
Inert catchment

INTRODUCTION

Inert catchment occurs when the pH of rainwater or condensation is not changed by contact with the catchment material, can cause corrosion in materials downstream of the catchment, such as gutters and downpipes, if unsuitable materials are specified for these applications. Correct specification of materials can remove the risk of accelerated corrosion in these situations.

WHAT HAPPENS TO RAINWATER

In general, unpolluted rainwater has a pH of less than 6, which is slightly acidic. This is due to naturally occurring carbon dioxide in the atmosphere reacting with the water vapour to lower the pH.

Rainwater can become more acidic when it is affected by certain atmospheric conditions, industrial fallout and even rainfall intensity and frequency. Acid rain, which can occur in industrial and heavily populated areas with fumes from motor vehicle exhausts, is more corrosive than unpolluted rainwater. Rainwater near the coast can pick up chlorides from salt air due to turbulence of the surf prior to precipitation, and overnight condensation can be similarly affected.

EFFECT OF CATCHMENT MATERIAL

When rain falls on a large catchment area, such as a roof, it is collected and directed in concentrated streams, following the roofing profile. If the materials at any point in the catchment system are susceptible to unpolluted rainwater or acid rain, corrosion is likely to occur. The material most commonly affected in such situations is unpainted galvanized steel, and this is of particular concern when placed downstream from an inert catchment area.

An "inert catchment" occurs where rainwater or condensation falls on materials that do not affect its corrosive properties in any way. This can allow for corrosion of materials downstream of the catchment, such as the gutter and downpipe. Typical examples of inert catchments are COLORBOND® steel and ZINCALUME® steel, glazed terracotta tiles, fiberglass and aluminium decking. Concentrated streams of rainwater or condensation can then flow from these catchments onto localised areas of materials that are not themselves inert, which can lead to accelerated corrosion.

Catchments that alter the corrosive components of rain and condensate are unpainted zinc-coated materials and unglazed cement tiles.

These materials counteract the acids and chlorides in rain or condensate to some extent, making it far less reactive by the time it leaves the catchment, although it is important to note that this is not a complete protection against corrosion.

Examples of common inert catchment situations include:

- COLORBOND® steel and ZINCALUME® steel roofing with zinc-coated steel gutters and downpipes
- Prepainted zinc-coated steel roofing with unpainted zinc-coated steel gutters

The following series of images (see next page) illustrates the issues arising from these inert catchment situations.

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Figure 1: Severe corrosion caused by ponding and the use of zinc-coated gutters in combination with roofing of both ZINCALUME® steel and COLORBOND® prepainted steel



Figure 2: Prepainted zinc-coated steel roofing with zinc-coated steel gutters

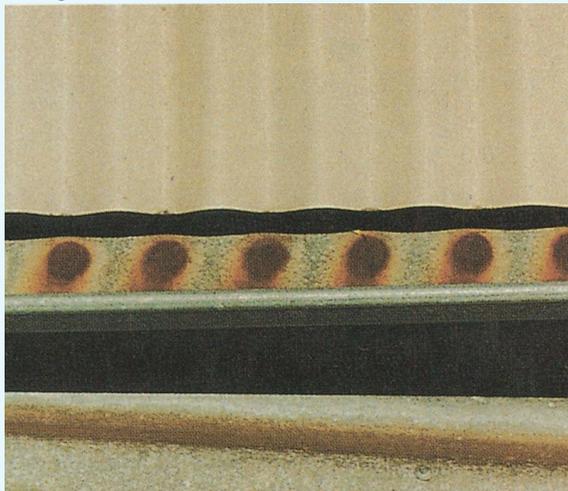


Figure 3: Water flowing from a glass roof onto zinc-coated steel roofing



Figure 4: Water flowing from a terracotta roof into zinc-coated steel gutter

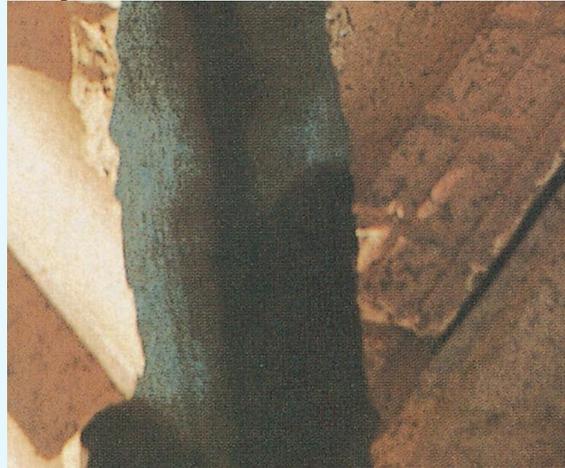


Figure 5: Fibreglass skylights in conjunction with zinc-coated steel sheeting



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