

Marine sands

in mortars and screeds

Marine sands are the finer fractions of the aggregate deposits found on the inner continental shelf off the UK coast.



Similar in geological origin and mineral composition to their terrestrial equivalents, many having been deposited by 'Ice Age' rivers, in valleys now submerged by the sea.

How can they be used?

Marine sands have mechanical, chemical and physical properties identical to the high quality land-based sands and as such the end uses are no different. They are also widely used in the production of:

- Mortar for bricklaying and blockmaking
- Screeds
- External renders
- Internal rendering
- Masonry blocks
- Paving blocks

How should they be specified?

BS EN 13139 is the specification for aggregates for mortar. This specification covers sands for masonry mortar, plastering

mortar, rendering mortar, floor/screed, special bedding materials, repair mortars and grouts.

Are they different from land-based aggregates?

The main differences between the majority of land-based sand and marine sands are the presence of **Chloride** (from sea salt) and **Shell** (as detailed overleaf):



- **Chloride content**

To minimise the risk of corrosion of metals embedded in mortar it is usual to limit the amount of chloride in mortar contributed from all constituents. The chloride ion content requirements of BS EN 998-2 are usually achieved when the water-soluble chloride ion content of the aggregate does not exceed 0,15% for plain mortar and 0,06% for mortars with embedded metals.

- **Shell**

Shell, like limestone, is predominantly calcium carbonate, which is stable in building products such as mortar. Consequently there are now no BS EN limits on shell.

It should be recognised that as with chlorides, shell can also be associated with land-based deposits.



Brickwork with evidence of efflorescence

Certification

Product certification in accordance with the Factory Production Control requirements of BS EN 13139 is available on request.

Will I get efflorescence?

The occurrence of efflorescence on the surface of building products is a spasmodic and a generally unpredictable occurrence, but a significant influence is the weather.

Efflorescence often occurs when masonry etc becomes wet and then dries slowly, and usually occurs as one of the following forms:

- 1 Concrete products can be discoloured by lime bloom or weeping. This is the migration to the surface of calcium hydroxide from the cement and its subsequent carbonation, creating discolouration.
- 2 Staining on clay bricks, which is normally the result of calcium sulphate from clay migrating to the surface.

- 3 A white deposit appearing on the surface caused by the migration of soluble salts. The chloride ion content of marine sands is not normally significant enough to cause such staining, should any occur due to this cause, it will disappear very quickly, as chlorides are extremely soluble and never persist.

There is occasionally resistance by Specifiers and Purchasers to restrict the use of 'sea dredged' sands due to their potential to include low levels of chlorides. The possibility of efflorescence is not influenced by the selection of either marine or land-based sand. The exclusion of marine sands will not reduce the likelihood of subsequent staining to the exposed faces. Many of our towns and cities are built using marine sands and show no aesthetic problems whatsoever, associated with sand source.

What about Alkali Silica Reaction (ASR)?

ASR is not generally a problem in building mortars and screeds. Further guidance is given in BRE 330 and Concrete Society Report 30.

Recommended publications



- **BS EN 13139** - Aggregates for mortar
- **BRE Digest 473** - Marine aggregates in concrete
- **BRE Digest 330** - Alkali-silica reaction in concrete
- **Aggregates from the sea** - BMAPA (www.bmapa.org)
- **BCA** - Appearance Matters
- **PD 6682-3** - Guidance on the use of BS EN 13139
- **BS EN 998-1** - Specification for mortar for renders and screeds
- **BS EN 998-2** - Specification for mortar for masonry
- **Concrete Society Report 30**
- **MIA Data Sheets** (www.mortar.org.uk)

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The British Marine Aggregate Producers Association is one of the constituent bodies of the Quarry Products Association, the trade association for the aggregate, asphalt and ready-mixed concrete industries. Secretary Richard Griffiths.