



**PHOENIX
REFRIGERATION**

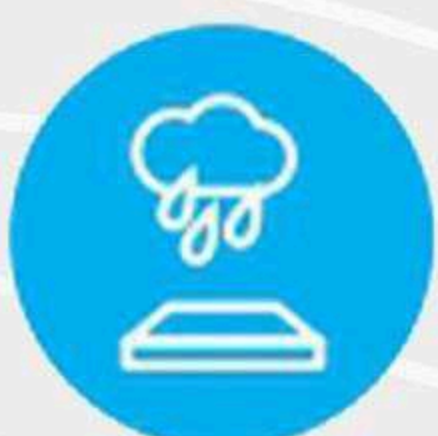


**PHOENIX REFRIGERATION
PVT. LTD.**
A-5 MIDC BHANDARA
3001, 2015-14 692-48001, 2018 Certified Company

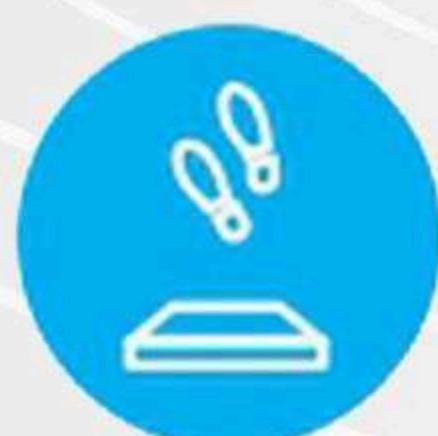


PHOENIX REFRIGERATION PVT. LTD.

(An ISO 9001:2015 & ISO 45001:2018 Certified Company)
(CIN : U74900PN204PTC15o908)



Weather Tight



Thermally Efficient



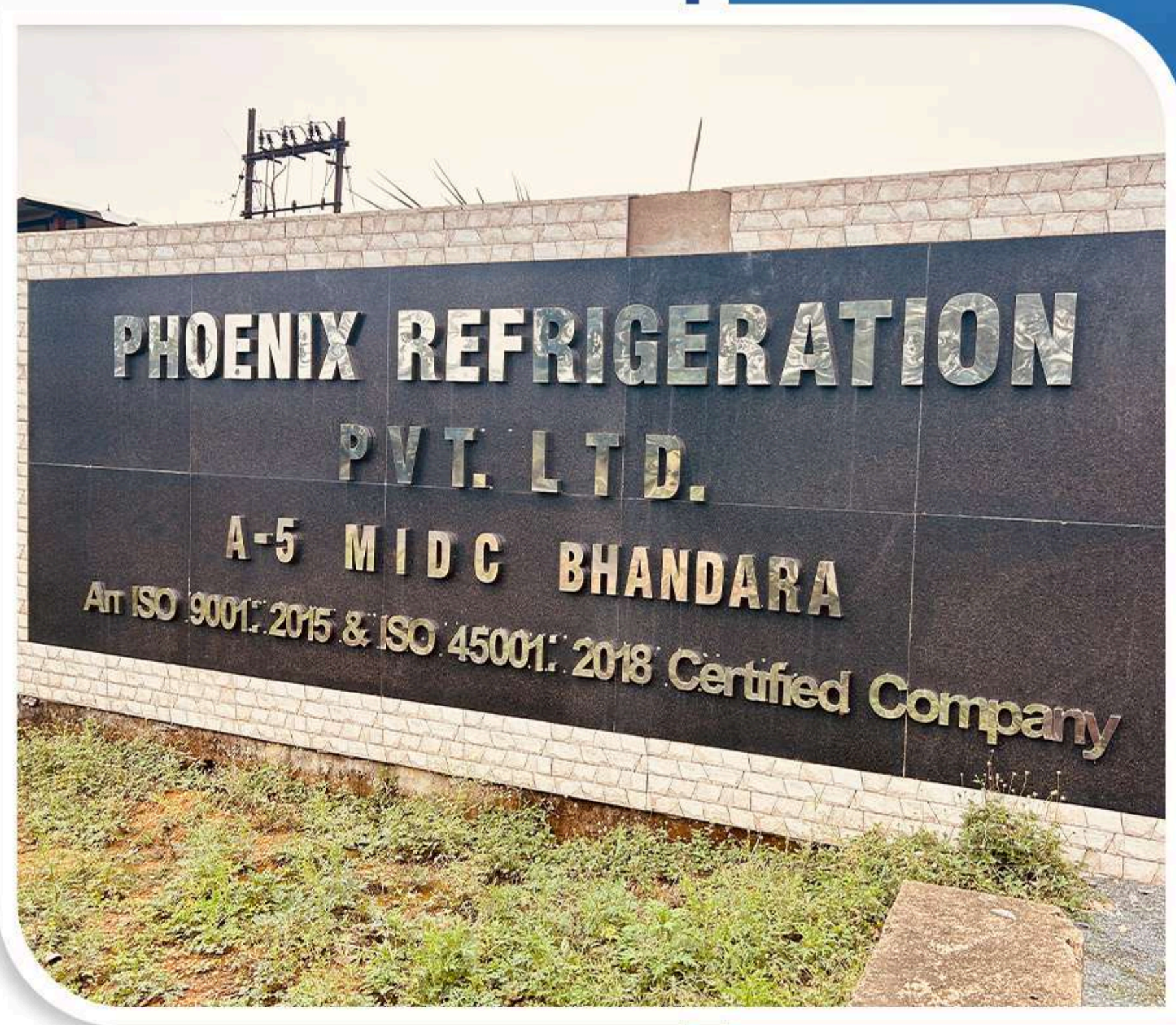
Structural



Internal Liner



Light Weight



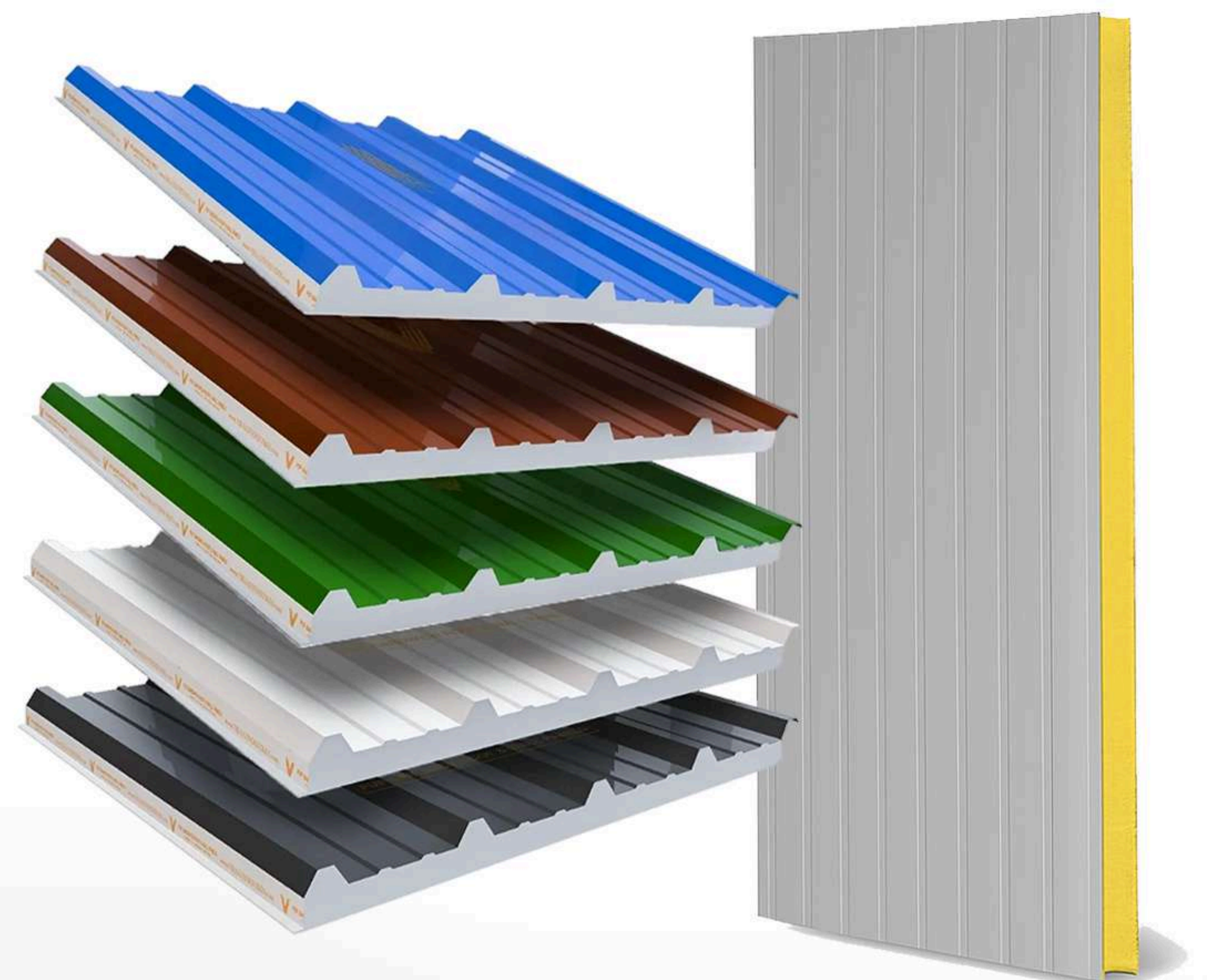
Phoenix Refrigeration Pvt Ltd is a leading manufacturer of PUF panels, clean rooms, and insulated doors. Our products are used in many industries such as pharmaceuticals, food and beverages, ice-cream and dairy plants, frozen storage, hospitals, offices, central homes, meat and fish processing, horticulture and prefab buildings.

We also provide solutions for cold storages, warehouses, research labs, agriculture, and logistics where temperature control and hygiene are most important.

With a strong focus on quality, durability, and energy efficiency, Phoenix Refrigeration continues to provide solutions that industries can rely on, today and in the future.

Our company is consists of experts with disciplines in all area of PUF Panel designing, engineering and installation. Our team can support customers step by step throughout the project starting from early stage to the end. This proven manner is a key to achieve success and customer satisfaction.

Our R&D department is working endlessly and putting all efforts to develop new technology and know-how in order to serve the most challenging and fast changing industry.



BASIC CONCEPT OF PANEL SYSTEM DESIGN

- ✓ Airtight
- ✓ Heat insulation
- ✓ Durability
- ✓ Clean ability
- ✓ Water proof
- ✓ Cost effective
- ✓ Fire resistant
- ✓ Chemical proof
- ✓ Easy to dismantle
- ✓ Energy efficient
- ✓ Restarting

WALL SYSTEMS

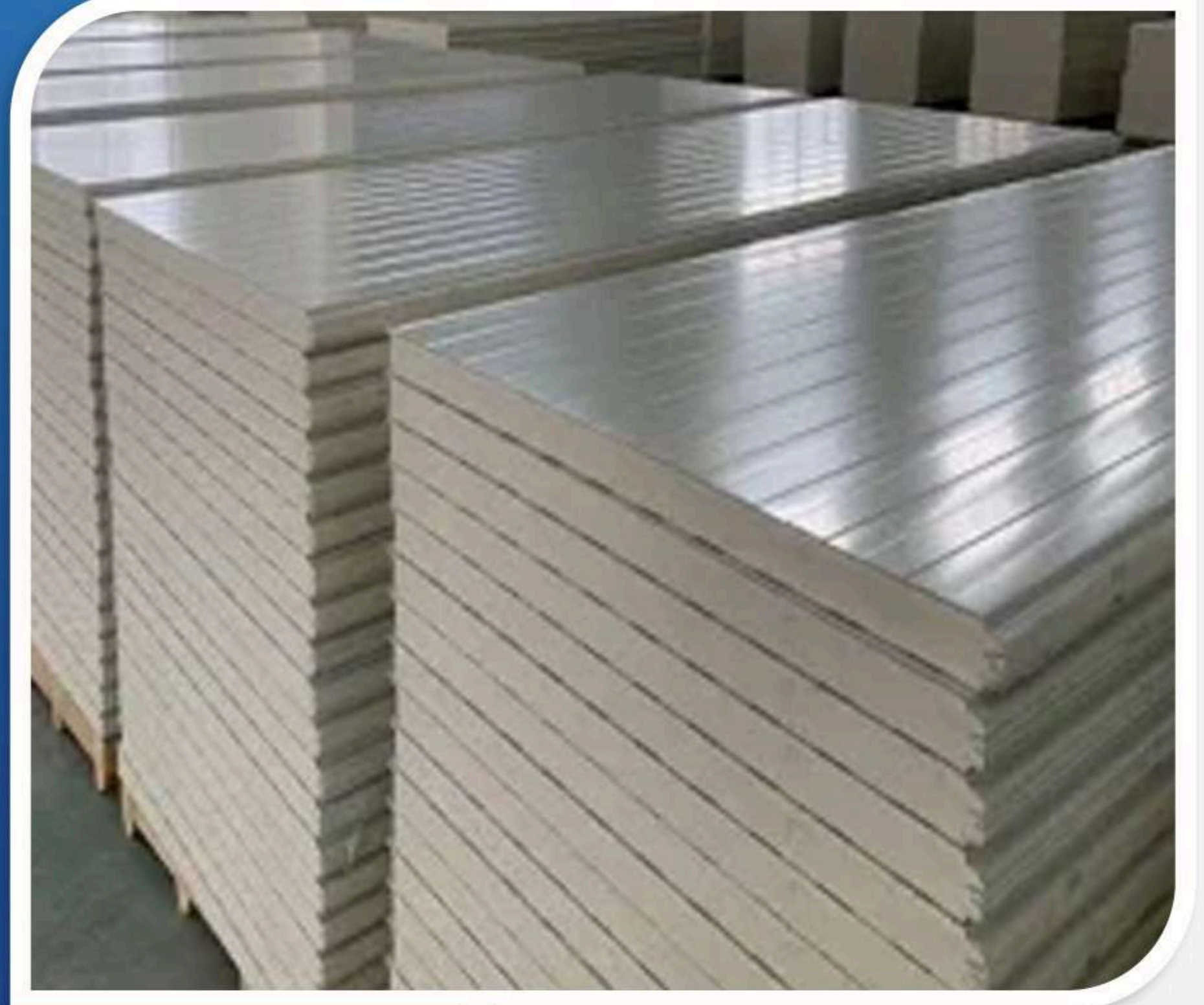
- ✓ Fast & easy installation
- ✓ Accommodate changes in clean room layout and future expansion
- ✓ Prefabricated panel with concealed electrical wiring
- ✓ Available either external or built-in panel return air riser including washable prefilter & removable grille
- ✓ Self-supporting, dismountable system
- ✓ Single piece wall round corner
- ✓ Flush surface and corner coving finishing

PUF/ PIR PANEL:

Description:

Phoenix PUF Sandwich Panels combine superior thermal insulation, high strength, and durability in a lightweight design. Ideal for cold storage, clean rooms, modular buildings, and temperature-controlled environments, our panels ensure energy efficiency, quick installation, and long-lasting performance.

PUF (Polyurethane Foam) Panels are advanced insulated sandwich panels designed for modern construction. Built with high-quality metal sheets and a rigid polyurethane foam core, these panels deliver superior thermal insulation, durability, and cost efficiency.



ATTRIBUTE	DETAILS
Thermal Insulation	Low conductivity (~0.024-0.028 W/m-K); Cuts heating/ cooling loads; Ideal for cold storage, temp-controlled buildings
Structural Strength	PU foam core between PPGI/ PCGI/ SS sheets; High load capacity
Lightweight	Lighter than concrete/ brick; Easy transport & install
Fire Resistance	Fire retardant; Up to 2 hrs rating (special panels)
Moisture Resistance	Closed-cell PU resists water; Sealed against leakage
Sound Insulation	Good acoustic control due to foam density
Corrosion Resistance	Coated facings (polyester/ PVC) prevent rust
Durability	15-25+ years lifespan; Pest, Fungi & Mold resistant
Quick Installation	Pre-fab panels for fast construction
Eco-friendly	Saves energy, CFC-free & recyclable

SPECIFICATIONS:

Panel Thickness	40/50/60/80/100/120/150 mm
Sheet Thickness	0.4 to 0.8 mm PPGI/ PCGI/ SS
Surface Coating	Pre Painted/ Powder Coated/ Stainless Steel
Insulation material	PUF/ PIR/ ROCKWOOL Upto 600mm
Width	1200 mm As per Requirements

COMMON APPLICATIONS:

- ✓ Cold storage rooms
- ✓ Clean rooms and laboratories
- ✓ Prefabricated buildings and shelters
- ✓ Wall and roof cladding
- ✓ HVAC / AHU

1. PUF PANELS FOR ROOFING

PUF panel rooms and cabins are strong, insulated, and ready-to-install structures ideal for homes, resorts, site offices, and remote shelters. These cabins provide long-lasting comfort and low electricity bills due to their excellent insulation.

With a wide range of different colors cut-to-length in our factory and supplied ready-to-install, our modern building products fare well in highly economic weather-independent conditions and fast modular building process.



Our PUF Panel Features



**Weather
Tight**



**Thermally
Efficient**



Structural



**Internal
Linear**

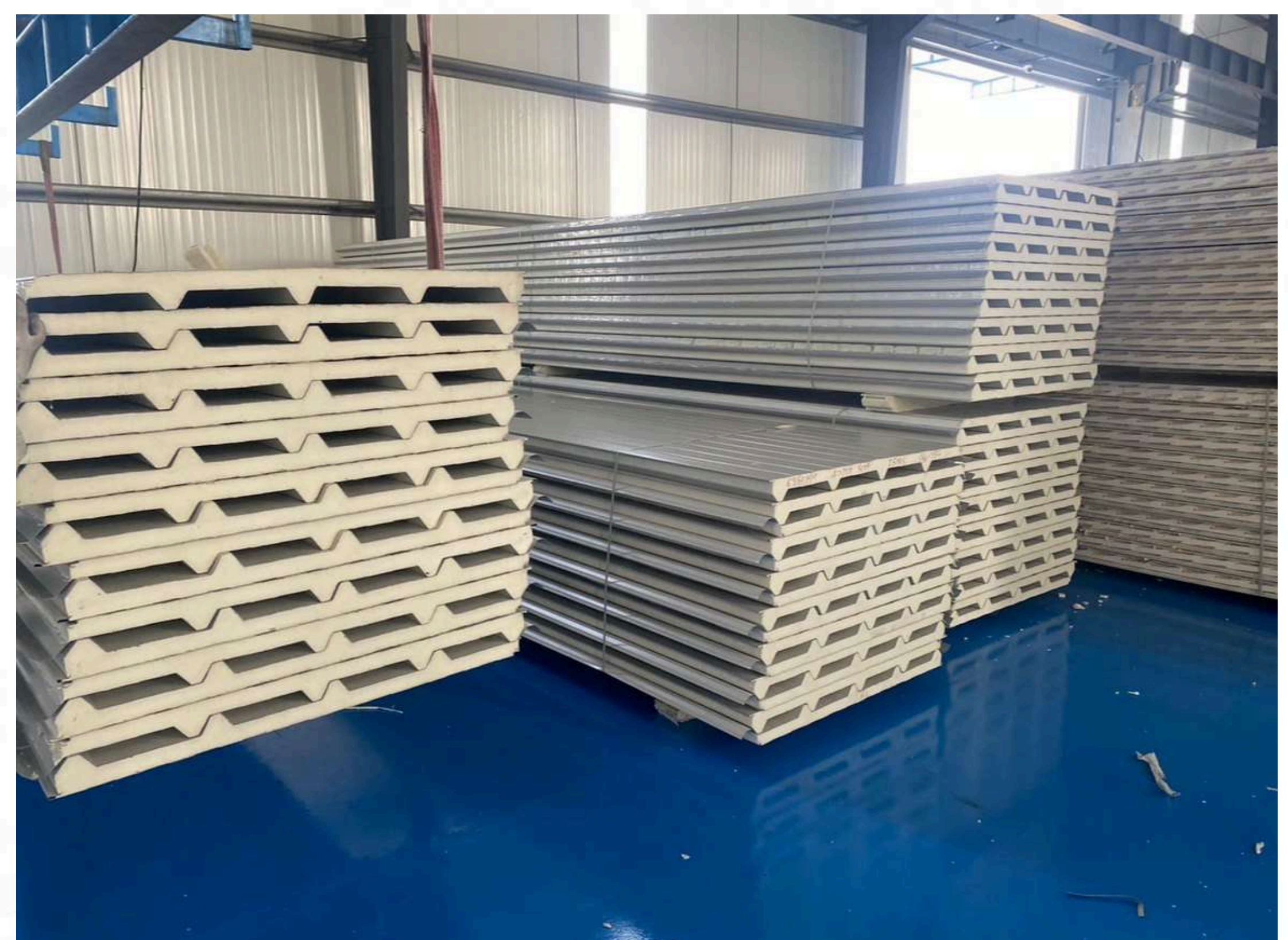


**Light
Weight**

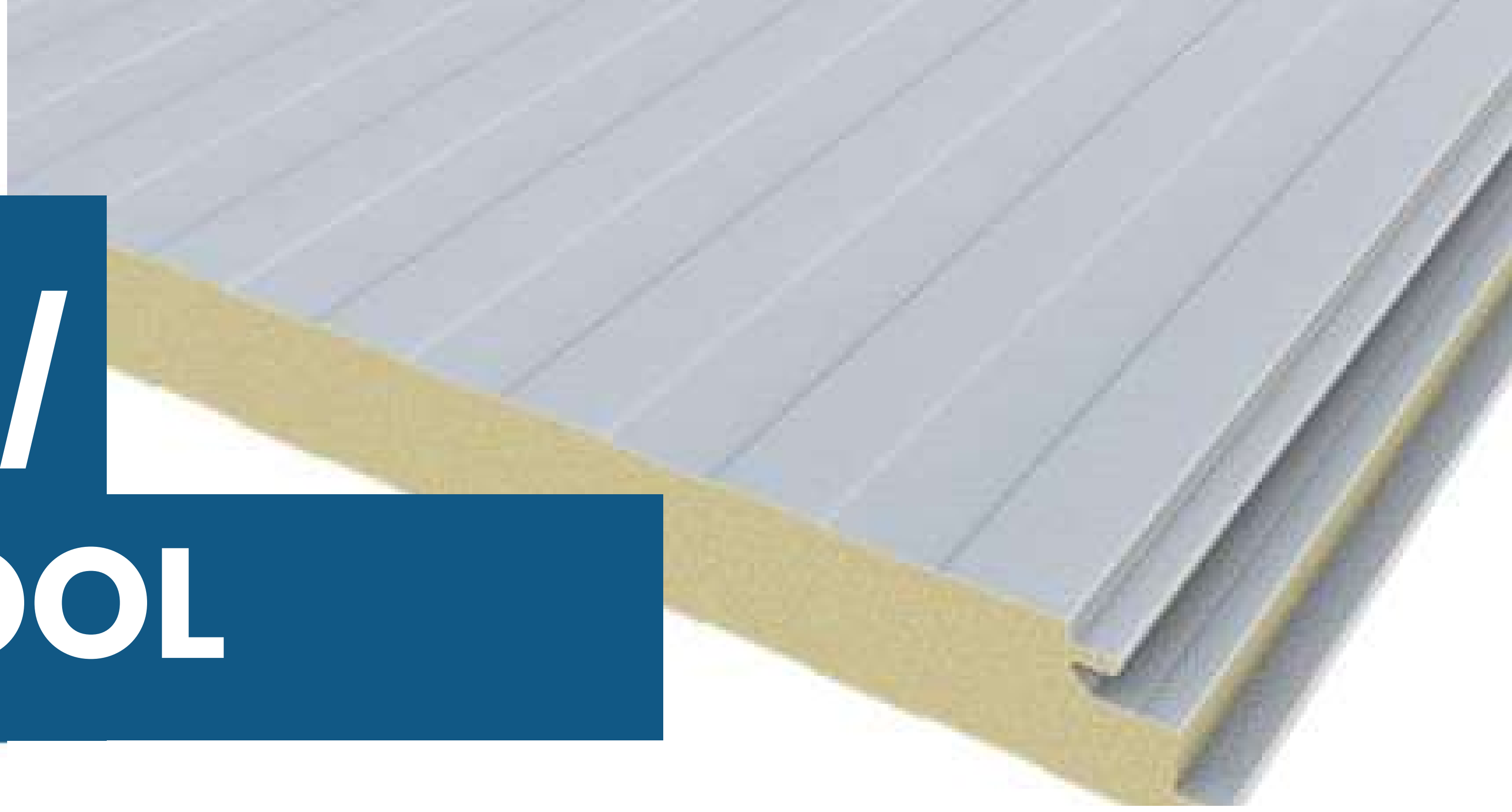
2. ROCKWOOL SANDWICH PANEL

KEY ATTRIBUTES:

- ✓ Excellent Mechanical Performance.
- ✓ Rockwool panel are light in weight.
- ✓ Designed to aid quick installation with minimum efforts.
- ✓ Rockwool Panel are effectively heat and sound insulated.
- ✓ Long term sustainable and durable.
- ✓ Rockwool Sandwich Panel are eco-friendly and save energy costs.
- ✓ Negligible maintenance cost.



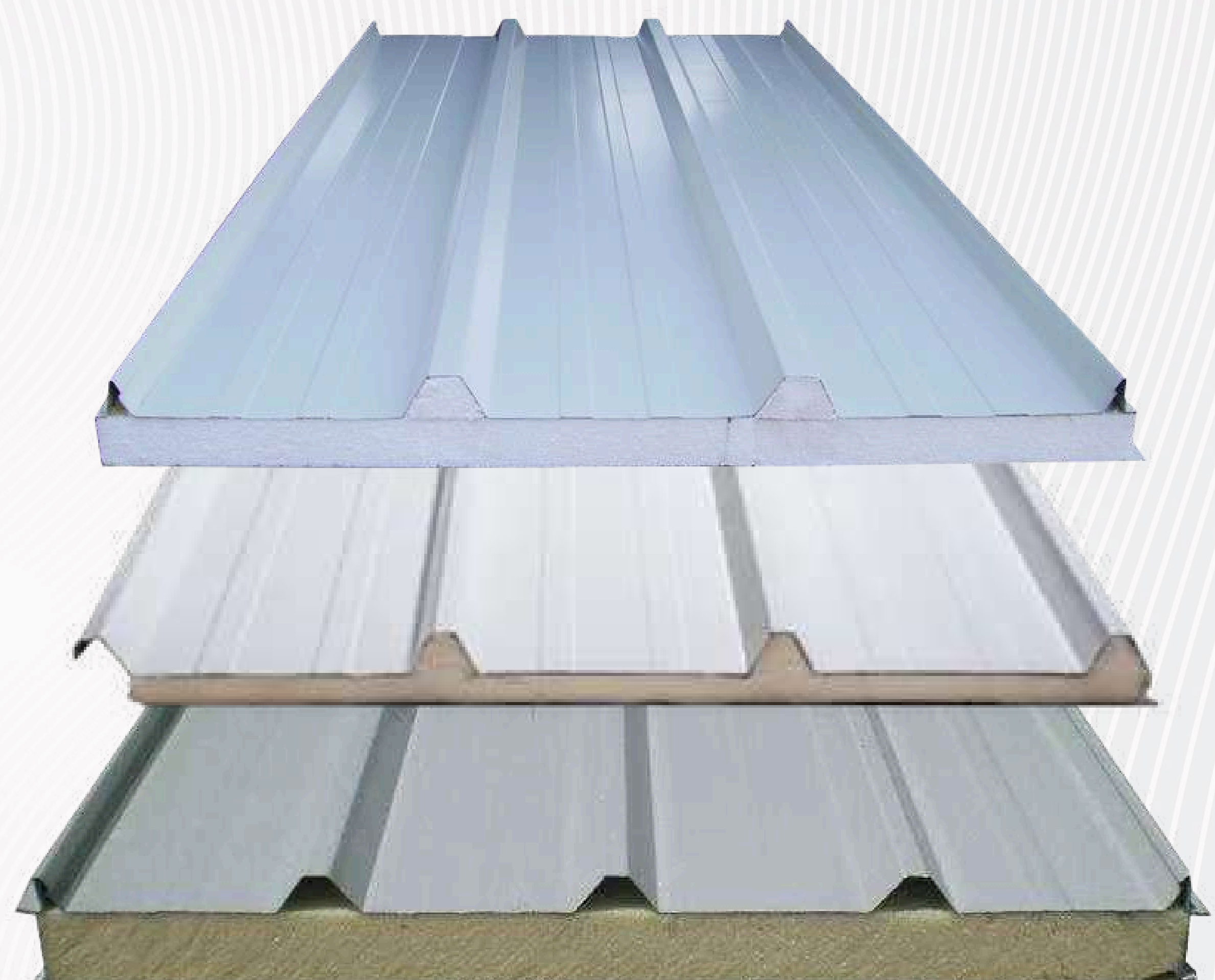
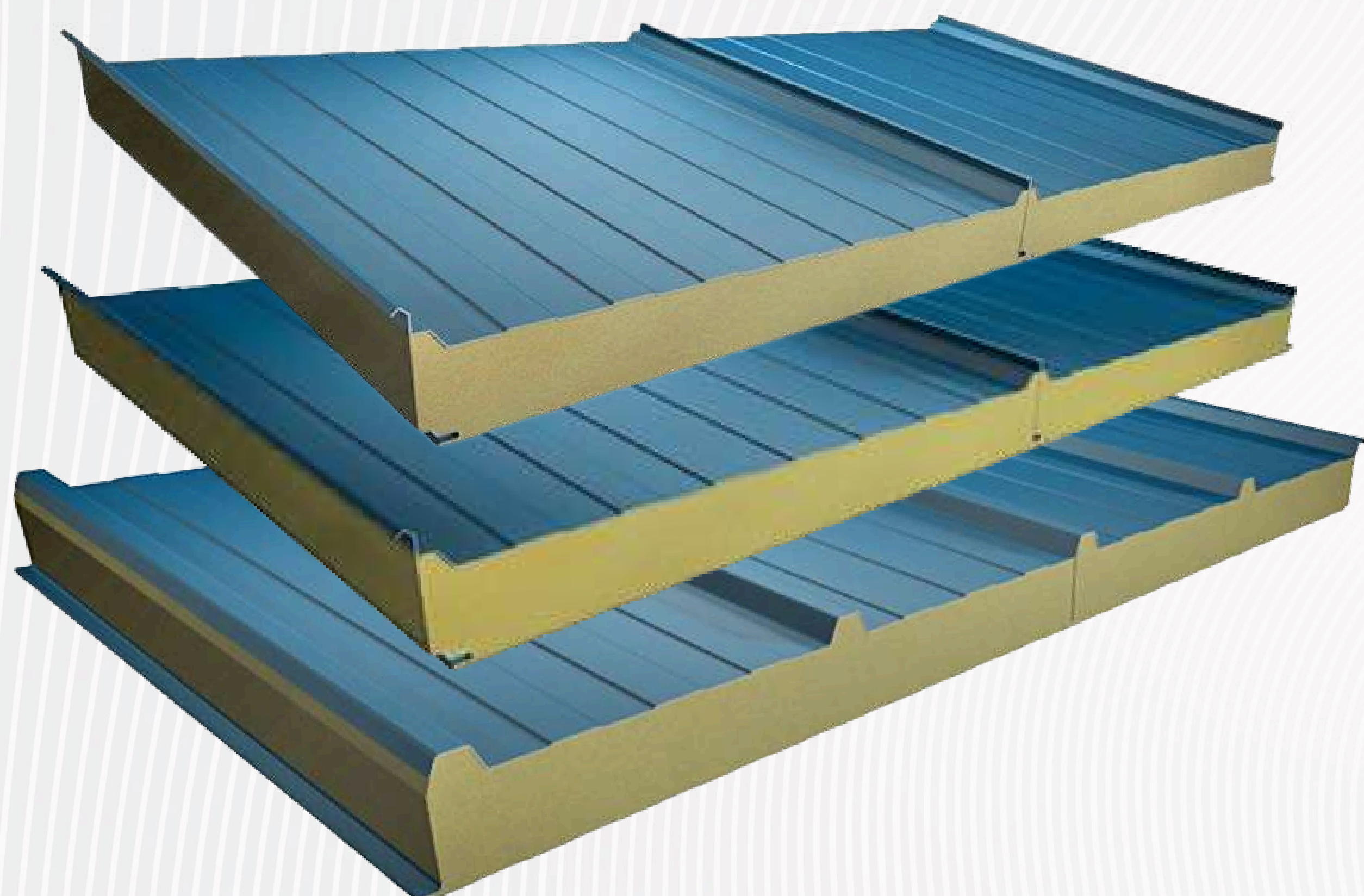
PUF / PIR / ROCKWOOL



Puff Rockwool Sandwich Panel Solutions are available at industry competent rates. Send us an inquiry to know more about Rockwool, Sandwich Panel price and specifications.

COMPLETE TECHNICAL SPECIFICATION FOR PUF / PIR / ROCKWOOL

	UNIT	PUF/ PIR	Rockwool
Density	KG/M3	40 to 48	42 to 100
Thickness	MM	40/50/60/80/100/120/150	50/60/80/100/120/150
Water absorption	%	Less than 1%	Less than 2%
Skin type		PPGI/ PCGI/ Stainless Steel	PPGI/ PCGI/ Stainless Steel
Skin thickness	MM	0.4 to 0.8mm	0.4 to 0.8mm
Connecting mechanism		Cam Locks/ Tongue and Groove	Tongue and Groove



3. Clean Room Panels / Operation Theater PUF Panel

Description:

These panels are used in pharma, biotech, hospitals, and labs. They maintain hygiene and prevent bacteria or dust from entering. Used in manufacturing units, operation theaters, ICUs, and sterile environments.

Made using high-density polyurethane foam core sandwiched between two pre-coated galvanized iron (PPGI) sheets, these panels provide excellent insulation, easy maintenance, and superior air-tightness. The seamless construction and anti-bacterial coating help maintain sterility and minimize contamination risks.



Clean Room Panels Features:



High Thermal Insulation



Air-Tight Construction



Smooth & Washable Surfaces



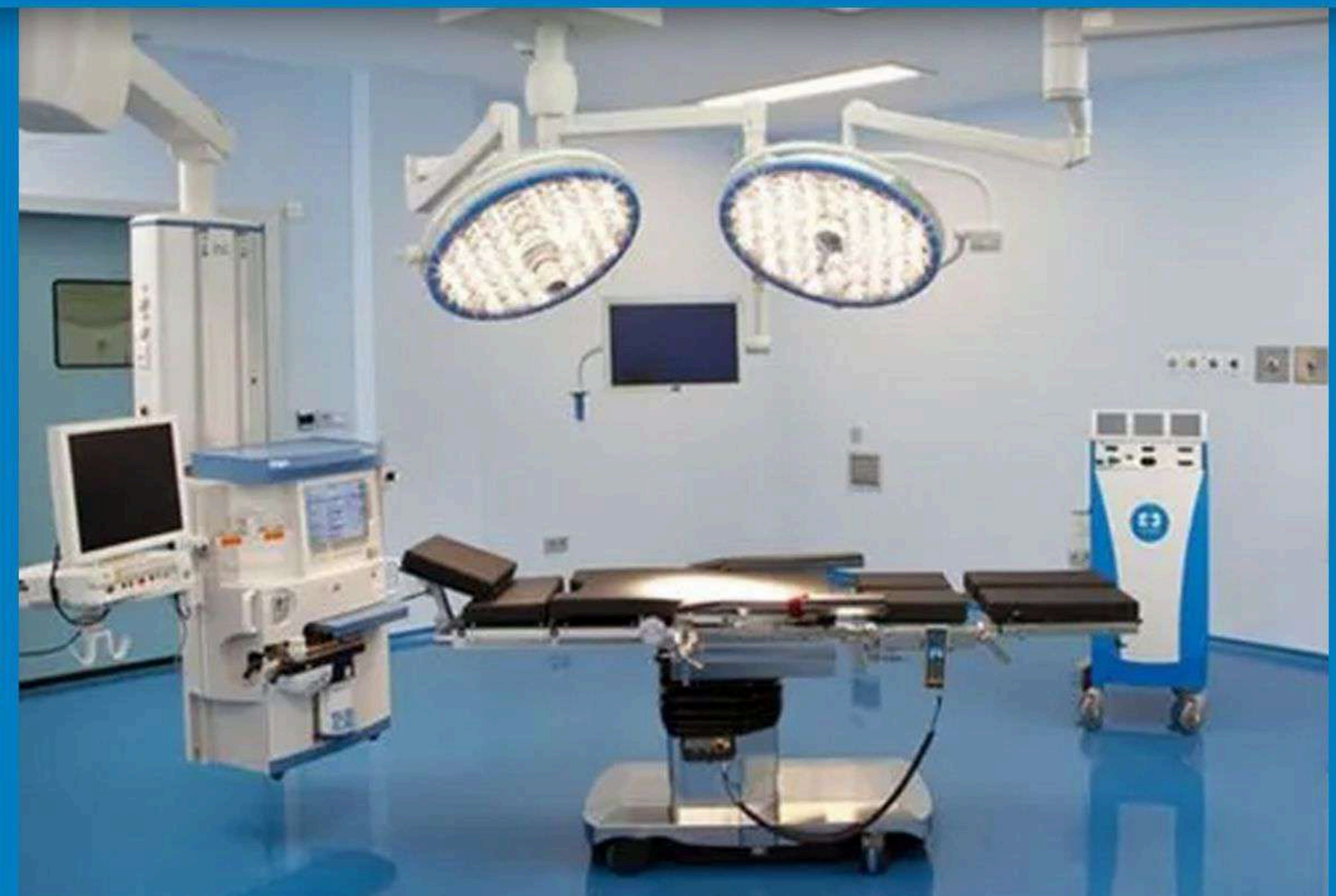
Fire-Resistant Options Available



Modular & Customizable

CLEAN ROOM ADVANTAGES:

- ✓ Flame retardant and anti-fungal surfaces
- ✓ Easy to wash and sterilize
- ✓ Clean edge finish with aluminum coving and air-tight joints
- ✓ Fulfills GMP and ISO standards for clean rooms
- ✓ Fast and modular installation



4. Cold Room / Cold Storage

PUF insulated cold rooms are ideal for storing fruits, vegetables, dairy, meat, icecream, medicines, vaccines, and chemicals. They maintain the required temperature and save energy.

These systems are essential for industries requiring a consistent, low-temperature environment to maintain product quality, safety, and extended shelf life. Built to withstand harsh environmental conditions and intensive usage, Cold Room Panels offer easy installation, low maintenance, and excellent thermal performance.



Cold Room / Cold Storage Features:



Superior Thermal Insulation



Temperature Range Support



Hygienic & Easy to Clean



Durable & Weather-Resistant



Modular & Customizable

COLD ROOM ADVANTAGES:

- ✓ Leak-proof camlock joining system
- ✓ Hygienic and food-grade panel skins (SS or GI)
- ✓ Compatible with sliding/hinged insulated doors
- ✓ Supports digital temperature control systems



5. Modular Office / Clinic / Porta Cabins

Description:

Portable, insulated, ready-to-use structures for site offices, clinics, and security cabins.

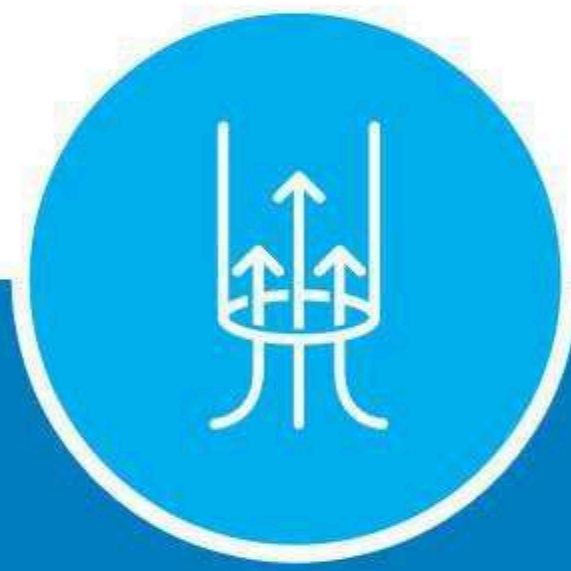
These portable cabins are factory-fabricated, transported in ready-to-install form, and assembled quickly at the site – ensuring minimal disruption, faster deployment, and cost savings compared to conventional construction.



Modular Office Panels Features:



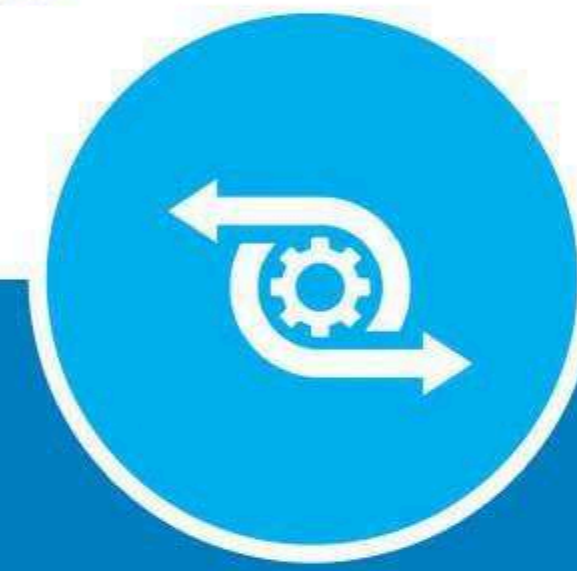
High Thermal Insulation



Air-Tight Sealing



Corrosion & Impact Resistant



Smooth Operation



Optional Accessories

MODULAR OFFICE ADVANTAGES:

- ✓ Fully insulated to save energy and increase comfort
- ✓ Lightweight but durable – ideal for portable use
- ✓ Waterproof and leak-proof construction



6. Doors:

Cold Room door

Here is a general Cold Room Door Specification that can be tailored depending on the type of cold room (chiller), usage, and temperature range. Contact us if you want a version suited for food storage, pharma, or industrial use.



COLD ROOM DOOR SPECIFICATION-

Category	Specification
Type of Door	Hinged (for small rooms/ personnel), Sliding (for large/ high-traffic openings) Options: Automatic Sliding, Double Leaf, Vertical Lift
Dimensions	Hinged: 800x1800 mm → 1200x2000 mm Sliding: 1000x2000 mm → 2000x2500 mm Custom sizes on request
Temperature Range	Chiller: +2°C to +8°C Freezer: -18°C to -25°C (or lower)
Door Panel Core	PUF / PIR / HONEYCOMB/ ROCKWOOL
Hardware	Heavy-duty lift-off hinges Lockable handle with emergency internal release
Heating System (Freezer)	Frame & threshold heater to prevent ice build-up 24V/ 230V heating strip with thermostat control

7. Clean Room door

Clean rooms are controlled environments that keep air free from contaminants. Clean room doors ensure airtight sealing, hygiene, and stable conditions for critical industries.



CLEAN ROOM DOOR SPECIFICATION-

Category	Specification
Type of Door	Swing (Single/Double Leaf) or Sliding (Manual/Automatic)
Dimensions	Single Leaf: 900×2100 mm Double Leaf: 1500×2100 mm Custom sizes available
Door leaf core	Rockwool / puf/ PIR
Surface Material	PPGI / PCGI/ SS
Leaf thickness	30 to 100 mm
Performance	Airtight sealing to maintain positive/negative pressure Controls humidity, temperature, and particle count Withstands frequent cleaning with disinfectants Rust, corrosion & surface degradation resistant
Hygiene features	Flush vision panels, gaskets, and frames to prevent dust accumulation

8. Fire Doors (Sliding, Steel, Glazed)

Fire doors are specialized doors designed to prevent the spread of fire and smoke between different compartments of a building, helping ensure safe evacuation and limiting property damage.

Our Fire-Rated Doors are specially engineered to provide maximum safety during fire emergencies. Designed with high-quality materials and certified to international standards, these doors ensure fire resistance, durability, and reliable performance in critical situations.



TECHNICAL BENEFITS OF FIRE DOORS-

1. Fire Resistance & Compartmentalization:

- ✔ Effectively prevents fire and smoke from spreading between rooms or zones, allowing safe evacuation time.
- ✔ Maintains fire-rated compartments as per building codes (30, 60, 90, 120 minutes).
- ✔ Minimizes heat transfer, keeping escape routes safer during a fire.
- ✔ Constructed with high-performance materials such as galvanized steel and fire-rated glass.
- ✔ Engineered for high-traffic and harsh environments without compromising fire integrity.

2. APPLICATION-BASED RECOMMENDATIONS

Application	Outer Surface	Recommended Mineral Wool Density
Office / Residential	30-60 mins	100-120 kg/m ³
Commercial/Hospital	60-90 mins	120-140 kg/m ³
Industrial/High-Risk Zones	90-120 mins	140-160+ kg/m ³



9. Hospital Trolleys - Technical Specifications

Hospital trolleys are mobile units used for the transportation of medical supplies, instruments, medications, and sometimes patients within clinical or surgical environments. Designed for durability, hygiene, and maneuverability

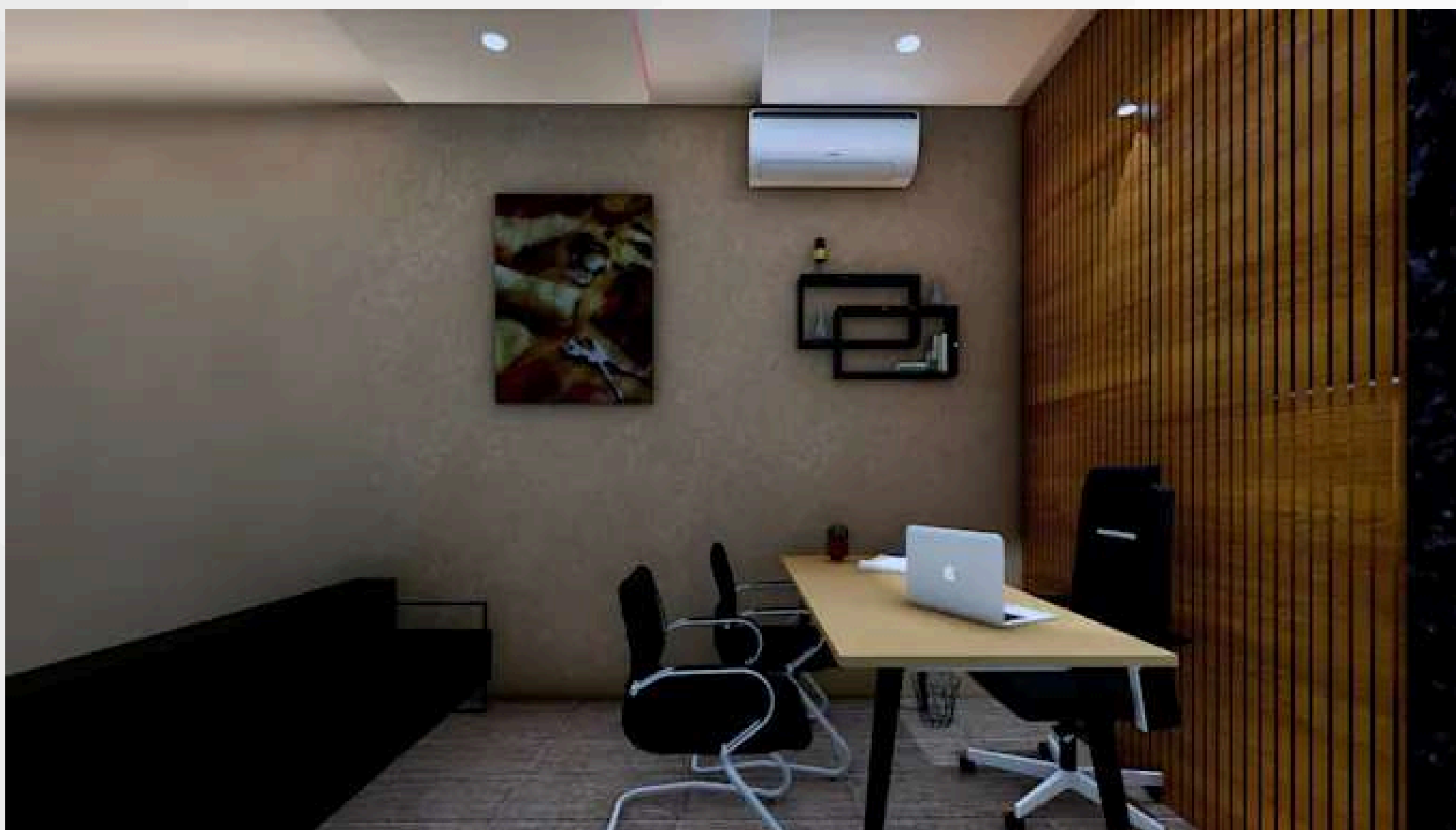
CATEGORY	DETAILS
Type	Instrument Trolley
Frame Material	Stainless Steel (SS) / Powder-coated MS / Aluminum
Shelves / Trays	2-4 tiers, stainless steel
Top Shelf	Guard rails / raised edges to prevent spillage
Castors/Wheels	100-150 mm dia., 360° swivel, 2 with brakes
Load Capacity	100-150 kg (depending on design)
Handles	Ergonomic push handle, anti-bacterial coating
Typical Dimensions	650 x 450 x 900 mm (customizable)
Finish	Brushed/ matte stainless steel, corrosion-resistant

10. Wooden Finish PUF Panel

A wooden finish PUF panel is a versatile and stylish material commonly used in interior design, , and architectural applications just like (Resort, Row houses), Porta Cabin,Office cabins.

Key Features :

- **Lightweight:** The PU material keeps the panel lightweight, which makes it easy to install and handle.
- **Durability:** Resistant to scratches, stains, and wear, the PU panel maintains its aesthetic appeal over time. It's also resistant to environmental factors like humidity and temperature changes.
- **Easy to Maintain:** The finish is easy to clean and doesn't require extensive maintenance, unlike real wood, which may need periodic polishing or sealing.
- **Eco-Friendly Options:** Many manufacturers offer eco-friendly variants, using sustainable materials or processes.



Wooden Finish Puf Panel for Office Cabin



Wooden finish puf panel for Row Houses



Wooden Finish Shade in PPGI Coil

Advantages :

- **Cost-Effective:** Provides the visual appeal of wood at a lower cost compared to solid timber.
- **Versatile Design Options:** Available in a wide range of wood types, finishes, and sizes, making it easy to match various decor styles.
- **Water Resistance:** Unlike real wood, PU panels are more resistant to water and moisture, which makes them ideal for humid areas like bathrooms and kitchens.



Wooden Finish Puf Panel for Resorts



Wooden finish Puf panel for Porta Cabin

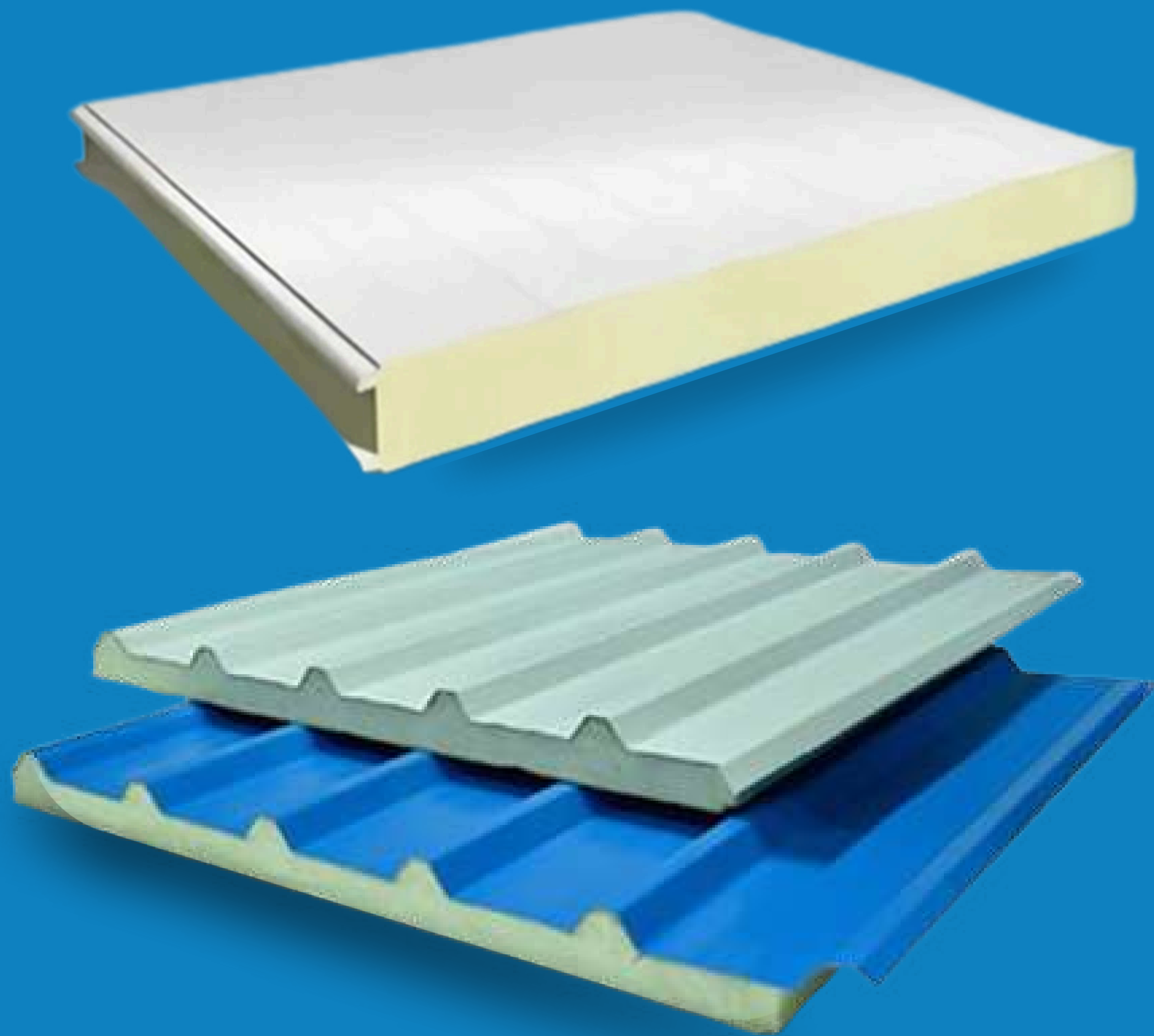


11. PEB Structure

A PEB Structure refers to a Pre-Engineered Building structure, which is a modern method of construction using prefabricated steel components. These buildings are designed, fabricated, and assembled using standardized engineering methods, making them efficient, cost-effective, and fast to erect.



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Sheet Thickness for Puf Wall & Roofing Panel

Wall Panel

40,50 & 60 mm

Roofing Panel

30,40,50, &60mm

Benefits of PUF Panels on PEB Structures

- Excellent Thermal Insulation.
- Energy Efficiency Reduces HVAC load and electricity bills significantly.
- Fast Installation Prefabricated and lightweight – reduces construction time.
- Durability Resistant to corrosion, weather, and pests. Long lifespan.
- Sound Insulation Provides decent noise reduction, ideal for industrial or commercial areas.
- Water & Moisture Resistance, closed – cell Foam does not absorb water. Prevents mold and dampness.

Applications: –

- ✓ Industrial Sheds
- ✓ Warehouse
- ✓ Cold Storage
- ✓ Commercial Building
- ✓ Clean Rooms
- ✓ Schools / Hospital



12. SAFFRON GROWING COLD ROOM/ CULTIVATION COLD ROOM

Saffron, known as “Red Gold,” is one of the world’s most valuable spices. Traditionally grown in regions like Kashmir, it is now cultivated using modern, climate-controlled indoor systems ensuring consistent quality and production anywhere.

A Saffron Growing Cold Room recreates the ideal natural conditions by controlling temperature, humidity, light, and airflow—resulting in higher yield, better quality, and year round farming.



Environmental Control Requirements

- ✓ **CO₂:** 400–600 ppm
- ✓ **Ventilation:** Proper airflow for humidity & gas balance
- ✓ **Shelving:** Racks with wooden trays for corms

Key Aspects of Saffron Cultivation

- ✓ **Planting Material:** High-quality mother bulbs/corms are crucial for production. One bulb can produce multiple new cormlets, increasing yield potential.
- ✓ **Indoor Setup:** Requires a controlled environment with air conditioning (chillers), vertical racks, grow lights (12–14 hours), and dehumidifiers to replicate a cool, dry climate.
- ✓ **Growing Medium:** If not using pure aeroponics, a well-drained sandy loam soil with a pH of 6–8 is recommended.
- ✓ **Climate Requirements:** Requires a cold period (2°C–15°C) to break dormancy and stimulate flowering.

Key Features

- ✓ Designed specifically for indoor saffron cultivation
- ✓ Enables year-round production
- ✓ Built with high-quality PUF panels for minimal heat transfer
- ✓ Operates on 3-phase power supply (single-phase optional)

Technical Specifications

✓ Temperature Range:

0°C to 4°C (flowering stage)
Up to 25°C (growth cycle control)

✓ Capacity:

1 Ton to 3 Ton systems
Standard size: 10×10×8 ft (customizable)

✓ Insulation:

60mm PUF Panels with PPGI sheets

✓ Humidity Control:

50% to 90% RH adjustable

✓ Refrigeration System:

High-efficiency compressor with R410A refrigerant

✓ Lighting:

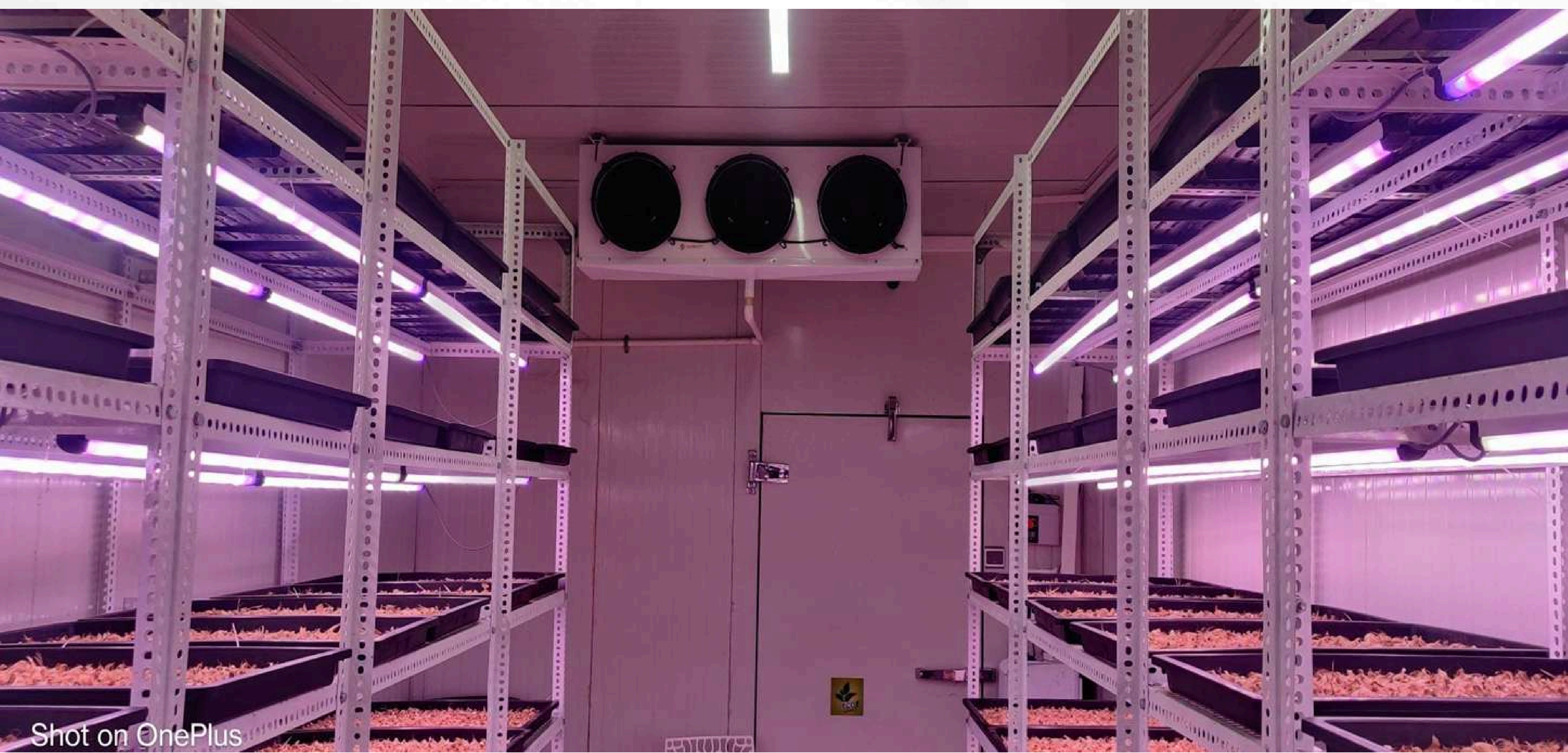
LED Grow Lights (12–14 hours cycle)

✓ Power Supply:

3-Phase (Single phase optional for small units)

SAFFRON FARMING COLD ROOMS

A Saffron Farming Cold Room is a specialized, climate-controlled environment designed to simulate dormant and flowering conditions for saffron corms. Typically measuring 10×10×8 ft (2 Ton capacity) with 0–4°C / 2–8°C temperature control, it ensures ideal conditions for both flowering and corm storage.



13. WALK-IN COLD ROOMS

Walk-in Cold Rooms are insulated storage systems designed for bulk storage of perishable products under controlled temperature conditions.

These rooms allow easy access and movement, making them ideal for commercial and industrial refrigeration applications.

Working Principle

The system uses a refrigeration cycle to remove heat from the storage area and maintain the desired temperature.

Insulated PUF panels prevent heat gain, while air circulation ensures uniform cooling throughout the room.



Technical Specifications

- ✓ **Temperature Range:** +10°C to -25°C (customizable as per application)
- ✓ **Storage Type:** Chilling / Freezing / Multi-purpose
- ✓ **Insulation:** PUF Panels (60 / 80 / 100 / 120 mm thickness)
- ✓ **Panel Density:** 40 ± 2 kg/m³
- ✓ **Refrigeration System:** Air-cooled / Water-cooled
- ✓ **Refrigerant:** R404A / R507
- ✓ **Compressor:** Reciprocating / Scroll / Screw type
- ✓ **Doors:** Hinged / Sliding insulated doors with airtight sealing
- ✓ **Flooring:** Anti-skid, heavy load bearing
- ✓ **Control System:** Digital temperature controller / PLC based
- ✓ **Capacity:** Custom-built (small to large scale)

Benefits

- Maintains product freshness & quality
- Extends shelf life of perishables
- Hygienic and controlled storage environment
- Energy-efficient insulation design
- Easy access and material handling
- Customizable as per storage needs

Applications

- Fruits & Vegetables Storage
- Dairy Products
- Meat & Poultry
- Seafood Storage
- Pharmaceuticals
- Hotels, Restaurants & Food Processing Units

Components

- Insulated PUF Panel Structure
- Refrigeration Unit (Compressor + Condenser)
- Evaporator Unit (Cooling Coil with Fans)
- Insulated Doors
- Temperature Control Panel
- Lighting System

Features

- Modular panel construction for easy installation
- Leak-proof joints for thermal efficiency
- Heavy-duty doors with locking system
- Hygienic and easy-to-clean interiors
- Optional humidity control & automation



14. HUMIDITY CONTROLLED COLD ROOMS

Humidity Controlled Cold Rooms are advanced storage systems designed to maintain both temperature and relative humidity levels for sensitive products.

These systems prevent moisture loss, dehydration, and spoilage, ensuring products retain their freshness, weight, and quality for longer durations.



Benefits

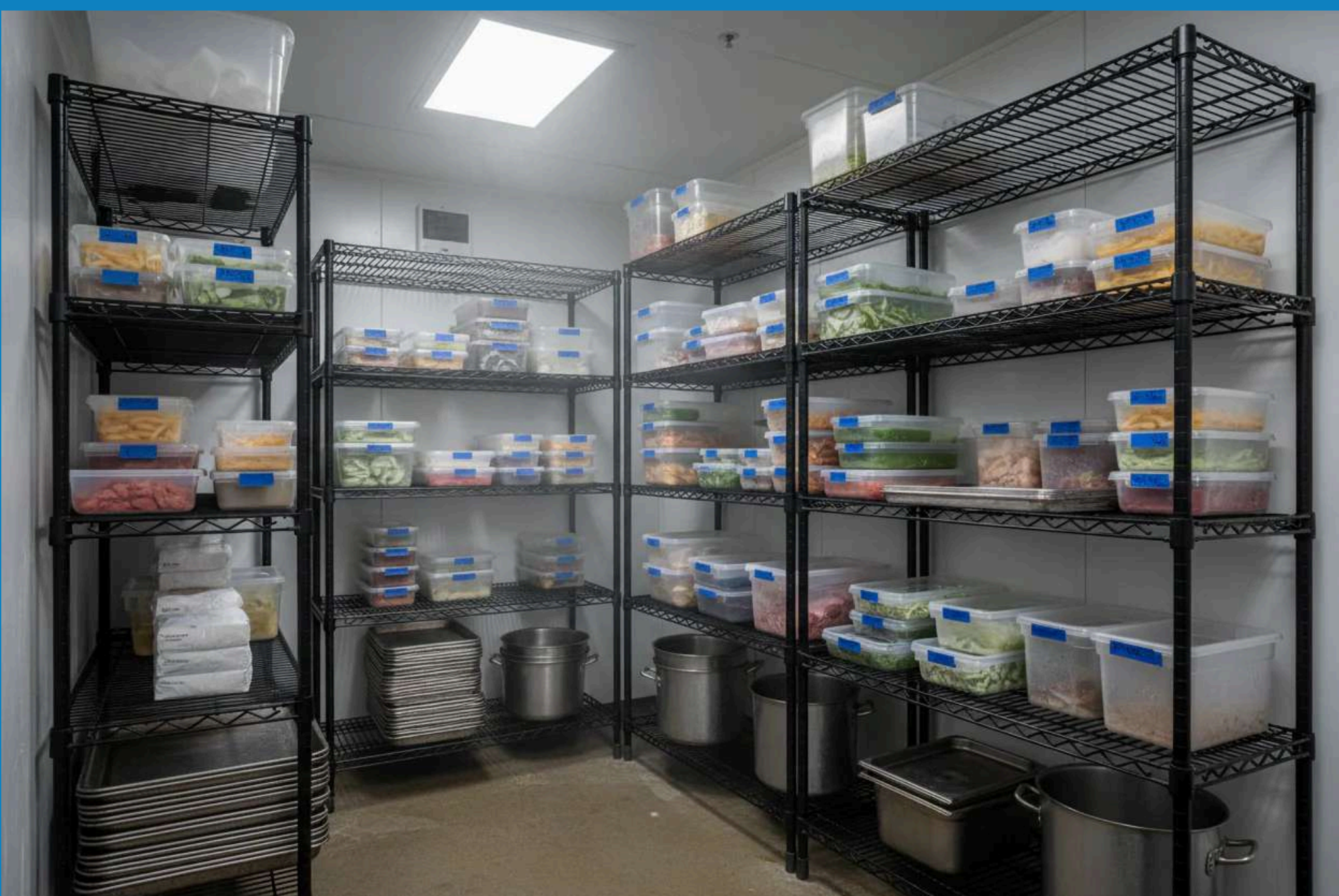
- Prevents weight loss & dehydration
- Maintains product freshness & texture
- Reduces spoilage and wastage
- Improves storage life and quality
- Suitable for moisture-sensitive products
- Energy-efficient and reliable operation

Applications

- Fruits & Vegetables Storage
- Floriculture (Flowers)
- Dairy & Fresh Produce
- Pharmaceuticals
- Food Processing Units

Specifications

- ✓ **Temperature Range:** 0°C to +15°C (application based)
- ✓ **Humidity Range:** 65% to 95% RH (adjustable)
- ✓ **Insulation:** PUF Panels (60 / 80 / 100 / 120 mm thickness)
- ✓ **Panel Density:** 40 ± 2 kg/m³
- ✓ **Refrigeration System:** Air-cooled / Water-cooled
- ✓ **Refrigerant:** R404A / R507
- ✓ **Humidity Control:** Humidifier / Dehumidifier system
- ✓ **Airflow:** Uniform air circulation system
- ✓ **Doors:** Airtight insulated hinged/sliding
- ✓ **Control System:** Digital / PLC based automation
- ✓ **Capacity:** Custom-built as per requirement





Components

- Insulated PUF Panel Structure
- Refrigeration Unit
- Humidity Control System (Humidifier/Dehumidifier)
- Air Circulation Fans
- Control Panel
- Insulated Doors

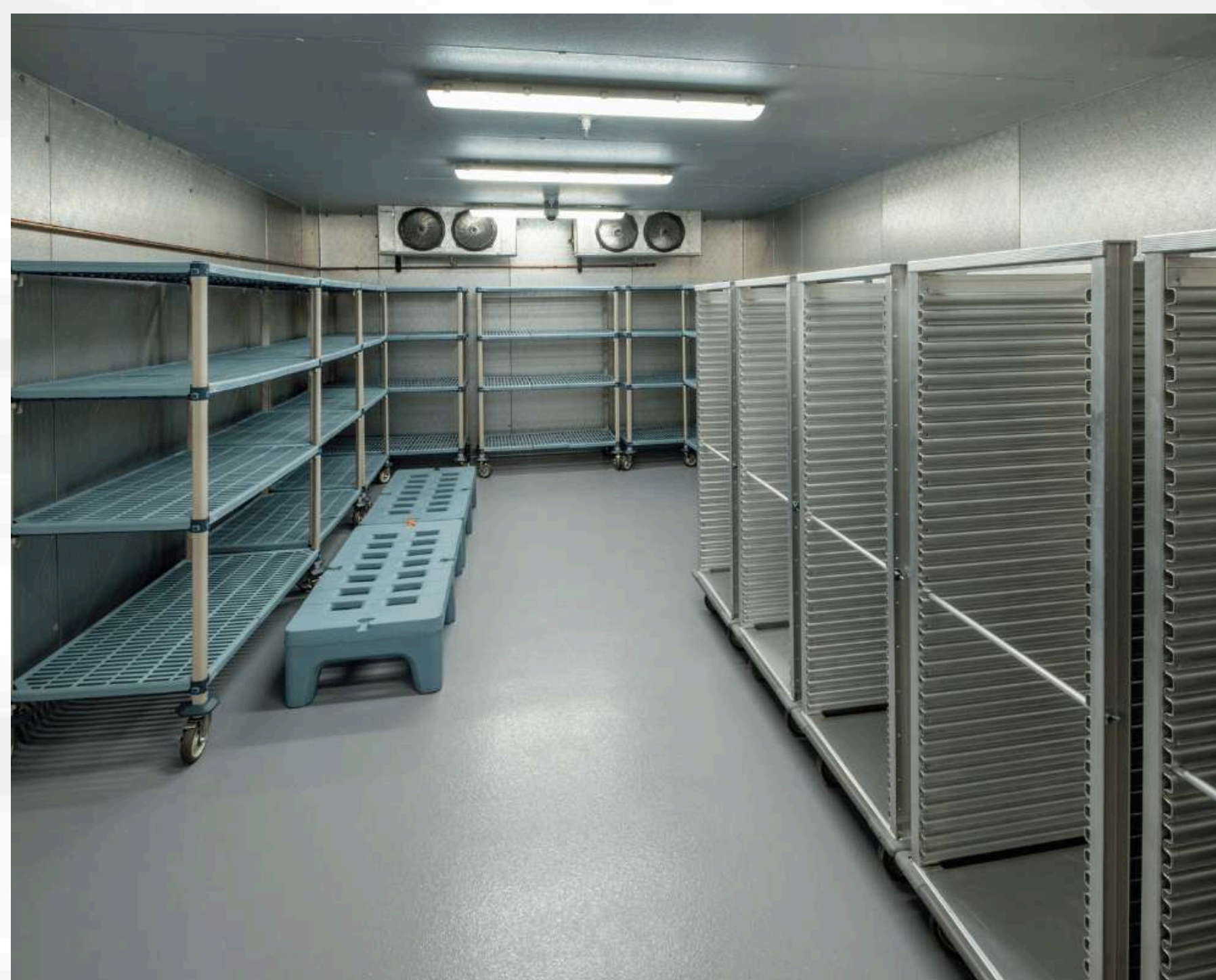
- Precision humidity control system
- Uniform airflow distribution
- Leak-proof insulated structure
- Hygienic interiors for safe storage
- Optional automation & monitoring system

Features

Working Principle

Along with cooling, the system uses humidity control equipment to maintain desired moisture levels.

Balanced airflow ensures uniform temperature and humidity distribution, preventing drying or condensation inside the room.



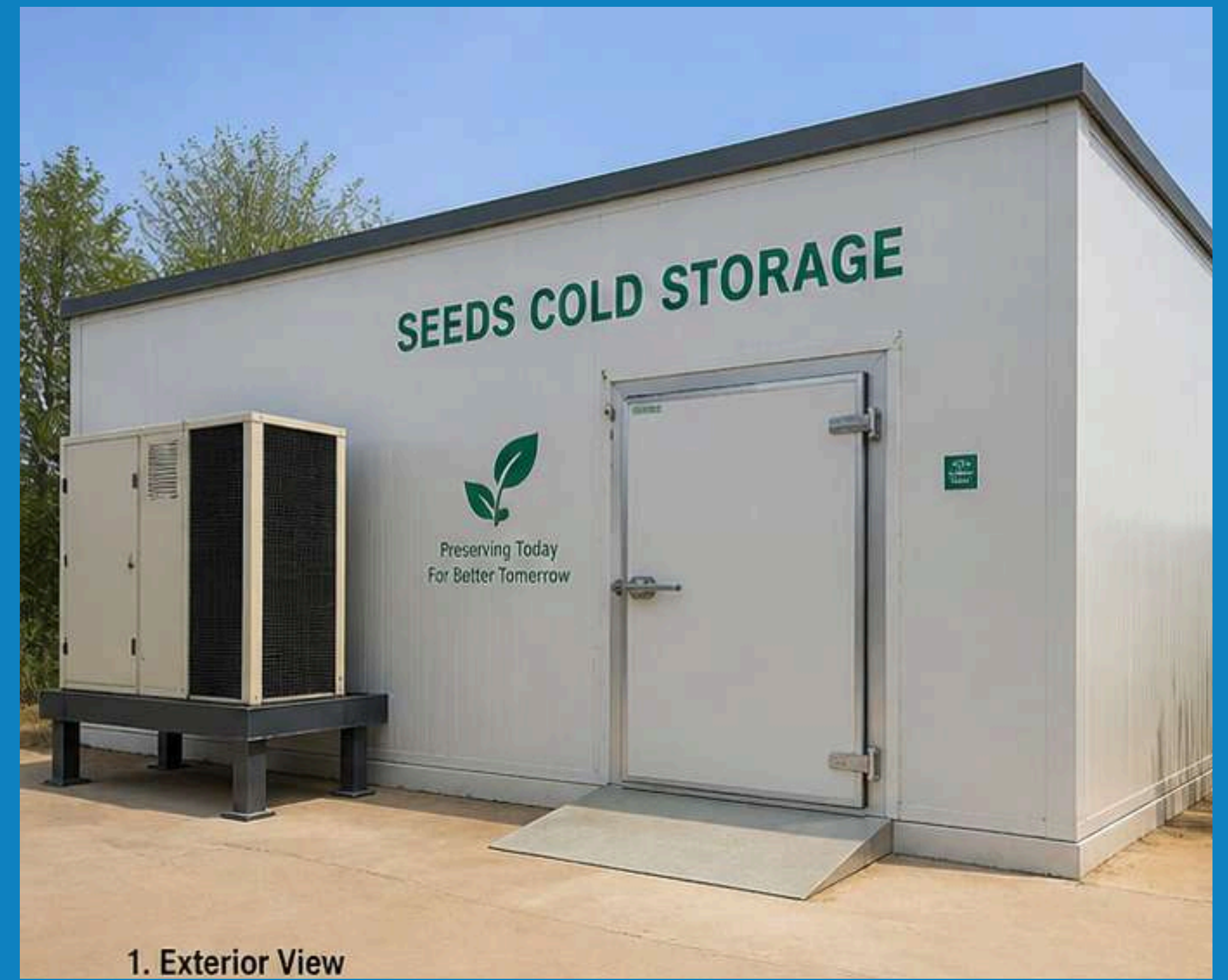
15. SEEDS COLD STORAGE

Seeds Cold Storage systems are designed to preserve the viability, germination capacity, and quality of seeds over long periods.

By maintaining low temperature and controlled humidity, the system prevents moisture damage, fungal growth, and deterioration, ensuring seeds remain healthy for future use.

Design Features

- Low humidity control for seed safety
- Airtight insulated structure
- Hygienic and contamination-free storage
- Uniform temperature distribution
- Optional monitoring & automation system



1. Exterior View

Components

- Insulated PUF Panel Structure
- Refrigeration Unit
- Dehumidification System
- Air Circulation Fans
- Control Panel
- Storage Racks / Pallets



Technical Specifications

- ✓ **Temperature Range:** 0°C to +10°C (seed dependent)
- ✓ **Humidity Range:** 30% to 50% RH (controlled low humidity)
- ✓ **Insulation:** PUF Panels (60 / 80 / 100 mm thickness)
- ✓ **Panel Density:** 40 ± 2 kg/m³
- ✓ **Refrigeration System:** Air-cooled / Water-cooled
- ✓ **Refrigerant:** R404A / R507
- ✓ **Airflow:** Uniform air circulation system
- ✓ **Doors:** Airtight insulated hinged/sliding
- ✓ **Control System:** Digital / PLC based
- ✓ **Capacity:** Custom-built (small to large scale)

Working Principle

The system maintains a low temperature and low humidity environment, which slows down seed respiration and prevents moisture absorption.

Controlled airflow ensures uniform storage conditions, protecting seeds from fungal attack and loss of germination power.

Key Benefits

- Maintains seed viability & germination rate
- Prevents moisture damage and fungal growth
- Extends storage life significantly
- Reduces quality degradation
- Suitable for long-term seed preservation
- Reliable and energy-efficient system

Applications

- Agricultural Seed Storage
- Seed Processing Units
- Research Laboratories
- Agro Warehouses
- Seed Export & Distribution



16. POULTRY/HATCHERIES/GOAT PUF SHED

- ✓ **Definition:** A prefabricated structure using sandwich panels (high-density PUF core between two metal sheets).
- ✓ **Purpose:** Designed to create a stable, climate-controlled microclimate for high-yield farming.
- ✓ **Key Advantage:** Effectively replaces traditional concrete or metal-only sheds to provide superior thermal resistance.



Critical Benefits for Hatcheries & Farming

- **Precision Temperature Control :-** Maintain Optimal 18 Degree to 24 Degree Range.
- **Biosecurity & Hygiene :-** Smooth & non Porous Surface (Like those form techno Puf Solutions) are easy to Sanitize and resist Bacteria , Mold & Pest.
- **Energy Efficiency :-** Reduce Heating & cooling Electricity Cost by 30 – 40 %.
- **Sound Insulation:-** Minimizes External Noise (Rain , Wind) , Reducing Bird Strss and Improving Feed Conversion ratio.

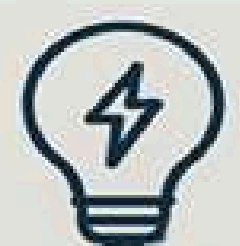
Technical Specifications

- ✓ **Panel Thickness:-** Commonly 60 mm (Wall & Roof) to 100 mm for extreme Climate.
- ✓ **Density :-** 40 +/- 2 kg / m Cube for the Puf Core
- ✓ **Surface Material :-** Pre Painted Galvanizing Iron(PPGI) or Galvalume Sheet.
- ✓ **Load Resistance :-** Can Withstand Wind Speed up to 150Kmph & Significant Live Roof Load.
- ✓ **Fire safety :-** Uses Fire Retardant Foam that is Self extinguishing does not emits toxic fumes.

WHY PUF PANELS ARE IDEAL FOR POULTRY FARMS



Thermal Insulation helps maintain a stable internal climate



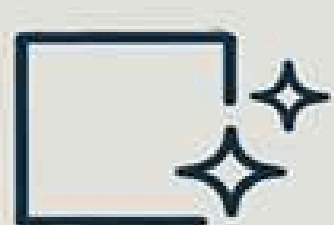
Energy Efficiency Reduces heating and cooling costs



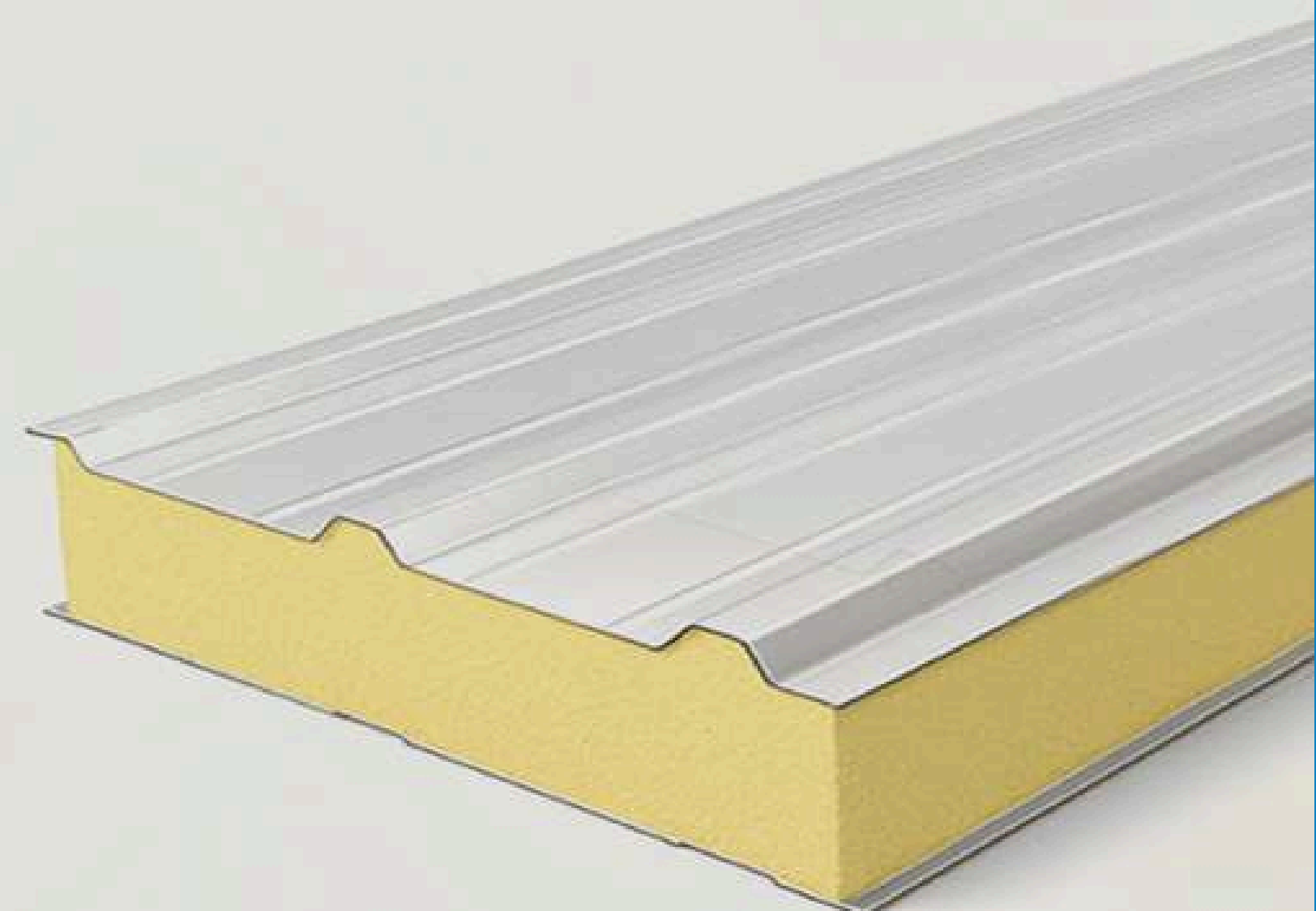
Hygiene & Cleanliness Easy to clean and sanitize



Moisture & Pest Resistance Prevents mold, mildew, and pests



Durability & Strength Withstands diverse weather conditions



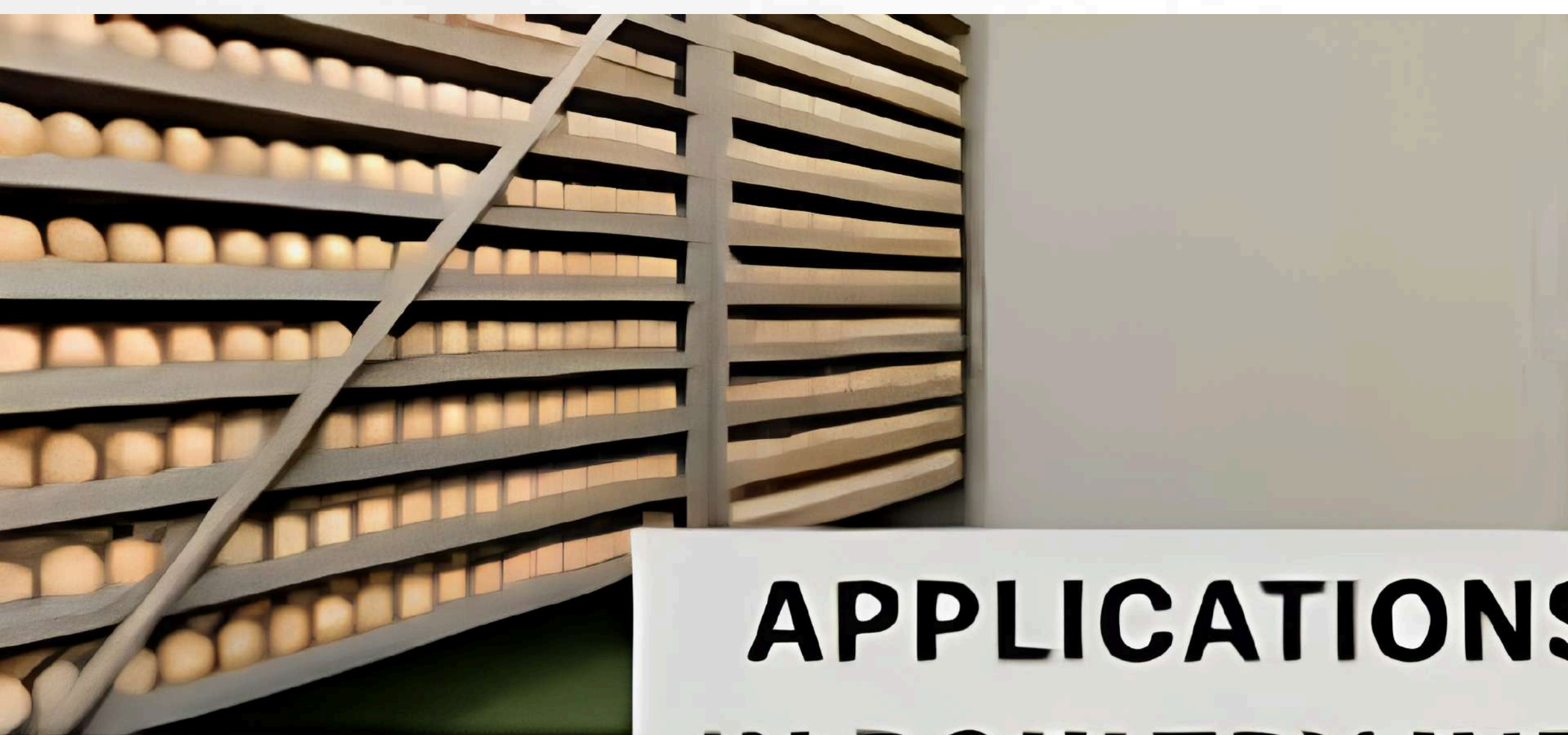
ROI & Performance Impact

- ✓ **Higher Productivity:-** Egg-laying rates can increase by 8-12% in temperature-controlled environments.
- ✓ **Lower Mortality:-** Stable climates strengthen bird immunity and reduce stress-related deaths.
- ✓ **Financial Payback:-** Though the initial cost (approximately ₹1.35 crore for a 20,000-bird shed) is higher than traditional sheds, investors often see a full ROI within 3-5 years through increased yields and lower utility bills.

Application Across the Lifecycle

- **Hatcheries:** Critical for maintaining the precise conditions for egg incubation.
- **Broiler/Layer Sheds:** Optimizing growth rates and egg consistency.
- **Feed Storage:** Moisture resistance prevents mold growth and feed spoilage.

APPLICATIONS OF PUF PANEL IN POULTRY INFRASTRUCTURE



17. BLAST FREEZER

A Blast Freezer is a high-performance refrigeration system designed to rapidly freeze products by exposing them to extremely low temperatures and high-velocity chilled air. This process ensures quick core freezing, preserving texture, taste, and nutritional value.

Key Components

- High-performance Compressors
- Heavy-duty Evaporators
- Insulated PUF Panels
- Air Circulation Fans
- Digital Control Panel
- Industrial Doors



Key Benefits

- ✓ **Faster Freezing** – Reduces freezing time significantly
- ✓ **Preserves Food Quality** – Maintains texture, color & taste
- ✓ **Prevents Bacterial Growth** – Ensures food safety
- ✓ **Longer Shelf Life** – Ideal for storage & export
- ✓ **Energy Efficient Design** – Optimized airflow & insulation
- ✓ **Uniform Freezing** – No partial freezing issues



Applications

- ✓ Food Processing Industries
- ✓ Meat & Poultry
- ✓ Seafood Processing
- ✓ Dairy Products
- ✓ Fruits & Vegetables
- ✓ Ice Cream & Bakery Products
- ✓ Pharmaceutical Storage

Technical Specifications

- ✓ **Temperature:** -18°C to -40°C | Blast Air up to -45°C
- ✓ **Freezing Time:** 90–240 minutes (depends on product)
- ✓ **Airflow:** 2–5 m/s high-velocity circulation
- ✓ **Refrigerant:** R404A / R507 / NH₃ (optional)
- ✓ **Insulation:** PUF Panels (60–120 mm, 40 ± 2 kg/m³ density)
- ✓ **Structure:** Hinged/Sliding insulated doors, anti-skid heavy-duty flooring
- ✓ **Capacity:** 100 kg to 10,000+ kg per batch
- ✓ **System:** Reciprocating/Screw compressor + forced air evaporator
- ✓ **Controls:** PLC / Microprocessor based system

Build Quality & Design Features

- Modular panel construction for easy installation
- Leak-proof joints for thermal efficiency
- Heavy-duty hinges & locking systems
- LED lighting with vapor-proof fittings
- Optional SS (Stainless Steel) interior finish



Core Components

- High-efficiency Compressor Units
- Industrial Evaporator Coils
- High-speed Axial Fans
- Insulated PUF Panel Chambers
- Airtight Insulated Doors
- Smart Control Panel System

18. RIPENING CHAMBERS

Ripening Chambers are specially designed for controlled and uniform ripening of fruits such as bananas and mangoes.

By maintaining precise temperature, humidity, airflow, and ethylene levels, the system ensures natural ripening, better appearance, and consistent quality.

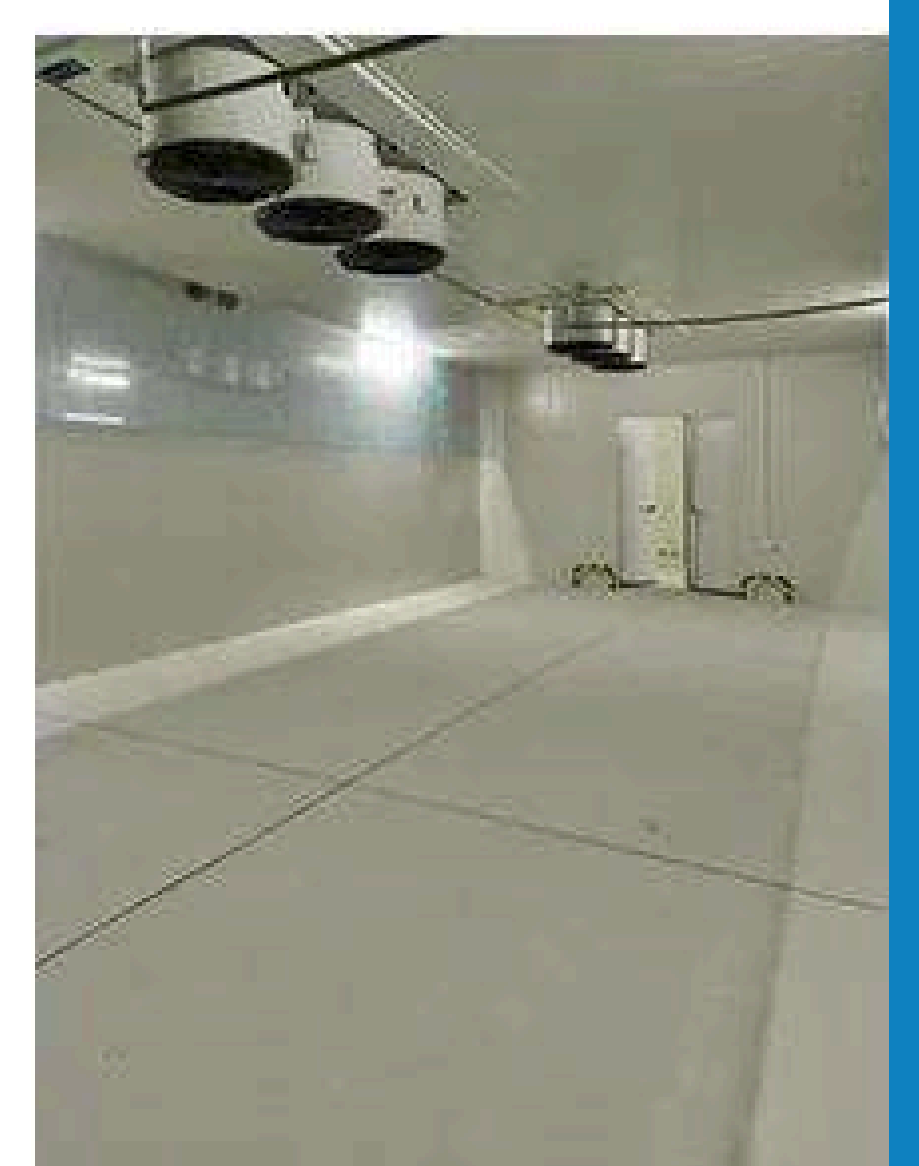


Components

- Refrigeration System
- Ethylene Dosing System
- Humidity Control Unit
- Air Circulation Fans
- Control Panel
- Insulated PUF Chamber

Working Process

Fruits are loaded in crates with proper spacing
Chamber conditions are stabilized (temp & humidity)
Controlled ethylene gas dosing is applied
Air circulation ensures even distribution
Fruits ripen uniformly without damage



Industry Applications

- Banana Ripening Facilities
- Mango Processing Units
- Fruit Distribution & Storage Centers
- Agri Export & Supply Chain Units

System Specifications

- ✓ **Operating Temperature:** 14°C to 25°C (fruit dependent)
- ✓ **Relative Humidity:** 85% to 95% RH
- ✓ **Ethylene Dosing:** 100–150 ppm (controlled injection)
- ✓ **Air Circulation:** Uniform forced air distribution system
- ✓ **Ripening Cycle:** Typically 24 to 72 hours
- ✓ **Insulation:** PUF Panels (60–120 mm, 40 ± 2 kg/m³ density)
- ✓ **Capacity Range:** 2 MT to 100 MT+
- ✓ **Doors:** Airtight insulated hinged/sliding doors
- ✓ **Refrigeration System:** Air-cooled / Water-cooled
- ✓ **Refrigerant:** R404A / R507
- ✓ **Control Interface:** PLC-based automated control panel

Operational Advantages

- Uniform Ripening: Consistent color & maturity across batches
- Quality Preservation: Maintains natural taste, firmness & aroma
- Reduced Spoilage: Controlled environment minimizes losses
- Higher Market Value: Better appearance & shelf appeal
- Batch Management: Predictable ripening cycles
- Food Safety Compliance: Eliminates harmful chemical ripening

Performance Highlights

- Scientifically controlled ripening environment
- Uniform results across full chamber capacity
- Optimized energy consumption
- Reliable performance in Indian climatic conditions



19. MUSHROOM PLANTS

Mushroom Plants are specially designed facilities that provide a controlled environment for cultivation of mushrooms such as button, oyster, and exotic varieties.

These systems maintain precise temperature, humidity, ventilation, and CO₂ levels to ensure high yield, uniform growth, and consistent quality.

Growing Process Control

- Compost preparation & spawning
- Controlled incubation phase
- Regulated temperature & humidity for growth
- Fresh air supply for CO₂ removal
- Uniform mushroom formation across racks

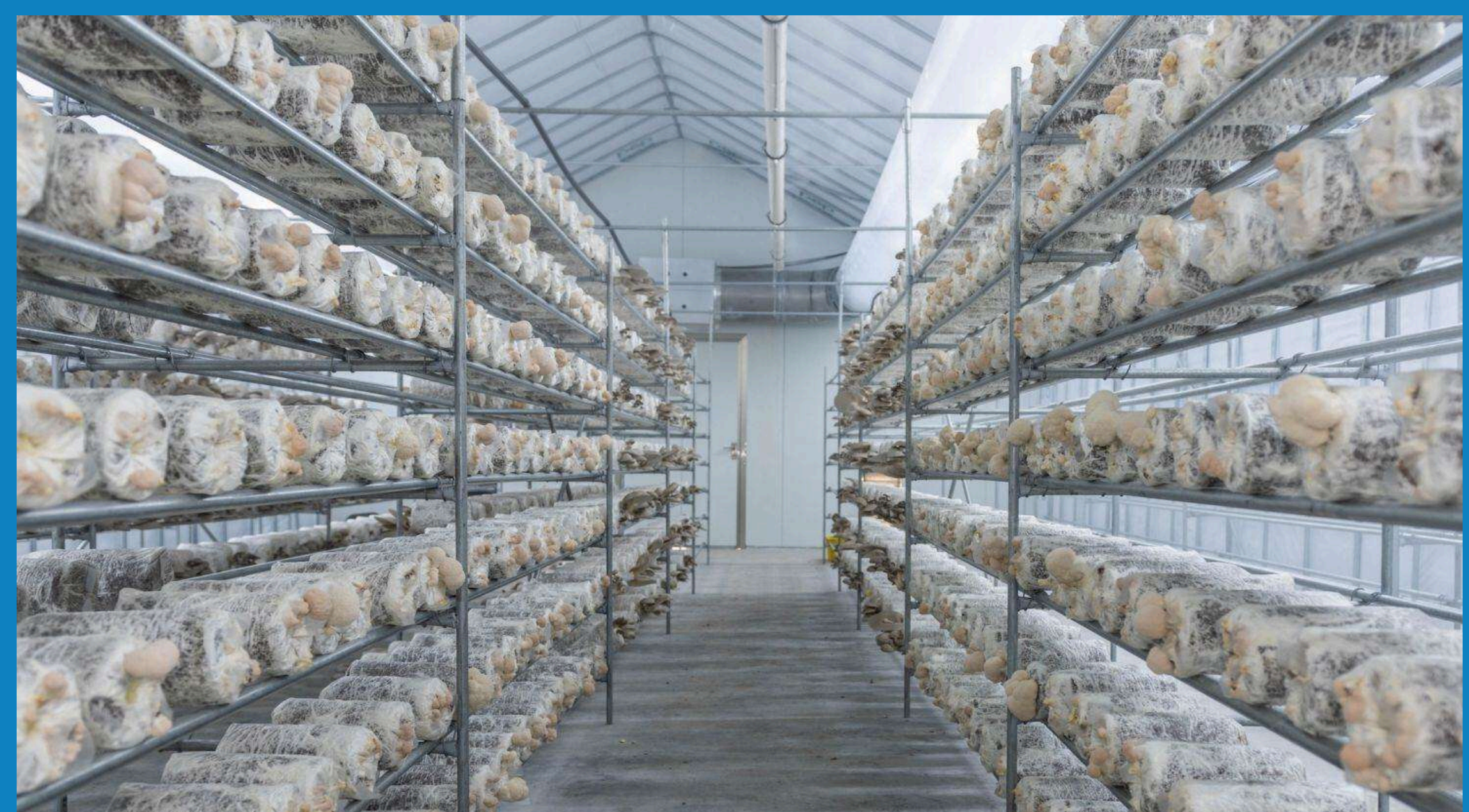


Key Benefits

- Controlled & hygienic cultivation
- Higher yield and better quality produce
- Year-round production capability
- Reduced contamination risk
- Energy-efficient operation
- Consistent size and texture

Key Components

- Insulated Growing Rooms (PUF Panels)
- HVAC / Refrigeration System
- Humidification System
- CO₂ Monitoring & Control System
- Air Handling Units (AHU)
- Rack / Tray Growing System
- Control Panel



Technical Specifications

- ✓ Temperature Range: 12°C to 25°C (stage dependent)
- ✓ Humidity: 80% to 95% RH
- ✓ CO₂ Control: 800–1500 ppm (controlled ventilation)
- ✓ Airflow: Uniform fresh air circulation system
- ✓ Insulation: PUF Panels (60–100 mm, 40 ± 2 kg/m³ density)
- ✓ Growing System: Rack-based / tray system
- ✓ Capacity: Custom-built (small to large scale units)
- ✓ Refrigeration: Air-cooled / Water-cooled system
- ✓ Control System: PLC / Microprocessor based



- Compost preparation & spawning
- Controlled incubation phase
- Regulated temperature & humidity for growth
- Fresh air supply for CO₂ removal
- Uniform mushroom formation across racks

Design Features



Growing Process Control

- Modular structure for expansion
- Hygienic and easy-to-clean interiors
- Uniform airflow distribution
- Automated environmental control
- Designed for continuous operation



20. SMART PUF PANELS TOILETS FOR SCHOOLS

This proposal outlines the plan for constructing Smart Toilets using PUF (Polyurethane Foam) Panels, designed for energy efficiency, rapid installation, and long-term durability. These modular smart toilets will integrate advanced sanitary features such as solar power. The combination of PUF panel infrastructure with smart technology provides an innovative, cost-effective, and sustainable solution for public sanitation challenges.

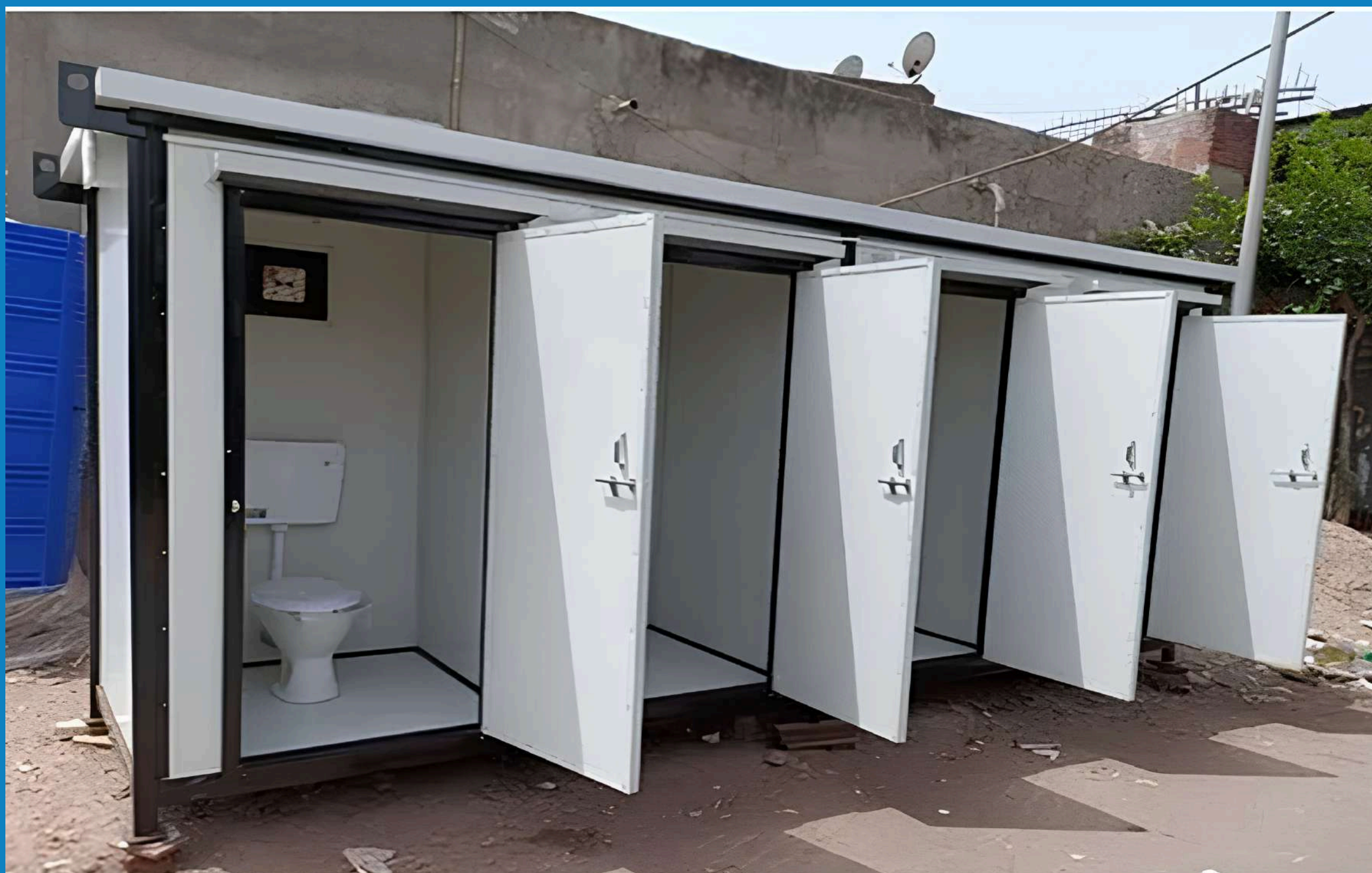
Objectives

- Construct durable, insulated smart toilets using prefabricated PUF panels.
- Reduce water and energy consumption through smart systems and solar power.
- Ensure quick deployment and ease of maintenance.



Scope of Work

- ✓ Site assessment and preparation
- ✓ Design ,Engineering & Installation of Smart Toilet units using Puff Panel.
- ✓ Installation of smart system (e.g. luxurious)



Target Locations

- ✓ Markets and malls
- ✓ Government buildings and public offices
- ✓ Railway stations, bus terminals, and highways
- ✓ Urban slums and resettlement colonies
- ✓ Tourist destinations and religious Places.
- ✓ Schools, colleges, and healthcare facilities

Key Features of Smart Toilets

➤ Smart Toilet Features

Feature	Description
Auto-Flushing System	Flush sensors to ensure hygiene
Self-Cleaning Technology	Scheduled cleaning using UV or water jets
IoT Sensors	Usage tracking, water levels, maintenance alerts
Accessibility	Ramps and handrails for disabled users

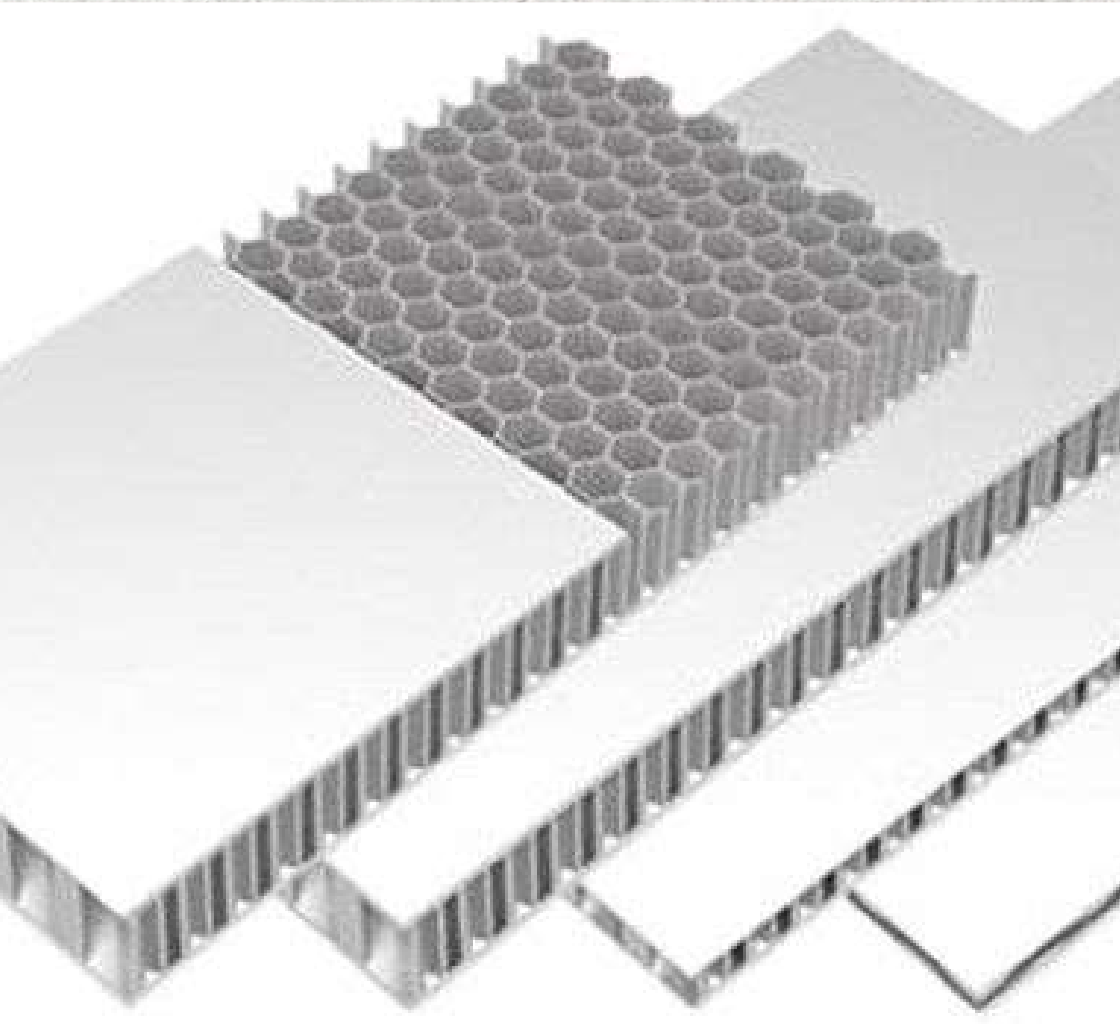
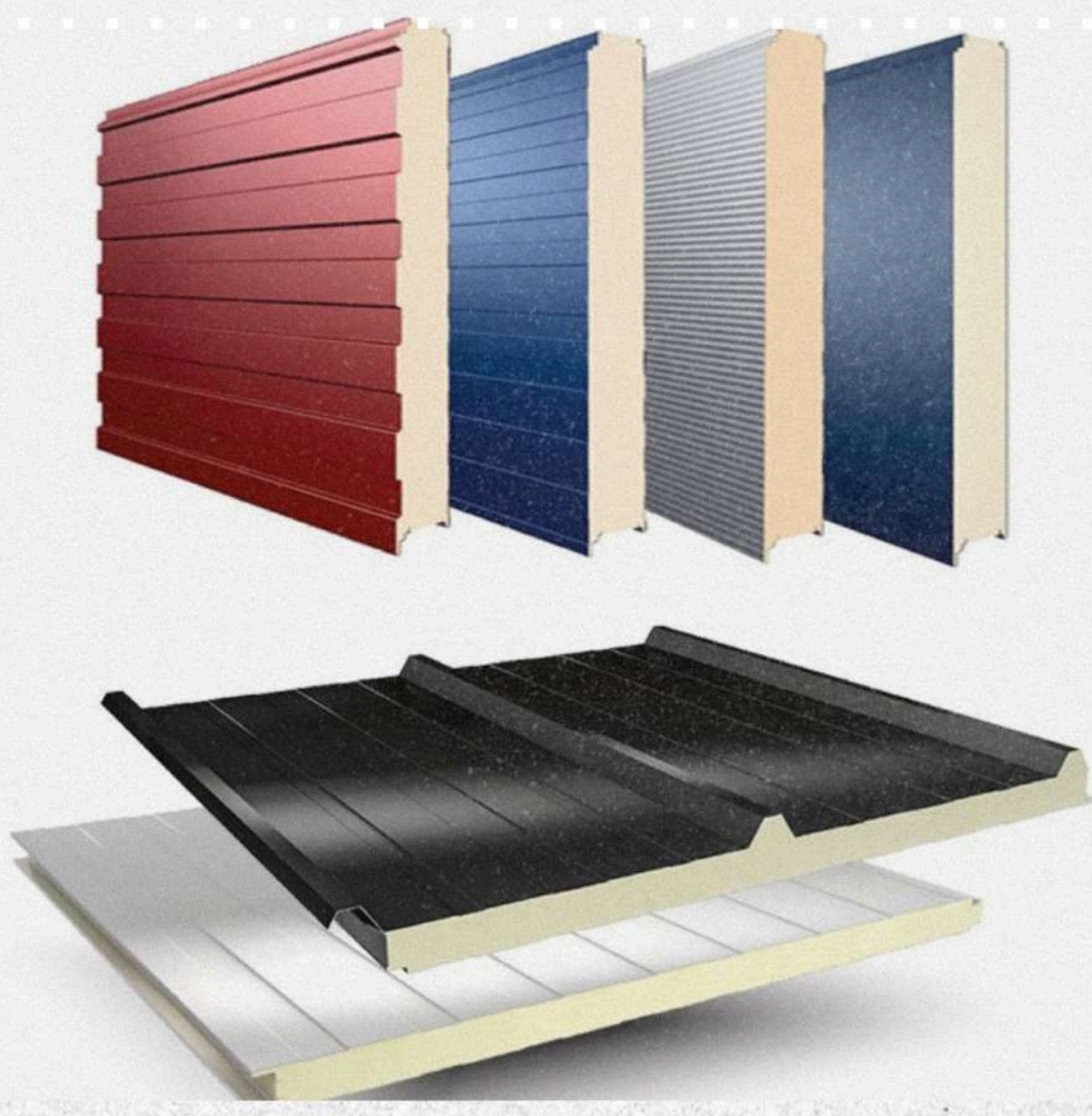
➤ Construction Features (PUF Panel-Based)

Feature	Description
PUF Panel Walls	Lightweight, weatherproof, insulated panels for thermal efficiency
Modular Design	Quick to install, relocate, or expand
Waterproof Flooring	Anti-skid and easy to clean
Ventilation & Exhaust	Designed for airflow and odour control

Benefits

- **Faster Construction** – Installation in less than 1 Month
- **Superior Insulation** – Comfortable interiors in all weather
- **Eco-Friendly** – Recyclable materials with low carbon footprint
- **Durability** – Rust-proof and pest-resistant
- **Cost-Effective** – Lower long-term maintenance





DESIGN BUILD SERVICES WE PROVIDE

- Complete project design build for Cold Rooms, Cold Storages, PUF Panels, Insulated Doors & Clean Rooms
- Approval drawings for Puf Panel work scopes and doors
- Comprehensive review of architecture details for panel and door
- Recommendations and corrections for thermal envelope details
- Value engineering as pertains to limits of proper design
- Preliminary budget costing
- Overall Project Reviews
- Consultancy services
- Energy Management Services (Energy Audits)

OUR CLIENTS



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REFRIGERATION**

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