

MANGAL
INDUSTRIES LIMITED

Metal Doors



AMARA RAJA
Gotta be a better way

The **Amara Raja Group** is one of the fastest growing conglomerates in India with a revenue exceeding USD 1.3 Billion through highly engaged customers across the Globe. Through our engaged employees, empowered teams and collaborative leadership we are in a constant endeavour of making things better for the Environment, Society, Customers, Suppliers, Employees and Shareholders.

Anchored by a workforce of 15,000+ people working for 7 companies encompassing 16 businesses and at the heart of all of this, are our people. We take pride in fostering an inspiring workplace with values that help each of us in becoming better individuals.



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AMARON



galla™



Mangal Industries is an evolving design-led organization and operates through six Strategic Business Units (SBUs) that caters to diverse markets and applications. Mangal Industries leverages its superior products & solutions portfolio, design expertise, quality and manufacturing capabilities to challenge the status quo in an unceasing bid to improve the value proposition to customers. Mangal's emphasis on operational practices such as 5S, Six Sigma, Poka Yoke, TPM ensures improved efficiency and productivity.

Mangal SBUs



AUTO COMPONENTS



METAL FABRICATION



STORAGE SOLUTIONS



BATTERY COMPONENTS



CUSTOM FABRICATION



TOOLWORKS

Metal Doors

Mangal Industries is engaged in manufacturing, supply and installation of a wide range of Metal doors. These doors are recognized for their low maintenance, compact design and durability. Mangal is specialized in offering its customers with products that meet the highest level of specification and conforms to all major international industry certifications and standards.

The hinged entryways offer a top-quality at the best cost, with a determination of the most aggressive items on account of their proficiency, quality and innovation. The product edges are developed from safe

substantial gauge aluminium profiles. The flawless protection and fixing of the product keeps the arrangement intact and continually spare vitality. All products have a smooth metal surface which can be effectively and hygienically cleaned.

A metal door (commonly of the flush type), fabricated of sheet steel Galvano Iron GPSP, Stainless Steel 304 Grade and reinforced by light metal channels; it has a hollow core, and laminated by papercraft Honey Comb or Poly Utherene Foam or Rockwool as per customer requirement.

Advantages of Mangal Metal Doors



Cost effective construction



Full control of Design at all stages.



Minimum Production Lead and Delivery time.



Modular construction facility for easy transportation.



Production quality certified to International Standards.



Variety of custom finishes.

World-class Manufacturing

The state-of-the-art manufacturing facility houses latest machinery for meeting customized requirements of diversified customers.



OUR PRODUCTS

- Scientific Doors
- Fire Rated Doors
- General Doors
- Stainless steel doors
- Lead Lined Doors
- Residential Doors
- Secure Doors
- Acoustic Doors
- Rail and stile doors
- Swing Doors
- Sliding Doors
- Shaft / Hatch Doors
- Louvered Door
- Transom Doors
- Hollow Metal Door Frames
- Dutch Doors
- Foldable Doors
- Double Egress Doors
- Single Glazed Fixed Glass Windows
- Double Glazed Fixed Glass Windows



Scientific Door

Scientific doors are designed and manufactured to meet the most stringent requirements for clean and hygienic applications while meeting USFDA/WHO/CGMP requirements.

Scientific doors can withstand exposure to chemical washing and facilitate highest standards of hygiene for clean room environment in industries like Pharmaceuticals, Bio-technologies, Food & Beverages, Electronics and Hospitals. These fully flush type doors available in galvanized steel and stainless steel is provided with a range of indigenous and imported ironmongery in stainless steel. These doors sets can be custom designed for individual project requirements while incorporating special features in addition to the vision panels, ironmongery and wide range of colour finish.



Fire Rated Door

The application and use of Fire rated doors are of critical importance in Buildings, Factories and Commercial spaces where the need to contain the spread of fire is at most important to save lives and property.

Studies have shown that more people have lost lives due to smoke asphyxiation than fire. Steel fire-rated doors play a critical role by serving as fire and smoke barriers. While the cause of the fire could be arson, short circuit, gas leakage or sheer negligence, the range of passive fire doors help to restrict their spread and save lives.



Fire Door Certifications

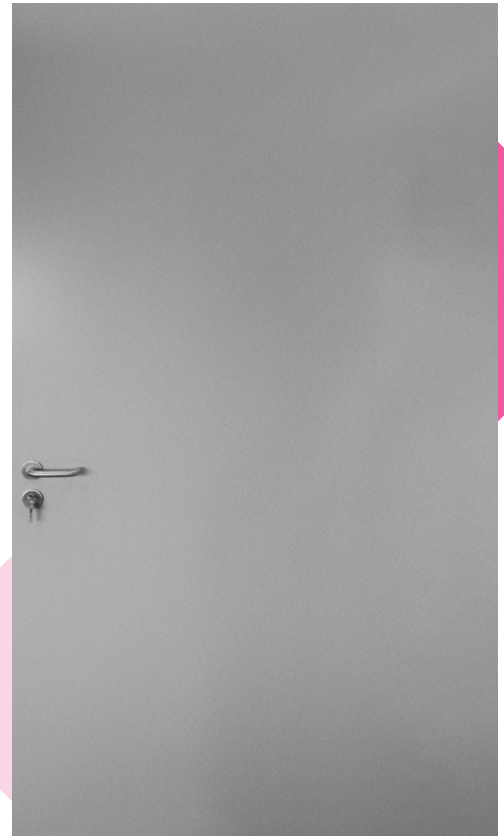
BUILDING FIRE RESEARCH
CENTRE, N.I.E., MYSURU, INDIA

General Door

General steel door sets offer a distinct advantage over other door systems. It provides high protection against vandalism, fire, burglary and is relatively maintenance-free.

They are more robust than timber/PVC/aluminium and are preferred by many residential or commercial enterprises for various design and aesthetic options while meeting safety and security parameters.

Our general doors have proved to be maintenance-friendly, long-lasting and eco-friendly.



Stainless Steel Door

Stainless Steel doors have multiple applications in Industries like Chemical, Pharmaceuticals, Clean room or lab, Food processing, Water treatment to name a few.

These versatile doors have smooth flat surface finish while offering high shear strength and durability.

Stainless steel doors can be designed and made available in standard and custom sizes as per customer requirement.

Lead Lined Door

Lead lined doors are constructed using a single layer of sheet lead in the centre of the door. Lead-lined hinged and sliding doors are designed and manufactured to afford personnel protection from radiations of X-rays / MRI / CT Scan / PET Scans by reducing the level of exposure to an internationally accepted level.

The doors are designed with a centrally located lead sheet lining of a thickness compatible with the degree of exposure from the equipment being used.



Residential / Commercial Door

Residential metal doors come with a plain/ embossed design on the surface with a finish of wood grain decorative patterns. These doors combine the strength of steel with the elegance of woodgrain decorative patterns. It can be used in both Residential/ Commercial applications offering high aesthetics, durability, security, termite proof and maintenance-free performance.

Woodgrain decorative doors enable architects to design interiors without the disadvantages of wood. The surface can be decorative to several natural wood finishes such as Teak, Mahogany, Walnut, Maple, Camphor, Tan, Pine oak, Rosewood, Cherry, etc. Customers can also choose Stone / Special effect decorative finishes. These doors are less susceptible to damage, peel, crack, warping or bow. More importantly, these doors are environment friendly and 100% recyclable.



Secure Door

In Secure door, special attention is paid to construction details and the addition of security hinges, multipoint locks, reinforced laminated cores and high security glazing that produces a range of secure door sets that are suitable for high security applications. The level of protection required will determine the degree of sophistication in construction.



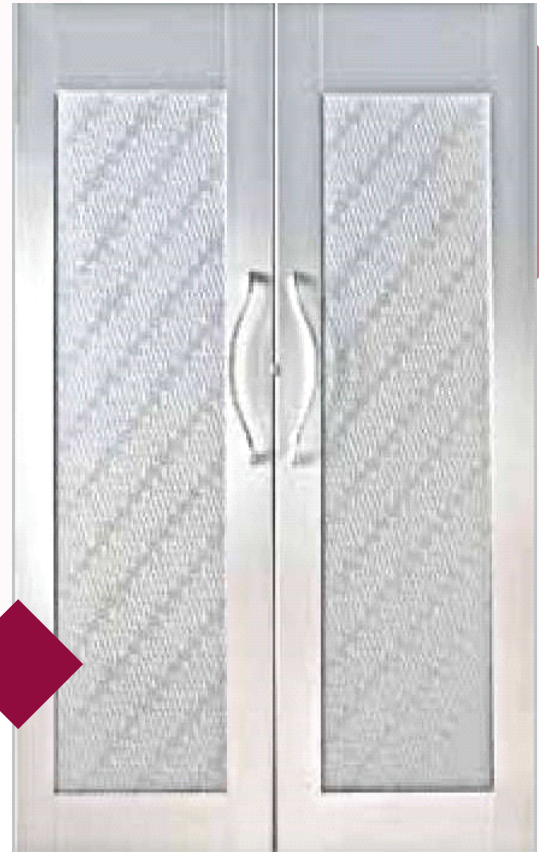
Acoustic Door

The solid built along with edge seals and the insulated engineering within the body of the acoustic door contribute to a significant reduction in the vibrations and sound that pass through it.

It has major applications in noise-sensitive areas and in Theatres, Music, Recording studios, Auditoriums etc. These door are available in multiple surface finishes and powder coating.

Rail and Stile Door

Rail and stile doors provide visual appeal and aesthetics with a high degree of design flexibility. These doors offer architects design consistency whereby the requirement of the entire building project can be factory finished and prepped with reinforcements. Rail and stile doors offer transparency with the use of standard rails of 150 and 120 mm. These doors find application as office entrances, internal doors, shop fronts, etc.



Sliding Door & Custom made Door

Sliding doors are available in single leaf and double leaf configuration with top or bottom hung system in a concealed track. These doors can be manufactured in both SS & GI steel.

In situations, where the door cannot be supported from above, a bottom rolling system is recommended. A bottom rolling system consists of two rollers at the bottom of the door running on a track and two guides at the top running in a guide channel. As all the weight of the door is concentrated on the two bottom wheels, more force is needed to move the door than on a top hung system. Sliding door applications include Hospitals, Pharmaceuticals, Chemicals, Food processing Industries and R&D Labs etc.

Duct / Shaft / Access Door

Access doors, also called Access panels/ shaft doors, are effective for providing a protected entry in areas where restrictions are required. These doors are available in wide range of colour options with/without vision panel/ louver as per the customer requirement. Access doors have several applications such as drywall, plaster, plumbing, electrical, valve boxes, floor hatches and security access doors. Access doors also include doors for larger installations such as roof hatches, floor hatches and walk through access doors.

Duct access doors are designed to provide convenient, economical access to duct components. Duct access doors have insulated door panels, along with the gasket between the door and frame which can assure a tight seal without obstructing the system. These doors are commonly available in either hinged or double cam construction.



Louevred Door

Louvered doors are the interior doors and best suited where there is a need for cross-ventilation.

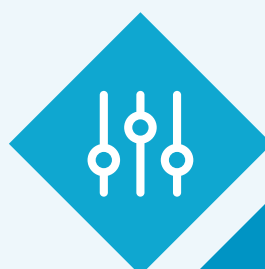
The Louvers are uniquely designed to provide visual privacy and help ventilate the room while offering privacy and security for high risk or vulnerable areas. We offer wide range of choices such as partial or fully louvered with single or double leaf door configuration to suit to your requirement.

These doors have applications in Maintenance rooms, Utilities, Power generator stations, Electrical substations, Swimming pools, Office cabins, Closets, Plant rooms, and other commercial areas.

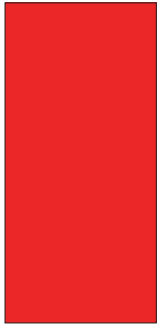
Metal Doors Specifications and Applications

Specification	Clean Room Door	Commercial Door	Fire Door	Cold Room Door	Acoustic Door	Sliding Door	General Purpose
Material	Galvanized Steel	Galvanized Steel	Galvanized Steel	Galvanized Steel	Galvanized Steel	Galvanized Steel	Galvanized Steel
	Stainless Steel 304 Grade	Stainless Steel 304 Grade	Stainless Steel 304 Grade	Stainless Steel 304 Grade	Stainless Steel 304 Grade	Stainless Steel 304 Grade	Stainless Steel 304 Grade
Sheet thickness	0.8 MM Thk for Shutter	0.8 MM Thk for Shutter	0.8 ,1.2 to 1.6MM Thk for Shutter	0.8 to 1.0MM Thk for Shutter	0.8 to 1.0MM Thk for Shutter	0.8 to 1.0MM Thk for Shutter	0.8 to 1.0MM Thk for Shutter
	1.2MM Thk for Frame	1.0 -1.2MM Thk for Frame	1.2,1.6 to 2.0MM Thk for Frame	1.2MM Thk for Frame	1.2MM Thk for Frame	1.2MM Thk for Frame	1.2MM Thk for Frame
Shutter Thickness	46mm	46mm	46 & 50mm	46 & 50mm	46 & 50mm	46mm	46mm
Infill Material	Honey Comb / PUF	Honey Comb	Rockwool/ Mineral Wool	PUF	Rubber Sheet + GlassWool With Neoprene Seals	HoneyComb	HoneyComb
Applications	Pharma , Food, Offices, Hospitals	Institution, Apartments, Malls, Offices	Pharma, Shopping Malls, Apartments Industries	Clean Room, Cold Room, Food Processing	Auditorium, Recording Studios	Offices, Shopping Malls	All

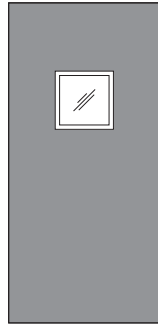
		Clean Room Door	Commercial Door	Fire Door	Cold Room Door	Acoustic Door	Sliding Door	General Purpose
Single Door	Width (mm)	450 -1200	450 -1200	450 -1200	450 -1200	450 -1200	450 -1200	450 -1200
	Height (mm)	750 -3000	750 -3000	750 -3000	750 -3000	750 -3000	750 -3000	750 -3000
Double Door	Width (mm)	800 -2400	800 -2400	800 -2400	800 -2400	800 -2400	800 -2400	800 -2400
	Height (mm)	750 -3000	750 -3000	750 -3000	750 -3000	750 -3000	750 -3000	750 -3000



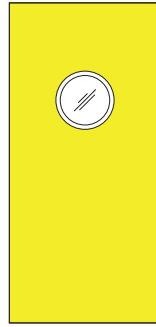
OUR DOOR DESIGNS



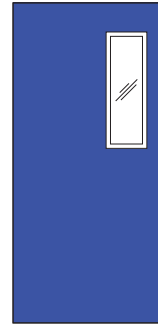
FF – Full Flush



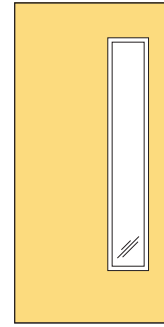
VS – Vision Square



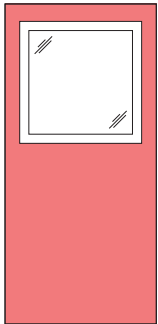
VR – Vision Round



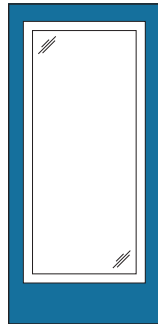
VNS – Vision Narrow Short



VNL – Vision Narrow Long



HG – Half Glaze



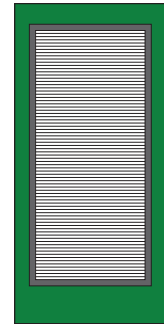
FG – Full Glaze



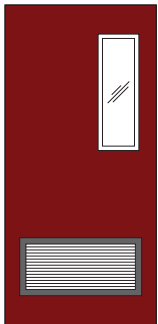
BL – Bottom Louver



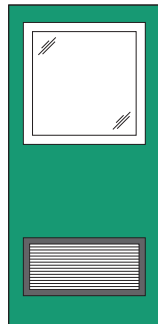
TL – Top Louver



FL – Full Louver



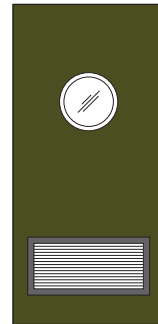
VNS/BL – Vision Narrow short with Bottom Louver



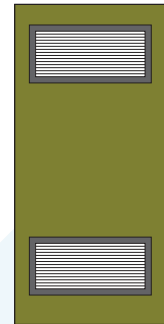
HG/BL – Half Glaze with Bottom Louver



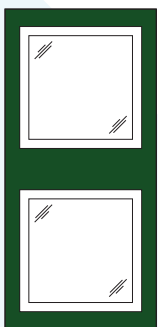
VS/BL – Vision square with Bottom Louver



VR/BL – Vision Round with Bottom Louver



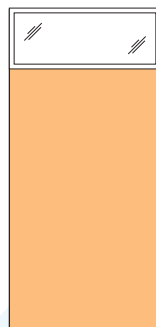
TBL – Top and Bottom Louver



TBG – Top and Bottom Glaze



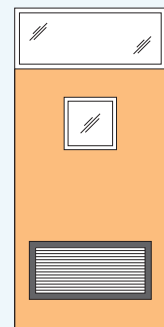
FF/TP – Full Flush with Top Panel



FF/TG – Full Flush with Top Glaze



FF/TL – Full Flush with Top Louver



VS, BL/TG – Vision Square, Bottom Louver with Top Glaze

OUR DOOR DESIGNS

◆ **Varients:**

- Mitre Joint
- Butt Joint
- Welded

◆ **Options:**

- Architrave on one side
- Architrave on both side

◆ **Sheet**

Thickness(profile Depth):

- Up to 150mm-1.2mm
- 151 & Above -1.6mm

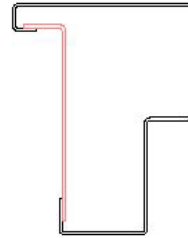
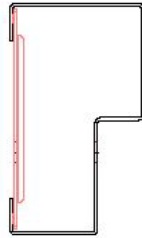
◆ **Frame Depth:**

- Max.350mm
- Min.50mm

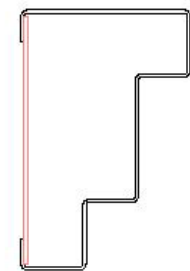
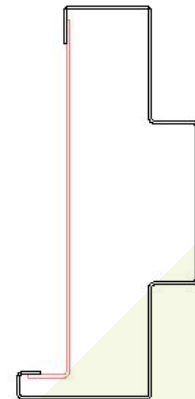
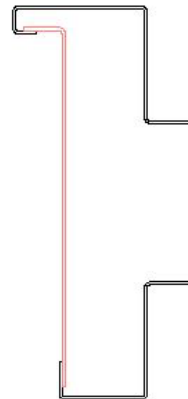
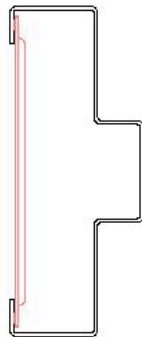
◆ **Smoke Seal:**

- PVC Seal for non fire rated.
- EPDM Gasket for Fire rated

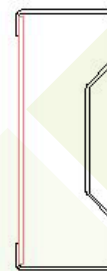
SINGLE REBATE



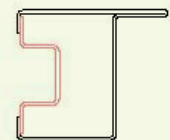
DOUBLE REBATE



DOUBLE EGRESS



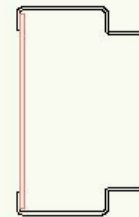
DOUBLE SWNG



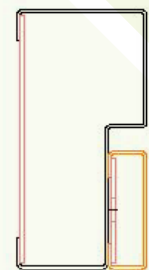
ZERO SOFFIT



WINDQW PROFILE-SG



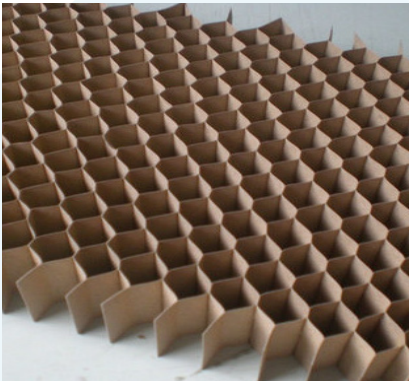
WINDQW PROFILE-DG



WINDQW PROFILE-

SHUTTER INFILL MATERIAL

CORES



Honeycomb

- Perfect hexagonal shaped strong and lightweight core or filling material, made of 100% recycled paper.
- Widely used as core infill material in interior doors, partitions, and various components.
- Offers high pressure strength
- Qualified as a core material between flat and moulded facings.
- Easily adapts to any shape.
- Outstanding deformation properties.



Rockwool with Stiffener

- The high density rock wool board insulation is produced from molten basalt spun to fine fibers and bonded with heat resistant binder.
- The rock wool infill board meets the requirements of the technical standard ASTM C-612.
- The combination of optimized density, fiber direction and excellent fit of mineral, rock wool provides ideal thermal and acoustic insulation for steel door.
- Rockwool infill is used in the steel stiffened doors.



Polyurethane Core

- This insulated foam is injected into the core and expands to fill all the available space within the cavity of the hollow metal door
- Polyurethane has the best insulation value but cannot be fire rated. This insulated door are generally used for clean room applications.

STANDARD HARDWARE

HINGES



DOOR BOTTOM SEALS



FLUSH PULL HANDLE



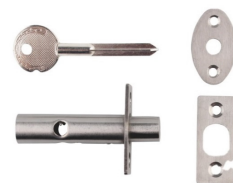
DOOR CLOSER



SS TOWER BOLT



SHAFT LOCK



LOCK SET



CONCEALED DOOR CLOSER



DOOR STOPPER



D-HANDLE



TOILET INDICATOR BOLT



DOOR STOPPER FOR FLOOR MOUNTED



D-HANDLE



SINGLE POINT PANICBAR



QUALITY ASSURANCE

The comprehensive quality systems at Mangal right from raw material to in-process to final products ensure compliance with International Standards. Continual improvements and upgradations in our inspection and testing facilities ensure product quality, durability, and reliability.

Through the Amara Raja Way®, our aim is to exceed the customers' expectations. To accomplish this, we focus on

- Agile business strategies with risk-based thinking and anticipating future trends
- Contemporary technologies and robust design principles
- Continuous enhancement of our individual engagement, development and performance
- Operational excellence through continual improvements
- Total employee involvement
- Fulfilling the compliance obligations
- Optimal utilization of energy and sustainable use of natural resources through the reduce, reuse and recycle concepts
- Zero incidents, zero defects and zero breakdowns



PRODUCT QUALITY TESTS



- ◆ **Salt Spray Test**
Subjected to accelerated weathering and salt spray tests and the condition of paint film is examined for corrosion
- ◆ **Cross Hatch Test**
To check the quality of adhesion of the powder with the bare material
- ◆ **Conical mandrel test**
To check the quality of adhesion of Zinc or Painting with the base material
- ◆ **Scratch hardness test**
To determine the hardness of a material to scratches and abrasion
- ◆ **Impact test**
To determine the resistance of the material to any sudden impact
- ◆ **UV test**
To determine the color fastness by exposing the metal to UV rays



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