP; **R290 (propane)** for small and medium modular units; **R744 (CO₂)** for medium systems in temperate climates. R22 is banned and R404A is phasing out.

Refrigerant	Efficiency (COP)	Operating Cost	Temp. Suitability	Compliance
R717 Ammonia	Very high	Very low	Best for large cold stores	Long-term
R290 Propane	High	Low	Excellent, 0°C to -40°C	Long-term
R744 CO₂	Low	Medium	Best for sub-zero	Long-term
R404A	Low-medium	High (GWP taxes)	-50°C to +10°C	Short-term, phasing out

Air-cooled condensing units

Lower upfront cost, easy installation, no water required. Ideal for small-medium stores (≤500 MT), dry climates and budget-conscious projects.

Water-cooled / evaporative condensers

Higher efficiency, quieter, better in ambient >35°C. Ideal for large stores (≥1000 MT), hot climates and high-efficiency industrial setups; 30–50% energy savings with EC fans and VSD.



Air Cooler Installation Picture



Modular Cold Rooms

Modular cold rooms are prefabricated, quick to install and sized to the user — from a 2 MT farm-gate chamber to multi-chamber mini cold storages at mandis and processing units. They let small farmers and traders store produce for 1–4 weeks and sell at the right price, eliminating distress sale.



Insulation parts

Cam-lock PUF/PIR panels (60–150 mm) · insulated floor panels · hinged, sliding or swing doors with heater wire and safety release

Refrigeration parts

Monoblock units for small rooms · condensing unit + evaporator sets for larger rooms · smart packaged units with EC fans and remote monitoring

Controls

Electric control panel with digital thermostat · temperature / humidity display · alarms and optional remote monitoring

Accessories

Pressure balance window · PVC strip curtain · LED cold store lighting · storage racks and crates · ramp for trolley access



2 MT & 10 MT Cool Chambers

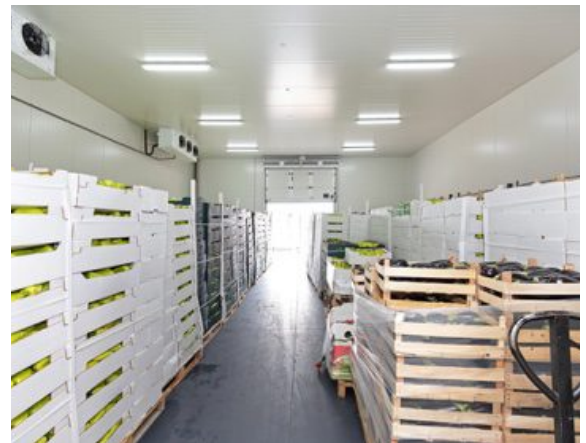
Particulars	2 MT Cold Room	10 MT Cold Room
Internal dimensions	8 ft × 6 ft × 6 ft	14 ft × 10 ft × 10 ft
Room temperature	+4°C (±2°C)	+4°C (±2°C)
Humidity	90% RH	85–90% RH
Ambient design temp.	43°C	43°C
Insulation	60 mm PUF panel	60 mm PUF, 0.5 mm pre-painted CRCA finish
Floor	60 mm PUF slab over kota & PCC	60 mm PUF slab over kota & PCC
Door	Hinged, 34" × 78" — 1 no.	Hinged, 34" × 78" — 1 no.
Refrigeration capacity	10,000 Btu/hr — 1 unit	30,000 Btu/hr (15,000 × 2 units)
Compressor / refrigerant	Reciprocating · R404A / eco-alternative	Reciprocating · R404A / eco-alternative
Power supply	2.23 kW · 230 V / 1 Ph / 50 Hz	5.9 kW · 230 V / 3 Ph / 50 Hz
Pull-down time	24 hrs / batch	24 hrs / batch
Typical use	Farm gate, retail, labs	Mandi, FPO, trader storage

Larger multi-chamber mini cold storages (25–500 MT) are configured from the same modular panel and refrigeration system, with chamber count, racking and door positions engineered to the site. A standby generator is recommended for all models.



Recommended Storage Conditions

Produce	Optimum Temp. °C	Humidity % RH	Storage Life
Potatoes	2–6	85–90	Season-long (up to 9 months)
Apples	1–4	90–95	Up to 12 months
Bananas	13–16	80–95	Up to 3 weeks
Grapes	0	85	Up to 8 weeks
Pears	–1–0	90–95	Up to 7 months
Nectarines, plums, peaches	0	90–95	Up to 5 weeks
Broccoli & cauliflower	0	95–100	Up to 4 weeks
Carrots (mature)	0	98–100	Up to 9 months
Onion (white & red)	0	65–70	Up to 8 months
Lettuce	0	98–100	Up to 3 weeks
Berries & strawberries	0	90–95	3–7 days



From Site to Commissioning



Tentative Bill of Quantities — 5000 MT Cold Storage

Indicative only · quantities and makes to be confirmed against final design

Part A — Refrigeration Machinery (Ammonia R-717 plant)

Sr.	Description	Qty
1	Heavy-duty ammonia compressor, reciprocating, 100 TR @ 0°C evaporating temp., with standard accessories	1 unit
2	Standby ammonia compressor, reciprocating, 75 TR @ 0°C evaporating temp.	1 unit
3	Oil separator suitable for above compressors, hydraulically tested at 500 psi	1 unit
4	Evaporative condenser, 130 TR @ 0°C evaporating / 40°C condensing, 4 × 24" fans, 1440 RPM, 3 phase	1 unit
5	Ammonia stop & control valves, expansion valves, check valves, line strainers, filters and pipelines for whole plant	1 lot
6	Air cooling units, SS 304 pipes with galvanized fins, 13 TR each, 4 fans (20" OD, 1440 RPM, 3 phase), water defrosting, GS drip tray	16 units
7	Liquid ammonia receiver suitable for the above plant	1 unit
8	Galvanized pipes, valves and fittings	1 lot
9	First charge of ammonia gas and refrigeration oil	1 lot
10	Erection and installation of refrigeration plant	1 job

Part B — Electrical Components

Sr.	Description	Qty
1	Electric induction motor for compressor, 100 HP, 1440 RPM	2 units
2	Electric pump for condenser water spray, 5 HP (one as standby)	2 units
3	Monoblock pump, pipe and fittings	1 lot
4	Sheet-steel electric panel board, dust & vermin proof, with starters, relays, push buttons, voltmeter and ammeters for entire plant	1 lot
5	Electrical wiring for the plant	1 lot

Insulation, Civil & Infrastructure

Parts C–E — 5000 MT Cold Storage

Sr.	Description	Qty
1	PUF panels 80–100 mm for roof, walls and partitions — both sides pre-coated galvanized steel 0.4–0.5 mm, density $40 \pm 2 \text{ kg/m}^3$	1 lot
2	Insulated doors 7' × 4', 80 mm PUF	4 nos.
3	Floor insulation — XPS/PUF slab with vapour barrier under RCC wearing course	1 lot
4	Civil work — foundation, building, plant & machinery bases; ante room, sorting & grading hall, dispatch dock with leveler & shelter, plant room, office, gates and security room	1 job
5	Wooden / steel racking inside chambers, 5 tiers of 7.5'	1 lot
6	Transformer, GO/DO, HT/LT wiring for entire plant; DG set for backup	1 lot
7	Water supply — bore well, pump, overhead tank, piping	1 lot
8	Material handling — forklifts, pallet trucks (BOPT/HOPT), plastic crates	as reqd.
9	Fire & safety systems, gas leak detectors, CCTV & monitoring, weighbridge	1 lot

Mini Cold Storage / Cold Room (10 MT reference)

Sr.	Description	Qty
1	PUF panels 60 mm, PP/PP finish, for walls & ceiling; 60 mm PUF floor slab over kota stone & PCC	1 set
2	Insulated hinged door 34" × 78" with lock, heater wire	1 no.
3	Refrigeration units 15,000 Btu/hr with hermetic reciprocating compressor, ceiling unit cooler, condensing unit	2 nos.
4	Electric control panel, wiring, stabiliser, earthing	1 lot
5	M.S. storage racks / plastic crates (~20–25 kg per crate)	1 lot
6	Standby DG set with auto-start	1 no.
7	Civil work ~192–400 sq ft (base, plinth, shed)	1 job

Tentative Reference Prices

All prices indicative, on a to-be-confirmed basis · final price on confirmed scope & site survey

Cold Rooms & Mini Cold Storage

Configuration	Scope	Reference Price
2 MT Cold Room (8'×6'×6')	Machinery ₹1.95 L · wiring ₹0.05 L · generator & accessories ₹0.50 L	₹2.50 lakh
10 MT Cold Room (14'×10'×10')	Machinery ₹4.65 L · civil ₹1.15 L · electrification ₹0.70 L · DG, crates & accessories ₹3.90 L · tax & installation ₹1.30 L	₹11.70 lakh
10 MT Cold Room project, full scope	Incl. 400 sq ft civil ₹2.40 L · cold room & equipment ₹11.50 L · crates / racks ₹4.00 L · DG & electrical ₹3.50 L	₹21.40 lakh

Bulk Cold Storage — Turnkey (EPC)

Capacity	Estimated Cost (INR)	Estimated Cost (USD)
500 MT	₹1 – 2 Cr	~ \$180,000 – 240,000
1000 MT	₹2 – 3 Cr	~ \$300,000 – 420,000
5000 MT	₹5 – 10 Cr	~ \$960,000 – 1.4 M

5000 MT Sample Break-up (plant & machinery, turnkey)

Part	Reference Price
A — Refrigeration machinery on turnkey basis	₹1,28,90,000
B — Electrical components	₹47,50,000
C — 80 mm PUF panels (roof, walls, partitions) + 4 insulated doors	₹1,56,55,000
C — Civil work incl. foundation of building, plant & machinery	₹3,30,00,000
D — Wooden racking, 5 tiers of 7.5'	₹50,10,000
E — Transformer, GO, DO and wiring for entire plant	₹12,50,000
Grand total (turnkey, ex-works)	₹7,25,50,000

Complete project reference (DPR): a 5000 MT potato cold storage including land, civil infrastructure, machinery, material handling and reefer vans — ₹18.14 Cr including taxes and transportation.

Imported CA-store package: insulation + refrigeration materials for a 3-chamber store, supply only — USD 272,485 EXW; complete 5000 T material package USD 650,000–700,000 (freight, installation extra).

Terms (indicative): prices ex-works; GST 18% extra; freight extra · delivery within ~9 months of technically & commercially clear order · payment 35% advance, balance against pro-forma invoice before dispatch · warranty 12 months from bill of lading or completion of installation, whichever is earlier.



Get a Price for Your Project

Share your capacity, commodity and site location — our techno-commercial team will revert with a tailored proposal and budget.

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