

# ROOFING ACOUSTICS

Complying with WA Guidelines

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## WA NOISE GUIDELINES

The WA Road and Rail Guidelines have created a table to ascertain where noise levels will be highest, corresponding to different policy requirements for house design. A summarised table is provided below with corresponding **exposure categories** listed.

Transport Corridor Classification	Number of Lanes	Forecast Noise Exposure Category Based on Lot Distance (m) from Transport Corridor																	
		10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	175	200	
Major Strategic Traffic Roads (50,000+ daily vehicles)	2-4	E	D	C	C	C	B	B	B	B	B	B	A	A	A	A			
	5-6	E	D	D	C	C	C	C	B	B	B	B	B	B	A	A	A	A	
	7-8	E	E	D	D	C	C	C	C	C	B	B	B	B	B	B	A	A	
Urban High Traffic Roads	60-80 km/h	Up to 6	D	C	C	C	B	B	B	B	A	A	A	A	A				
	≥ 100 km/h	Up to 6	E	D	D	C	C	C	C	B	B	B	B	B	B	B	A	A	A
Passenger Railways			D	C	C	B	B	B	A	A	A	A							
Freight Railways			E	E	D	C+	C+	B+	B+	A+	A+	A+	A	A	A	A	A	A	A

As shown above, homes closer to main roads and rail infrastructure will require a better acoustic design. Even if your home falls in a lower category, optimising acoustics will lead to a quieter and more comfortable home.

## COMPLIANT ROOFING SOLUTIONS

**Exposure Category A, A+ and B**  
 $R_w + C_{tr} \geq 35$  dB

Concrete or Terracotta Tiles  
Foil Sarking  
Top Plate  
13 mm Plasterboard

Tiled roof, with foil sarking under battens. 13 mm plasterboard ceiling fixed to ceiling rafters.

Corrugated Steel Sheet  
Foiled Backed Insulation  
Top Plate  
13 mm High-Density Plasterboard  
Furring Channel

Sheet steel roofing, with foil/insulation blanket over 13 mm thick dense plasterboard on steel furring channels.

**Exposure Category B+ and C**  
 $R_w + C_{tr} \geq 40$  dB

Concrete or Terracotta Tiles  
Foil Sarking  
Top Plate  
13 mm High-Density Plasterboard  
Furring Channel

Tiled roof, with foil sarking under battens. 13 mm thick plasterboard ceiling fixed to ceiling rafters.

Corrugated Steel Sheet  
Min. R2.0 Fibre Insulation  
Top Plate  
13 mm High-Density Plasterboard  
Furring Channel

Sheet metal roofing with minimum R2.0 insulation between sheet and battens. 13 mm thick plasterboard ceiling fixed to ceiling rafters.

**OPTIMAL ACOUSTIC DESIGN**

**Exposure Category C+**  
 $R_w + C_{tr} \geq 45$  dB

Concrete or Terracotta Tiles  
Foil Sarking  
Top Plate  
13 mm High-Density Plasterboard  
Furring Channel

Tiled roof, with foil sarking under battens. 13 mm thick plasterboard ceiling fixed to ceiling rafters.

**THERE IS NO ACCEPTABLE SHEET METAL ROOFING OPTION FOR EXPOSURE CATEGORY C+ DUE TO ITS LIMITED ACOUSTIC PERFORMANCE.**

**Note:** Whilst the WA guidelines state that a sheet metal roof with sarking and R3.0 ceiling insulation is compliant, ARTA testing proves this is not the case. To obtain an  $R_w + C_{tr} \geq 35$ , additional furring channels will be required, with a foiled backed insulation blanket.

**Note:** Metal roofs require additional R2.0 foil backed insulation between sheets and battens compared to tiled roofs to comply.

**Note:** Regardless of exposure category, tiled roofs provide superior acoustic performance, keeping homes quieter due to their mass. Homes within 200 m of major transport corridors should use tiled roofs for optimal noise reduction.