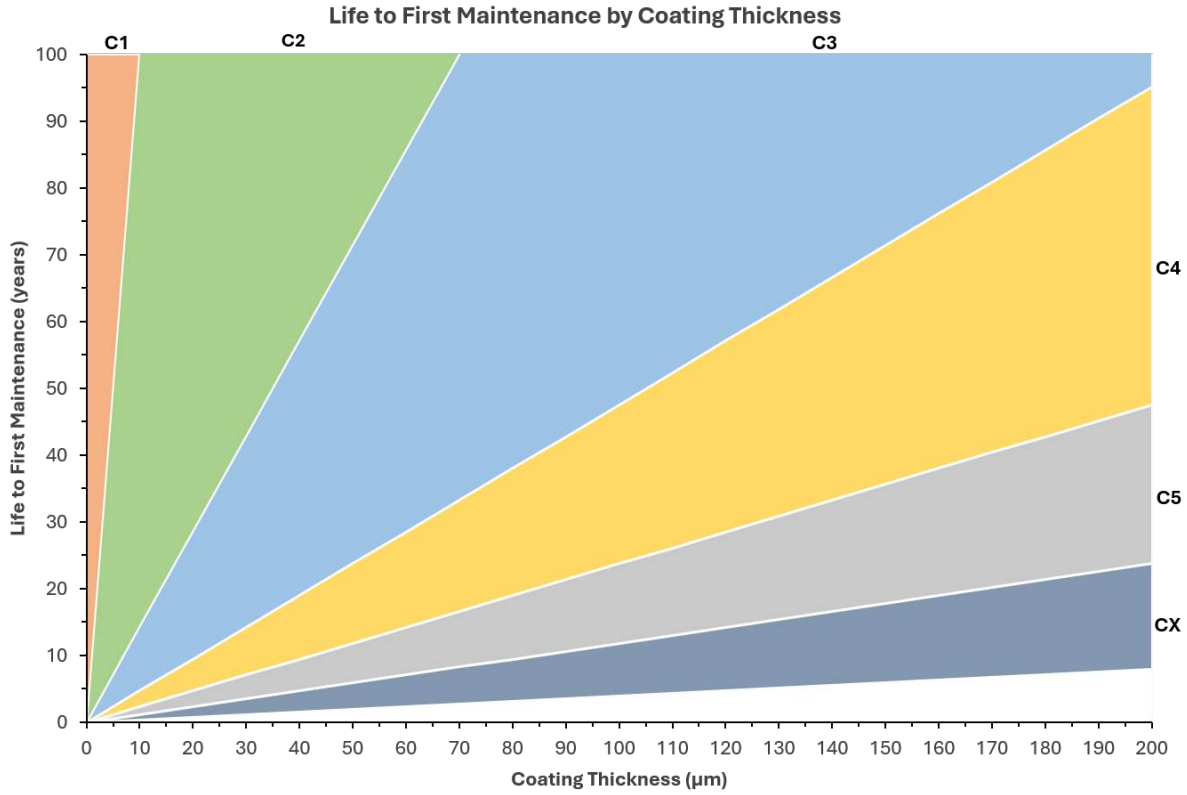
Life to First Maintenance

Hot Dip Galvanized Steel to AS/NZS 4680



AS/NZS 4680 Normal steels			Corrosivity category				
Class	Steel thickness range mm	Coating thickness µm	CX Extreme	C5 Very high	C4 High	C3 Medium	C2 Low
			Estimated LtFM of zinc coating (min-max, years)				
HDG900	By agreement	125	5 - 15	15 - 30	30 - 60	60 - >100	>100
HDG600	> 6 mm	85	3 - 10	10 - 20	20 - 40	40 - >100	>100
HDG500	> 3 mm to ≤ 6 mm	70	2 - 8	8 - 16	16 - 33	33 - >100	>100
HDG390	≥ 1.5 mm to ≤ 3 mm	55	2 - 6	6 - 13	13 - 26	26 - 78	78 - >100
HDG320	< 1.5 mm	45	1 - 5	5 - 10	10 - 21	21 - 64	64 - >100

The chart and table are based on the atmospheric macroenvironment, meaning the general environmental conditions for an area. Actual corrosion rates may vary because of site-specific conditions. Atmospheric levels of airborne salinity, precipitation, temperature, relative humidity and sulfur dioxide influence the actual corrosion rates in a specific geographic location.

Surfaces which are sheltered and not rain-washed and in a marine atmospheric environment where chlorides are deposited, can experience a higher rate of corrosion due to the presence of hygroscopic salts. See AS/NZS 2312.2 for more details.

Use the chart or table to estimate when hot dip galvanized steel is likely to need its first maintenance. First, determine the site corrosivity category (C1 – CX) using the flow chart overleaf, then read the expected life to first maintenance from the chart or the table for the relevant coating thickness.

Both the Life to First Maintenance (LtFM) chart and table were developed from AS/NZS 2312.2 and they will provide very conservative estimates when the steel surface is fully rain washed. LtFM means the estimated time before the galvanized coating first needs maintenance to continue protecting the steel. For example, steel with an initial coating thickness of 85 µm in a C4 corrosivity zone has an expected life to first maintenance of 20 – 40 years.

For structures with a long design life, life to first maintenance can often be assessed using ISO 9224. More information is available in the GAA Guide to Durability of Hot Dip Galvanized Steel.

galvanizers
ASSOCIATION OF AUSTRALIA

Determining the Australian Atmospheric Macroenvironment (as per AS/NZS 2312.2)

Start at the top of the flow chart and answer each question in order. If the answer is Yes, use the corrosivity category shown on the right. If the answer is No, move down to the next set of questions. For internal steelwork, also check the C1 category for more details.

Are you within 50 metres of the shoreline of coasts exposed to surf or very rough seas? Are you up to 100 metres from the shoreline in tropical locations?	Yes →	**Extreme Corrosivity CX**
No ↓		
Are you between 50 metres to 500 metres inland from the shoreline of coasts exposed to breaking surf or very rough seas? Are you up to 50 metres from the shoreline of a semi-sheltered coast? Are within 100 to 500 metres from the shoreline in a tropical location?	Yes →	**Very High Corrosivity C5**
No ↓		
Are you within 500 metres to 1 kilometre inland of the shoreline of breaking surf or very rough seas? Are you 50 metres to 500 metres from the shoreline of a semi-sheltered coast? Are you within 50 metres of the shoreline of a sheltered bay? Are within 100 to 500 metres from the shore in a tropical location?	Yes →	**High Corrosivity C4**
No ↓		
Are you 1 kilometre inland to 10 kilometres inland of breaking surf or very rough seas? Are you 500 metres to 5 kilometres inland from a semi-sheltered coast? Are you 50 metres from the shoreline to one kilometre inland of a sheltered bay? Are you 500 metres to 1 kilometre from the shoreline of a tropical coast?	Yes →	**Medium Corrosivity C3**
No ↓		
Are you at least 50 kilometres from the coast? Are you at least 5 kilometres to 15 kilometres from a semi-sheltered coast? Are you at least one kilometre from a sheltered bay?	Yes →	**Low Corrosivity C2**
No ↓		
Are you inside an air-conditioned building? Is your steelwork hidden within a fully insulated area behind a thermal break, such as within the external wall and roof cavity of a building structure?	Yes →	**Very Low Corrosivity C1**

Hot Dip Galvanizing – First and last line of defence

A: Level 6, 124 Exhibition Street, Melbourne, VIC, 3000
W: https://gaa.com.au/ and https://designmanual.gaa.com.au/
E: durability@gaa.com.au
T: +61 3 9654 1266

galvanizers
ASSOCIATION OF AUSTRALIA