Metal connectors in enhanced durability timber

Overview

Connectors are an important part of any structure and they need to be chosen to provide adequate durability as well as connection strength. This note is to provide advice on what metal connectors should be used with different products in AKD's enhanced durability product range – AKD Terminator™, AKD Endura™, AKD Ironwood™, and AKD Ironwood Edge™. The advice is also applicable to other metal elements (flashings, sheet roofing, speed brace) in direct contact with these timber products.

Selecting Appropriate Corrosion Protected Connectors

Metals naturally corrode in the presence of moisture and oxygen. This can accelerate when the metal is in contact with a dissimilar metal. Sometimes wood durability modification uses metal solutions to protect timber from decay, so connectors need to be chosen to ensure the long-term durability of the connection.

AKD Terminator™ and Endura™ products do not use metals to enhance timber durability, so the choice of connector material only needs to consider the exposure conditions and corrosion zone. Refer to the tables below to determine a suitably durable connector.

AKD Ironwood™ and Ironwood Edge™ are modified with a metallic solution. Galvanised fasteners with an epoxy coating are the minimum corrosion protection recommended for these products. Stainless steel may be used for a more corrosion resistant solution.

How to select connectors for use with AKD Terminator™ and AKD Endura™

Step 1. Determine the Exposure condition from Table 1.

Table 1: Exposure Condition

Type	Definition
Enclosed	Fully enclosed within the building wall envelope. e.g. closed roof, floor or wall cavities.
Sheltered	Not exposed to direct weather; but open to windblown spray or other chemical vapours. e.g. open subfloors, carports, verandahs
Exposed	Exposed to direct rainfall. e.g. decks and subfloor, pergolas, fencing

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Step 2. Based on the Corrosion Zone in Table 2, and the Exposure Condition determined in Table 1, identify the material required to meet the minimum corrosion protection requirement.

Table 2: Corrosion Zone and minimum corrosion protection

Zone	Definition	Exposure Type	Minimum corrosion protection
Severe Surf	Along the shoreline of areas with high salt deposition. Adjacent to swimming pools.	Enclosed	Galvanised Z275 Class
		Sheltered	Stainless Steel 304 or better
		Exposed	Stainless Steel 304 or better
Surf	Within 200m* of rough sea shoreline.	Enclosed	Galvanised Z275 Class
		Sheltered	Stainless Steel 304 or better
		Exposed	Stainless Steel 304 or better
Calm seashore	Between 200m to 1km* inland from rough seas. Within 50m of sheltered or calm shoreline.	Enclosed	Galvanised Z275 Class
		Sheltered	Galvanised Z275 Class with soft seal
		Exposed	600gsm Hot Dipped Galvanised
Coastal	Between 1km to 10km from rough shoreline, extending up to 50km inland subject to prevailing winds and local conditions. Between 100m and 6km inland from less sheltered bays. Between 50m – 1km of a sheltered or calm shoreline.	Enclosed	Galvanised Z275 Class
		Sheltered	Galvanised Z275 Class with soft seal
		Exposed	600gsm Hot Dipped Galvanised
Arid/Urban Inland	Inland from coastal zone.	Enclosed	Primed
		Sheltered	Galvanised Z275 Class
		Exposed	Galvanised Z275 Class
Dry Indoors	Inside climate-controlled building with clean atmosphere.	Enclosed	Primed
Special Hazard Zone	Building or areas with high concentrations of airborne corrosive chemicals e.g. enclosed pools, fertilizer storage, chemical plants etc.	All	Seek specific advice

* The Inland limit of corrosion zones may extend further inland due to prevailing winds and local conditions.

Step 3. If a higher level of corrosion protection is wanted, choose a material from Table 3 that is above the minimum corrosion protection identified from Table 2.

Table 3: Fastener Types

Fastener Type	Protection Level
Stainless Steel 316	**Highest** ↓
Stainless Steel 304	
Galvanised Metal with Epoxy Coating	
600gsm Hot Dipped Galvanised	
Galvanised Z275 Class with Soft Seal	
Galvanised Z275 Class	
Primed	**Lowest**

Other Resources

This AKD Tech Note should be read in conjunction with AKD product brochures which outline product usage, installation and maintenance advice - https://www.akd.com.au/customers-products/our-products/

More information is also available from:

Wood Solutions
www.woodsolutions.com.au
Design Guide 52 – Timber Connectors

Timber Queensland
www.timberqueensland.com.au
Technical Data Sheet – Corrosion Resistance of Metal Connectors