



CASE STUDY



Figure A Kwinana Waste-to-Energy Facility

PROJECT

Kwinana Waste to Energy Project

SITE LOCATION

Kwinana, 6167, WA

The site of Kwinana is characterised by its industrial landscape, within 5 kilometres of the coast with strong winds, hot dry summers and mild wet winters.

PROJECT SCOPE

The Australian Government, through the Australian Renewable Energy Agency (ARENA) established the Kwinana Waste to Energy project. The project is currently under construction with a budget of \$696m for the 11,520 m² industrial facility. The roof building materials are required to meet specific criteria:

- Contractual Life of the project is 10 years
- Life span of 30 years
- Withstand External Environment - Sea shore (surf) C5 Category &
- Internal Environment - Industrial/potentially polluted C3 Category
- Materials to be inherently corrosion resistant
- Prevent galvanic reaction between dissimilar metals (Mesh and Purlins)
- Require minimal maintenance, frequency greater than 5 years
- Comply with AS 4389 - Roof Safety Mesh

THE PROBLEM

Traditional steel products are not inherently corrosion resistant and will rust. These steels will rust at an accelerated rate in high corrosion zones reducing the asset life and increasing the maintenance frequency. Coatings can be used to protect the surface from rusting, but once coatings break down then the rusting process accelerates. Coatings therefore require regular inspection and maintenance to ensure the life of the asset.

PRODUCT

[Roof Safety Mesh](#)
[Stainless Steel 316 PVC Coated](#)

Product Code: SSWMRM 150 2.0 1806 PVC

Roof Safety Mesh that is inherently corrosion resistant and the PVC coating prevents dissimilar metal corrosion between the mesh and the building structure.



L - 50m
W - 1800mm

MESH

150mm - longitudinal
300mm - transverse

PROJECT CHALLENGE

The location of the Kwinana Waste Facility is rated as C4-C5 (sea-shore (calm) and sea-shore (surf)), corrosivity category according to TG016 Corrosion protection. Kwinana is located south of Perth with Fremantle to the north and Rockingham to the south which are both C4-C5.

In addition to the coastal location and sea exposure which brings corruptions issues the industrial facility faces challenges of chemical exposure due to the activities taking place internally and the galvanic reaction between the dissimilar metals.

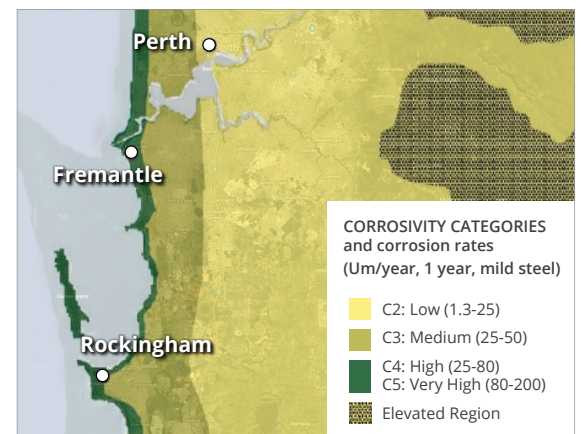


Figure B Source: Finance Technical Guideline: TG016 Corrosion protection & ISO 9223 Corrosivity Categories for Perth



Government of WA
Finance Technical Guideline
TG016 Corrosion Protection



SITE CORROSIVITY

"Perth, with its exposed ocean and strong winds, is likely to experience comparatively highly corrosive atmospheres, up to several kilometres inland."



Figure C Roof Safety Mesh installation in progress Photo Credit: Murphy's Remedial Builders

THE SSWM SOLUTION

The project demanded robust a solution, to combat corrosion and galvanic reactions. SSWM worked with the roofing industry over 10 years ago to address these challenges by developing PVC coated Stainless Steel Roof Safety Mesh.

The innovative product has been through stringent testing listed below to ensure durability and compliance to AS 4312 Atmospheric Zones in Australia. Additionally, it meets the guidelines of Government of Western Australia, Finance Department, Finance Technical Guidelines, TG016.

Testing & Compliance to- Australian & International Standards

AS/NZS 4389:2015 Safety Mesh

- Each production run of roof safety mesh is tested and complies
- Tensile strength of wire minimum 600Mpa exceeding requirement of 450Mpa transverse and 500Mpa longitudinal

AS 2331.3.1:2001 (R2017) Neutral Salt Spray Test

- PVC Coated tested to 96 hours

ASTM D4587-11 (2019)e1 Standard Practice for Fluorescent UV-Condensation Exposures of Paint and Related Coatings

- PVC Coated tested to Cycle 2 Test

STAINLESS STEEL ROOF SAFETY MESH MADE TO LAST

SSWM is Australia's first and only stockist of this innovative product. The integrity of Roof Safety Mesh is crucial to ensuring the safety of workers.

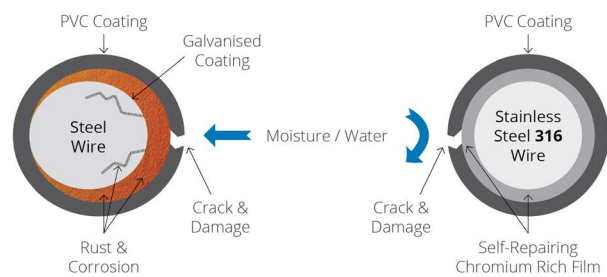
The table below considers the life of the PVC when determining the suitability of the products. determining the suitability of the products.

STAINLESS STEEL VS GALVANISED COMPARISON

COMPARISON TABLE - ROOF SAFETY MESH				
	SS 316 PVC	SS 316	GALVANISED PVC	GALVANISED
External Environment (Sea shore surf - C5)	✓	✓	X	X
Internal Environment (Industrial / Polluted)	✓	✓	X	X
Dissimilar Metals	✓	X	✓	X
Overall	✓✓✓	✓✓	✓	X
Suitable Locations (AS 4312)	C5-CX: Sea Shore, Coastal & Polluted	C3-C4: Coastal, Polluted & Wet Inland	C2: Inland	C1: Dry inland

PVC Galvanised vs PVC Stainless Steel

Diagram demonstrating when PVC Coating is damaged or cracked how galvanised wire will corrode below surface of PVC.



Roof Safety Mesh with PVC coating is effective in preventing dissimilar metal corrosion between the mesh and the building structure by acting as an electrical insulator and stopping the galvanic cell. However, PVC can crack during installation, maintenance, or over time, allowing moisture to reach the metal surface. For traditional steel materials, this initiates rusting, which can occur undetected beneath the PVC, making it an unacceptable and unsafe condition.

In contrast, Stainless Steel is inherently corrosion-resistant and will not rust when cracks develop. If the PVC cracks, it will likely do so in small areas, exposing the steel underneath. The rate of dissimilar metal corrosion depends on how much PVC falls away, exposing the underlying metal, and the extent of contact with the building structure. The corrosion rate is a function of the exposed metal area.

INDUSTRY EXPERTISE

The Australian Stainless Steel Industry Association (ASSDA) supports SSWM in determining the appropriate grade of material for the project environment.

ASSDA produce Corrosion charts that help industry select the appropriate grade of Stainless Steel. There are over 150 different Chemicals listed that can assist the purchaser make the right grade selection for their environment. Make your specification a lasting decision with Stainless Steel Roof Safety Mesh.



SAME DAY DESPATCH
when your order
is received by 9am

