Dimond Roofing®

DIMOND AUDIOPERF®

PRODUCT TECHNICAL STATEMENT

AudioPerf® is a perforated ceiling system for commercial applications and is manufactured from perforated steel or aluminum and rollformed into a wide range of profiles. Developed for large and medium scale building applications, and particularly large span ceiling applications. AudioPerf® gives strong clean lines and bold symmetry with modern forms it is used to create dynamic shadows and can be integrated with bespoke flashings to create negative details and installation points for sprinklers, light units etc.

RECOMMENDED PRODUCT/DESIGN USE

- **Applications:** Internal Ceilings
- **Materials:** Specified coating and material based on environmental conditions in accordance with E2/AS1. Available in metallic coated and pre-painted steel in 0.55mm - Aluminium 0.90mm BMT (base material thickness)
- **Material Thickness:** Steel 0.55mm – Aluminium 0.90mm
- **Colours:** Available in pre-painted ColorCote® ZinaCore™, MagnaFlow™ and MagnaFlow® COLORSTEEL® MAXAM™ and Altimate® Refer to www.colorcote.co.nz and www.colorsteel.co.nz
- **Durability:** All material selections must be compatible with the prevailing environmental conditions and adjacent materials. Areas not naturally exposed to rain will require scheduled maintenance.

ENVIRONMENTAL PRODUCT DECLARATION

Dimond Roofing® has been implementing green building principles across the industry for several years now and has developed a fully realised environmental sustainability pathway to reach our goal of reducing our carbon emissions by 30% by 2030. Dimond Roofing® has met the criteria for "Level A" certification for the Global GreenTag™ GreenRate™ ecolabel and as part of Dimond's Toitū carbonreduce® accreditation, essential Scope 1 & 2 emissions, are being measured as well as voluntarily measuring Scope 3 emissions.

Dimond Roofing® profiles are accredited with Eco Choice Aotearoa when manufactured from COLORSTEEL®. All manufacturing sites have been Audited by NZ Steel.

Dimond Roofing® recycle all steel scrap waste and offcuts which can then be remelted down and reused in other steel-based products. At the end of its useful life as a roofing profile can be recycled back by remelted down.

NEW ZEALAND BUILDING CODE COMPLIANCE

When used in accordance with Dimond Roofing installation and maintenance requirements, facilitate with meeting the following provisions of the NZBC:

- **B1 Structure:** Performance clauses B1.3.1, B1.3.2, B1.3.3 (a) (b) (c) (g) (h), B1.3.4 (b) and (d)
- **B2 Durability:** Performance clauses B2.3.1(b) and (c)
- **C3 Fire affecting areas beyond the fire source:** Performance clauses C3.4(a) and C3.9
- **E2 External moisture:** Performance clauses E2.3.1 and E2.3.2
- **F2 Hazardous building materials:** Performance clause F2.3.1
- **G12 Water Supplies:** Performance clauses G12.3.1 and G12.3.2

To comply with the performance clauses of NZBC E2 all cladding to be installed in accordance with:

- Acceptable Solutions NZS E2/AS1 or an Acceptable Alternative Solution
- MZ Metal Roofing Manufacturers Code of Practice
- Dimond Roofing Specification; details available on www.dimond.co.nz

Dimond Roofing is not subject to any warning or ban under section 26 of the Building Act 2004.

MAINTENANCE

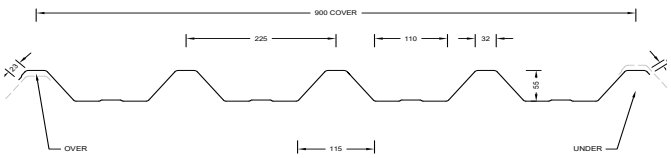
In general, NZ metal roofing materials exposed to rain washing can be expected to comply with NZBC B2 without manual washing, or replacement of protective finishes.

Areas not directly exposed to rain, such as soffits, wall cladding under eaves, the undersides of gutters, fascia's, and sheltered areas like garage doors, will require scheduled maintenance.

Refer to ColorCote® Minimum Maintenance Schedule and COLORSTEEL® Maintenance Recommendations Brochure.

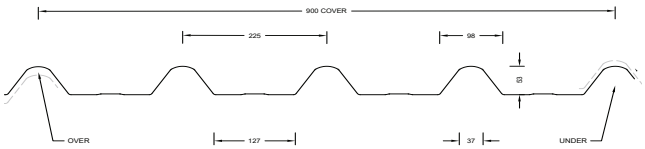
AUDIOPERF® IS AVAILABLE IN THE FOLLOWING PROFILES

Steelspan 900®



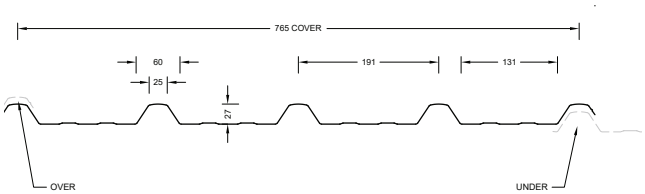
Cover (mm)	900
Sheet width (mm)	970

Topspan®



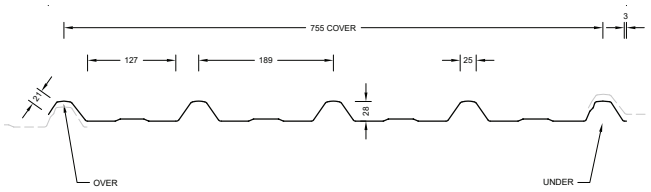
Cover (mm)	900
Sheet width (mm)	970

Hi Five®



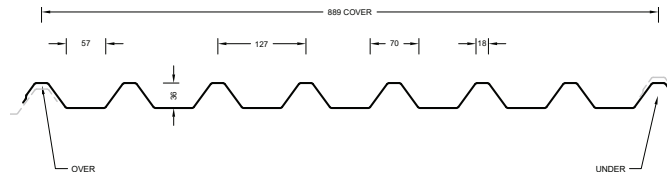
Cover (mm)	764
Sheet width (mm)	822

Styleline®



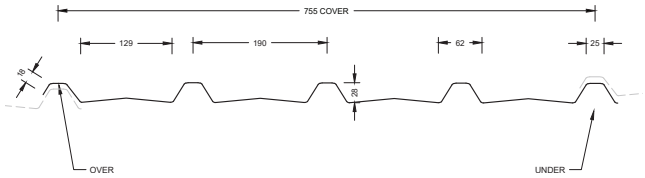
Cover (mm)	755
Sheet width (mm)	810

LT7®



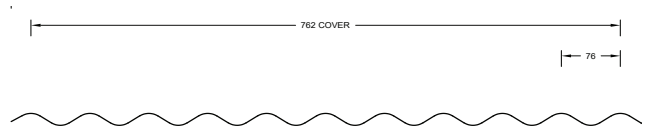
Cover (mm)	889
Sheet width (mm)	933

Veedek®



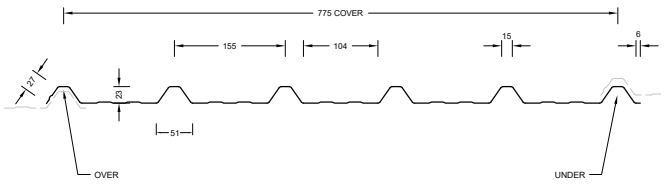
Cover (mm)	755
Sheet width (mm)	810

Corrugate®



Cover (mm)	762
Sheet width (mm)	851

Six Rib®



Cover (mm)	775
Sheet width (mm)	820

SHEET TOLERENCES

Cover: ± 5mm - Sheet length: +10mm, - 0mm (steel)
Cover: +10mm, -15mm – Sheet length: +0mm, -15mm (aluminium)

MATERIAL CLADDING TESTING AND PREFORMANCE

All cladding testing is carried out in accordance with the NZMRM Code of Practice – Testing and MRM Standards.

AudioPerf® Specifications Maximum allowable spans for direct fixed ceiling applications (mm)						
Material Options	Corrugate	6 Rib	Hi Five	V-Rib	LT7	Steelspan/ Topspan
0.55mm (G300)	1.3	1.35	1.5	1.6	1.6	1.7
0.90mm Aluminium	1.5	1.65	1.7	1.8	1.8	2

Rollforming facilities at: Auckland, Hamilton, Wellington, Christchurch and Invercargill
Steelspan 900 (Hamilton); Topspan (Christchurch); LT7 (Wellington and Invercargill); Six Rib (Invercargill)

Curving facility at: Contact Dimond® Roofing.

Sheet Lengths: AudioPerf® is custom run to order. Where long sheets are used, consideration must be given to:

- Special transportation licences for sheet lengths over 16m
- Site access for special lifting equipment

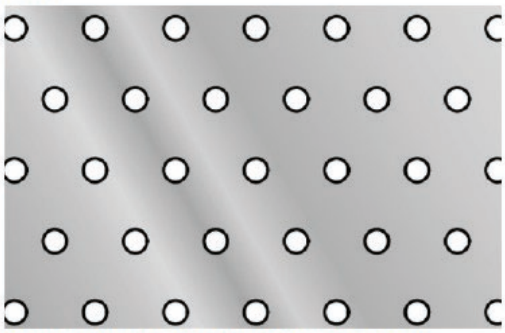
As the product is intended primarily as an internal ceiling material other uses should be considered carefully on an individual basis in consultation with Dimond® Roofing, typical examples are:

- For external use, aluminium material must be specified
- Curved or Bull-nose applications
- Internal wall cladding, or areas exposed to physical contact or vandalism

PERFORATIONS

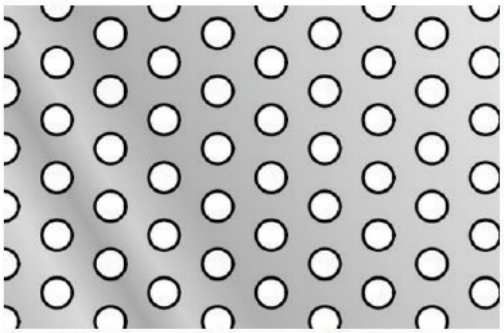
Perforations are available in three-hole sizes and array pitches giving 7% to 33% open areas. Examples are shown below:
Note: For acoustic performance, P143C is recommended.

P119C



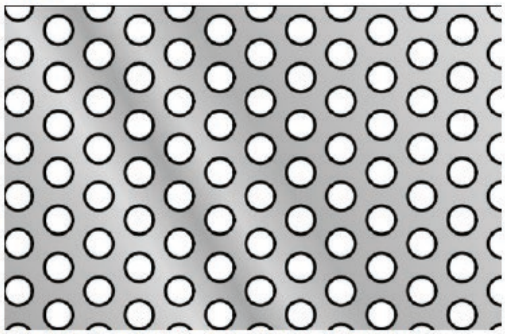
2.5mm perforation diameter at 8.62mm centres - 7.6% open area

P143C



3.2mm perforation diameter at 6.38mm centres - 22.8% open area

P129C



3.0mm perforation diameter at 5.0mm centres - 33.6% open area
Note: It is important to use the full code number when specifying the perforation.

SPAN DATA

The table on the front-page cover, the installation onto metal battens using the material thickness, condition and perforation pattern specified. Note the span data assumes self-weight only and penetrations, inserts of other items should have loads reacted directly against structural members rather than imposed via the AudioPerf®. For small items (less than 3kg) where no more than 2 items exist on the same sheet these should be located near to battens (to avoid sag) and battens spans should be reduced by 20%.

CURVED CEILINGS

Sheets may be rolled over their width or sprung curved/ machine curved over their length, for corrugated profile the following should be maintained:

Width Curved 1 metre radius
Sprung curved 10 metre radius
Machine curved 450mm radius

ACOUSTIC PERFORMANCE

Testing of the ceiling system is to ASTM C423 and ASTM E1414. Independent laboratory testing of insulation materials can give an NRC value of up to 1.0; Testing of a typical complete system has shown the following NRC values:

- P143C corrugate direct fixed with 25mm insulation = NRC 0.55
- P143C corrugate direct fixed with 50mm insulation = NRC 0.70
- P143C corrugate direct fixed with 75mm insulation = NRC 0.70

(NRC = Noise Reduction Coefficient)

FIRE PERFORMANCE

The system when installed on metal purlins or battens complies with the New Zealand Building Code C/AS1 and has been specifically tested to AS1530.3 and meets the following:

Ignitability Index (Range 0-20) 0
Spread of Flame (Range 0-10) 0
Heat Evolved Index (Range 0-10) 0
Smoke Developed Index (Range 0-10) 3

DURABILITY

All materials selected and supplied by Dimond® Roofing are **warranted for internal use only**, to exceed the requirements of clause B.2.3 (1) of the first schedule to the Building Regulations 1992 for 15 years durability, providing the materials selected are suited to the environment and designed, detailed, and fixed and maintained in compliance with Dimond® Roofing instructions, the New Zealand Metal Roof and Wall Cladding Code of Practice and good trade practice.

LENGTHS

AudioPerf® is made to custom long run lengths. Where these exceed 16 metres, they may require special transport and handling facilities. For lengths over 24m, special Land Transport Safety Authority permission should be sought at design stage.

FLASHINGS

Standard flashings are available for each profile. Attention is drawn to use of matching flashing material in contact with the AudioPerf®. In addition, curved flashings are available to suit curved or sprung ceilings.

FIXING

Fasteners for internal use shall be 12g x 20mm steel or 12g x 25mm timbertite and be pan fixed.

MAINTENANCE

No specific maintenance is required for internal use than an annual removal of dust with a mild detergent.
Avoid the product being prolonged contact with debris that could hold moisture Regularly hose down and clean any areas showing accumulation of dirt salt other contaminants. Always use a non-abrasive brush. For moderate environments this should be carried out at least annually. Avoid contact with, or discharge from dissimilar metals. Failure to observe these guidelines may result in voiding the warranty and affect the durability of the product.

DESIGN DETAILS

Design details covering residential & commercial roof & wall claddings are available at www.dimond.co.nz in PDF, DWG & RVT files under each product section.

PUBLICATIONS

To achieve the product's full potential, it must be designed, installed, and maintained in accordance with Good Trade Practice. For more information, please refer to:

NZS E2/AS1: www.building.govt.nz

NZMRM: New Zealand Metal Roofing and Wall Cladding Code of Practice – www.metalroofing.org.nz

NZMRM: Installation Guide – Metal Longrun Roofing and Cladding - www.metalroofing.org.nz

RANZ: How to Guides - www.ranz.co.nz

Pacific Coil Coaters: Choose the Right Roof www.colorcote.co.nz

Pacific Coil Coaters: Maintenance Schedule www.colorcote.co.nz

Pacific Coil Coaters: Environmental Product Declaration www.colorcote.co.nz

New Zealand Steel: Environmental Categories, Warranty & Product Maintenance Recommendations Brochure www.colorsteel.co.nz

New Zealand Steel: Maintenance Recommendations Bulletin - www.colorsteel.co.nz

New Zealand Steel: Installers Guide www.colorsteel.co.nz

BRANZ: Good Profiled Metal Roofing and Wall Cladding - www.branz.co.nz

MBIE: Guide to tolerances, materials and workmanship in new residential construction 2015 - www.mbie.govt.nz

THERMAL NOISE

All profiled metal roofs and wall cladding can produce thermal noise from time to time. This occurs as the roof expands and contracts due to temperature changes, with darker colours potentially increasing the noise. The NZMRM Code of Practice addresses this issue.

According to the MBIE's 2015 "Guide to Tolerances, Materials, and Workmanship in New Residential Construction," noise from metal roofing's thermal expansion is considered normal and should be expected.

OIL CANNING

Differential thermal movement between wide, flat surfaces and ribs or corners within a metal sheet can create a visual effect known as oil canning. This refers to the visible waviness or undulations in the flat sections of metal cladding, roofing, or walling. Oil canning is an inherent architectural characteristic of flat metal surfaces and is not indicative of any performance issues with the product.

It may occur during the forming and installation processes, as well as throughout the roof's lifecycle due to thermal expansion. The visibility of oil canning can vary depending on lighting conditions, sun angles, and the gloss level of the coating.

For more details, please refer to Section 12.4 of the New Zealand Metal Roof and Wall Cladding Code of Practice.

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