



**GENERAL:** This document defines **SIGNUM 49 dB Acoustic cum 120 Minute Fire Resistant Steel Door specifications** which meet with **IS 3614 and BS 476 Part 22** standards for Fire Resistance and **ASTM E90/ ISO 10140-2, ASTM E413 and ISO 717-1** for Sound Transmission Loss (**STC**) measurement. The product described herein **conforms to stability and integrity criteria** as mentioned in IS 3614/ BS 476 Part 22. It includes proprietary design and performance specifications.

#### REFERENCES

**IS 3614:** Fire Doors and Doorsets —Specification

**BS 476 Part 22:** Fire Resistance Test to Building Material – Non load-bearing elements of construction

**ASTM E90:** Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements

**ASTM E413:** Classification for Rating Sound Insulation

**ISO 10140-2:** Acoustics - Laboratory measurement of sound insulation of building elements - Part 2: Measurement of airborne sound insulation

**ISO 717-1:** Acoustics - Rating of sound insulation in buildings and of building elements - Part 1: Airborne sound insulation

#### MATERIALS

Steel sheets for frame sections and shutter skin shall conform to IS 277 with Z 120 coating and to IS 513 for its base physical and chemical properties. Sheet thicknesses shall be as per Fire Type Test Report

Core shall be proprietary fire retardant heat cum sound insulating material

Intumescent strip shall be Rigid PVC type of size 10 mm x 4 mm

Anchor Bolts shall be of size M8 x 75 mm, galvanized for corrosion resistance

Vision Panel (optional) shall be of hermetically sealed double glazed unit (DGU) type to achieve a fire rating of 120 minutes as per standards.

#### CONSTRUCTION

**Frame:** Steel frames shall have a triple rebated profile of 150 mm x 75 mm with bending radius of 1.4 mm constructed from minimum sheet thickness of 1.5 mm.

Frames shall be fabricated at factory pre-equipped with iron-mongery preparation and reinforcements. Frames shall be in knock down form with butt joints for bolted assembly directly at site. Provision for anchor bolt fasteners on each vertical jamb for fixing to Wall/ RCC surface shall be made. Center to center distance between the anchor fasteners shall not be more than 600 mm

**Shutter:** Steel shutters shall be 75 mm ( $\pm 2$  mm) thick, press formed, double skin type construction with folded interlocking seam joints at stile edges, with minimum sheet thickness of 1.2 mm

Shutters shall have no visible screws or fasteners on either face

Shutters shall be constructed out of proprietary fire retardant heat cum sound deadening insulating material bonded to the inner surfaces of the sheets with suitable permanent glue.

Shutters shall be factory prepared with pre-punched cut-outs and reinforcements to receive iron mongery.

#### MANUFACTURE

Steel door units - frames and shutters shall be fabricated to be rigid and free from defects such as warping and buckling. Separate top and bottom channels shall be welded to the shutter to act as reinforcement and to prevent ingress from external particles.

Beading for vision panel shall be square or rectangular in shape with profile with a profile of 40 x 6 mm, with one side welded to the shutter face and the other side screwed. Screws shall be counter sunk and flat to be flush with beading surface. Clearances at jambs and heads shall not be more than 3 mm between the frame and shutter. Floor level to shutter bottom clearance i.e. undercut shall not be more than 5 mm.

#### FINISHES

**Frame and Shutter** surfaces shall be suitably prepared and cleaned with solvents prior to coating. Frames and shutters shall be finished powder coated at factory as per approve RAL colour shades. The dry film thickness (DFT) for the powder coating shall be not less than 50 microns as per IS 13871.

Alternatively frames and shutters can be finished using anticorrosive zinc rich two component epoxy stoving primer (35 microns DFT) and top coat of two component polyurethane paint (35 microns DFT) of approved RAL colour shade for the project

#### IRON MONGERY PROVISIONS



**SIGNUM**

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**Frames** shall be provided with 3 mm thick hinge reinforcement plates with M6 nuts pre-fixed to receive hinges for screw mounted fixing at site. Concealed encasings or brackets using steel plates shall be provided at all pre-punched cut-outs as reinforcement and with pre-drilled holes for iron mongery such as lock strike plates, concealed door closer tracks/ guide channels. All cut-outs including hinge plates, lock strike plates shall have mortar guard covers from inside to prevent grouting material, dirt, and dust ingress into cut-outs during installation.

**Shutters** shall be provided with 3 mm thick hinge reinforcement plates with M6 nuts pre-fixed to receive hinges for screw mounted fixing. Concealed encasings or brackets using steel plates shall be provided at all pre-punched cut-outs as reinforcement and with pre-drilled holes for iron mongery such as lock body, concealed door closer, flush bolts, drop down gaskets etc. Reinforcement plates shall also be provided at necessary locations (as per approved drawings) to support surface mounted iron mongery items such as doors closers, all drops, pull handles.

Special Noise insulating acoustic gaskets shall be mounted on door periphery on 3 sides (and in the meeting edges in case of double doors) along with automatic bottom drop down gasket/ seal to ensure maximum sound insulation from edges of door.

#### **QUALITY ASSURANCE**

Steel Fire rated cum Acoustic doors shall be manufactured by a unit certified for its quality systems as per ISO 9001: 2015 standards from a recognized certifying authority.

Steel door unit shall be designed and manufactured to comply with relevant specifications.

Each door unit shall have a fire rating label, to indicate fire resistance of door as well as door identification number and date of manufacturing.

Acoustic door unit shall be GreenPro certified to be eco-friendly by CII-IGBC (Indian Green Building Council).

#### **TESTING**

Entire fire door assembly complete with iron mongery shall be type tested and certified for its fire rating by CBRI or CPRI and by ARAI for its sound transmission loss rating. Single and double doors shall be tested separately to reflect accurate resistance results in case of fires. Type test reports shall be submitted for all projects with no further testing required, unless agreed to between the client and SIGNUM.

#### **WARRANTY**

SIGNUM warrants that for 18 months from the date of dispatch or 12 months from the date of installation, whichever is earlier, its manufactured products shall be free from defects in material, workmanship and construction and in accordance with the approved shop drawings submitted. Any items not manufactured by SIGNUM are only as warranted by the manufacturer of such items, otherwise all such items are sold on an AS IS basis. If examination by SIGNUM discloses that the product has been defective, provided the product was used as intended and appropriately maintained, then our obligation is limited to repair or replacement, at our option, of the defective parts or entire product, free of charge to the client. Manufacturer's warranty shall exclude losses caused by improper or insufficient maintenance, normal wear and tear, any improper operating, storage, handling, installation, modification after handing over of product to client. Manufacturer's liability for incidental, consequential, or damages, including commercial or other loss, resulting from any defective product, is strictly limited to repair and/ or replacement as stated above. For details please feel free to contact us:

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#### **TRANSPORTATION, UNLOADING AND STORAGE**

Frames and shutters shall be covered with adhesive based PE sheets to prevent damages to surface finish during transportation and at site. Labels shall be applied to each set as per project schedule for easy identification at site.

Additional protection such as side bolsters from card-board paper shall be used to protect during transit and at-site storage.

All knocked down frames shall be stacked flat and shutters flat/ vertically on top of card-board/ other bolsters in clean, dry, well-ventilated areas.

**DISCLAIMER:** All functionality, features, specifications and other product information provided in this document including, but not limited to design, components, performance, availability and capabilities of the product are subject to change without notice or obligation.