

SCOPE OF USE

Dimond Structural 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 Structural DHS Purlins, Fastbrace, Bolted 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.

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 Structural 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 Structural accepts no liability whatsoever for products which are used otherwise than in accordance with these recommendations.

The information contained within this manual is only applicable to Dimond Structural 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 Structural 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 Structural for the specific project, before the project is commenced.

DURABILITY

2.1.1

SCOPE

The Dimond Structural 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 this section.

2.1.2

COATING MATERIAL SPECIFICATIONS

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

Standard Grade Z275, i.e. 275g/m² total galvanised zinc coating weight.

Grade Z450, i.e. 450g/m² total galvanised zinc coating weight. Grade Z450 requires a three-month lead time from date of order to supply for all sizes of purlins and quantities.

Dimond Structural Bracing Systems are manufactured from Grade Z450 material.

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 galvanised 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 (which can hold moisture) that settles on the product.
- Any other wind-blown deposits that may settle on the product, promoting corrosion.
- Proximity to the ground in subfloor areas with little or no ventilation.

Condensation or other deposits should be prevented from accumulating on Dimond Structural Purlin Systems by providing adequate ventilation and carrying out regular maintenance. A protective barrier must be provided if dampness is possible on the purlin system. Refer Durability Statement 2.1.5 and Maintenance 2.1.6.

2.1.3.2

LIMITATIONS ON USE

The use of galvanised steel purlin systems should be avoided:

- In areas where high concentrations of chemicals are combined with a high humidity, where the system remains wet for long periods of time, causing rapid consumption of the galvanised zinc coating and eventual red rusting of the base metal for example, swimming pool roofs.
- Where the galvanised surface is being exposed to continuous moisture, without a chance for the surface to dry out for example, water tank roofs.
- In or near marine environments, where the prevailing wind carries marine salts which deposit on the purlin system, causing rapid consumption of the galvanised zinc coating and eventual red rusting of the base metal.
- 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.
- When in contact with or laid directly on ground.
- When in contact with timber and especially treated timber such as CCA (copper chrome arsenic) without the use of an isolating material such as DPC between the timber and purlin system.

- When used as supporting members to which fall arrest anchor points are attached.
- Where used as ceiling support members, 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 (fixing to a secondary adjustable grid framing system connected to the DHS purlins prior to lining with plasterboard will ensure tighter alignment and fixing tolerance, to achieve the required finish).
- 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.
- Where embedded in concrete or where used within 50mm of the concrete ground slab.

2.1.4

NZBC COMPLIANCE

Past history of use of Dimond Structural Purlin Systems indicate that provided the product use and maintenance is in line with the guidelines in this manual, Dimond Structural 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 Structural Purlin Systems is limited to dry and non corrosive environments unless further protection of the surfaces is provided.

It is the responsibility of the design engineer to assess the durability requirements and specify accordingly.

Dimond Structural Purlin Systems can be used in the temperature range of +60°C to -30°C.

As a guide and subject to designers specification and approval,

- Standard Z275 zinc coating weight is used on buildings where components are kept dry in service and protected from exposure to moisture and corrosive environments.
- Z450 zinc coating weight could be considered for mild external environments, such as the underside of canopies (Note: Fastbrace, Bolted Brace Channel and bracing end cleats are supplied in Z450 zinc coating).
- Where the surface of the purlin system may be exposed to contaminants and/or moisture that will not regularly dry out, the use of Dimond Structural Purlin Systems is only recommended if suitable protection of the galvanised steel surface can be achieved with a proprietary coating system applied in-situ. Coating specifications and statements on suitability of use can be obtained from PPG Coatings or Akzo Nobel Coatings.

MAINTENANCE

2.1.6

Dimond Structural Purlin Systems require a minimum degree of maintenance to ensure expected performance is achieved. Careful maintenance can extend the useful life of the Dimond Structural 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 the exposed underside of canopy structures. Where necessary, regular maintenance should include a wash-down 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).
- b) Periodically inspect the Purlin, Girt, Fastbrace, Bolted Brace Channel, Sag Rod members and connections. At the first sign of any surface corrosion, the affected areas should be cleaned down, spot primed with a zinc rich primer and then repainted to an appropriate paint manufacturer's recommendations.
- c) Periodically inspect and, where necessary, tighten any loose bolts or fasteners and replace any that have deteriorated to the extent that red rust has become obvious over most of their surface.

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