

Technical data sheet

System **Privacy System**

Design performance Fire, thermal moisture & acoustic

Application Air-borne sound insulation above partition walls



Document notices

Original publication **May 2005**

Current version: **07 August 2015 Amd 2**

Publisher **Australasian Insulation Supplies Pty Ltd**

56 Cutler Road Jandakot WA 6164 As trustee for AIS Unit Trust ABN 25 612 643 993

T +61 (0)8 9417 9494 F +61 (0)8 9417 9595 E sales@ais-group.com.au W www.ais-group.com.au

Disclaimer This information is for use by suitably qualified building professionals. Whilst the information presented was to the best of our knowledge accurate and reliable at the time of preparation, no responsibility is accepted for errors and omissions. This information should not be construed as a recommendation to use any product in violation of any patent rights or in breach of any statute or regulation. Building professionals are advised to make their own determination as to the suitability of this information in relation to their particular purposes and specific circumstances. Since the information contained in this document may be applied under conditions beyond our control, no responsibility can be accepted by AIS for any loss or damage caused by any person acting or refraining from action as a result of this information.

Privacy in modern commercial buildings can only effectively be achieved with a total approach to room acoustics and structural elements. This requires management of sound transmission through walls, flanking transmission through ceiling plenums, doors and windows, and effective sound absorption in large open plan areas.

The design performance of many ceiling panels falls short of their operational performance because most are tested without penetrations.



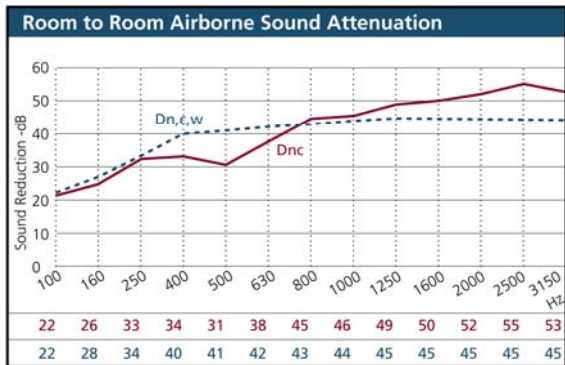
The Privacy System is part of a whole-of-system approach to optimize privacy and room acoustics in office construction. Room acoustics and room to room sound attenuation form the basis of the systems effective performance.

ROOM ACOUSTICS

An acoustic fundamental is to treat noise problems at the source wherever possible. Poor room acoustics can amplify speech levels in open plan areas. It therefore follows that to achieve adequate levels of privacy in these areas the maximum level of ceiling sound absorption should be called for, especially with the growing trend towards the use of hard flooring surfaces and large areas of glass.

Maximising absorption will have the effect of greatly reducing reverberation, and will actually reduce noise levels in the room compared to that using low absorption ceilings.

ROOM TO ROOM ATTENUATION



A suspended acoustic ceiling is not a reliable way of achieving privacy between rooms because light boxes, flexible duct connections and the like create penetration that negate what has been achieved in trying to create a continuous barrier.

In rooms where privacy is critical, full height partitions are the most effective way to achieve high room to room sound insulation. However this is typically not done.

The Privacy System is a highly effective and economical solution for creating a barrier between the top of the wall and the underside of the floor slab above. The graph opposite shows room-to-room sound attenuation of a range of frequencies. The Barrier System is especially effective in the critical 1000 to 3000 Hz speech frequencies.

[0] Performance presumes partition wall performance is sufficient to achieve adequate R_w , and that other paths of sound transmission such as doors, glass areas and mechanical services have all been designed using good acoustic practice.



The photograph opposite shows the system. It is fast to install and does not require fastenings. The barrier slab is neatly cut to suit the opening (slightly oversize) and then friction-fitted into the gap. It is suitable for voids up to 1 metre height.

The Privacy System using standard Rockfon Acoustic Ceiling Panels achieves airborne sound insulation from room to room (R_w) of more than 40dB in service[0].

PERFORMANCE SUMMARY

The Barrier System has an engineered stone wool core with a foil facing. The table below details the performance of the Barrier System for a range of Rockfon ceiling panels. The each panel, sound absorption outcomes are listed, together with the room-to-room sound

| Rockfon Privacy System ⁽²⁾ | Thickness (mm) | Sound Absorption Coefficients ⁽¹⁾ | | | | | | α_w | NRC | $D_{n,c,w}$ dB System A ⁽⁴⁾ | $D_{n,c,w}$ dB System B ⁽⁴⁾ |
|---|----------------|--|--------|--------|---------|---------|---------|------------|------|--|--|
| | | 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | | | | |
| Rockfon Polar | 15 | 0.40 | 0.80 | 0.90 | 0.80 | 0.95 | 0.95 | 0.90 | 0.85 | 41 | 46 |
| Rockfon Koral | 15 | 0.40 | 0.85 | 0.90 | 0.80 | 0.90 | 0.85 | 0.90 | 0.85 | 41 | 46 |
| Rockfon Alaska | 15 | 0.45 | 0.65 | 0.50 | 0.55 | 0.55 | 0.35 | 0.40 | 0.55 | 41 | 46 |
| Rockfon Sonar | 18 | 0.45 | 0.70 | 0.75 | 0.80 | 0.90 | 0.85 | 0.80 | 0.80 | 43 | 48 |
| Wet-felt mineral fibre tiles ⁽³⁾ | 15 | Not generally published in manufacturers current literature. | | | | | | | 0.55 | 33-35 | |

absorption outcomes.

1. Sound absorption performance in accordance with ISO 354 and ISO 11654, NRC in accordance with ASTM C 423. Sound Absorption Coefficients based on the use of 200mm suspension.
2. $D_{n,c,w}$ figures based on tests using Acoustic Barrier and standard Rockfon ceiling panels. Tested by Acoustic Laboratories Australia in accordance with AS 2490:2000 Acoustics – Laboratory measurement of room to room air-borne sound insulation of a suspended ceiling with a plenum above it. Test information available on request.
3. Performance for wet-felt mineral fibre tiles taken from manufacturer literature.
4. System A: ceiling panel and Acoustic Barrier, System B: R2.5 Acousti-therm insulation add to privacy ceiling area.
5. Sound reduction values for Rockfon Sonar are estimates based on testing of similar product.

CEILING SYSTEM DESIGN GUIDELINES FOR PRIVACY

Maximise ceiling absorption by selecting products with Sound Absorption Coefficients (NRC) that are effective in all of the appropriate speech frequencies (Figure A). Relying on a single figure NRC may actually detract from privacy levels because it does not reveal product performance at critical speech range frequencies (Figure B).

Nominate **full height wall partitions** for critical privacy areas wherever possible.

Prior to fit-out, identify the key privacy areas. For these areas, planning of air-conditioning ductwork and other services is critical. The Privacy System can accommodate penetrations such as cable trays, pipes and insulated steel duct – but not flexible ductwork.

For internal glass areas, door construction and seals the project acoustic consultant can recommend products that will complement the above measures and ensure the desired result is achieved.

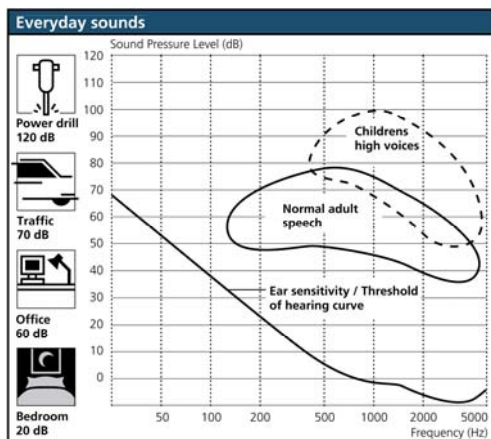


Figure A

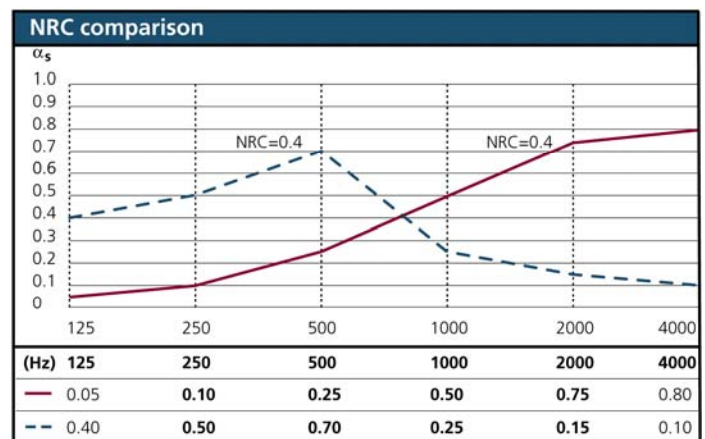


Figure B

INSTALLATION GUIDELINES

Partition walls stopped at the underside of a continuous ceiling grid

The Barrier System is fast to install and does not require fastenings:

1. Install the ceiling height partition walls and continuous ceiling grid. Leave out ceiling panels that abut each side of the partition wall.
2. Adhere a min 4mm thick approved acoustic foam to the top of the partition wall capping.

3. Seal between the partition wall capping and the ceiling grid T-bar with an approved acoustic sealant.
4. Cut the foil faced stone wool slabs to neatly follow the profile of the opening – allowing a 10mm oversize to ensuring a tight compression fit around the entire perimeter and at all vertical joints in the stone wool slabs.
5. Slit (do not notch) the stone wool slabs at the ceiling grid upstand “T-bars”.
6. Friction fit the stone wall slabs into place, ensuring vertical joints are compressed together.
7. Seal the entire perimeter on each side of the barrier with an approved acoustic sealant and tape all stone wall slab joints with a quality, heavy duty foil tape.
8. Refit the ceiling panels at the wall edge by trimming them to fit neatly against the foil face of the stone wool slab.

Installation limits

The maximum vertical opening (partition wall to underside of concrete) is 1 metre.

Installation can be undertaken before the ceiling panels are installed (new work), or retrospectively in existing offices by removing the ceiling panels abutting the wall.

Full installation instructions are available from AIS.