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Global statement of the relative corrosion performance of Magnelis® in soils

Since 2006, the Institut de la Corrosion has performed comparative corrosion studies in soils of zinc based coatings for ArcelorMittal. The materials studied were mainly continuous hot dip zinc coating and continuous zinc aluminium magnesium coating (Magnelis®), both produced according to EN 10346. Most of these studies have been carried out under collaborative joint industrial programs including material suppliers and end-users.

The exposures consisted in field exposure, laboratory exposure using natural soils and synthetic soils. The range of parameters investigated, and exposure time are detailed in Table 1.

Table 1: Soil parameter ranges in the corrosion studies including Magnelis® based on DIN50929-3

| Parameter | Range |
|------------------|------------------------------|
| Exposure time | 6 months to 5 years |
| Texture | clay, silt and sand mixtures |
| pH | 4 to 9 |
| Resistivity | 5 to 900 Ω.m |
| Chlorides | <10 to 2200 ppm |
| Sulfates | 0 to 507 ppm |
| Sulfides | 0 to 82 ppm |

The obtained results show that the average **corrosion resistance of the Magnelis® in soils was improved by an average factor of 3.8, compared to continuous hot dip zinc coating**. This factor has been calculated based on mass loss according to the ISO 8407 standard.



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