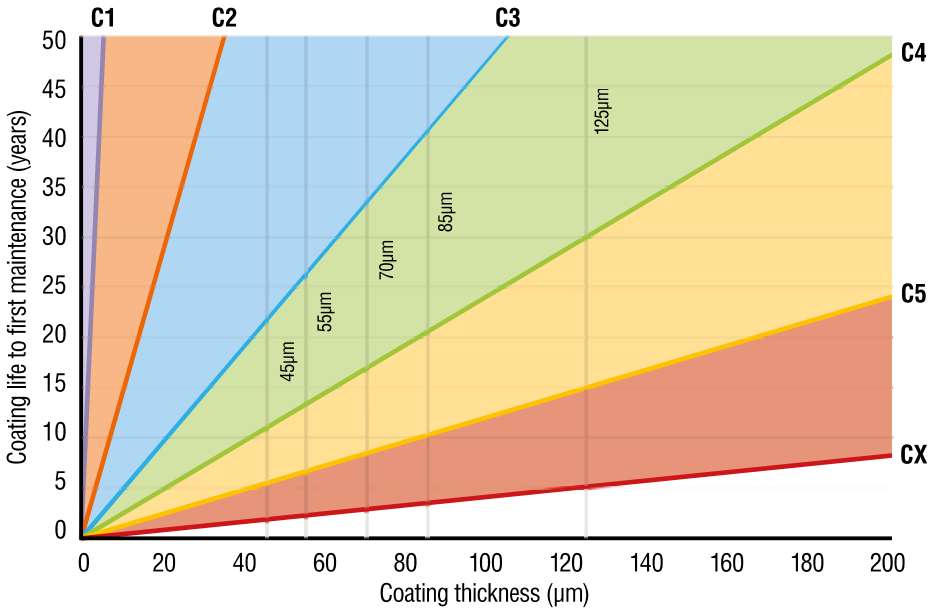
Durability of hot dip galvanized coatings

Hot dip galvanizing has proven to be more serviceable and predictable than all other steel protective coatings in the Australian atmosphere. Its excellent performance is due to its inherent corrosion resistance, high tolerance to mechanical damage and inertness to the high UV levels prevailing over all of Australia.

The corrosivity of particular environments have been widely researched and the corrosion rates of both steel and zinc are classified in International and Australian Standards as a function of the temperature, relative humidity, the amount of airborne salinity and the amount of airborne pollution present.

The life of a hot dip galvanized coating is (to a first approximation) proportional to its thickness, which is normally a function of the article's steel thickness.



The chart shows that steel with an initial coating thickness of 85µm in a C4 corrosivity zone will have an expected life to first maintenance of 20 – 40 years.

Typical corrosivity categories and corrosion rates of steel and zinc				**Typical service life (years) for hot dip galvanized articles to AS/NZS 4680**				
Corrosivity category and typical environment		**Corrosion rate (µm/year)**		**Fabricated article thickness (mm) and coating specification as per AS/NZS 4680**				
				≤ 1.5	**> 1.5 and ≤ 3.0**	**> 3.0 and ≤ 6.0**	**> 6.0**	**>> 6.0***
		Mild steel	**Zinc**	**45 µm 320 g/m²**	**55 µm 390 g/m²**	**70 µm 500 g/m²**	**85 µm 600 g/m²**	**125 µm* 900 g/m²**
C1	Dry indoors	≤1.3	≤0.1	100+	100+	100+	100+	100+
C2	Arid/Urban inland	>1.3 to ≤25	>0.1 to ≤0.7	64-100+	78-100+	100+	100+	100+
C3	Coastal or industrial	>25 to ≤50	>0.7 to ≤2.1	21-64	26-78	33-100	40-100+	60-100+
C4	Calm sea-shore	>50 to ≤80	>2.1 to ≤4.2	11-21	13-26	17-33	20-40	30-60
C5	Surf sea-shore	>80 to ≤200	>4.2 to ≤8.4	5-11	7-13	8-17	10-20	15-30
CX	Off-shore	>200 to ≤700	>8.4 to ≤25	2-5	2-7	3-8	3-10	5-15

The actual coating thickness achieved on steel articles is typically in excess of the minimum average values specified in AS/NZS 4680.

* Although coatings thicknesses greater than 85µm are not specified in AS/NZS 4680, if the specification of a thicker coating is desired, consultation with the galvanizer is recommended to discuss how a thicker coating can be achieved.