

Install® Plus: Service life and corrosion prevention

Robust, reliable and reputable multi-certified, hot-finished tube

Proven in service, Tata Steel carbon steel tubes have earned their reputation for performance over many, many years, and can still be found in a wide range of building, engineering and industrial pipework applications, many decades after installation*.

The improved Install® Plus multi-certified, hot-finished tube builds on the success of the Install®+ and Install® brands.

Now available externally coated, with new Tata Steel red paint, providing significantly enhanced corrosion protection, for even better service life performance.



Life expectancy

The lifespan of any carbon steel tube is dependant on:

- The specific service conditions.
- A satisfactory installation practice.
- A proper maintenance procedure.
- The use of appropriate corrosion protection, inhibitors or other suitable practices.

In situations of poor installation, premature failure may occur due to adverse conditions.

Normally, properly installed and protected carbon steel tube would be expected to have a service life in excess of 25 years*.

If carbon steel tubes are wrapped in protective tapes, or employ other corrosion coating or protection methodologies, then service life in excess of 40 years is possible*.

* This view assumes that:

- The tube is properly installed in accordance with best practices and applicable standards or regulatory requirements.

- No aggressively corrosive fluids are introduced into the system.
- Levels of corrosion inhibitor and additives are adequately maintained.
- The service conditions are maintained throughout this period.
- Any protective coatings are applied in accordance with the coating manufacturer's instructions.
- Any breach of such coatings is made good before any corrosion can take place.

Corrosion prevention

The combined presence of oxygen and moisture is normally necessary for corrosion of carbon steel to occur.

Several environmental factors will have an effect on the rate of internal corrosion of pipework, such as the fluid involved, its flow rate, temperature, pH, dissolved oxygen and carbon dioxide contents, whether the system is closed or open etc.

For water conveyance, soft or hard water content, the presence of bacteria and use of corrosion inhibitors etc are also relevant. The

interaction between these various factors is complex.

Longevity may be improved for particular applications by using external red-painted or galvanised tube.

Tata Steel red paint

Improved Install® Plus is now supplied with the new Tata Steel red paint coating.

This product provides a significantly enhanced external corrosion protection compared to our previous paint (please refer to the Tata Steel red paint data sheet for full details).

Galvanised tube

Galvanised tube provides improved corrosion resistance as the protective coating is applied to both external and internal surfaces.

Note that EN12502-3 gives guidance on the likelihood of corrosion of galvanised products in water distribution and storage systems.

Galvanising specifications

Install® Plus tube is hot dip galvanised in accordance with EN10240 (and available in qualities B.2, A.2 or A.1) or EN ISO1461.

The minimum external coating thickness (quality B.2) is 40 microns with a typical coating thickness normally 55-75 microns for automated processes and 100 microns for standard hot dipped products.

Thicker coatings may be seen with standard hot dipped products. This is sometimes preferred, or requested by customers to provide even better service life performance.

Zinc composition

For our galvanised products, the composition of zinc shall not contain impurities (other than iron and tin) exceeding 1.5%.

Passivation

Install® Plus galvanised tube is not passivated after the galvanising process.

Under damp storage conditions, prior to or post delivery, white discolouration can form on galvanised coatings.

The formation of this, although unsightly, has no significant effect on the service life of the product.

Polarity reversal

Galvanising protects steel sacrificially; in contact with a conducting aqueous solution, zinc behaves as an anode whereas steel acts as a cathode.

In this way, even bare carbon steel areas are protected. However, at temperatures around 60°C a polarity reversal occurs such that any exposed carbon steel corrodes preferentially to zinc.

For this reason, galvanised tubes are not recommended for hot water systems, especially in soft water areas.

Bacteria corrosion

The presence of certain types of bacteria can also result in the rapid corrosion of galvanised tube in cold-water conditions.

Generally soft water conditions are more corrosive than hard water conditions.

In such cases, appropriate water treatment or inhibitors should be used.

Please refer to the relevant industrial experts in water treatment for guidance.

Galvanic corrosion

Galvanised tubes should not be used in contact with copper based alloy tubing, fittings or washers, due to possible galvanic corrosion reaction.

Tapes and wraps

Any pipework being buried externally or within structures should be fully protected by pre-wrapping or use of other suitable coatings to ensure adequate corrosion resistance.

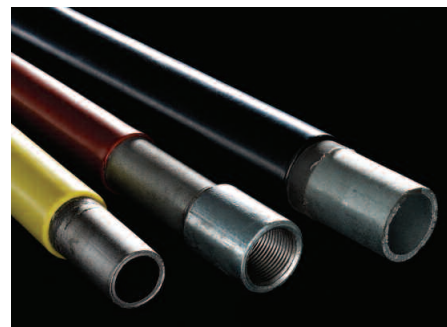
Bitumen-based wraps and tapes are readily available from appropriate suppliers.

Alternatively, sub-contractors may apply polymer wrappings, epoxy or extruded coatings.

Polymer coated tubes

Tata Steel produces a range of epoxy and polymer-coated products (certain coating options and size restrictions do apply).

Please contact one of our Customer Technical Services experts for further information.



Special note

The working life of any system depends upon its inherent durability and the prevailing environmental conditions.

A clear distinction should be made between the (declared) working life for a product, based on the assessment of durability in technical specifications, and the actual working life of a product.

The latter depends on many factors beyond the control of the tube manufacturer, such as installation design, environmental location, handling, use, and maintenance etc.

Technical support

Our Customer Technical Services (CTS) experts are on hand to answer any tube mechanical suitability enquiries.

Please contact us via the Tubes Technical Helpline: +44 (0) 1536 404561

Tata Steel

P. O. Box 101, Weldon Road,
Corby, Northants, NN17 5UA
United Kingdom
T: +44 (0) 1536 402121

Tubes Technical Helpline

T: +44 (0) 1536 404561
F: +44 (0) 1536 404111
E: technicalmarketing@tatasteel.com

www.tatasteelconstruction.com

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