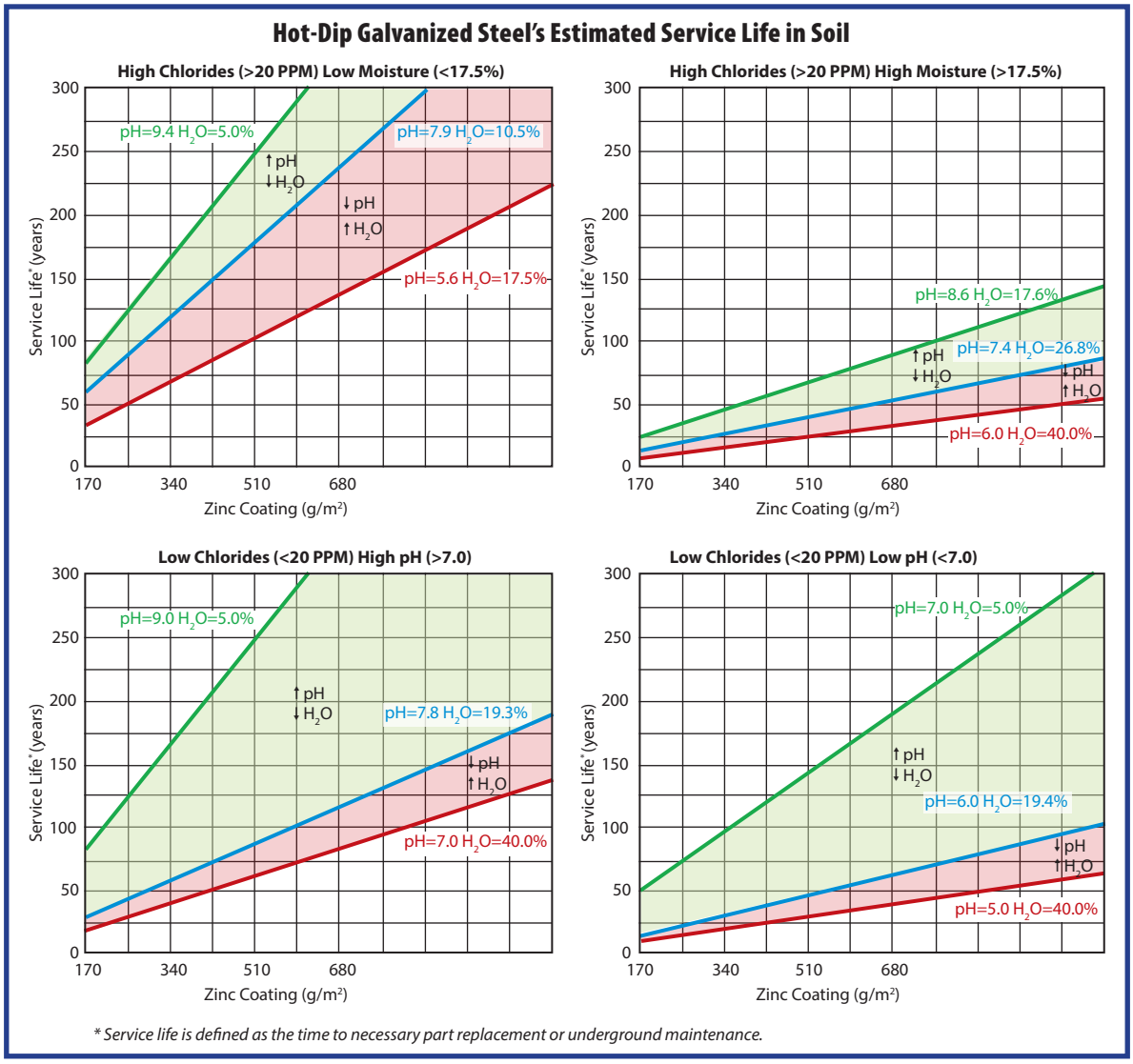
DETERMINATION OF WIRE DURABILITY SERVICE LIFE IN SOIL ENVIRONMENTS

The determination of wire durability for **hot-dip zinc galvanized** steel is an important issue for design engineers. The ability to predict a wire's service life under specific soil and moisture conditions is necessary to provide the designer, guidance on design life of products, coated in this manner. This information enables decisions to be made on when necessary part replacement, or field monitoring, of the structure may be required. The charts below (American Galvanizers Association, 2010) provide some guidance on the estimated service life of the galvanized steel product in soil and air respectively.

The service life may be either defined as time for necessary part replacement (in soil) or time for first maintenance (when 5% rust occurs on the steel surface, exposed in air). On the horizontal axis, the average zinc coating mass in g/m^2 and the vertical axis showing the predicted service life in years.

Charts are presented for varying pH, chlorides content and moisture content.



** Service life is defined as the time to necessary part replacement or underground maintenance.*

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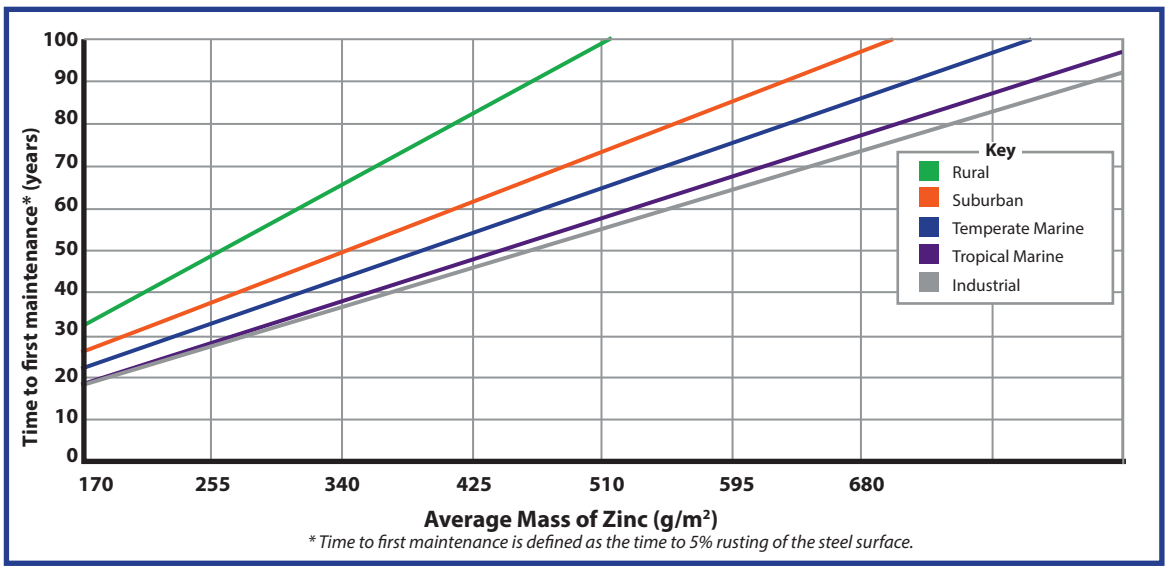

** Time to first maintenance is defined as the time to 5% rusting of the steel surface.*

When relating to the zinc galvanized wire of our **Link® gabions and mattresses**, we can refer to the following table (also refer to BBA UK Certificate, 2010) with respect to the nominal wire core diameter and zinc coating mass:

Nominal wire core diameter (mm)	Minimum zinc coating mass (gsm)	Equivalent coating thickness (mils)
2.0 (mattress wire)	215	1.3
2.7 (gabion wire)	245	1.5

For detailed definitions on the exposure environments, please refer to the referenced title[1] below.

Additionally the Link gabions and rock mattress may be coated in a Zn/Aluminium/Mischmetal coating marketed under the trade name Galfan. Reference is made to AS/NZS 4534 which states that a wire coated with such a coating type may have up to three times the service life than that of a heavily galvanized wire of equivalent coating mass.

References:

1. Performance of hot-dip galvanized steel products. American Galvanizers Association, 2010.
2. Link Middle East (LME) earth retention & protection systems. Woven hexagonal mesh gabion boxes, mattresses. British Board of Agrément, 2010.
3. AS/NZS 4534 Zinc and zinc/aluminium-alloy coatings on steel wire.

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