

Moduline™

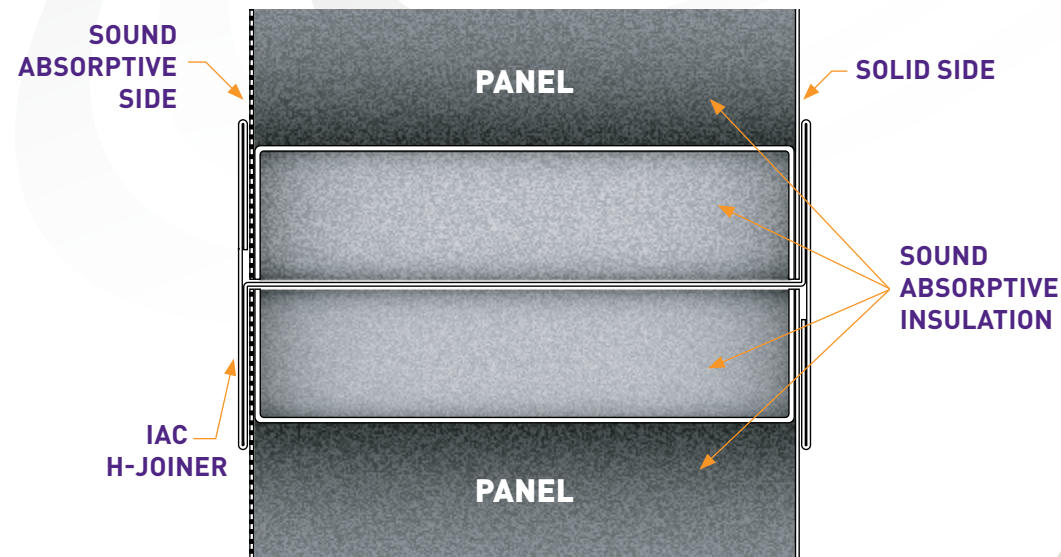
IAC's proven modular range of acoustic construction panels



Moduline™

Moduline™ is a system of field proven and laboratory-tested modular components ideally suited for the construction of a large variety of acoustically treated spaces from simple offices to complex multi-storey structures.

All basic components – including wall and roof panels, doors, windows and built-in silenced ventilation systems – integrate readily with each other to form a versatile, building block system which saves cost, weight and space.



Several factors must be considered for the control of the acoustical environment in any building: noise propagation and flanking paths; transmission loss characteristics of walls, ceilings and floors; compatibility of windows and doors; the noise control of HVAC systems; hardware and trim.

Other considerations include the fire ratings, aesthetics, structural integrity and the ability to meet specifications at minimum cost. Moduline's complete range of pre-engineered components and IAC full service capabilities ensure that the architect and engineer can lay out a building for maximum efficiency and economy while fully protecting against noise and/or fire.



ATTRACTIVE APPEARANCE

Available in a variety of colours and finishes, Moduline components can be provided in primed or un-primed galvanised steel, finish painted, or coated with vinyl or fluoropolymer films for superior wear resistance in a range of architectural colours and gloss levels.

FIRE AND BLAST RATINGS

Optional fire Noise-Lock® panels and doors are certified for both 60 and 90 minute ratings. Moduline structures and doors can also be provided to withstand 6895N/m² blast load. All doors remain operable after blast.

LARGE SIZES OR SPECIAL DESIGNS

Moduline walls have been built to heights of over 12m. with standard and special doors, windows, wind pressure relief devices and other components. For unusual applications, the IAC engineering and R&D team is available to develop and test custom designs and hardware.

WEIGHT AND SPACE SAVINGS

Moduline walls are only 102mm thick, yet provide the sound conditioning required with as little as 1/3 of the weight of 152mm acoustic block. Moduline therefore means savings in foundation costs and less space for walls results in more space for the user. Ideal for existing buildings which may have floor loading limitations.

BARRIER-FREE ACCESS

Single or double leaf Noise-Lock® doors are acoustically compatible with Moduline wall panels. Choice of manual or automatic sliding doors. Optional access plugs, quickly removable panels or moveable Trackwall™ panel systems offer additional accessibility.

Moduline doors are provided complete with standard architectural hardware as specified, including power operated sliding door mechanisms, magnetic seals, astragals and camlift hinges for swinging doors, pressure tested strikes and latches for blast doors, and certified components for fire-rated doors.

FULL VISIBILITY

Double glazed Noise-Lock® windows stop the noise, but not the view. Windows can be incorporated into any Moduline panel, door or conventional wall.

COST SAVINGS

Moduline structures are competitively priced and designed to meet a wide range of performance requirements.

A proven, cost effective method for creating acoustic structures, barriers and panels.

Moduline™ is a range of high-performance acoustic panel systems from which IAC has successfully created complete acoustic structures and walls for over 60 years. Features Include:

- Guaranteed acoustic performance
- Combined Sound Transmission Loss (STL) and sound absorption
- Doors / windows and ventilation systems readily incorporated
- Simple, rapid assembly
- Strong, durable construction
- Fire resistant
- Full demountability

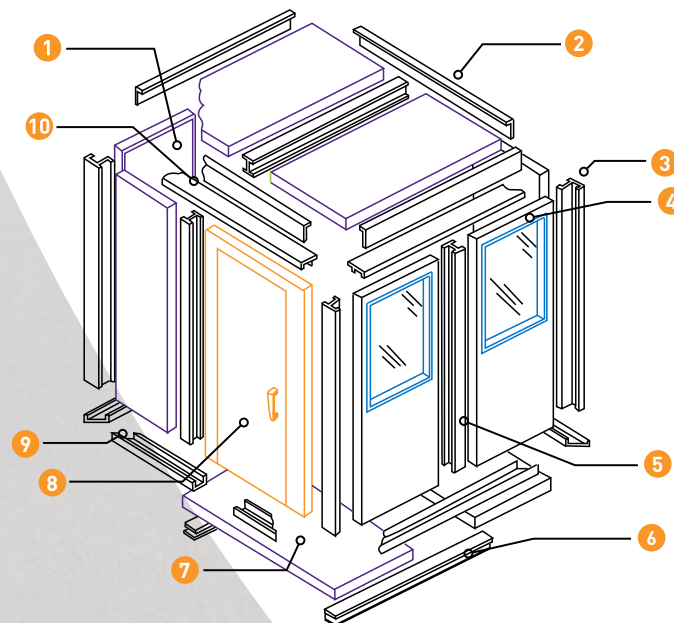
For each individual project, it is possible to select a panel design which has the required sound transmission loss (STL) and sound absorption ratings. These ratings, amongst other details can be seen opposite.

The flexibility of Moduline™ panels means that the following types of noise control solutions can be configured:





- Straight walls / barriers
- Partial enclosures / shields
- Access control, including doors, windows and hatches
- Complete enclosures including acoustic roofs and isolated / floating floors
- Silent ventilation packages for all types of enclosure from personnel shelters to power generation plant rooms



- 1 Panel - inner surface typically perforated
- 2 Roof apron
- 3 Corner joiner
- 4 IAC Noise-Lock® acoustic window
- 5 IAC 'H' panel joiner
- 6 Isolation rail
- 7 Floor panel
- 8 IAC Noise-Lock® acoustic door
- 9 Floor channel
- 10 Roof channel



VARIOUS PANEL CONFIGURATIONS

CONFIGURATION				
PHYSICAL & ACOUSTIC CHARACTERISTICS	ONE ABSORPTIVE & ONE SOLID SIDE RW 40 TO XX	SOLID BOTH SIDES RW 55 TO XX	ONE ABSORPTIVE & ONE SOLID SIDE WITH SOLID CENTER RW 53 TO 57	UNBACKED ABSORPTIVE PANEL NRC 0.95
STANDARD MODULINE PANELS	NOISE-LOCK II NOISE-LOCK IV NOISHIELD REGULAR	NOISE-LOCK II HARD NOISHIELD HARD	NOISE-LOCK III NOISE-LOCK V	VARITONE
STANDARD THICKNESS	102mm			102mm 51mm
MAX. PANEL WIDTH	1500mm			360mm 450mm
MAX. PANEL HEIGHT	3660mm			
THERMAL INSULATION	SOUND ABSORPTIVE INFILL DOUBLES AS THERMAL INSULATOR $U = 0.4 \text{ W/m}^2/\text{°C}$ (0.07 Btu/hr/ft ² °F)			

SOUND TRANSMISSION LOSS

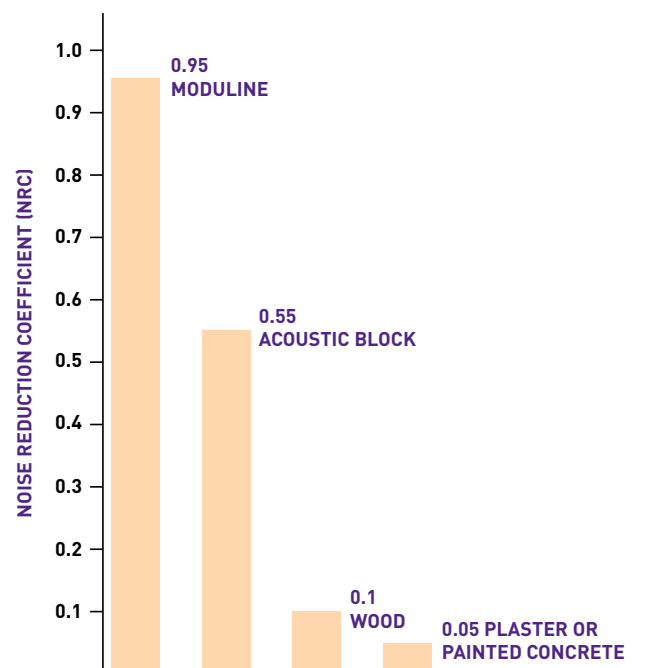
OCTAVE BAND, Hz	63	125	250	500	1k	2k	4k	8k	Rw	MASS (kg/m ²)
NOISHIELD REGULAR	20	21	27	38	48	58	67	66	40	30.4
NOISHIELD HARD	22	33	45	52	58	68	75	65	55	35.7
NOISE-LOCK II	27	30	32	41	50	59	67	71	45	45.9
NOISE-LOCK II HARD	24	40	50	57	65	73	80	78	??	51.2
NOISE-LOCK III	19	33	52	65	77	80	80	73	57	61.7
NOISE-LOCK IV	-	25	31	43	52	64	74	-	44	38.1
NOISE-LOCK V	17	29	45	53	58	63	64	60	53	56.7

SOUND ABSORPTION COEFFICIENTS

OCTAVE BAND, Hz	63	125	250	500	1k	2k	4k	8k	NRC*
NOISHIELD REGULAR	0.89	1.00	1.00	1.00	1.00	1.00	1.00	0.93	0.95
NOISE-LOCK II	0.94	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95
NOISE-LOCK III	-	0.49	0.37	0.83	0.96	0.99	1.00	1.00	0.80
NOISE-LOCK IV	-	0.49	0.37	0.83	0.96	0.99	1.00	1.00	0.80
NOISE-LOCK V	0.94	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95
VARITONE (50mm)	-	0.35	0.65	1.20	1.21	1.07	0.92	-	1.00
VARITONE (100mm)	-	0.97	1.39	1.34	1.29	1.19	1.01	-	1.30

* NRC stands for Noise Reduction Coefficient and is the average of the 250, 500, 1000 and 2000Hz coefficients. It is a single number indicator of relative absorption values. Coefficients greater than 1.0 result from diffraction effects associated with limited sample size (ASTM C423-90a - 6.69m²). For most applications, a maximum coefficient of 0.95 is recommended for noise reduction calculations.

MODULINE SOUND ABSORPTION VS. OTHER CONSTRUCTION MATERIALS



MODULINE TRANSMISSION LOSS / WEIGHT

CONSTRUCTION	THICKNESS (mm)	MASS (kg/m ²)	Rw
PLASTER / GYPSUM	102	70	39
NOISHIELD REGULAR	102	30.4	40
HOLLOW MASONRY BLOCK, PLASTERED BOTH SIDES	175	156	45
NOISE-LOCK IV	102	38.1	44
NOISE-LOCK II	102	45.9	45
SOLID CONCRETE, PAINTED	300	732	53
NOISHIELD HARD	102	35.7	55
NOISE-LOCK III	102	61.7	57
NOISE-LOCK II HARD	102	51.2	??

MODULINE SPECIFICATIONS

This specification covers the requirements for a building structure consisting of IAC Moduline panels and components as shown on the drawings and as manufactured by IAC Acoustics.

Moduline panels and doors are rated for sound transmission loss and sound-absorption coefficients in AIS's Aero-Acoustic laboratory in accordance with applicable portions of ASTM Specifications E90, E413 and C423.

Noise reduction ratings of typical Moduline enclosures range between 34dB and 71dB in the speech interference frequency (500, 1000 and 2000Hz) octave bands.

PANEL CONSTRUCTION AND DESIGN

1. Wall, ceiling and floor panels shall be in 102mm thick and fabricated of steel face sheets, framing members and internal reinforcements welded and riveted together to form a rugged metal-sheathed panel. Each panel shall be damped and filled with sound retardant and absorbing materials that are inert, mildew resistant, vermin proof, hydrophobic and incombustible.
2. Connecting panel joiners for stationary panels shall be fabricated on one length of roll formed steel designed and sized to prevent noise leakage while acoustically and structurally joining the panels. Steel hardware and trim shall be provided as necessary.
3. Fire-rated panels shall bear a label with Listing Mark of Underwriters Laboratory (UL) certifying that construction has been fire rated for 90 minutes with fire facing sound absorptive surfaces and for 60 minutes with fire facing non absorption surfaces.
4. Windows shall be installed in panels and shall consist of two independently supported layers of 4.8mm safety glass separated by an air space containing desiccant to prevent fogging and framed in acoustically tight rubber seals that provide vibration isolated suspension from the panel structure.
5. Demountability. The structure shall be designed to permit disassembly without deformation or damage to components. Reassembly shall be accomplished without loss of acoustic or structural integrity and without requiring any replacement parts.

NOISE-LOCK® DOORS

1. Door leaves shall be a minimum of 64mm thick and fabricated of steel face sheets and internal reinforcements. Face sheets shall be attached or structurally joined only at perimeter. Leaves shall be designed and filled with sound retardant and absorptive materials that are inert, mildew resistant vermin proof, hydrophobic and incombustible.
2. Frames - Shall be welded steel construction. For renovation applications, optional split frame design shall have concealed fasteners.
3. Acoustic Seals - Sides and head of door and frame shall include a minimum of two sets of self-aligning, magnetic compression seals. In closed position, an acoustic labyrinth shall be created and the door held in place by magnetic force of perimeter seals at head and jambs. Bottom of door leaf shall contain continuous seal, active by gravity action of cam hinge, that compresses against floor as door is closed. Raised sills and threshold drop seals will not be permitted.
4. Hardware - Two IAC cam-lift butt type hinges, shall be supplied with each door leaf. Manufacturer shall provide test data showing that hinges of identical design have been cycled a minimum of 125,000 times while supporting a door leaf weighing at least 159kg.
5. Fire rating and blast-pressure rating (optional) - Fire rated door and frame assemblies shall be furnished UL label for clear opening up to 3660x3660mm. Larger sizes shall be furnished with UL Certification Report. Fire rated doors shall utilize IAC fire-resistant compression mechanisms. Blast rated doors, when specified, shall withstand a static pressure of 1psi (6895N/m²) and remain operable after blast.

ACOUSTIC PERFORMANCE

Manufacturer shall furnish certified sound-transmission-loss and sound-absorption test data, per the schedule and taken in an acoustical laboratory with a reverberation room of at least 283m³ volume and satisfying applicable portion of ASTM Specifications E90, C423 and E413 (inert transmission loss and sound absorption requirements).

WARRANTY

Acoustic panels and components shall be guaranteed against defects in workmanship and materials for one year from date of shipment.

IAC Acoustics is the foremost designer and manufacturer of noise control equipment and has been so engaged exclusively since 1949. Thousands of IAC Acoustics' systems are in use throughout the world. Most likely we have standard products or previously worked out solutions for your requirements. If not, our engineering and R&D departments have a proven record of solving special problems.

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