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THE NDE SOLUTION

• SERVICE ACCESSIBILITY • EXPERTISE

CORROSION RESISTANT MATERIALS AND SOLUTIONS

Stainless Steel in Marine Environments

Stainless Steel in Marine Environments

Overview

- Composition
- Corrosion resistance and corrosion
- Families of stainless steel
- Fabrication
- Care
- Cost savings

This presentation is drawn from over 70 years of NDE company experience and relationships with local and international suppliers including Outokumpu

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Moisture

- A conductive electrolyte is required for atmospheric corrosion to occur
- One factor is called Time of Wetness (TOM)
- High moisture dissolves dried salt and creates a corrosive electrolyte

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Aggressive Contaminants

- Salt spray deposits on the surface and evaporates leaving salt on surface. Sea salt stays wet for longer than pure salt and is therefore more damaging
- Sulphur containing environments cause acidic environments which make pitting worse

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Microclimate

- Sheltered areas can often be more susceptible than open ones. Rain, for example, often cleans the surface
- High temperature together with high humidity and a protected area can make the corrosion worse
- Underside of sloping roofs can have high corrosion rates

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Protected and Unprotected Areas

Stainless Steel for Engineers

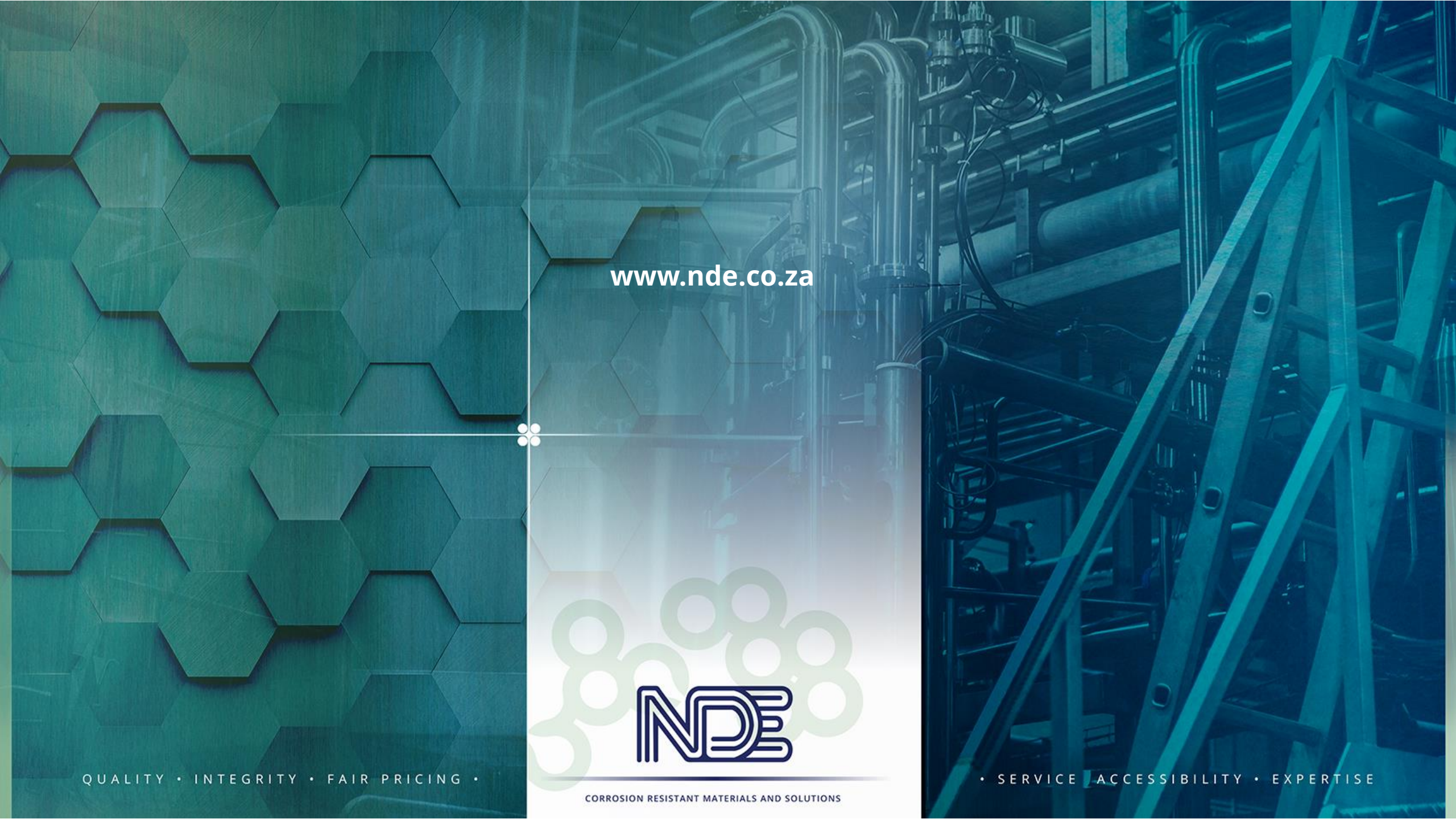
Chloride Induced Corrosion

Chloride ingress does not cause a reduction in the background pH. It inhibits the mechanism by which the protective oxide layer is maintained.

Main source of chlorides:
Sea water

"The most serious process affecting maritime structures is that of chloride-induced corrosion of reinforcement or prestressing steel, with consequent cracking and bursting of the concrete cover and loss of steel cross-section due to corrosion."

Chloride induced corrosion in a coastal environment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