

A I S PRIVACY SYSTEM





Privacy in modern commercial buildings can only effectively be achieved with a total approach to room acoustics and structural elements. This approach addresses sound transmission through walls, flanking transmission through ceiling plenums, doors and windows, and effective sound absorption in large open plan areas. Many allegedly high sound insulating ceiling panels fail to deliver acceptable levels of privacy in practice. Most are tested without penetrations resulting in overstated performance compared to results achieved in service.

Rockfon Privacy System employs a more rational approach to optimize privacy and room acoustics in office construction. The two key aspects to privacy form the basis of the Rockfon system; they are, room acoustics and room to room sound attenuation.

ROOM ACOUSTICS

One of the fundamentals of acoustics 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. Maximizing 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.

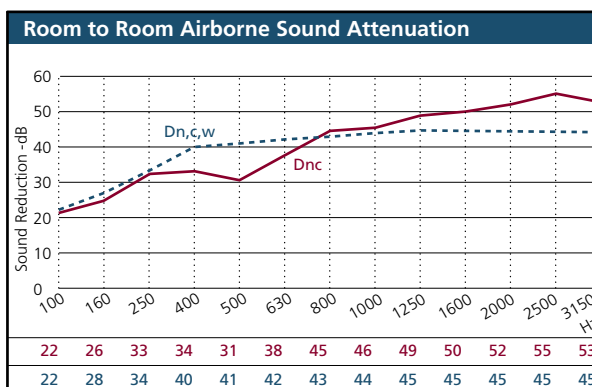
ROOM TO ROOM ATTENUATION

A suspended acoustic ceiling is not a reliable way of achieving privacy between rooms. The presence of numerous penetrations such as light boxes and flexible duct connections negates what has been achieved in trying to create a barrier. In some cellular offices and meeting rooms where privacy may be critical the most effective way to achieve high sound insulation between rooms is to provide full height partitions. However this is not always practical. Rockfon Privacy System provides an economical and highly effective barrier between the top of the wall and the slab or wall and flat metal roof. It is fast to install, requires no fastenings and is simply friction-fitted into the gap to provide a barrier that is suitable for use in voids up to 1 metre in height. Rockfon Privacy System using standard Rockfon Acoustic Ceiling Panels achieves airborne sound insulation from room to room (R_w) of more than -40dB in service.

(The above discussion is based on the assumption that the walls are of sufficient structure to achieve adequate R_w and that other paths of sound transmission such as doors, glass areas and mechanical services have all been designed with privacy in mind).

Rockfon Acoustic Barrier installed as part of the Rockfon Privacy System (see below).

Note the high levels of sound attenuation at the critical speech frequencies of 1000-3000 Hz (see below).





Product summary

| 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 | |

- 1) Sound absorption performance in accordance with ISO 354 and ISO 11654; NRC (Noise Reduction Coefficient) in accordance with ASTM C 423 . Sound Absorption Coefficients based on the use of 200mm suspension.
- 2) Rockfon Privacy System $D_{n,c,w}$ figures based on ceiling tests using Rockfon 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 manufacturers literature.
- 4) System A – Rockfon Ceiling with Acoustic Barrier. System B – same as System A with R2.5 Acousti-therm insulation to privacy ceiling area. Sound reduction values for Rockfon Sonar are estimates based on testing of similar product.

ROOM ACOUSTICS

Open plan areas such as offices, restaurants and hospital wards present a challenge to achieve sufficient levels of noise reduction and privacy, especially with the growing use of hard flooring surfaces. Maximising sound absorption at the ceiling level in these areas will help provide better levels of privacy and lower noise levels to achieve a more pleasant acoustic environment.



ROOM TO ROOM ATTENUATION

Cellular offices and meeting rooms need more than a ceiling to maintain acceptable levels of privacy. Rockfon Privacy System incorporating the Rockfon Acoustic Barrier around these areas in the ceiling plenum will provide optimal privacy for occupants while reducing noise intrusion from the work area outside, providing that all other paths of transmission have been addressed.

CEILING SYSTEM DESIGN GUIDELINES FOR PRIVACY

1. Maximise ceiling absorption in all open plan work areas by selecting products with Sound Absorption Coefficients that are effective in all of the appropriate speech frequencies (fig.A). Relying on only a single figure NRC may actually detract from privacy levels because it does not reveal the product's performance at those critical frequencies in the speech range (fig.B).
2. Nominate full height wall partitions for critical privacy areas wherever possible.
3. After construction the fit-out of each level is usually completed to meet the new tenant's requirements. It is at this point that remaining key privacy areas need to be identified. The location of privacy areas should take into consideration the presence of supply air-conditioning duct and other likely penetrations. Rockfon Privacy System will accommodate penetrations such as cable trays, pipes and insulated steel duct. Flexible duct connections however can not effectively penetrate the Rockfon Acoustic Barrier.
4. The Rockfon Acoustic Barrier is applied by removing the ceiling panels next to the wall that is to be treated. Full installation instructions are available from AIS. It is designed for multi-storey and single level applications with voids between ceiling and slab or metal roof of up to 1 meter. Systems for larger voids are available.
5. 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.

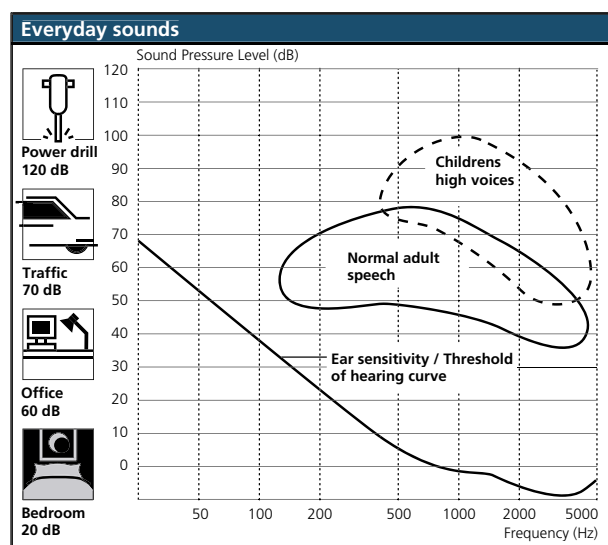


fig. A

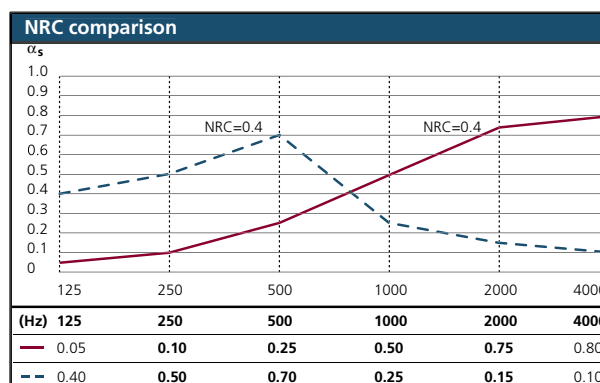


fig. B