



DELTA INDUSTRIES™

(An ISO 9001:2015 Certified Company)

We assure best quality!



About Us

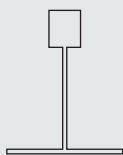
Leading Manufacturers of High Performance Metal Ceiling & Exterior Cladding Systems

Delta Architectural Products have developed an extensive range of suspended ceiling & exterior cladding systems. We continually invest in new manufacturing techniques, equipment and tooling in order to supply our products in a responsive and efficient manner from a quality controlled environment.

Adoption of Environmental considerations, remain the foundation of our business. We take pride in our products, culture and ethos and we look forward to being of service to you.

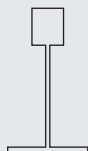


Delta Grid Suspension Systems (T-24 Plain)



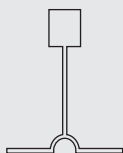
Description	Length	Height	Width	Thickness
Main Runner	3.0/3.6 Mtr	32/38	24	0.3
Cross Tee	1.2 Mtr	26	24	0.3
Cross Tee	0.6 Mtr	26	24	0.3
Wall Angle	3 Mtr	21	21	0.4

Delta Grid Suspension Systems (T-15 Plain)



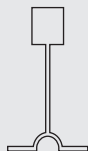
Description	Length	Height	Width	Thickness
Main Runner	3.0/3.6 Mtr	32	15	0.3
Cross Tee	1.2 Mtr	32	15	0.3
Cross Tee	0.6 Mtr	32	15	0.3
Wall Angle	3 Mtr	21	15	0.4

Delta Grid Suspension Systems (T-24 Center Black)



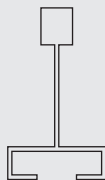
Description	Length	Height	Width	Thickness
Main Runner	3.0 Mtr	32	24	0.3
Cross Tee	1.2 Mtr	32	24	0.3
Cross Tee	0.6 Mtr	32	24	0.3
Wall Angle	3 Mtr	24	24	0.4

Delta Grid Suspension Systems (T-15 Center Black)



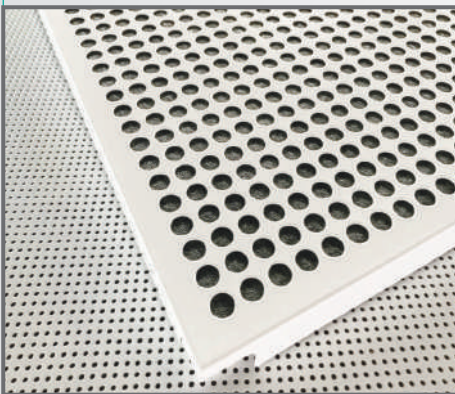
Description	Length	Height	Width	Thickness
Main Runner	3.0/3.6 Mtr	32	15	0.3
Cross Tee	1.2 Mtr	32	15	0.3
Cross Tee	0.6 Mtr	32	15	0.3
Wall Angle	3 Mtr	21	15	0.4

Delta Grid Suspension Systems (T-15 Silhouette)



Description	Length	Height	Width	Thickness
Main Runner	3.0 Mtr	38	15	0.3
Cross Tee	1.2 Mtr	38	15	0.3
Cross Tee	0.6 Mtr	38	15	0.3
Wall Angle	3 Mtr	21	15	0.4





Metal Lay in Ceiling Panel

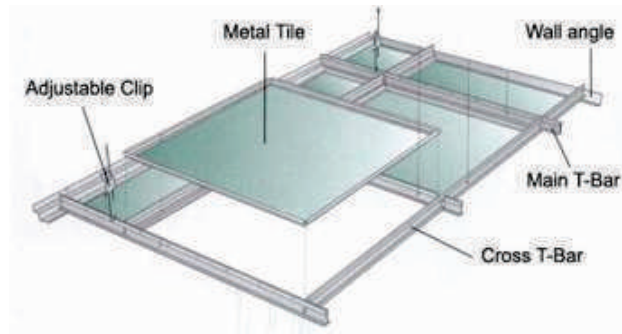
Description

The panels are simply laid on the exposed suspension grid systems, allowing simple and easy access to the plenum. For the lay in system, the tiles have a flange on each end which lays on the exposed grid.

Basic Parameters:

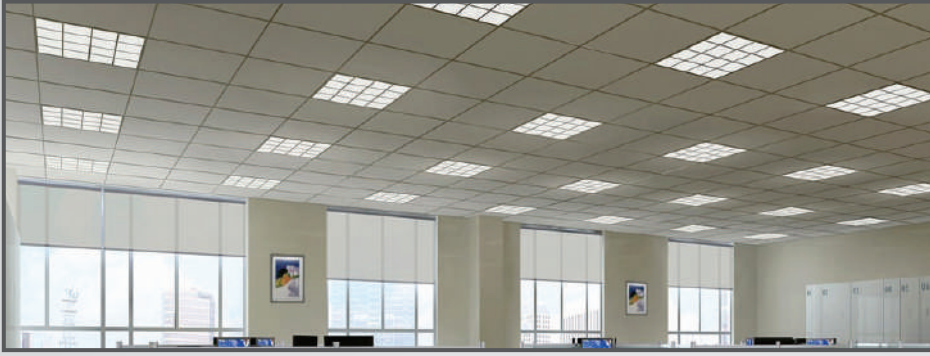
Product	: Metal Lay in ceiling (Perforated)
Available Size	: 600 x 600mm
Thickness	: 0.5 mm
Perforation Dia	: 1.8 mm
Perforated Rate	: 22%
Surface Treatment	: Power Coated
NRC	: 0.55 to 0.75

Instillation :



Application:

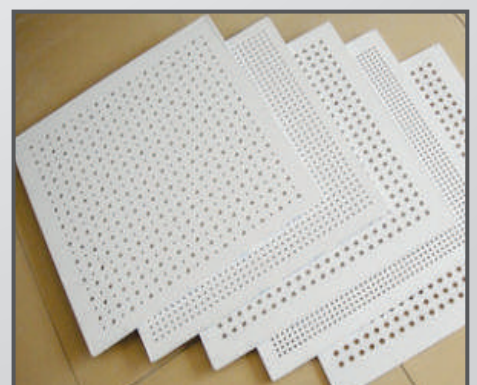
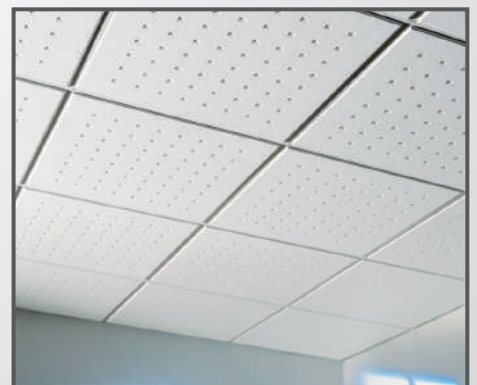
- | | |
|---------------------|-----------------------|
| → Airport | → Laboratory |
| → Cinema | → Marine & Offshore |
| → Computer Room | → Office Area |
| → Exhibition Centre | → Restaurant |
| → Hospital | → Shower Room |
| → Hotel | → Supermarket Theater |
| → Kitchen | |

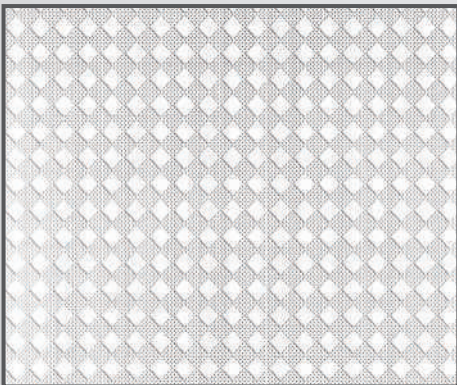
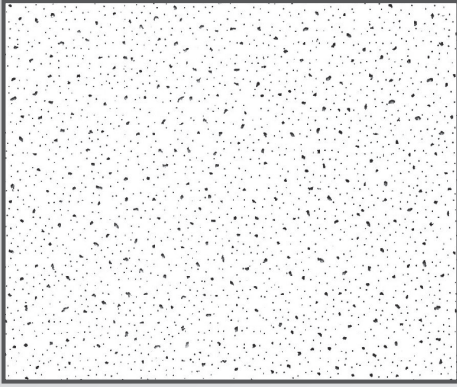


PVC Gypsum Ceiling Tile

Introduction

Giving a stylish and elegant look to your ceiling, this revolutionary product is ideal for maintaining the aesthetics of your spaces. With High water vapour/humidity/fire/corrosion resistance, PVC gypsum ceiling tile is made with superior quality paper-faced gypsum board with a layer of PVC on its surface. The back side of the product is covered by polished aluminium foil. It is absolutely eco-friendly and Biodegradable. With its light weight properties, it is easy to handle and easier to maintain.





PVC Gypsum Ceiling Tile

Basic Parameters:

Product	: Vinyl Laminated Ceiling Panel
Size	: 595 x 595mm
Surface Finish visible	: Vinyl Laminated-a hard washable surface that seals moisture, bacteria & odors
Surface Finish back	: Aluminum Foil – Provides good thermal insulation value & reduce Heat Transmission
Core	: Gypsum Plaster
Edge Profile	: Square
Grid	: Exposed, Easily demountable
Weight (kg/m²)	: 7.2
Colors	: White
K-Value	: 0.16 w/m k
Standard Thickness	: 8 mm (Before Lamination)
Thickness after Lamination	: 8 mm
Thermal Constructive Index	: Average 0.20 w/MK
Thickness Tolerance	: +/- 0.5
Size Tolerance	: +/- 1
Lengthways Raptures Load	: >360 N
Lateral Raptures Load	: >150 N



Dealer Stamp :

info@sutrah.in | www.sutrah.in

COLD ROOM AN OVERVIEW

An ISO 9001:2000 Organization

Refrigeration Technologies



DELTA INDUSTRIES™

(An ISO 9001:2015 Certified Company)



ENVIRONMENT
FRIENDLY



LESS ELECTRICITY
CONSUMPTION



WORLD CLASS
TECHNOLOGY



www.sutrah.in

www.deltaindustrys.in



SAVE MOTHER NATURE

{ DELTA COMMITMENT TOWARDS SAVING ENVIRONMENT }

The **GLOBAL WARMING** has led to increase in mean earth surface temperature and thus **MELTING OF POLAR ICE AND GLACIERS OF HIMALAYAN REGION.**

There are frequent melt down of glaciers that result in floods and other natural calamities. The melting of ice at the poles has increased the mean sea level. And further increase in temperature will in turn melt more ice, due to which low lying countries will come in circle of danger. Therefore it becomes our moral duty to not contribute in global warming and
SAVE OUR MOTHER NATURE.

{ **We offer our products with Eco-frenidly Refrigerants viz.
R 134a, R 404A, R 410A, R 407C, R717 (NH),
R744 (CO₂), Hydrocarbons etc.** }

Through our Green Factory program, every Delta facility is working to **REDUCE** emissions and energy use, **REUSE** more raw materials and **RECYCLE** manufacturing materials, paper and plastic. All major Delta plants already meet the toughest international environmental management standards (ISO 14001), covering a host of environmental areas such as waste disposal, water treatment and energy use.

And yet, Delta is going even further. As part of our Green Factory program, teams of Delta associates are setting energy-reduction targets for every area of our operations. Delta's Green Factory Initiatives have established our manufacturing operations as industry leaders in the efficient use of natural resources with minimal environmental impact.

COLD ROOMS

Delta is a market leader in refrigeration technology. Delta representing market with widest range of Cold Room by their own manufactured refrigeration system and evaporators. All refrigeration systems are designed according to the need of customers.

Delta cold room division customized and designed modular cold room of all sizes. We are serving customer through our cold room for Fresh food, Frozen food, Meat, Sea food, Ice Cream, Medical product and many more perishables products. Our technical department maintains an International standard and world class technology in their refrigeration system, which provides tremendous efficiency, durability, & reliability.

We have a long list of satisfied customers right across the board. We have installed our cold rooms for different industry such as, dairy, horticulture, floriculture, sea food and meat, hospitality, pharmaceuticals & food processing. If you are looking unmatched solutions for your refrigeration needs, let's move forward together to satisfy your need.

Delta acts as an imaginator, innovator, and implementor, that is why customer can get widest temp. Range in cold rooms from **+20°C to -80°C**. In our products humidity is a crucial factor to keep products extremely fresh for a longer period of time. Our experts always ensures humidity level as per products by using dehumidifier and ultrasonic humidifier.



BLAST FREEZERS

A blast freezer is a freezer which is extremely cold. It may also be known as a shock freezer. Such freezers are intended to rapidly bring the temperature of foods down, freezing them extremely quickly. These specialized freezers are used in the frozen food industry and they are also utilized in some commercial kitchens for specialty tasks.

When food is frozen, the water inside it crystallizes. If freezing takes place at relatively warm temperatures, the ice crystals which form will be large.

Advantages of Blast Freezing:

1. Rapid temperature reduction prevents the reproduction of microorganisms.
2. Increase shelf life of product.
3. Appearance, flavour, texture and nutritional value remain as natural.
4. High and constant quality.
5. Reduction in electricity consumption
6. Prevention of large ice crystals which can damage food.
7. Reduced kitchen waste as unused portions can safely be stored for later use.
8. Increased Kitchen efficiency lets you prepare large batches and use some portions later.
9. Cost effective operation & maintenance.
10. Production always available for the sale









A Blast Freezer in operation at installed site



COLD ROOMS

THE INSIDE STORY

-  Electricity Saving
-  Noise level reduction
-  Serviceable
-  High COP/ EER
-  ISR™ (Inverter Spike Resistant)
-  High Ambient Design



R404A, R717, R134a, R22 and CO₂

AIR-COOLED & WATER-COOLED CONDENSING UNITS

- Compressor for three phase and single phase 230 V/1/50Hz with fitted starting device and run capacitor.
- Condenser with grooved copper tubes and Aluminium Fins.
- Generously sized liquid receiver.
- High & Low pressure cut-out including mounting brackets, wired to terminal strip, Electrical wiring to the connection box IP65.
- Operating pressure up to 28 bar.
- High cooling capacity with reduced power consumption.
- Full exploitation of the finned package due to the careful matching of the high capacity external rotors fans.
- Fans with especially efficient low noise external rotor motors single phase & three phase.
- Precharged with ester oil for R134a and R404A/R507A.
- Designed for extremely high ambient condition upto 65°C/75°C.
- Copper pipe without any elbow coupler in single pipe with CNC bending machines.
- Special epoxy plus polyurethane metallic paint.
- Big size filter dryer, moisture indicator, solenoid valve, oil separator & accumulator.
- Shell & tube condenser made of copper and coppernickel (seawater resistant design) with newly developed tube geometry and low fouling profile on the coolant side.

EVAPORATORS/ INDOOR UNITS

STRUCTURE FEATURES

- **Coil:** use new high efficient aluminum wave fin, high heat conductivity, fast water discharge, use high efficient copper pipe, high heat transfer, use new type liquid distributor & uniform frost
- **Fan:** low cost, high reliability, lower temperature- resistant and low noise external Rotor fans
- **Defrost:** use electric heating stainless steel pipe, high leak-proofness at the end, anti-electric leakage and long life
- **Casing:** use aluminum plate and stainless steel or cold plastic spraying plate, nice appearance and durable
- **Maintenance:** flexible to disassemble and lean
- **Service & food Industry:** special design for hotel & food industry

COMPRESSORS



SEMI HERMETIC RECIPROCATING COMPRESSORS



**SCROLL
COMPRESSORS**



**SEALED
COMPRESSORS**

ELECTRIC CONTROL PANELS

DELTA electrical control panel is operator friendly designed, which provides better safety with following.

- Single Phase Preventor, which protect compressor from single phasing, phase failure and phase reversal.
- Overload Protector current Sensing Device with current relay. This Safeguards compressor motor from the overload.
- Miniature Circuit Breaker with 4-POLE, which safeguards the Condensing Unit from short circuit.
- Electrical controller to check voltage, ampere, frequency, phase to phase and phase to neutral voltage.
- Phase indicator with 3 nos. for Red, Yellow and Blue.
- ON/Off Buttons with Light Indicators.
- Auto & Manual Mode switch over button.
- Indicating lamp with 5 nos. of LED to help the operator to make out fault, also from distance. For thermal protection unit, L.P./H.P. cutout, heater on and oil pressure cut out.
- Contractor of standard makes 3 No.s Separate for Compressors, Indoor Fan & Heaters.
- All electrical cables are of standard make.
- Control Panel MCB used for protection of Electrical Panel.
- Connectors: Finolex make with serial nos. used for connection with Condensing Unit & Evaporator.

COLD ROOM CONTROLLER: Microprocessor Based Controller with two Sensors used for cold room & evaporator coil to save life of cooling coil & defrosting electricity. Also With Flexibility to control Defrosting Timing & Duration, Option for manual defrosting & internet connectivity* with RS232 port to monitor all the parameters of cold room on computer, remote monitoring facility and communication of all faults alarm.



**Optional feature*

SOLAR POWERED COLD STORAGE



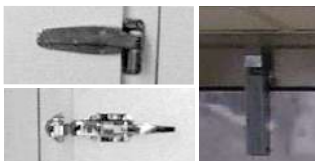
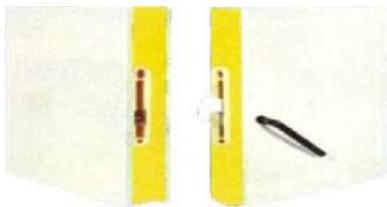
PUF PANELS & ACCESSORIES



PUF PANELS



DOORS



PUF PANELS

Cold room panels have a lightweight, self-supporting, aluminum / GI-sandwich construction with special aluminum / GI profile as wall joints. They are extremely robust, corrosion-resistant, and have waterproof sealing.

Key Features:

- These Cold room are designed & developed customized as per specific requirement of the customer.
- These are fire retardant as per code, sheeted cabinet using highquality PUF insulation, minimizing the out side ambient temperature.
- The panel Thickness can be made from 60 mm to 150 mm. with the maximum size of 1.2mtr X 6.5mtr.
- Standard density of these PUF filled panels shelter is 40 ± 2 k.g. however the same can be increased or decreased as per specific requirements.

Doors

High quality cold room door of different thickness and sizes like overlap door, flush type door and sliding door using imported lock and hinges. With thermal break parameter to avoid thermal conductivity otherwise lead to ice formation. For viewing the inside without opening the door, to check if the door swing-path is clear, view glass option is available.

Camlock

Posi-loc locking assemblies that provide perfect alignment of walls, ceiling, floor, corners and door frames

Hardware & Posi-seal Closure

Heavy-duty cast alloy handles and hinges with attractive brushed-chrome finish. Cushions closing of door, making it noiseless and firmly shut

Flooring

Useful to provide the result of an insulated regular floor and also to form a stable base for wall and partitions.

Puf slab with Kota stones are being used in big cold rooms.

Interior & Exterior Ramps

Movement of material become easy due to use of ramp, without causing any damage to floor.

Sweep Gasket

The heavy duty sealing gasket under the door keeps it flexible at any temperature, which makes it completely airtight.

APPLICATIONS

Dairy & Ice Cream Industry

Delta specialize in maintain accurate temperature for dairy and ice cream industry. Once the ice- cream melts then it becomes useless, so it is very necessary to understand need and then design cold room with multiple units so that customers always be at safer side. Delta designs special units for blast freezing to achieve instant cold temperature. By this process, we can quickly hard ice-cream without hampering its flavour, texture, appearance and it also reduces crystal formation. We also design cold room for other critical dairy products such as butter, cheese, panner, and non dairy cream etc.



Horticulture & Floriculture

Delta design cold room with highest quality & refrigeration system to maintain temperature, humidity level and air flow, which ensures freshness of fruits, vegetables, flower & other perishable products.

To maintain freshness & blossom of flower it is very necessary to control the air flow speed, so to maintain this condition, Delta makes special kind of evaporators for their cold room.



APPLICATIONS

Sea Food & Meat Industry

Delta provides complete solution to sea food and meat industry. The cooling requirements vary at different stages of production. So, we are serving this industry with pre chilling room, blast freezer & cold room. Delta designs special Air Cooled & Water Cooled condensing units and high CFM evaporators for this.



Hospital, Research and Pharmaceutical Industry

Purpose of this industry is to store vaccine, blood samples, drugs, bio products and lots of chemicals. These cold rooms are designed with lot of safety factors like humidity and high & low- temperatures alarm to ensure that room conditions are maintained.



APPLICATIONS

Hotel Industry & Restaurant

To understand actual need for the hospitality segment, we design special refrigeration system because of heavy usage & high frequency of door openings. Delta provides an option of SS finish and food-grade-sheet on panel and evaporators are of complete SS 304 also. Delta maintain absolute humidity level inside the cold room and we also customize it accordingly to the need like view window & auto door close mechanism, which helps to maintain uniform temperature and thus maintain factors like quality & hygiene.

& Restaurant



Hotel Industry

APPLICATIONS

BANANA & MANGO RIPENING

Condition For Ripening of Mango and Banana..

	Mango	Banana
Fruit Temperature	20 to 18°C	20 to 22°C
Relative Humidity	90-95 %	90-95%
Duration of Exposure to ethylene	12-24 hrs	24-48 hrs
Ethylene Concentration	100-150 ppm	100-150 ppm
Carbon dioxide	<1%	<1%

Features of our ripening project:

- The room is insulated with high-efficiency PUF panels to control the temperature.
- The room is designed to have adequate refrigeration.
- Ethylene Generators for optimum ripening of the fruits.
- High CFM evaporators to maintain uniform air-flow.
- For best ripening results, maintains proper humidity levels by installing Humidifier.
- Unique energy efficient refrigeration units with complete one year warranty.



BANANA & MANGO R I P E N I N G



Few questions to be asked:

Delta has extensive experience in the design and manufacturing of cold room to suit customer specific requirement. According to the need of customer Delta technical department calculate heat load calculation & design refrigeration system also they have knowledge of thermal property of foods, cooling and freezing times of foods, food microbiology, methods of precooling fruits, vegetables and cut flowers that give best solution to customer. To give you a best solution Delta needs to analyze on some views, for that Delta engineers discussed with you on some points.

These are the following factors that come into consideration while giving you a proper & best result.

- What is the product you want to store?
- What is your requirement to store the products or blast freezing of product?
- What is the quantity of product that you need to store at one time?
- What is the time duration & planning of flow of material inside the cold room?
- How long time it will be stored?
- What is the Incoming temperature of product?
- What is the temperature pull down time required?
- How much is the frequency of door opening in a day?
- What is your stacking & storage pattern?
- How is the usage of Cold room heavy or light?

On the basis on above information along with experience Delta Cold room division engineers do all the heat load calculation & design all the indoor & outdoor units, which fulfill all customer requirements. Along with these refrigeration units all the designing & fabrication of puf panels being done by experts. So, if your business needs cold room, we are always available to provide you a complete solution under One roof.

TECHNICAL COMPARISON

SEMI-HERMETIC	VS	HERMETIC
SEMI-HERMETIC (Semi-Sealed)		HERMETIC (Sealed)
EASY TO ACCESS FOR REPAIRS		NOT POSSIBLE
NOISE LEVEL 75dB (A)		88 dB (A) NOISE LEVEL
VIBRATION ARE VERY LESS		MORE VIBRATIONS DUE TO ONE SHELL ASSEMBLY
WIDE VOLTAGE SELECTION AVAILABILITY		LESS IN COMPARISON OF SEMI HERMETIC
LESS POWER CONSUMPTION FOR THE SAME H.P. COMPRESSOR		HIGHER POWER CONSUMPTION DUE TO MORE MOVING PARTS
SUCTION GAS COOLED MOTORS		FAN COOLED MOTORS
LOW MOTOR TEMPERTAURE		NOT SUITABLE FOR VERY LOW TEMPERATURE APPLICATIONS
a) AVAILABLE FROM 0.5 TO 50 H.P. (AIR COOLED)		AVAILABLE FROM 0.5 H.P. TO 15 H.P
b) AVAILABLE FROM 0.5 TO 50 H.P. (WATER COOLED)		
DESIGNED FOR EXTREMELY HIGH AMBIENT CONDITIONS (UPTO 75° c)		DESIGNED FOR MAXIMUM 46° C / 50° C AMBIENT
SPARES EASILY AVAILABLE LIKE GASKETS, MOTOR WINDING, VALVE PLATE		REPLACEMENT OF COMPRESSORS IS PREFERRED AS REPAIRING IS VERY DIFFICULT

POWER & COOLING CAPACITY COMPARISONS

Model No.	European Hermetic	2SB 55.3 (Sea-Bird Semi-Hermetic)
Displacement	16.73m ³ /hr	16.24m ³ /hr.
Gas	404A	404A
Selection	-30°C Evaporating temp. 50°C Condensing temp.	-30°C Evaporating temp. 50°C Condensing temp.
Cooling Capacity (Watt)	1870 Watt	2690 Watt
Cooling Capacity (Btu/ hr.)	6377 Btu/ hr.	9173 Btu/hr.
Power Input	2.64 Kw.	2.39 Kw.
Sub Cooling	0 K	0 K (without liquid sub cooling)
Super Heat	10 K	10 K
COP/EER	0.71	1.12

Result: Cooling Capacity increased by 43.84 %
Power Consumption (Kw) decreased by 9.5%

Other Advantages:

- Warranty
- Spares Easily Available
- Low Noise

After Sales Support:

Though at every level Delta ensures its product's performance and services but we would welcome your query at:

All India Sales & Services Network: Ph.: +91 99866 81944, 0824 2409439

SALES
&
Services



TEMPERATURE REQUIRED

Products	Storage Temperature C	% RH	Recommended Storage
Apples	-1 to +1	85 - 90	2-7 M
Apricots	-0.5 to +1.6	78 - 85	1-2 W
Bananas	+11.7	85	2W
Beans, dried	+0.7	70	6M
Beef (fresh)	+1.75	87	3W
Beef (frozen)	-18 to -20	80 - 85	3-8 M
Butter	-10 to -1	75 - 80	6M
Cabbage	0 to +1	85 - 90	1-3 M
Carrots, bundled	0	85 - 90	1-2 W
Cauliflower	0 to +2	85 - 90	2-3 W
Cucumbers	+2 to +7	75 - 85	2W
Cheese	-1 to +1.5	65 - 75	3-10 M
Cherries	+0.5 to +1	80	1-3 W
Chocolate	+4.5	75	6M
Dates	-4.5	75	12 M
Eggs	-1 to -0.5	80 - 85	8M
Fish (Fresh)	-0.5 to +4	90 - 95	1-2 W
Fish (frozen)	-20 to -12	90 - 95	8-10 M
Grapes	-1 to +3	85 - 90	1-4 M
Honey	+1	75	6M
Ice Cream	-30 to -20	85	2-12 W
Lamb (Fresh)	0 to +1	80 - 90	5-10 D
Lamb (Frozen)	-24 to -12	80 - 90	10 M
Lemons	+5 to +10	80 - 90	2M
Lettuce	0 to +1	85 - 90	1-2 M
Lobster	-7	80	1M
Margarine	+0.5	80	6M
Melons	+2 to +7	80 - 90	1-8 W
Milk	0 to +2	80 - 85	1W
Mutton (Fresh)	0	80 - 85	10 D
Mutton (Frozen)	-12 to -18	80 - 85	3-8 M
Oranges	0 to +1.2	85 - 90	8-10 M
Peas, Green	0	80 - 90	1-3 W
Peaches	-0.5 to +1	80 - 85	2-4 W
Parsley	+1.5	80	1-2 W
Patatoes	+3 to +6	85 - 90	6M
Poultry (Fresh)	0	80	1W
Poultry (frozen)	-30 to -10	80	3-12 M
Tomatoes, Green	+10 to +20	85 - 90	3-4 W
Vegetables, Frozen	-24 to -18	—	6-12 M

*Data is subject to variation

M = Month W = Week



PROVIDING BEST OF PRODUCTS & SERVICES

W O R L D W I D E



DELTA INDUSTRIES™

(An ISO 9001:2015 Certified Company)

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For South Region
Vishwas.S: +91 98865 02505
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German Engineered Steel Doors

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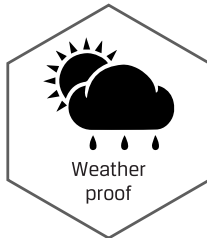
WELCOME TO THE WORRY-FREE WORLD OF AVANTE.

A German-engineered steel door that is tested for 200,000 swing cycles.

Avante is a unique combination of the strength of steel and the warmth of wood. It stands out by exuding not only style and panache but also durability and longevity. This smart door is designed to overcome all the common threats that are associated with wooden doors like seasonal door jams, fear of fire, termites and heavy-handed installation process. Avante is not just a conventional door; it is a statement of strength and elegance that is here to ring in a new era of worry-free doors for your home.

SWING CYCLE- A single opening and closing sequence of the door.

ADVANTAGE AVANTE



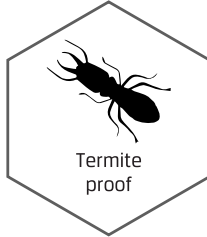
Weather
proof

WEATHER PROOF DOORS
Not just a fair-weather friend. Avante doesn't shrink or swell with the changing weather. A be-all and end-all solution to your monsoon worries.



Fire
resistant

FIRE RESISTANT DOORS
You will need a furnace to bring this down. Avante stands tall in the case of fire and could give up to 2 hours of "evacuation time". A perfect solution for a stress-free exit.



Termite
proof

TERMITE PROOF DOORS
No more hollow knocks. Avante fully eliminates the possibility of a termite attack. A guaranteed fix for a termite free home.



Easy
to install

EASY TO INSTALL
No more carpenter woes. Once assembled, it is ready to install ensuring best turnaround time for both; the homeowners and the professional contractors.



Eco-friendly

ECO-FRIENDLY
No trees were trimmed to construct this door. Avante is an environmental friendly steel door manufactured in a compliant facility.



SIZE: 9" X 11" (OPEN SIZE: 18" X 11")

INSIDE-OUT

- Doors are designed to be fully flushed without any joints on the surface.
- The door and the frame are provided with adequate internal reinforcement in specific areas where hardware is mounted for additional strength.
- The honeycomb infill has high crushing strength leading to impact resistance. The infill material also ensures there is no metallic noise while the doors are knocked or closed.
- The frame is made with mitered joints. It arrives in knocked down form and is assembled on-site.
- The frame is mounted on the wall opening with suitable anchor fasteners. The frame can also be filled with PUF or cement slurry (as required) to give a solid feel.

INTERNAL SUPPORT ELEMENTS

Steel reinforcements are provided internally for structural stability and integrity.

HONEYCOMB FILLING

This hexagonal infill made out of craft paper has unique properties that enhances structural integrity and ensures minimal weight addition.

STEEL SHEETS

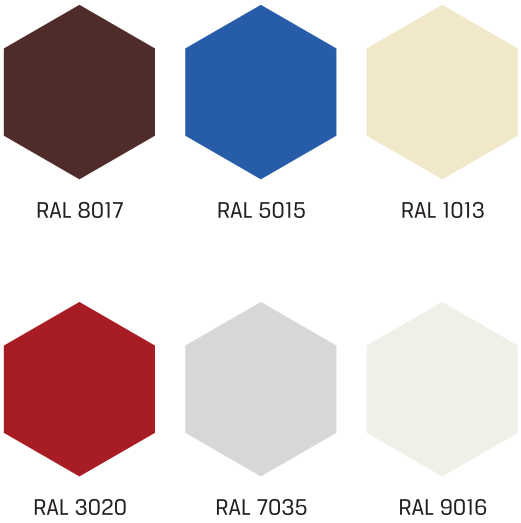
The steel used in the doors is galvanized, coated with primer and painted. This offers triple protection from any atmospheric interaction. They are easy to maintain, tough to the core and provide the greatest longevity.



PLAIN FINISH DOORS

- These are simple flush doors that are high on aesthetics and low on maintenance.
- Available in a range of RAL shades to suit your décor.

Material: Galvanized steel with PU paint
Infill: Honeycomb Core
Size: Wall Opening
Min: 750 x 2100 mm
Max: 1200 x 2400 mm



*Colours may vary on actual product. Above colours are indicative.



SIZE: 9" X 11" (OPEN SIZE: 18" X 11")

WOOD GRAIN FINISH DOORS

- These doors have natural wood finish with a textured surface.
- The wood grain texture gives these doors a premium look and feel.
- Available in natural wooden colours.

Material: Wood grain finish steel
Infill: Honeycomb Core
Size: Wall Opening
Min: 900 x 2100 mm
Max: 1200 x 2400 mm



*Wood finishes are indicative and will vary against batch quantity.



PAGE- 07

CLASSIC EMBOSSED WOOD GRAIN FINISH DOORS

- These doors have natural wood finish with a textured surface and with design embossed on it.
- Available in natural wooden colors.

Material: Wood grain finish steel
Infill: Honeycomb Core
Size: Wall Opening
Min: 1000 x 2100 mm
Max: 1200 x 2400 mm



*Colours may vary on actual product. Above colours are indicative.



SIZE: 9" X 11" (OPEN SIZE: 18" X 11")

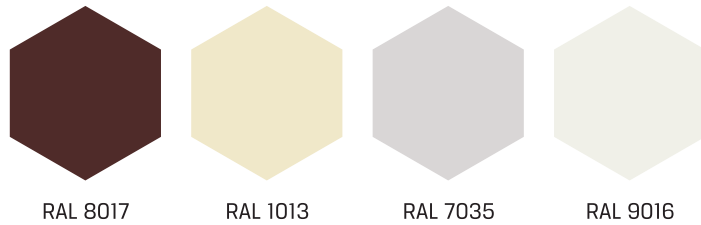
SIX PANEL EMBOSSED WOOD GRAIN FINISH DOORS

- These doors have natural wood finish with a textured surface and with design embossed on it.
- Available in natural wooden colors.

Material: Wood grain finish steel
Infill: Honeycomb Core
Size: Wall Opening
Min: 1000 x 2100 mm
Max: 1200 x 2400 mm



ALSO AVAILABLE IN PLAIN FINISH COLOUR



*Colours may vary on actual product. Above colours are indicative.

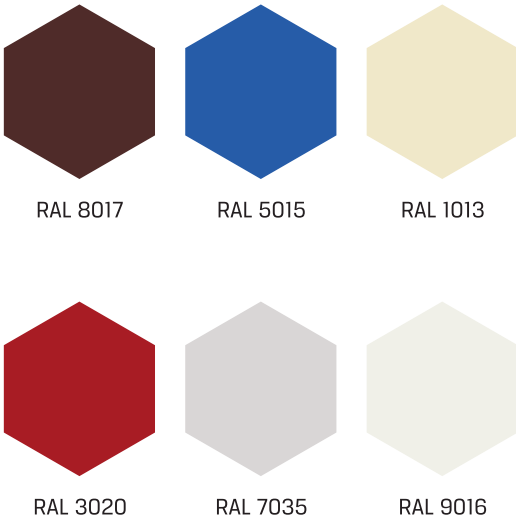


PAGE- 09

COMBINATION DOORS

- These doors come with a combination of main door and security grill door fitted in a twin rebate frame.
- They are available in a range of colours, both in plain finish and wooden texture.

Material: Galvanised steel with PU paint
Infill: Honeycomb Core
Size: Wall Opening
Min: 1000 x 2100 mm
Max: 1200 x 2400 mm



*Colours may vary on actual product. Above colours are indicative.
*Make to Order

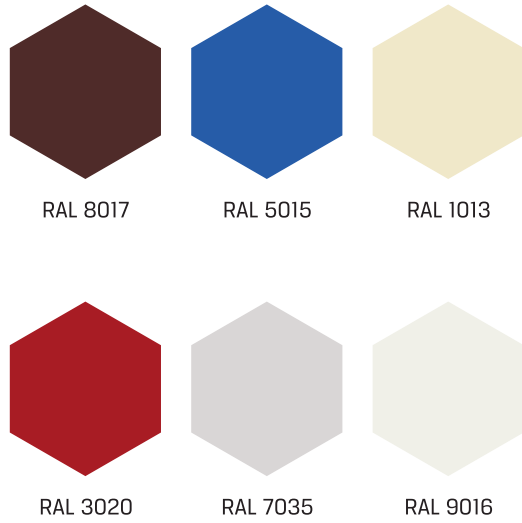


SIZE: 9" X 11" (OPEN SIZE: 18" X 11")

FRAMED GLASS DOORS

- These doors have an outer steel frame and the glass panel mounted centrally.
- The frames can accommodate glass panels of various design and transparency levels.

Material: Galvanized Steel with PU paint.
Infill: Honeycomb Core
Size: wall opening
Min: 1000 x 2100 mm
Max: 1200 x 2400 mm



*Colours may vary on actual product. Above colours are indicative.
*Make to Order



PAGE- 11

HARDWARE HORMANN

HINGE



Stainless steel ball bearing butt Hinge

EURO PROFILE CYLINDERS



Euro profile cylinder with both side key



Euro profile cylinder with one side key and one side thumbturn

DOOR CLOSERS



Concealed door closer



Door closer HDC13 (FD)
Door closer HDC03

LOCKS



Multipoint Locking LVR x Knob



Mortise sashlock with steel latch & Dead bolt H1-ZK



Mortise sashlock H8 (Fire rated)



WC lock with nylon latch and nylon Dead bolt H3-ZK



Mortise sashlock H9 with Steel latch (Fire rated)



Multipoint lock KfV

ACCESSORIES



Eye Viewer



Door Guard



Threshold Rebated



Floor Stop



Wall Stop

LEVER HANDLES AND PULL HANDLES



Lever handle for multipoint lock ERA



HR2-B Polymide Lever handles with roses and escutcheons black



HR2-W Polymide Lever handles with roses and escutcheons white



Stainless steel lever handle - ES1B



HR3-B Polymide Lever handles roses and indicator black



HR3-W Polymide Lever handles roses and indicator white



LT001 Stainless steel lever handle U type



LT002 Stainless steel lever handle L type



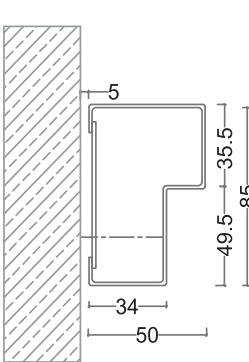
D type pull handle L: 300mm



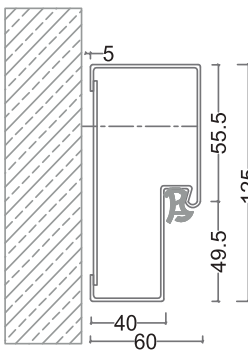
H type pull handle CTC: 300mm

TECHNICAL

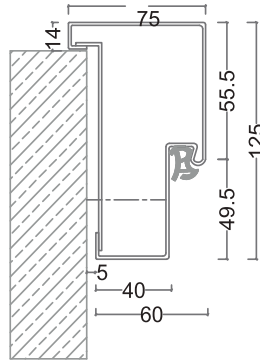
FRAME PROFILE



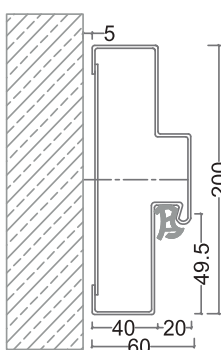
Standard: 85x50mm



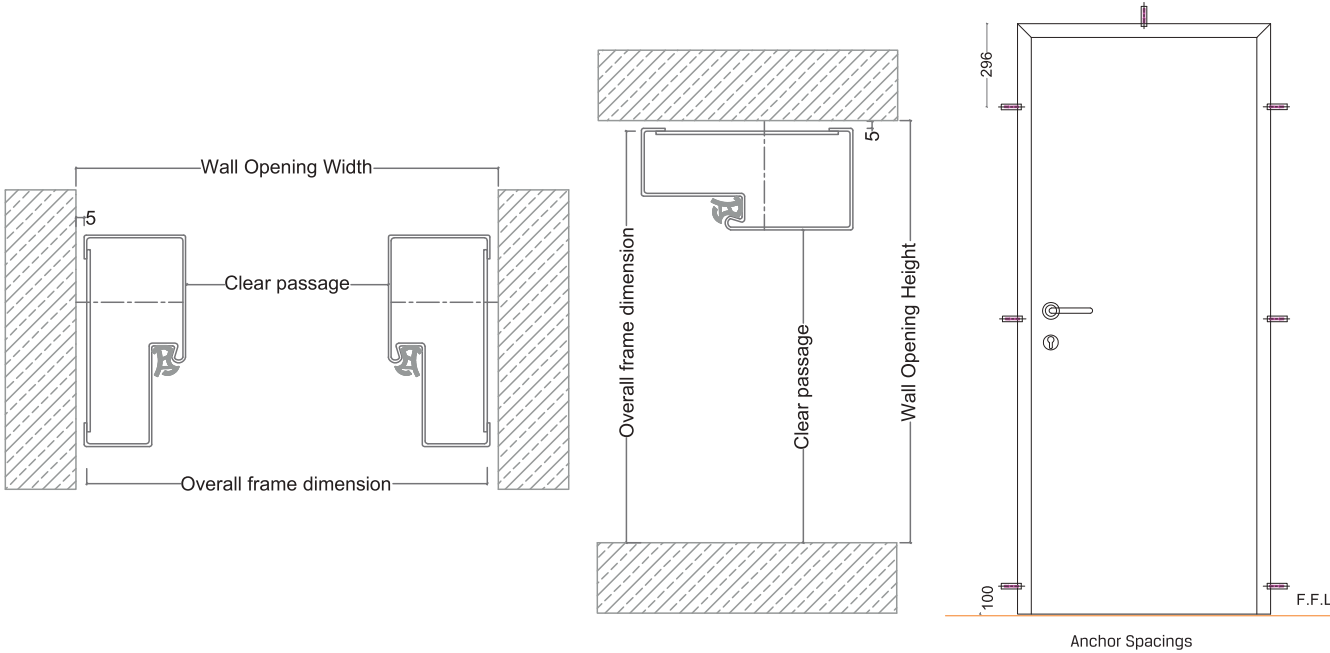
Standard: 125x60mm



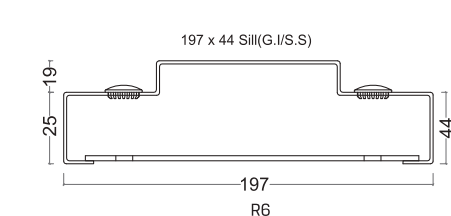
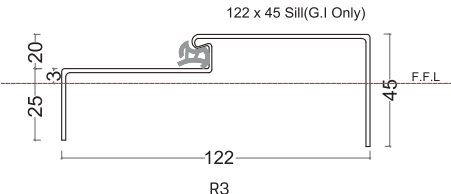
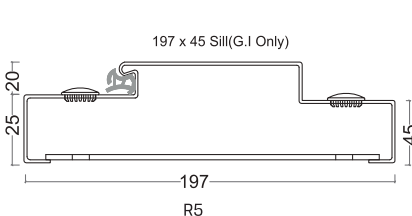
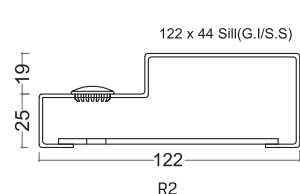
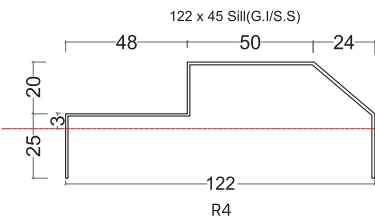
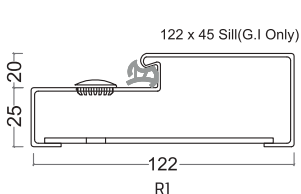
Architrave: 125x60x75mm



Standard: 200x60mm



PROFILE THRESHOLD



JSW STEEL

JSW Steel is the flagship company of the JSW Group and is one of India's largest integrated steel manufacturers. With a capacity of 18.3 MTPA, never a day goes by without making significant contributions to a nation that's making progress through leaps and bounds. With state-of-the-art manufacturing facilities located in Karnataka, Tamil Nadu, and Maharashtra, it places innovation and quality at its cornerstone. A manufacturing philosophy that is reflected in everyone among a gamut of steel products Like Hot Rolled, Cold Rolled, Bare & Pre-painted Galvanized & Galvalume", TMT Rebars, Wire Rods and Special Steel.

And to ensure we stay at the top of the game of technological advancements JSW has forged a technological collaboration with JFE Steel Corp, Japan for manufacturing high-strength and advanced high-strength steel for the automobile sector. And the same commitment is reflected in our partnership with Marubeni-Itochu Steel Inc. Tokyo, to set up state-of-the-art steel processing centers.

JSW Coated products Ltd is India's largest manufacturer and exporter of coated steel as well as colour coated steel. Located strategically, near major ports, the production facilities at the Tarapur and Vasind Works or even the Kamleshwar works, located near Nagpur, ensures demands are meant without ado across all regions.



Disclaimer

"While every effort has been made to ensure the accuracy of the information contained in this publication, the use of the information is at the reader's risk and no warranty is implied or expressed by JSW Steel with respect to the use of information contained herein. The information in this publication is subject to change or modification without notice. Please contact the JSW Steel office for the latest information.



About



“Together we have the opportunity to make our built environments more energy efficient, attractive, adaptable, environmentally sensitive and productive. The way we build can be more effective and reach higher standards than ever before. We can make our buildings really work for us; consuming and generating energy smartly to become real investments in our future”

These are Delta’s aspirations, and they shape every aspect of how the Group works.

Delta Industries, the biggest division in Steel Profiling and Insulation is the National leader in the design, development and delivery of advanced building envelope products and solutions. It is widely recognised in the industry for the high quality and performance of its products as well as its commitment to excellent customer service and technical support.

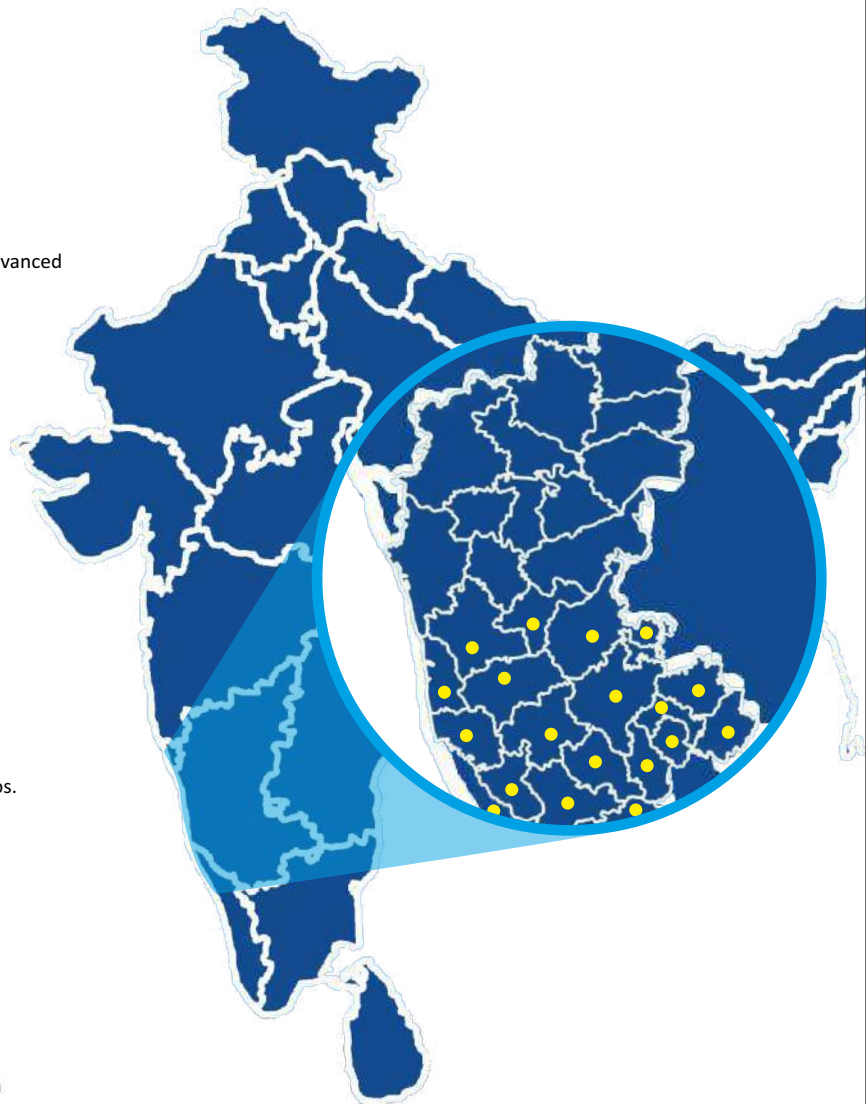
Our product portfolio includes ; Insulated Roof & Wall Panels; Fabrications, Safety & Lighting Solutions; Controlled Environments; Structural Products & Systems; Steel Building & Interior Solutions, & Insulated Door Components; and Sutrah Energy Rooftop Solar

Our wide range of products allows developers, architects and contractors to meet and exceed today’s construction challenges and create functional buildings that are aesthetically pleasing, energy efficient, safe, cost effective and sustainable.

This product selector has been specifically designed for the Indian markets and showcases the Single sheet and Insulated Roof & Wall Panels in detail, with a overview on some of the other portfolios. For further information on the other ranges, please refer to the www.sutrah.in website.

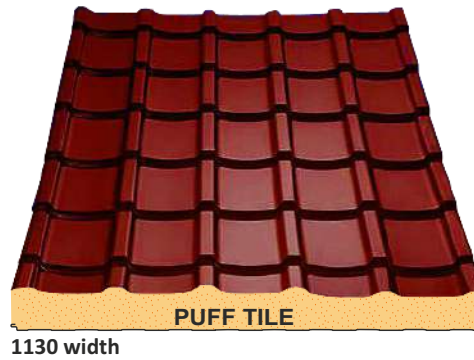
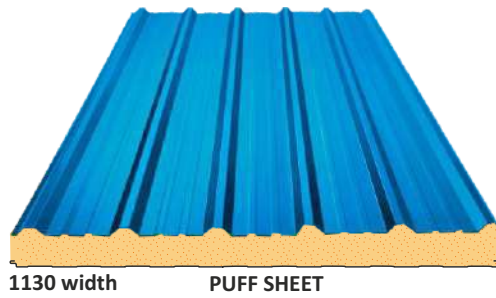
Domestic Presence

Today the Group has retail network around the nation, sells in more than 20 states

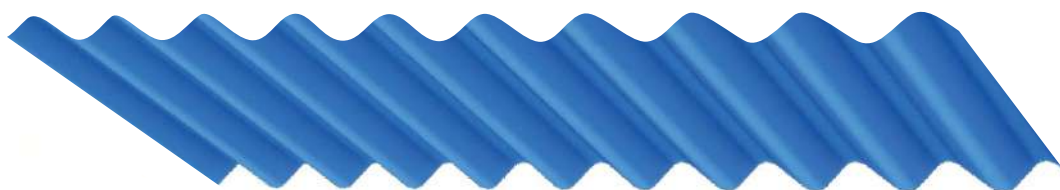


Product Range

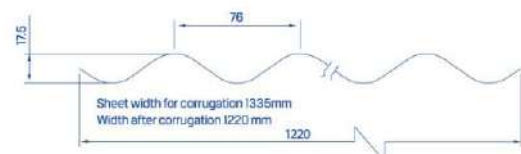
At a Glance



With wider you pay less & get more



GC Sheet



Product Range At a Glance



C&Z Purlins

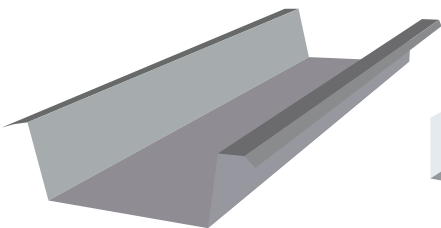


Decking Sheet

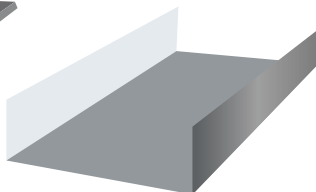


Galvanized Plain

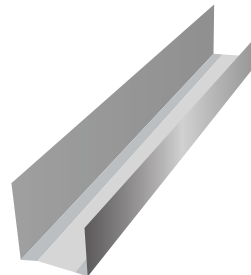
FALSE CEILING SECTIONS



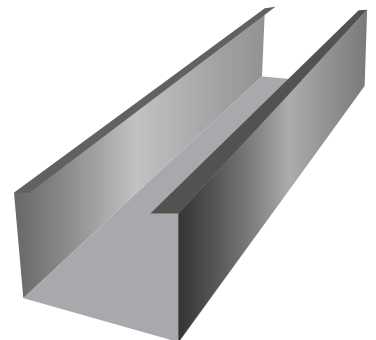
Top Hat Batten



Intermediate



Perimeter



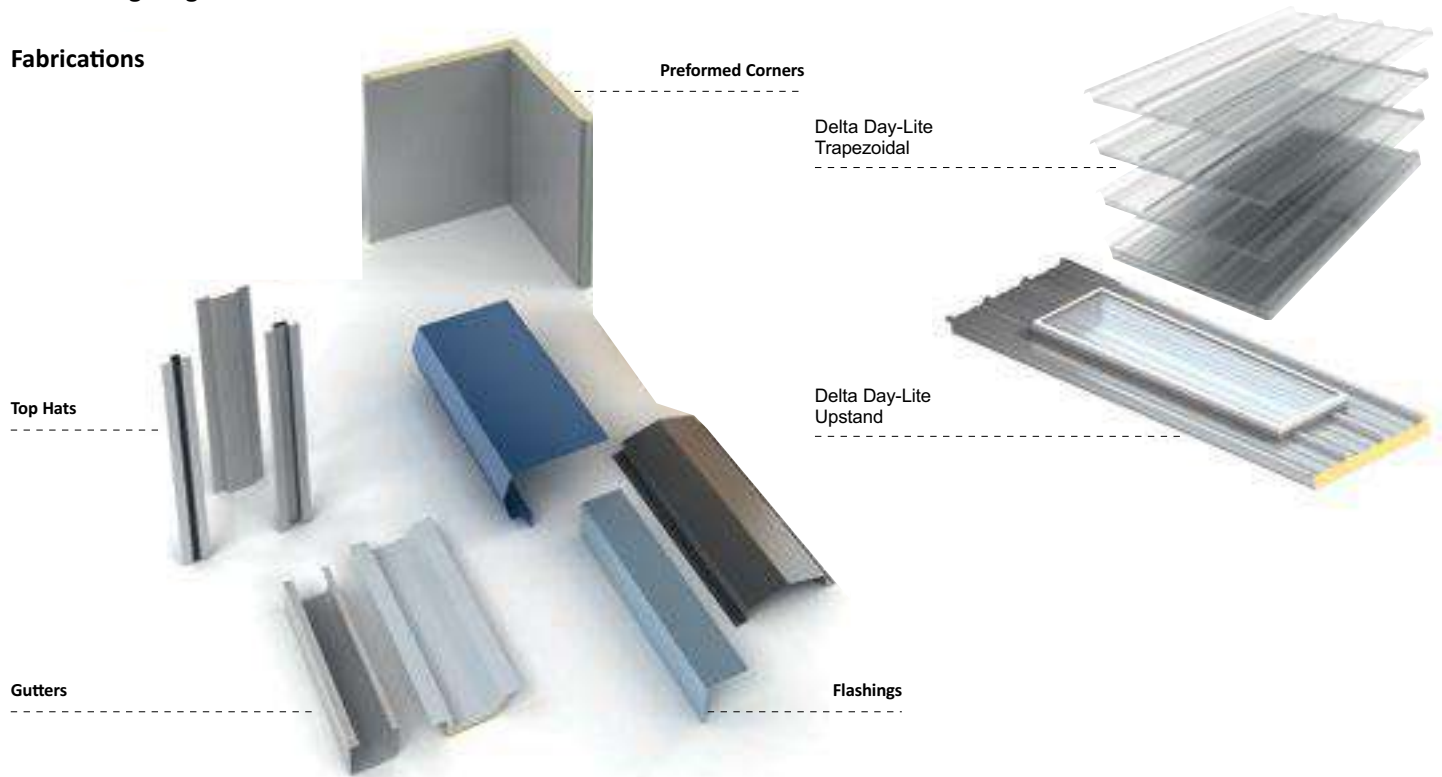
Stud

Available in Embossed

Product Range At a Glance

Fabrications, Safety & Lighting Solutions

Fabrications



Controlled Environments

Delta Temp Temperature Controlled Systems



Delta Cleanroom Systems



Crash Barrier



Delta Walk-In Coldrooms



Structural Products & Systems









Sutrah Energy Rooftop Solar PV

Roof Mounted PV System



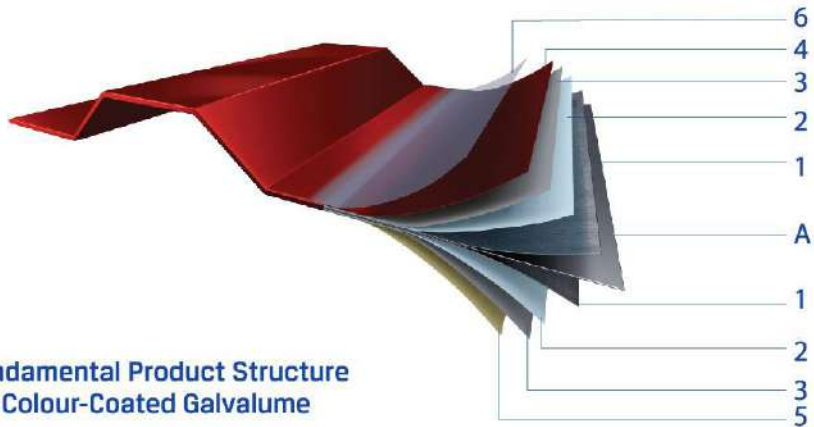
A WIDE RANGE OF COLOURS

Off White JSAWA572S		Light Blue JSAWA577S		Brick Red JSAWA576S	
Nova Blue JSAWA578S		Environment Green JSAWA574S		Terra Cota JSAWA575S	
Pepsi Blue JSAWA589S		Tomato Red JSAWA590S		Mist Green JSAWA591S	
Capri Blue JSAWA592S		Seco Red JSAWA593S		Caulifield Green JSAWA594S	
Bright Green JSAWA595S		Turquoise Blue JSAWA596S		Graphite Grey RAL 7024	

PRODUCT SPECIFICATIONS

COIL FORM	PPGL
Thickness (mm)	0.20-1.2
Width (mm)	600 - 1335
Substrate	Al-Zinc alloy steel
Zinc Coating (gsm)	70-200
Hardness (HRB)	55-65 Soft CQ, Above 85 for Grade 80
Guard film-optional (microns)	40µ (Customised also) ASTM A 755, EN 10169, IS 159

Fundamental Product Structure for Colour-Coated Galvalume



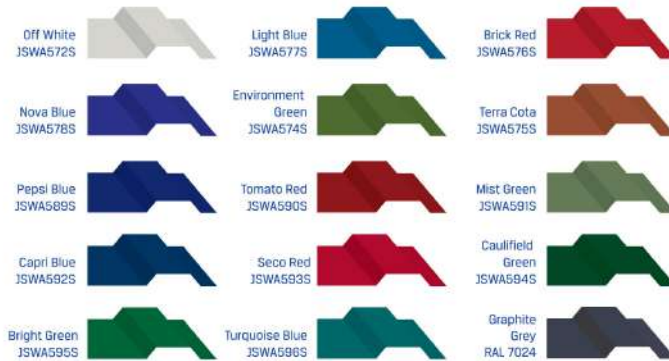
- A - Colled rolled steel substrate
- 1 - Al-Zinc alloy coat
- 2 - Pre-treatment (chromating)
- 3 - Primer
- 4 - Top coat
- 5 - Backer coat
- 6 - Guard film (optional)




DELTA INDUSTRIES

Plot No. 401 B, Baikampady Industrial Area, New Mangalore - 575 011
Ph : 0824-2409439 | M : +91 99866 81944 | info@sutrah.in | www.sutrah.in

A Wide Range of Colours

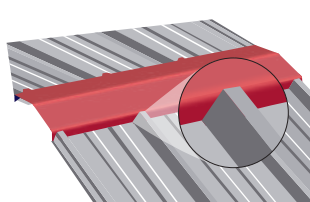


Product Specifications

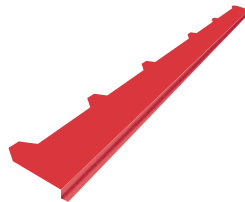
Thickness (mm)	Roof Panel: 30 mm & 50 mm Wall Panel: 50 mm upto 150 mm
Width (mm)	Roof Profile: 1060 mm Tile Profile: 1100 mm Wall Profile: Upto 1200 mm
Steel Supplied by	



Accessories



Ridge Cap



End Cap

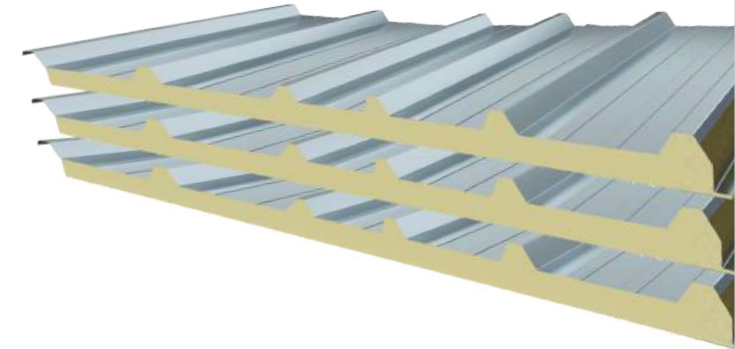


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+91 99167 50250, +91 99168 50250

info@sutrah.in | www.sutrah.in



Sandwich panels

Technical catalogue



General Information

Sandwich panels may be used for building walls and roofs of buildings and also for building enclosures of industrial equipment, air conditioning devices, etc. Such panels are manufactured in a continuous process of joining the insulating core with external lining, most often metal plates. The final product is a sandwich panel consisted of several layers. Metal lining protects against weather conditions, such as rain or snow and also performs decorative function. These panels are also resistant to corrosive factors. They keep their parameters when exposed to moisture, steam, snow, chemicals or other difficult conditions. The core, made of PUR Polyurethane foam, IPR Polyisocyanurate foam, guarantees thermal and acoustic insulation. When joined with the lining, it becomes a barrier protecting against fire, debris load, wind, temperature and other factors.

User gets numerous benefits, using sandwich panels in building roofs and walls:



Perfect insulating properties. Thermal conductivity λ of panels with polyisocyanurate foam core is 0,020 W/m*K.



Perfect protection against weather conditions, maintaining properties and appearance for many years. When coating is properly selected for local conditions, several years' durability of panels may be reached without any problem.



Leakproofness - water, snow and damp will not get inside. Perfectly finished joints ensure complete leakproofness for many years, if installation standards are followed.



Noise insulation. Properly selected core material can give very good noise insulation parameters. They are particularly important if insulation of outside noise, reduction of industrial noise propagation to the outside of the building or noise reduction within the building is required.



Fire protection properties according to the needs. Proper type of core can ensure reaching fire resistance class. This enables protection of escape routes, separation of fire compartments from each other.

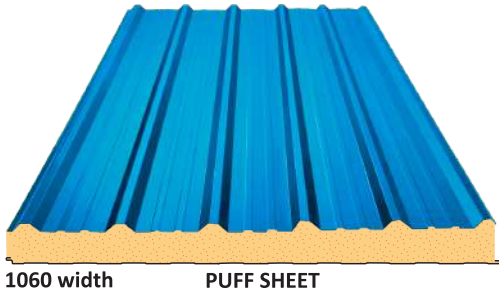


Easy and quick installation, low construction costs, operating costs lower than in other buildings. 50 mm thick IPR foam panel has the same heat-transfer coefficient U as a 75 cm thick aerated concrete wall, 60 cm thick structural clay tile wall or a 190 cm thick brick wall.



We have managed to combine all these benefits to the user with benefits to the natural environment. Entire power input in the production of the material used for thermal insulation of the building pays for itself after two or three years from installation, on average. Materials used in production are recyclable. Steel may be reused successfully, waste core materials can also be recycled, while production of the panels itself is not harmful to the environment.

Roof Profiles

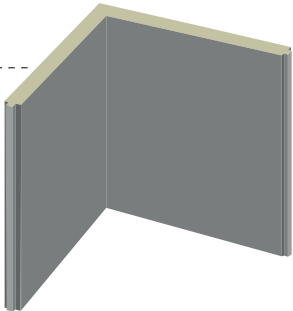


Wall Profile



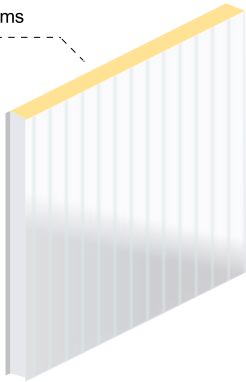
Performed Corners

Preformed Corners



Controlled Environments

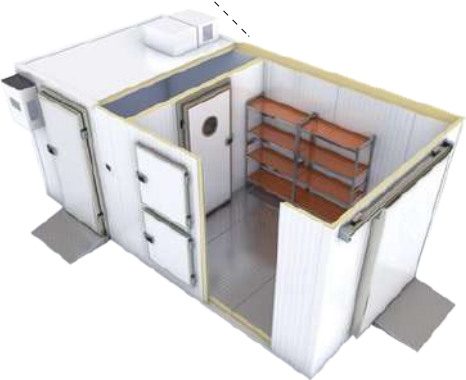
Delta Temp
Temperature
Controlled Systems



Delta
Cleanroom
Systems



Delta
Walk-In
Coldrooms



BURN TEST



After burned for 21 seconds at + 370°C, flames were extinguished and the opposite surface were'nt burnt at all. **DELTA** is fireproof and fire-retardant property that prevent fire to spread, so it highly recommended for your roofing solution.

STRENGTH TEST



DELTA endure 4 adult weight that repeatedly jump on its surface without any damage. **DELTA** can survive even tough run over by a car.

CHEMICAL TEST

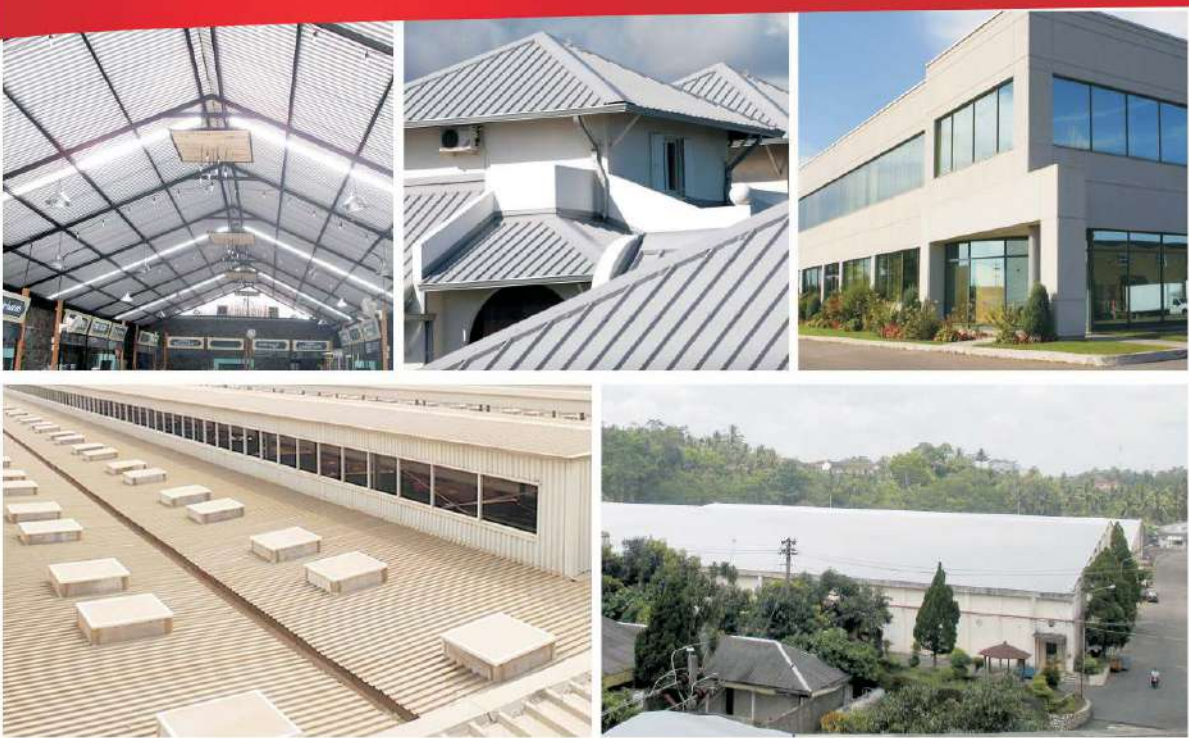


DELTA are chemical resistant for following substance :
HCl (Hydrochloric Acid), Caustic Soda (Sodium Hydroxide), Paint Thinner, Benzene and Salt Water. So **DELTA** is safe for industries that use chemicals.

Chemical	23°C (73°F)	60°C (140°F)	Chemical	23°C (73°F)	60°C (140°F)
Acetic acid, 25%	R	R	Caustic soda	R	R
Acetone	N	N	Chloric acid, 20%	R	R
Alcohol, ethyl (ethanol)	R	R	Chlorine, gas, dry	C	N
Alums	R	R	Detergents, aq	R	R
Aluminium Fluoride	R	N	Diesel fuels	R	R
Ammonium fluoride, 10%	R	R	Ethylene glycol	R	R
Barium salts	R	R	Fluorine, wet gas	R	N
Barium Nitrate	R	N	Formaldehyde	R	N
Benzene (benzol)	R	R	Freon - F11, F12, F113, F114	R	R
Bleach, 1.2% active chlorine	R	R	Hydrochloric acid	R	R
Borax	R	R	Sulfuric acid, 90 to 93%	R	N
Butane	R	R	Thread cutting oils	R	N
Carbonic Acid	R	R	Urea	R	R

R : Generally resistant N : Not resistant
C : Less resistant than R but still suitable for some conditions

DELTA INDUSTRIES™
(An ISO 9001:2015 Certified Company)



Durable
Durable material, rust-free and flexible

UV Protection
Reflect heat up to 70%, keep the room temperature cool

Sound Insulation
Noise reduction when it rains, muted sound up to 15 db

Fire Retardant
Delays fire combustion and prevent the spread of fires.

Chemical Resist
Acid, salt, corrosion and chemical resistant

High Strength
High strength material that can sustain up to 540 Kg

Safelock System
No leak and sound proof

Easy Installation
Fast and easy installation, no need special maintenance

DOUBLE WALL CORRUGATED
uPVC ROOF

DELTA INDUSTRIES™
(An ISO 9001:2015 Certified Company)

Plot No. 401 B, Baikampady Industrial Area,
New Mangalore - 575 011
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**BUILDING
GO GREEN**

**10
YEARS
GUARANTEE**

www.sutrah.in





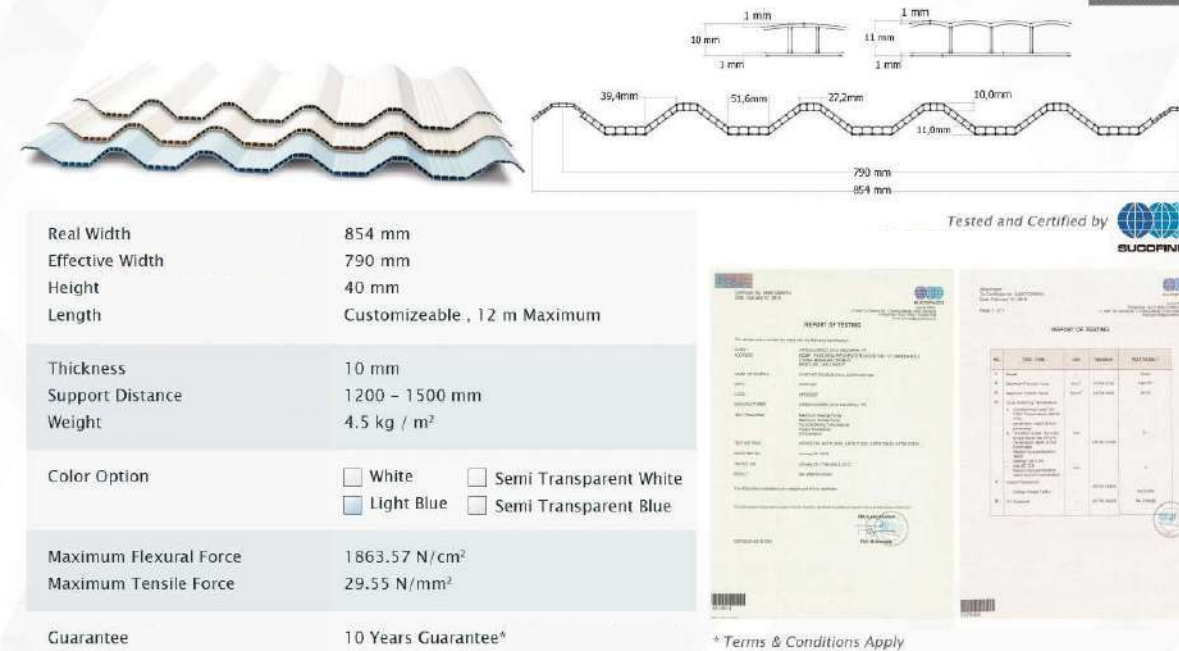
WHY CHOOSE DELTA?

DELTA are revolutionary products for industrial and residential needs. Using high quality material, durable, stand extreme weather, and chemical resistant. **DELTA** has more effective protection and durability compared to any other commercial roofing due to its 3 benefiting layers.

DELTA - Double Wall Technology make it more soundproof and with UV protection layer it can reduce heat up to 70% and room temperature would be cooling down. With optimum temperature, employees can achieve thermal comfort which increase their productivity.



DELTA SPECIFICATION



DELTA ACCESSORIES



DELTA ACCESSORIES

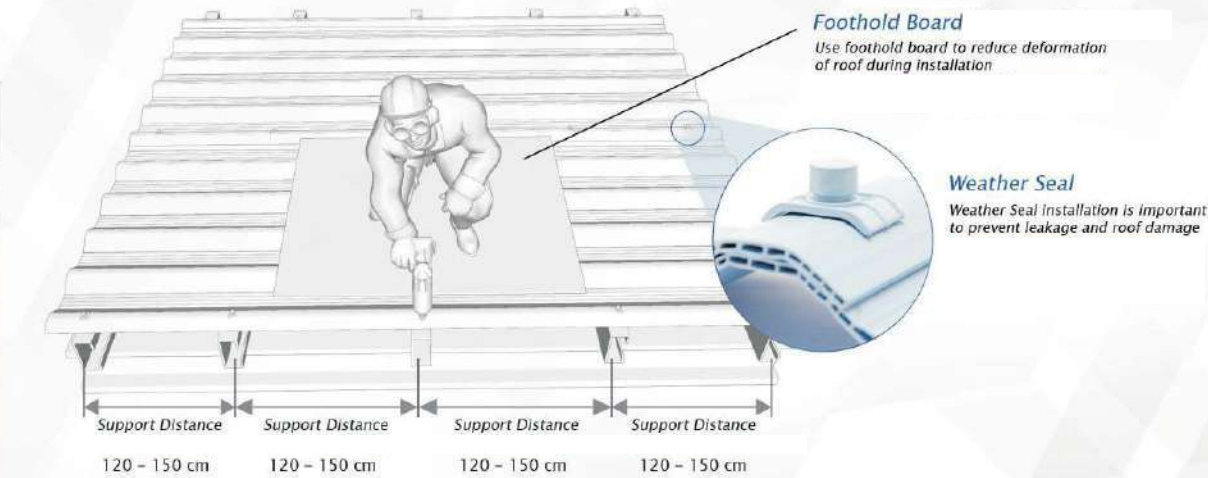
Angle	10° - 15°
Width	600 mm
Length	854 mm
Thickness	10 mm
Weight	2.7 kg / pcs
Color Option	<input type="checkbox"/> White (Putih) <input type="checkbox"/> Light Blue (Biru Muda)

DELTA WEATHER SEAL

DELTA Weather Seal prevents roof damage by spread the pressure of the screw to a wider area. Equipped with distinctive layer and safety cover for prevents any leakage.

Dimension	42 x 30 mm
Height	65 mm
Color Option	<input type="checkbox"/> White <input type="checkbox"/> Light Blue

DELTA INSTALLATION



CUTTING ROOF

For best result, highly recommend to use grinders machine or metal cutting saws



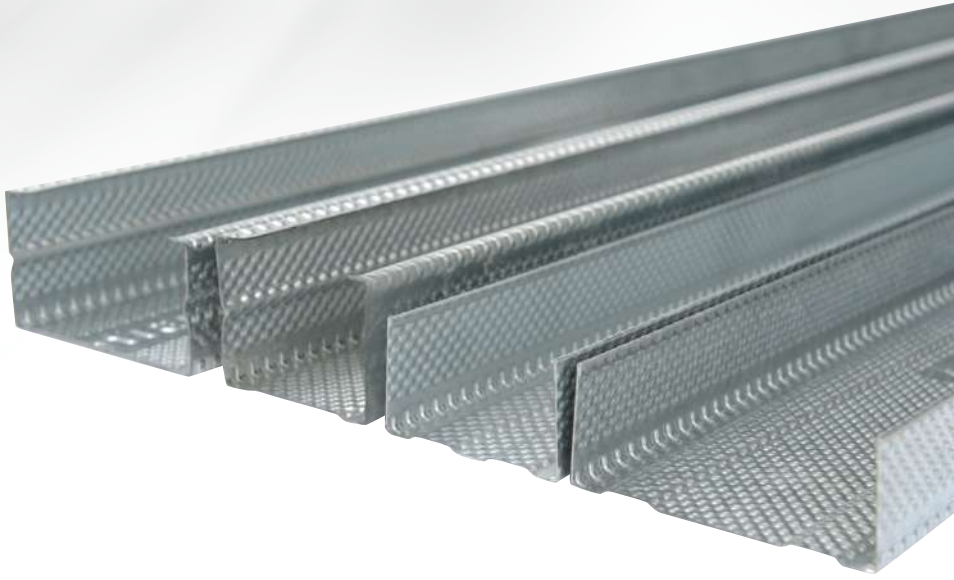
CLEANING

Liquid dish washing detergent is effective for remove grease and dirt from **DELTA** surface

NO ADDITIONAL INSULATION

Don't install any additional insulation such as glasswool or aluminium foil

Product warranty is void if installation process didn't correspond as this installation guides

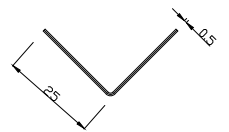


Gypframe profiles

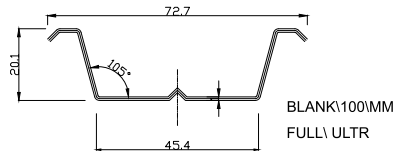
Dimensional Specifications

Introduction

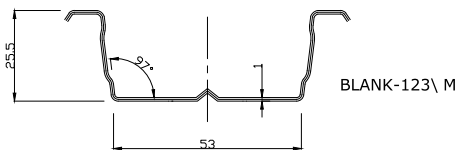
This data sheet contains the dimensional specification of the following Gypframe components – Gypp frame Studs, Gypp frame Channels, CasoLine^{mf}, Gypp Liner, ShaftWall, Gypp Floor, Gypp Rapid Wall, Gypp Frame Steel Angles and Gypp Frame Specialist Profiles. Gypp Frame profiles are cold roll formed in **jsw | explore** utilizing the patented **jsw** Steel process.



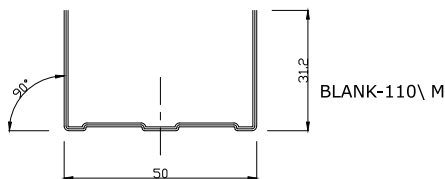
〈 FULL ULTRA ANGLE 〉



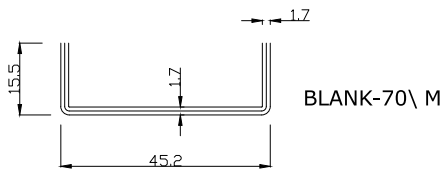
〈 CEILING\ FULL\ ULT 〉



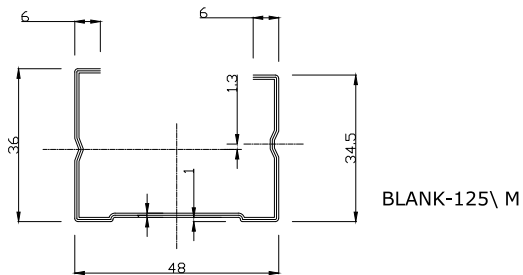
〈 CEILING\ FULL\ ULT 〉



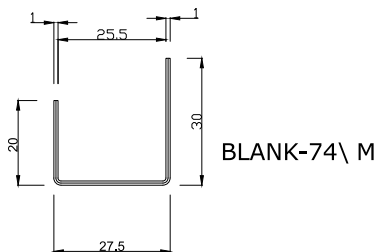
〈 FLOOR\ FULL\ ULT 〉



〈 INTER\ FULL\ ULT 〉



〈 STUD\ FULL\ ULT 〉



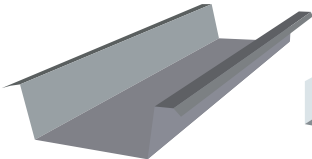
〈 PARAMETER\ FULL\ ULT 〉

Products

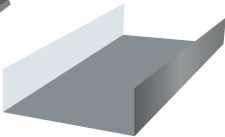


Gypsum Boards

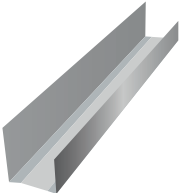
FALSE CEILING SECTIONS



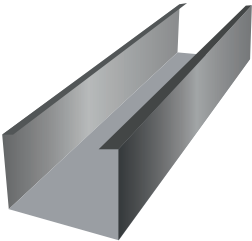
Top Hat Batten



Intermediate



Perimeter



Stud

Available in Embossed



Slit Coil



Gypsum Board Tape



Self Drilling Screws



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