Protection & repair

STEEL

What are the occuring problems with Metal/Iron?

1. **Corrosion:** One of the most significant issues with metal components is corrosion, especially in outdoor or humid environments. Corrosion weakens metal structures, leading to rust formation, deterioration, and potential structural failure over time.
2. **Metal Fatigue:** Continuous stress, vibrations, or heavy loads can lead to metal fatigue, where the material weakens and loses its structural integrity. This can result in cracks, fractures, or deformations in metal components.
3. **Weld Failure:** Welded joints in metal structures can fail due to improper welding techniques, material defects, or overloading. This can compromise the stability and safety of the building.
4. **Galvanic Corrosion:** When dissimilar metals come into contact in the presence of an electrolyte such as moisture, galvanic corrosion can occur. This leads to accelerated corrosion of one of the metals, particularly the less noble or reactive one.

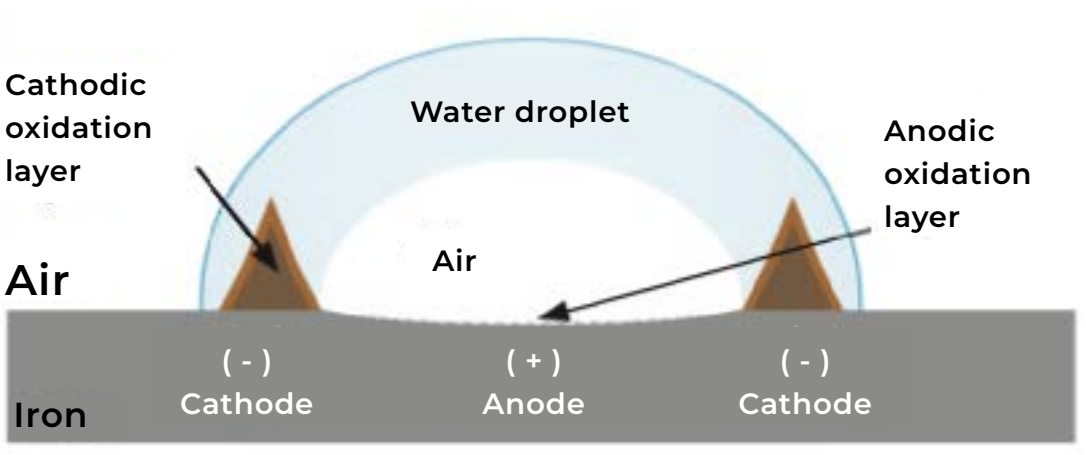
What are the occuring problems with Metal/Iron?

5. **Metal Erosion:** Exposure to abrasive materials, chemicals, or environmental factors such as wind-blown sand can cause erosion of metal surfaces over time, leading to thinning and weakening of the material.
6. **Metal Expansion and Contraction:** Changes in temperature can cause metal components to expand and contract, leading to stress on joints, connections, and fasteners. This can result in loosening, warping, or distortion of metal elements.
7. **Paint and Coating Failure:** Protective coatings such as paint or rust inhibitors can deteriorate over time, exposing the underlying metal to corrosion and other forms of damage.
8. **Structural Movement:** Movement or settling of the building's foundation can exert stress on metal structural elements, leading to misalignment, cracking, or failure of connections.
9. **Impact Damage:** Accidental impacts from vehicles, equipment, or falling objects can cause dents, punctures, or deformation in metal surfaces, compromising their integrity.
10. **Water Leakage:** Improper sealing or joint connections can allow water to penetrate metal components, leading to corrosion, rusting, and potential structural damage.

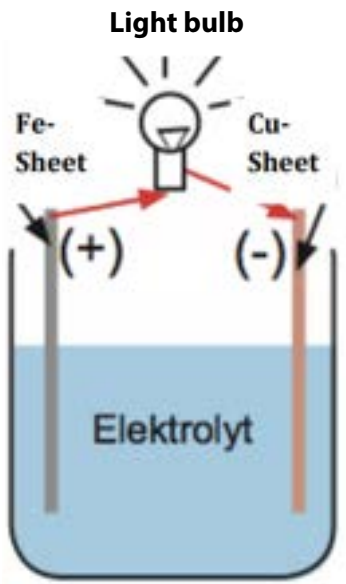
How does corrosion occur?

- Corrosion is an electrochemical process in which metal is anodically dissolved and deposited at the cathode as metal oxide or hydroxide.
- This may seem complicated, but it is a simple and easy-to-understand process, which will be explained below on a few small graphics.
- If you understand the corrosion process, then you will also understand why zinc forms an outstanding corrosion protection for iron.
- Dripping 1 drop of water on an iron sheet, then atmospheric oxygen penetrates into the drops and it forms an oxygen-rich and an oxygenpoor drop zone, a so-called ventilation element

- In the region of the oxygen-rich drop zone, this forms a negative charge zone (cathode) in the iron. In the oxygen-poor drop zone, the positively charged iron zone (anode) is created.
- If you place this test sheet in a container with high humidity (eg saucepan with lid and a wet sponge) the drop does not evaporate. Then you will see after a few hours that it forms a brown ring of rust in the outer area of the drop



- It has formed a so-called galvanic element similar to a flashlight battery. Between the anode and the cathode, an electric voltage has formed and it flows a small electric current.
  - This electrical current flow is the cause of the corrosion. If you continue the experiment for a few days, then you notice that the rust deposit is getting higher and the iron is being removed within the annular rust deposit.
    - The iron is dissolved at the anode, the iron ions migrate to the cathode and oxidize in the oxygen-rich drop zone to the brown rust.
      - In a glass with an electrically conductive liquid, so-called electrolyte, saline, dilute acid, etc.) are an iron sheet and a copper sheet.
        - Accordingly, between the "less noble" iron (electrochemical potential -0.41) and the "nobler" copper (e-potential +0.35) there is an electrical voltage of 0.94 volts and weak current flows through the electrolyte which, after all, makes a flashlight bulb shine.
          - The energy is created by the degradation of the "base" iron sheet, which is gradually consumed. The "nobler" copper sheet is not attacked.



Logic UH

Logic UH is a product formulated from epoxy resin combined with sand, free from foam or any additional additives.

Leveraging innovative Logic technology, this product seamlessly spreads through pores and exhibits optimal adhesion to surfaces.

Primarily used for repair and sealing applications, Logic UH is ideal for joints, roofs, and construction beams.

Notably, it remains insoluble in water, ensuring it does not contaminate drinking water sources.

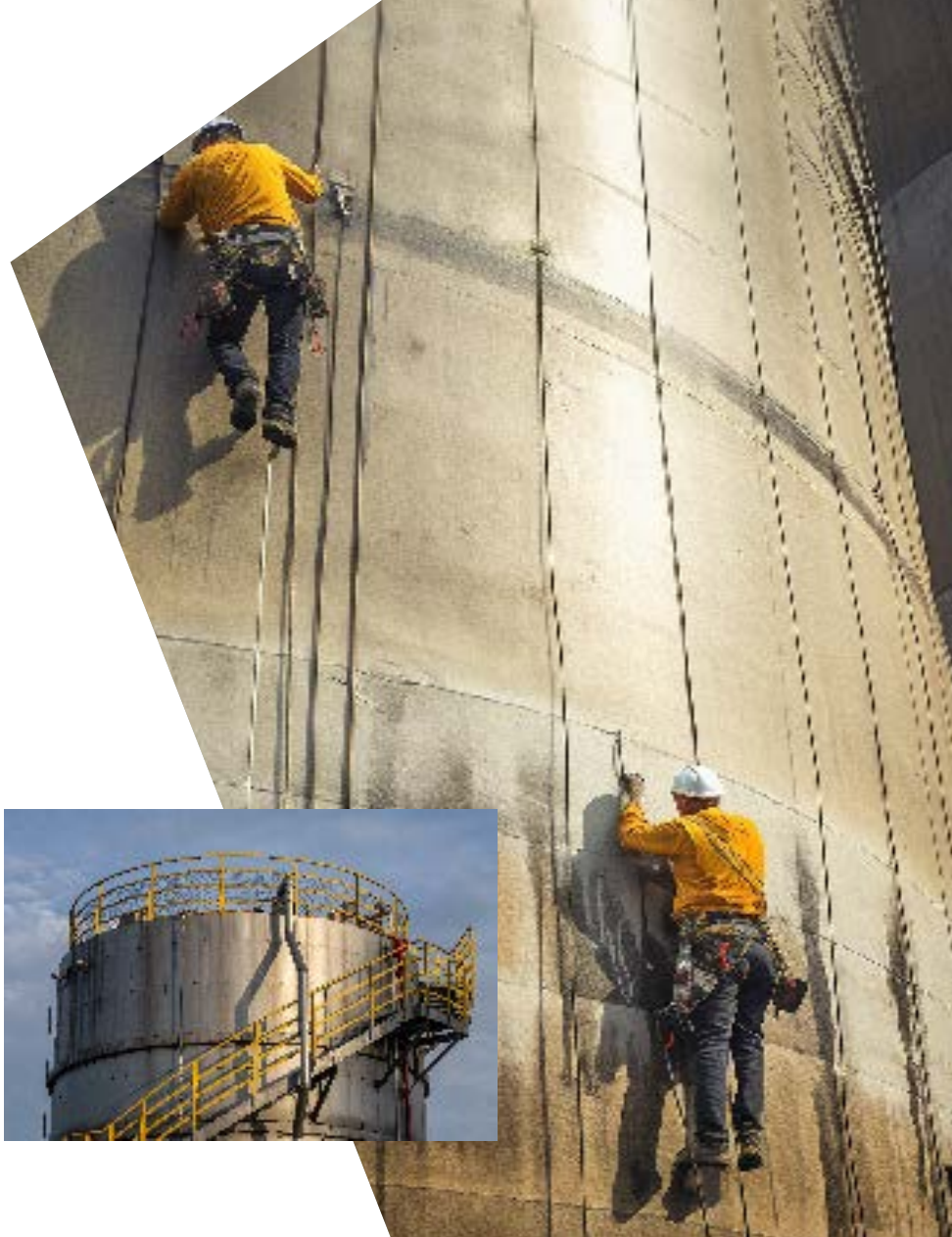
Furthermore, it is free from harmful ingredients and dampness, making it suitable for use as repairing mortar in porous buildings.

Logic DP+

- Epoxy zinc primer for heavy corrosion protection
- Logic DP+ is a two-component special primer comprising epoxy resin and metallic zinc powder
- Optimized particle size mixture
- First produced in 1964, continuously improved through research and studies
- Research focuses on electrochemical action of zinc for cathodic protection of iron
- Natural potential difference between iron and zinc is high, providing effective protection
- Moderators in Logic DP+ lower potential difference, reducing zinc removal rate without compromising protection
- Contains aggregates and additives to control and optimize anodic zinc degradation
- Sets apart from conventional zinc dust paints with advanced technology
- Reduces zinc reaction in undamaged layers, prolongs cathodic corrosion protection even in case of injury

Application areas

- Logic DP+ is highly popular for applications requiring severe corrosion protection and long-lasting effectiveness.
- Provides active anticorrosive coating, offering sufficient protection even in case of minor damage like scratches or stone chips.
- Prevents corrosion spread in areas of major coating violations. Activates electrochemical reaction upon coating damage, halting corrosion propagation.
- Contrasts with passive coatings that only seal against water and oxygen, which can exacerbate damage upon injury.



Application areas

- Suitable as sole protective coating if thickness exceeds 100 micrometers (my).
- Can be used as active primer for decorative paints or corrosion protection under seawater.
- Epoxy resin binder ensures excellent adhesion to steel substrate, serving as a bonding layer for subsequent coatings.
- Ideal for steel structures, tanks, pipelines in various industries including petrochemical, mining, steel-hydraulic engineering, shipbuilding, and plant construction.
- Cured layer exhibits high resistance to fresh water, seawater, weather, aliphatic hydrocarbons, aromatics, alcohols, oils, fats, mineral oils, and synthetic lubricants.

Logic DS

- Logic DS is a solvent-borne two-component plastic coating with excellent chemical resistance.
- Specifically designed for lining tanks, large containers, pipelines, storage bunkers, and coating machines, devices, constructions against corrosive chemicals, acids, alkalis, etc.
- Formulated with a special resin featuring epoxy groups, exhibiting exceptionally low shrinkage during curing.
- Offers outstanding resistance to chemicals and good adhesion to various materials typical of epoxy resins.
- Demonstrates excellent abrasion resistance against abrasive slurries and heavy vehicle traffic (e.g., forklifts).
- Unchanged since 1961, benefiting from extensive long-term experience, reflected in the comprehensive resistance list.