TECHNICAL DATA SHEET

CORROSION RESISTANCE

1. GENERAL

Pryda features Grade 316 across all stainless products. However, the majority of products available are those which use pre-galvanised steel (Z275). This type of corrosion protection has served well for many decades, however, there are some environments which warrant higher degrees of corrosion protection. For example, where there are high concentrations of air-borne sea salt, or an aggressive environment such as that produced by swimming pools, and heavy industrial plants.

There are two considerations to be taken into account when determining if corrosion resistance should be specified higher than that provided by galvanised steel. Is the product close to the coast? and Is it subject to wetting or condensation? If so, consideration for higher protection is required.

The first factor is the coastal / inland location, as areas close to the coast can be exposed to relatively high concentrations of airborne sea salt. If we are in a coastal region, then the location of the product within the building needs to be considered, as externally located product is more prone to corrosion than for products internally located.

1.1 MINIMUM AUSTRALIAN REGULATORY REQUIREMENTS

AS 1720.5-2015 B6 outlines the two major contributing factors to corrosion specification for truss components. These are:

- exposure condition
- corrosion zone.

1.2 EXPOSURE CONDITION EXAMPLES

The following exposure condition examples as are as per Figure B1 of AS 1720.5-2015

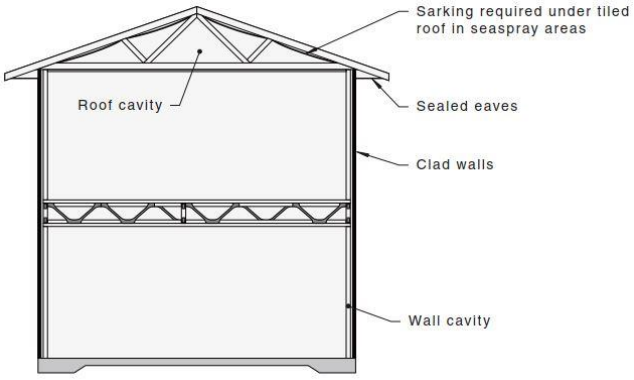


Fig.1 Enclosed

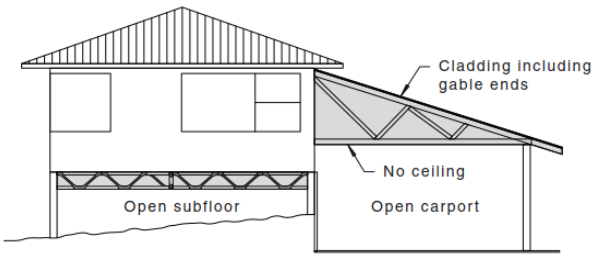


Fig 2. Sheltered

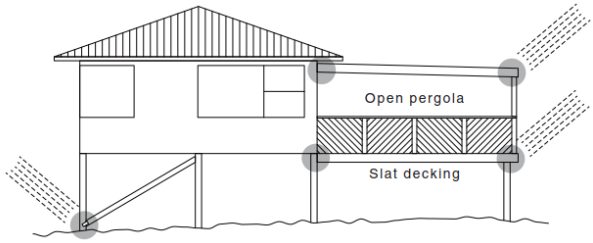
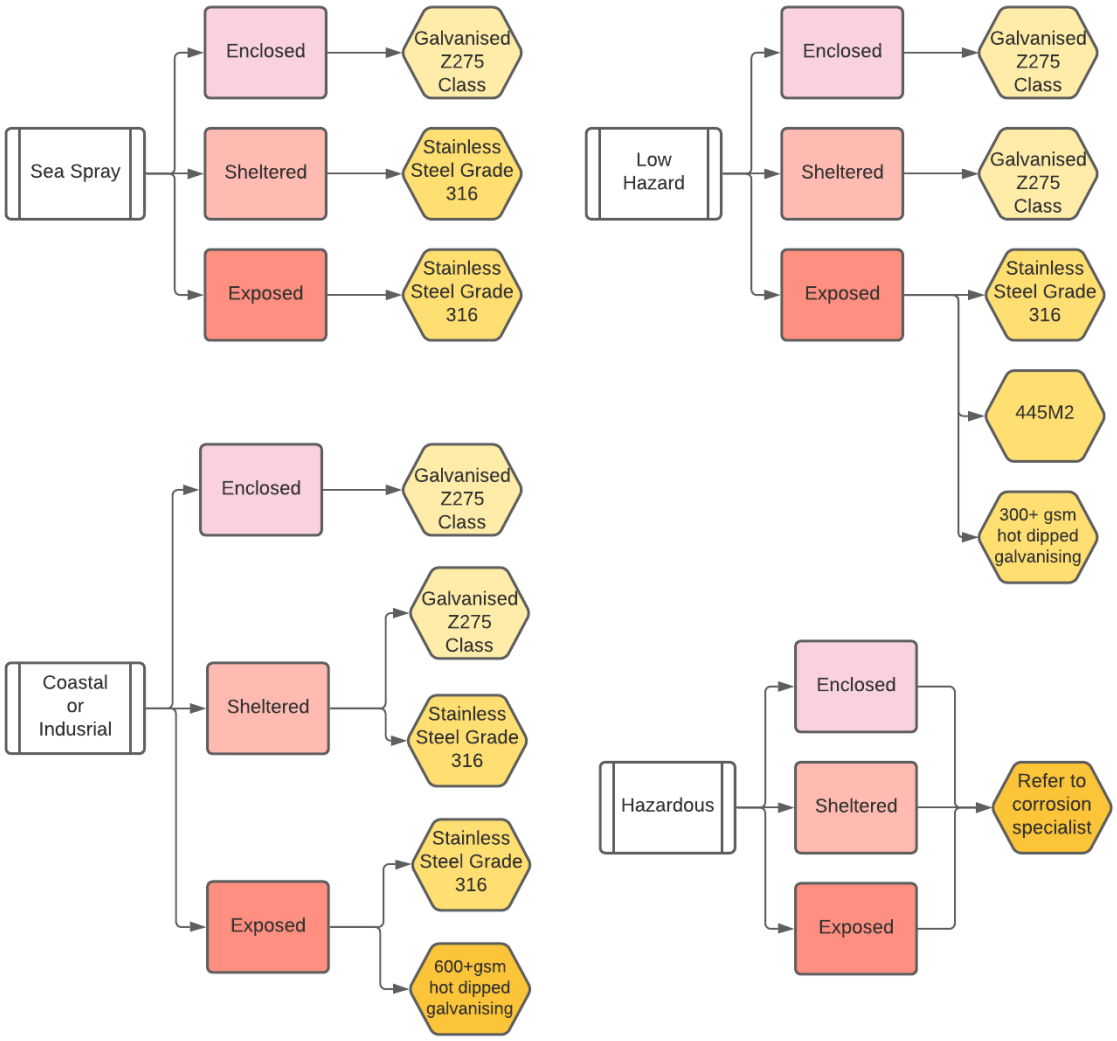


Fig 3. Exposed

2. RECOMMENDED PRACTICE

Recommended corrosion protection practice is fundamentally based on exposure conditions and corrosions zone as outlined in the flow chart below. This is principally based on Table B1 of AS 1720.5-2015.



2.1 EXPOSURE CONDITION

A summary table of exposure conditions as per AS 1720.5-2015 B6 is provided below.

Enclosed	Internal areas not exposed to rain, ground moisture or corrosive salts.
Sheltered	Areas subject to wind-blown corrosive salts but not rain.
Exposed	Area is directly exposed to rain or wind-blown rain.

2.2 CORROSION ZONE

A summary table of corrosion zones as per AS 1720.5-2015 B6 is provided below.

Sea Spray	Within 1km from surf coast, within 100m from bayside areas or around swimming pools.
Coastal	1km to 10km from surf coast or 100m to 1km from bayside areas.
Industrial	100m proximity to industrial complexes where corrosive gases may be emitted.
Low Hazard	Environments not otherwise categorised.
Hazardous	Environments which adversely affect the durability of steel. For example, enclosed swimming pools (chlorine), laboratories and buildings used for chemical storage.

2.3 CORROSION PROTECTION SELECTION

These recommendations are interpretations by Pryda Australia of the various codes and technical literature on the subject, based on available research and are subject to change in future technical updates.

Ultimately, it is the responsibility of the Building Designer or the relevant local authority to specify corrosion requirement for different locations within the building.

3. CORROSION PROTECTION OF PRYDA PRODUCTS

All Pryda products are at minimum galvanised Z275. In addition to this Pryda features Grade 316 across all stainless products, i.e Multigrips, Minigrips, Strapbrace and Framing brackets. These products are offered with Grade 316L stainless steel, commonly known as Marine grade.

Some FAQs on stainless steel and its use;

Q. Must I use stainless steel nails with stainless steel products?

A. Galvanised nails may be used with stainless products in protected, non-corrosive environments.

Q. When should I supply Pryda products made from stainless steel?

A. When the use of stainless steel has been specified by the building designer, or when required as a “deemed to comply” by local authorities, or by government regulation.

4. OTHER ISSUES

4.1 WEATHER EXPOSURE

If non stainless products are to be exposed to weather, they should be either hot-dip galvanised 300 g/m2 after manufacture or coated with 2 coats of alkyd prime or 2 coats of alkyd gloss or hot-dip galvanised 100 g/m2 plus 1 coast of solvent based vinyl primer/gloss/alkyd (as per NCC 2019 3.4.4.4).

4.2 TIMBER TREATMENT

If the timber is treated with CCA, Pryda products may be used without additional protection as long as the timber stays dry in service. If the timber is exposed to the weather, the products must be fusion coated, or coated with epoxy paint, or made from stainless steel. This is because the zinc coating on the product will be attacked by the copper from the CCA treatment if the moisture content of the timber rises above 20% for a significant period of time.

4.3 TIMBER MOISTURE CONTENT

If the timber is used in an internal environment and is initially unseasoned, but dries in service and remains dry, no further protection is required on the standard Pryda products. Otherwise, use the recommendations in section 4.1 (Weather Exposure).

4.4 SWIMMING POOLS

The use of steel products within an enclosed swimming pool environment is a special case. The corrosive agents are chloramines which are particularly aggressive to steel. Even Grade 316 stainless steel has been found to fail due to stress corrosion cracking in these environments.

For further details on how steel plates should be protected in these environments read Pryda Technical Update No. 23 on Corrosion Resistance of Trusses over Enclosed Swimming Pools.