

2.1.1.3 WARRANTY

Warranties for commercial applications are issued on a job by job basis. It is imperative that care is taken during the planning process to choose the roofing, wall cladding, guttering and fastener system that will provide the life expectancy in the environment in which it will be installed, as incorrect selection could result in no warranty being available. Any warranty is not Dimond's responsibility and will be subject to the coil suppliers conditions. The site may affect the warranty term and/or product suitability so it is vital that the customer supplies accurate site information and that the designer is fully aware of the suitability of products specified.

To assist you in determining the system that will best meet your warranty expectations Dimond have in place a Warranty Inquiry Service. Your design decisions on product type, material thickness, profile, paint coating type and colour, along with site details including address, distance from sea and degree of exposure will be required to enable us to provide a warranty. To access the service, please contact Dimond on 0800 DIMOND.

All warranties will carry a required maintenance clause, which must be complied with to ensure the warranty remains valid. Often aspects of design such as roof shape and roof pitch can influence the maintenance requirements. Due consideration of these factors during the design process is wise.

As a general guide, provided the materials are correctly selected and installed from Table 2.1C for the environment and coil on cut edge protection lacquer used if required by the coil coater, and building design does not impact on durability, it is reasonable to expect the following warranty periods will be available for your roofing and wall cladding. Please note that no warranty is available for Galvsteel material regardless of which environmental category it is used in.

Paint products from different suppliers should not be mixed on the same job. This applies when the roofing is from one material supplier and the flashings from a different material supplier. No warranty would be available on either material.

Warranties only apply to roofing and cladding and guttering situations and not when used as fences, shower liners or planter boxes.

Guideline Warranty Periods

Steel substrate with appropriate paint coating:

- Commercial roofs:
 - 15 years to perforation of substrate and fastener strength retention.
 - 15 years to paint coating peeling, flaking or excessive fade.
- Residential roofs (dependent on environment):
 - Up to a maximum 30 years to perforation of substrate and fastener strength retention.
 - Up to a maximum 20 years to paint coating peeling, flaking or excessive fade.

Aluminium (unpainted):

- Commercial and residential roofs:
 - 15 years to perforation of substrate.

Aluminium substrate with appropriate paint coating:

- Commercial roofs:
 - 15 years to perforation of substrate and fastener strength retention.
 - 15 years to paint coating peeling, flaking or excessive fade.
- Residential roofs:
 - 30 years up to and including Severe Marine Environments, and 20 years in Very Severe Marine Environments, to perforation of substrate and fastener strength retention.
 - 15 to 20 years dependent on environment to paint coating peeling, flaking or excessive fade.

Duraclad

- Commercial and residential roofs and walls:
 - 20 years to fibre show through or perforation of sheet.

2.1.1.3 Continued

Routine Maintenance

Washing

All metal surfaces must be kept clean for best durability. Warranty conditions require regular washing either by natural rainwater or by manual washing and scrubbing with a soft bristle brush.

The frequency of washing must be sufficient to prevent build up of debris, dirt or salt deposits and will vary depending on location and degree of protection from rainfall.

As a general guide the following frequencies can be used as a starting point.

Environment	Washing Frequency
Moderate / Marine	Every 6 – 12 months
Severe Marine	Every 3 – 6 months
Very Severe Marine	Every 3 months

The need to wash can be reduced by building design that avoids the creation of metal roof or wall surfaces that are sheltered from natural rainfall.

- Unwashed areas such as the exposed underside of roofing in soffits are not warranted, but can be specified as double sided paint surfaces to offer better durability to exposed roof undersides. Minimum coil quantities apply. Regular washing of these areas are still required. However they are not covered by the material warranty.

Overpainting

Once new or older pre-finished roofs are overpainted, the original material warranty becomes null and void, due to uncontrolled conditions and workmanship of the roof.

Substrate in Good Condition

Clean the surface and overpaint with 2 coats of an acrylic roof paint system, following the paint manufacturer's instructions.

If the roof or wall cladding has had less than 2 years exposure to weathering, the acrylic paint manufacturer should be consulted for advice on pretreatment of surface to ensure adequate adhesion.

Substrate Requires Refurbishment

Clean the surface and coat any surface corrosion with a suitable conversion treatment and primer, then overpaint with 2 coats of an acrylic roof paint system, following the paint manufacturer's instructions. Check and replace any fasteners exhibiting advanced corrosion.

Rubbing

Hard rubbing on the unpainted Zinalume surface can cause black marks if the clear coating is worn through. If rubbing is unavoidable we recommend it be kept to a minimum to avoid the wear through of the protective clear coating.

2.1.1.4 LIFE CYCLE COSTING AND MAINTENANCE OPTIONS

The selection of the most appropriate roofing and wall cladding material to meet cost-performance requirements within a chosen time period should be made with the assistance of Life Cycle Costing comparisons.

Input for these comparisons requires:

- Environment type
- Expected useful life for each material / maintenance option
- Type of regular maintenance (if any) and associated cost
- Material types of sheeting and fastener, and their durability
- Material and installation costs
- Discount rate (%) to convert costs to present value

The following Tables 2.1D, E, F, G provide a guideline comparison for general cases. The Tables are based on:

1. Environment descriptions as defined in Section 2.1.1.2, specific chemical exposure has not been included in the Life Cycle Analysis.
2. Market rates for the sheeting and fastener materials detailed and for installation labour. These rates have been converted to relative costs based on the initial installed cost of unpainted Zinalume®.
3. A choice of three different maintenance options identified on the Tables by the following key:
 - R: Replacement Option –
No maintenance other than regular washing to keep surface clean. Sheeting and fasteners replaced once the sheeting has reached an advanced state of deterioration, but before perforation and leakage occurs.
 - F: Refurbish Option –
No maintenance other than regular washing to keep surface clean until surface deterioration is at a point where refurbishment will add to the life of the sheeting rather than leave for later replacement.
 - A: Acceptable Appearance Option –
Regular washing to keep surface clean, and repainting of the surface to maintain a good standard of acceptable appearance, where this is important (e.g. high visibility walls). Once painted, repainting is required every 8 years.
4. In some cases the F and A maintenance options will eventually include sheeting and fastener replacement. The number of replacements expected in any case is shown on the Tables with shading to the following key.

	No replacement of sheeting and fasteners
	One replacement of sheeting and fasteners
	Two replacements of sheeting and fasteners
5. The relative costs are given as initial installed cost at 0 years (with lowest cost option assigned the relative value of 1.0) and then as the present value of future maintenance costs required to deliver a sheeting life of 20, 30, 40 or 50 years. Present value has been calculated at a discount rate of 10%.

Continued on next page...

2.1.1.4 Continued

6. The combination of steel and aluminium is based on material with similar load span capability. No account has been taken of extra maintenance that may be required to repair foot traffic damage (which in some case may be higher for aluminium than steel).
7. The costs used for Duraclad do not include the extra support framing that may be required for this material in comparison with steel or aluminium. Depending on use (e.g. wall cladding versus roofing) this difference may not be significant.

Table 2.1D Relative Life Cycle Costs – Moderate Environment

Roofing/Cladding Options			Relative Life Cycle Cost for Period				
Material		Maintenance	Relative Life Cycle Cost for Period				
Sheeting	Fastener		0 Years	20 Years	30 Years	40 Years	50 Years
Zincalume®	Class 3	R	1.00	1.00	1.00	1.09	1.09
Post-painted Zincalume®	Class 3	F	1.32	1.32	1.369	1.43	1.46
		A	1.32	1.54	1.58	1.59	1.62
Colorsteel® Endura™ or ColorCote® ZinaCore™	Class 3	R	1.21	1.21	1.21	1.27	1.27
		F	1.21	1.21	1.21	1.24	1.25
		A	1.21	1.28	1.32	1.34	1.35
ColorCote® ZinaCore X™	Class 4	R	1.46	1.46	1.46	1.46	1.50
		F	1.46	1.46	1.46	1.47	1.48
		A	1.46	1.46	1.50	1.53	1.54

Table 2.1E Relative Life Cycle Costs – Industrial / Marine

Roofing/Cladding Options			Relative Life Cycle Cost for Period				
Material		Maintenance	Relative Life Cycle Cost for Period				
Sheeting	Fastener		0 Years	20 Years	30 Years	40 Years	50 Years
Zincalume®	Class 3	R	1.00	1.00	1.24	1.24	1.27
Post-painted Zincalume®	Class 3	F	1.32	1.44	1.48	1.50	1.55
		A	1.32	1.54	1.58	1.60	1.65
Colorsteel® Endura™ or ColorCote® ZinaCore™	Class 3	R	1.21	1.21	1.21	1.31	1.31
		F	1.21	1.21	1.25	1.26	1.27
		A	1.21	1.28	1.32	1.34	1.35
ColorCote® ZinaCore X™	Class 4	R	1.46	1.46	1.46	1.46	1.53
		F	1.46	1.46	1.46	1.48	1.47
		A	1.46	1.46	1.50	1.53	1.54
Colorsteel® MAXX™	Class 4	R	1.54	1.54	1.74	1.74	1.74
		F	1.54	1.79	1.90	1.95	1.99
Aluminium (unpainted)	304 S/S	R	1.56	1.56	1.56	1.56	1.56
Duraclad	304 S/S	R	1.52	1.52	1.52	1.59	1.59
		F	1.52	1.52	1.63	1.68	1.72

2.1.1.4 Continued

Table 2.1F Relative Life Cycle Costs – Severe Marine Environment

Roofing/Cladding Options			Relative Life Cycle Cost for Period				
Material		Maintenance	Relative Life Cycle Cost for Period				
Sheeting	Fastener		0 Years	20 Years	30 Years	40 Years	50 Years
Colorsteel® Endura™ or ColorCote® ZinaCore™	Class 4	R	1.23	1.67	1.67	1.77	1.77
		F	1.23	1.42	1.64	1.66	1.67
ColorCote® ZinaCore X™	Class 4	R	1.46	1.46	1.76	1.76	1.81
		F	1.46	1.57	1.57	1.75	1.77
		A	1.46	1.58	1.64	1.83	1.84
Colorsteel® MAXX™	304 S/S	R	1.54	1.54	1.86	1.86	1.91
		F	1.54	1.91	2.17	2.22	2.27
Aluminium (Unpainted)	304 S/S	R	1.56	1.56	1.56	1.75	1.75
ColorCote® AlumiGard X™	304 S/S	R	2.158	2.15	2.15	2.15	2.25
		F	2.15	2.15	2.15	2.18	2.24
		A	2.15	2.23	2.26	2.28	2.29
Duraclad	304 S/S	R	1.52	1.52	1.52	1.59	1.59
		F	1.52	1.52	1.63	1.68	1.72

Table 2.1G Relative Life Cycle Costs – Very Severe Marine Environment

Roofing/Cladding Options			Relative Life Cycle Cost for Period				
Material		Maintenance	Relative Life Cycle Cost for Period				
Sheeting	Fastener		0 Years	20 Years	30 Years	40 Years	50 Years
Colorsteel® MAXX™	Class 4	R	1.54	2.06	2.06	2.18	2.18
		F	1.54	1.91	2.23	2.29	2.34
Aluminium (Unpainted)	304 S/S	R	1.56	1.56	1.87	1.87	1.92
ColorCote® AlumiGard X™	304 S/S	R	2.15	2.15	2.15	2.41	2.41
		F	2.15	2.27	2.30	2.46	2.47
Duraclad	304 S/S	R	1.52	1.52	1.52	1.59	1.59
		F	1.52	1.52	1.63	1.68	1.72