

2.0 SCOPE OF USE

Dimond Purlin Systems are intended for use as structural support to roofing and wall cladding. The systems provide for bolted connections to primary structural framework and include Dimond Hi-Span (DHS) Purlins, Fastbrace, Dimond Brace Channels and Top Notch purlins. The systems are subject to limitations on the environment in which they are used, depending on the type of coating specified.

Dimond Purlin Systems are not intended to be used as members to which fall arrest anchor points are attached.

Dimond purlin systems are not intended to be used as vertical studs or horizontal wall girts where plaster board is fixed directly to the DHS purlin and a level 4 finish or above is required. Where a level 4 finish or above is required, Dimond recommend fixing a secondary adjustable grid framing system to the DHS purlins prior to lining with plasterboard to ensure a tighter alignment and fixing tolerances, to achieve the required finish.

It is critical to product performance that the loads applied, member spans, member sizes and bracing points are designed within the appropriate Limit State Loads and limitations published in this manual. Before commencing a project using a Dimond Purlin System, the designer must ensure relevant information is available to the end user. Failure to observe this information may result in a significant reduction in product performance. Dimond accepts no liability whatsoever for products which are used otherwise than in accordance with these recommendations.

The information contained within Purlin Systems is only applicable to Dimond Purlin and Bracing Systems – it cannot be assumed to apply to similar products from other manufacturers.

USE OUTSIDE THE STATED GUIDELINES

If the need arises to use a Dimond Purlin System outside the limitations and procedures given in this manual or if there exists any doubt on product handling or use, written approval should be obtained from Dimond for the specific project, before the project is commenced.

2.1 DURABILITY

2.1.1 SCOPE OF USE

The Dimond Purlin Systems described in this manual are subject to limitations on the environment in which they are used, depending on the type of coating specified in detail in this section.

2.1.2 COATING MATERIAL SPECIFICATIONS

Dimond Purlin Systems are manufactured from galvanised coil in the following protective galvanised zinc coating weights.

1. Standard grade (typically used for interior use) Z 275, i.e. 275 g/m² total zinc coating weight, for DHS Purlins. Fastbrace channel standard is Z450, i.e. 450 g/m² total zinc coating weight.
2. Special grade (typically used for exposed external use) Z450, i.e. 450 g/m² total zinc coating weight, for DHS Purlins and Fastbrace channel and cleat ends.

Refer to Section 2.1.3 on the selection of the appropriate grade.

Refer to Section 2.1.3.1 where extra paint protection may be required

The special grade Z450 usually requires a three-month lead time from date of order to supply for all sizes of purlins and quantities.

2.1.3 ENVIRONMENTS

2.1.3.1 GENERAL

The durability of galvanised zinc coated products is dependent on:

- the environment it will be installed in.
- the grade or weight of the zinc coating used.
- the degree and extent of the maintenance that will be undertaken over the life of the product.

Performance of galvanised zinc coated products is affected by:

- the cumulative effects of the weather.
- the amount of dust that settles on the product (which can hold moisture).
- any other wind-blown deposits that may settle on the product, promoting corrosion.

If these deposits are not removed, they will greatly lessen the durability of the product. Regular maintenance should be carried out on these areas – refer Section 2.1.6.

Standard zinc coating weight is used on most buildings where components are kept dry, protected from exposure to moisture and corrosive environments. Inside the building the galvanised zinc coated products can be used in the temperature range of +60°C and down to a minimum of -30°C.

In high risk areas such as the underside of canopies, exposed purlin systems used above underslung canopies or exposed purlin systems around large door openings facing the prevailing wind direction, attention should be given to specifying a suitably protective paint coating on the purlin and bracing. Refer Section 2.1.5. The special grade Z450 material may also be specified for the purlins. Bracing Channel and cleats are supplied standard as Z450 galv weight.

2.1.3.2 LIMITATIONS ON USE

Avoid the use of galvanised steel purlin systems without the additional protection of an appropriate coating in the following environments:

- Swimming pool covers, where high concentrations of chlorine are combined with a high humidity environment. In this situation the purlin system remains wet for long periods of time, causing a rapid consumption of the galvanised zinc coating and eventual red rusting of the base metal.
- Any use where the galvanised surface is being exposed to continuous moisture, without a chance for the surface to dry out.
- In or near marine environments, where the prevailing wind may deposit marine salts on the galvanised surface.
- In areas surrounding chemical or industrial storage buildings where any chemical attack may lessen the life of the structure or wind-driven chemical fumes may attack the galvanised coating. Please call 0800 Roofspec (0800 766 377) to discuss.
- When in contact with the ground (ie soil or clay) or where embedded in concrete.

Avoid the use of galvanised steel purlin systems:

- When in contact with timber and especially treated timber such as CCA (copper chrome arsenic) without the use of an isolating material such as Malthoid (DPC) between the timber and galvanised steel flooring sheet. This avoids any moisture or chemical reaction between the two materials.
- When in contact with the ground (ie soil or clay) or where embedded in concrete.
- When used in sub-floor areas with less than 450mm ground clearance.
- When used in sub-floor areas where ventilation does not comply with NZS 3604 Clause 6.14.
- When used within 50mm of the concrete ground slab.

2.1.4 NZBC COMPLIANCE

Past history of use of Dimond Purlin Systems indicate that provided the product use and maintenance is in line with the guidelines in this manual, Dimond Purlin Systems can reasonably be expected to meet the performance criteria in clause B1 Structure and B2 Durability of the New Zealand Building Code for a period of not less than 50 years.

2.1.5 DURABILITY STATEMENT

The use of Dimond Purlin Systems is limited to dry and non corrosive environments. It is the responsibility of the designer to assess the durability requirements of the Dimond Purlin System.

Dimond can, for specific job locations, give advice on the performance of the Dimond galvanised zinc coated purlin system. Call Dimond on 0800 Roofspec (0800 766 377).

The durability of the galvanised zinc coating can be extended by the application of a suitable paint system. Overpainting specifications for specific locations can be obtained from Ameron Coatings 0800 263 766 or Akzo Nobel Coatings Limited 0800 808 807.

2.1.6 MAINTENANCE

Dimond Purlin Systems require a minimum degree of maintenance in order that the expected performance is achieved by ensuring the galvanised surface is free from dirt buildup. Careful maintenance can extend the useful life of the Dimond Purlin System.

As a guide the following should be carried out as often as is needed (this could be as often as every three months).

- a) Keep surfaces clean and free from continuous contact with moisture, dust and other debris. This includes areas such as exposed undersides of canopies.
- b) Regular maintenance should include a washdown programme to remove all the accumulated dirt or salt buildup on all the galvanised surfaces with a soft brush and plenty of clean water or by water blasting at 15 MPa (2000 psi).
- c) Periodically inspect and replace where necessary any bolts or fasteners that have deteriorated to the extent that red rust has become obvious over most of their surface.
- d) Periodically inspect the Purlin, Girt, Fastbrace Brace Channel, Sag Rod members and all connections for signs of surface corrosion. Remove any surface corrosion and spot prime corroded areas that exhibit exposed steel substrate, and repaint to an appropriate paint manufacturer's recommendations.

Any case of severe damage or corrosion must be reported to the design engineer.