International

Solutions for coastal structures

Marine environments impose unique challenges. High chloride levels, combined with the aggressive action of waves and currents, push structural integrity to the limits, whilst at the same time offering only fleeting opportunities for repair.

Structures in service, such as wharfs, jetties, piers and coastal defences, need to withstand extreme loading variations from wind and water movement, as well as abrasion damage from waterborne debris.

Aggressive attack on concrete and steel

Reinforced concrete structures in coastal environments are highly susceptible to attack from chlorides due to their constant submersion in saltwater and the regular exposure to airborne sea spray. Chloride ions will readily penetrate even the densest concrete to initiate corrosion of the reinforcement. Ultimately, spalling will occur, necessitating major and costly repairs.

Meanwhile, coastal steel structures and those in a saline location are particularly prone to corrosion, due to the aggressive nature of the environment, often exacerbated by a lack of preventative maintenance. There are many products available for remedial works, although a high level of surface preparation is generally needed. This includes the removal of all contaminants and corrosion by-products back to bright metal, a scenario often impossible in marine environments with restrictive tidal windows.

Innovative Intercrete® solutions

Our advanced reinstatement mortars are specially engineered for marine use and our cementitious coatings provide long-term protection in hostile coastal environments.

Highly resistant to early wash-out, **Intercrete** products afford optimum performance in wet, chloride-laden environments. Suitable for both remedial and new build projects, application requires minimal preparation and can be undertaken on damp substrates between tides. **Intercrete** mortars and coatings will cure normally under water to form an abrasion resistant, impenetrable barrier to chlorides whilst also preventing the ingress of oxygen and carbon dioxide in reinforced concrete exposed to the atmosphere.

Fighting the threat of ALWC

Accelerated Low Water Corrosion (ALWC) is an aggressive form of corrosion found on sheet piled quays and steel coastal structures. If left untreated, concentrated corrosion rates can dramatically reduce the design life, potentially leading to catastrophic, sudden failure.

Intercrete products provide an effective defence against ALWC:

- **Intercrete 4840** can be spray or brush applied direct to steel substrates in tidal zones. It rapidly stabilises to form a dense barrier coating that protects from water, oxygen and chloride ions
- **Intercrete 4840** seals the surface gap at the interlock, effectively protecting these vulnerable areas

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Typical problems and challenges in coastal engineering

International

Used in some of the world's most hostile environments, Intercrete products offer outstanding protection for coastal structures:

Corrosion protection

Problem: Steel and reinforced concrete structures require protection from the corrosive effects of chlorides found in seawater. Any coatings used must be applied in wet environments with less than ideal surface preparation.

With Intercrete 4840, only UHP cleaning techniques are required

Solution: **Intercrete 4841** is easily applied to damp concrete with excellent adhesion. It cures to form a dense coating with high levels of protection from water, oxygen and chloride ion penetration. **Intercrete 4840**, a cement and epoxy modified polymer coating, can be successfully sprayed directly onto steel substrates in damp conditions. Its impressively high resistance to the ingress of the fuels for corrosion and inherent alkalinity will ensure it provides stand-alone anti-corrosion protection.

Repairs to coastal defences

Problem: Jetties, harbours and sea walls can erode from the continual onslaught of waves and waterborne shingle. Stone and concrete structures require superior pointing and bedding to ensure long term structural integrity.

Intercrete 4802 can be easily applied to both horizontal and vertical surfaces

Solution: **Intercrete 4802**, a rapid setting mortar can be applied into voids and joints to provide a resilient, durable repair solution with excellent abrasion resistance. **Intercrete 4820** and **Intercrete 4810** can be combined to provide a high strength pointing and bedding mortar with excellent waterproofing and wash-out resistance properties. **Intercrete 4804** with the addition of washed shingle improves impact strength from waterborne shingle and can be hand applied to re-profile damaged areas.

Splash zone repairs

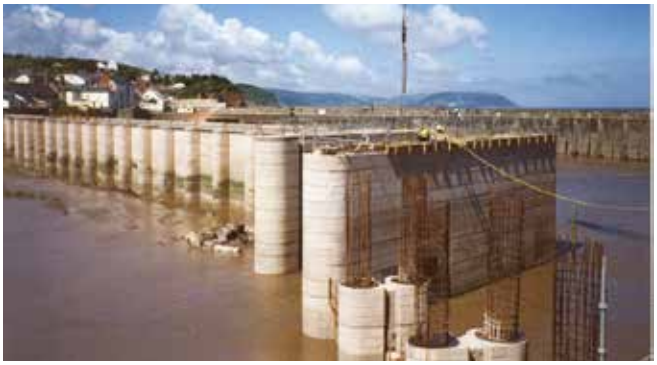
Problem: Corrosion of steel reinforcement and the subsequent spalling of concrete can occur in splash zones due to continual wetting and drying of surfaces and the action of salt spray.

Intercrete products are non-hazardous and completely safe to apply

Solution: **Intercrete 4800** can be hand applied to re-profile small areas of damage and a special grade **Intercrete 4800 (WS Grey)** is available for application by wet spray process in larger areas. **Intercrete 4879** can be applied to concrete faces and it diffuses through the structure to form a mono-molecular layer on the reinforcement that protects it from corrosion.

Tidal zone repairs

Problem: Corrosion of steel reinforcement and spalling of concrete in tidal zones due to continual pounding and erosion from wave action. The opportunity to carry out repairs is limited to tidal windows.



2mm of Intercrete 4841 offers protection equivalent to 1m of quality concrete

Solution: **Intercrete 4804** is a specially formulated repair material that is perfectly suited to areas subject to early immersion, providing excellent wash-out resistance against wave action. **Intercrete 4841** is easily applied to damp concrete, curing to form a dense coating with high levels of protection from water, oxygen and chloride ion penetration.

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