

Coating Thickness

INTRODUCTION

Hot dipped zinc coatings and electrozinc coatings both protect steel in a similar manner. The main difference is that 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 on a continuous galvanizing process. This figure is calculated using the zinc corrosion rates from ISO 9223¹ to estimate the life to first maintenance for a variety of different corrosivity categories. This methodology is adopted from Table 2 of ISO 14713-1:2009².

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

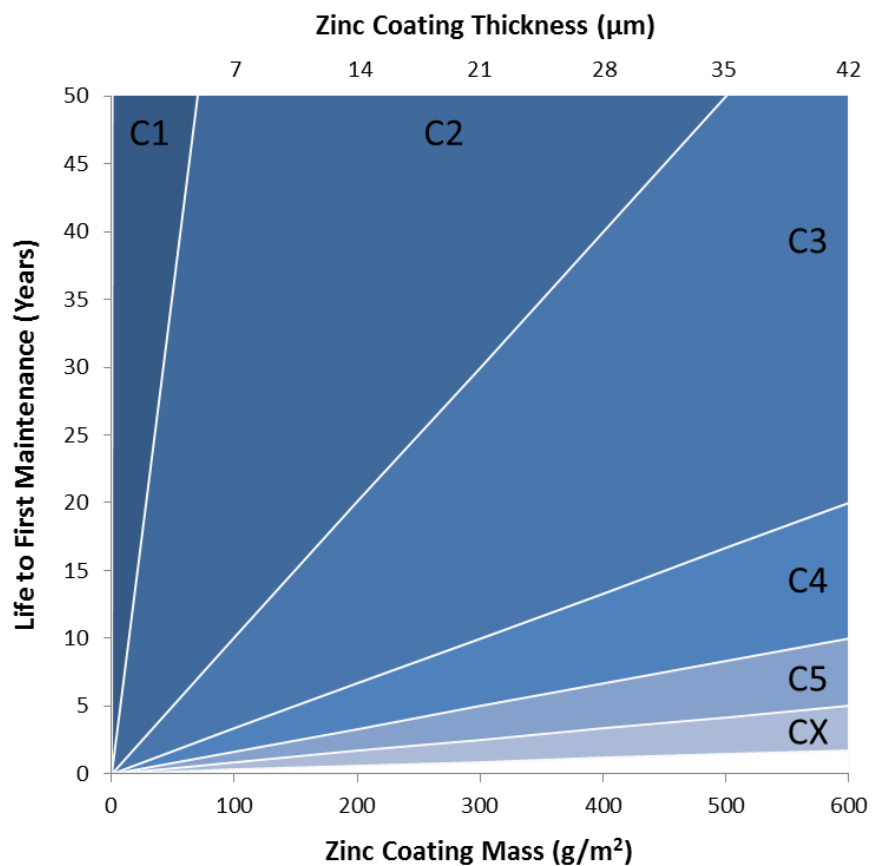
Note¹:

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

Note²:

ISO 14713-1:2009 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.



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