

# Corrosion: effect of coating thickness

## INTRODUCTION

Hot-dipped zinc coatings and electrogalvanised coatings both protect steel in the same manner. However, hot-dipped zinc coatings are usually thicker and therefore offer a longer life under the same exposure conditions.

The protective life of a metallic zinc coating is essentially a function of the coating thickness. Figure 1 indicates the life to first maintenance for hot-dipped zinc coatings produced by a continuous galvanising process. This figure is calculated using the zinc corrosion rates from ISO 9223:2012 to estimate the life to first maintenance for a variety of different corrosivity categories. This methodology is adopted from Table 2 of ISO 14713-1:2017.

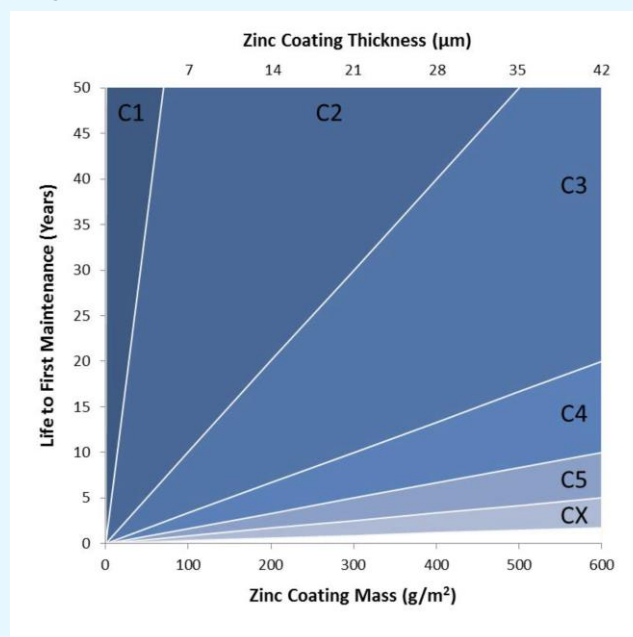
In general, for a particular environment the life of a zinc coating is directly proportional to the initial zinc coating mass. Similarly, a specific life to first maintenance necessitates increasing the zinc coating thickness as the corrosivity of the environment is increased from C1 to C5.

## REFERENCED STANDARDS

ISO 9223:2012 *Corrosion of metals and alloys – Corrosivity of atmospheres – Classification, determination and estimation.*

ISO 14713-1:2017 *Zinc coatings – Guidelines and recommendations for the protection against corrosion of iron and steel in structures – Part 1: General principles of design and corrosion resistance.*

Figure 1: Life to first maintenance as a function of zinc coating mass and equivalent zinc coating thickness, and corresponding corrosivity categories



[steel.com.au](http://steel.com.au)

To ensure you have the most current Technical Bulletin

1800 800 789

[steeldirect@bluescopesteel.com](mailto:steeldirect@bluescopesteel.com)

If you have any questions regarding this Bulletin, contact Steel Direct



The information and advice contained in this Technical Bulletin ('Bulletin') is of a general nature only and has not been prepared with your specific needs in mind. You should always obtain specialist advice to ensure that the materials, approach and techniques referred to in this Bulletin meet your specific requirements. BlueScope Steel Limited makes no warranty as to the accuracy, completeness or reliability of any estimates, opinions or other information contained in this Bulletin and to the maximum extent permitted by law, BlueScope Steel Limited disclaims all liability and responsibility for any loss or damage, direct or indirect, which may be suffered by any person acting in reliance on anything contained in or omitted from this Bulletin. BlueScope and the BlueScope brand mark are registered trademarks of BlueScope Steel Limited. © 2019 BlueScope Steel Limited ABN 16 000 011 058. All rights reserved.