

Efflorescence

A.1 Which types of bricks are more vulnerable to efflorescence?

Bricks with a higher soluble salt content, that is durability classification of bricks FM, MN and ON.

BS 3921 classifies clay bricks according to their frost resistances and soluble salt content.

A.2 How will efflorescence affect steel reinforcement?

Soluble salt can corrode steel encased in concrete, if the 'cover' on the steel is below the specified minimum, the soluble salt may access the steel due to water pressure, capillary action or cracking of the concrete due to shrinkage or movement.

As the steel reinforcement corrodes and expands 'blowing' away the concrete that surrounds it.

A.3 Which type of stone is considered the most susceptible of building stones to salt decay?

Limestone is the most susceptible to salt decay, stone that contains particles of lime are also vulnerable.

A.4 Why would efflorescence reoccur?

Efflorescence would reoccur due to continual wetting with water containing soluble salts.

From spoil behind a retaining wall, below DPC masonry absorbing ground water by capillary action, poor quality masonry being continually wetted.

A.5 Suggest 10 ways masonry can be protected during construction to reduce efflorescence.

- Store off the ground
- Repair any damaged shrink wrapping
- Keep materials covered
- Discard materials contaminated with ground water.
- Use only fresh water for mortar
- Use only washed sand
- Protect sand and mortar from ground water
- Install proper DPC's and DPM's
- Install vertical DPM behind retaining walls
- Keep masonry covered during construction

A.6 How would efflorescence damage masonry?

Continual saturation with soluble salts, can cause deterioration of masonry, if the materials are soft like stone, soft blocks, non BS bricks or bricks below FL quality.

This continual wetting with ground water or water high in soluble salts can make the materials susceptible to frost attack also the salt crystals can build up inside the masonry expanding as the frost water molecules do destroying the face.

Water molecules expanding within the face of the masonry will make the face breakaway and flake, leaving the masonry unsightly and over a long time un-stable.

Lime mortar will be affected, as the soluble salts will attack the lime the chemical reaction between the soluble salt and the lime creating sulphates that weakening the mortar.

With face stone work particularly stone containing limestone, the soluble salts will cause a chemical reaction between the soluble salt and the lime creating sulphates, leaving the masonry susceptible to atmospheric attack from acid rain and frost etc