

EVALUATION OF DURABILITY OF CLAY ROOFING TILES

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Keywords: Durability, Clay Roofing Tiles, Accelerated weathering tests.

Abstract

In Portugal, some cases of accelerated decay of clay roofing tiles localised in coastal zones can be quite worrying for industrial producers and final consumers. This degradation strongly conditions the roofing tiles durability and seems to arise from the exposition to the salt mist atmosphere at the seaside.

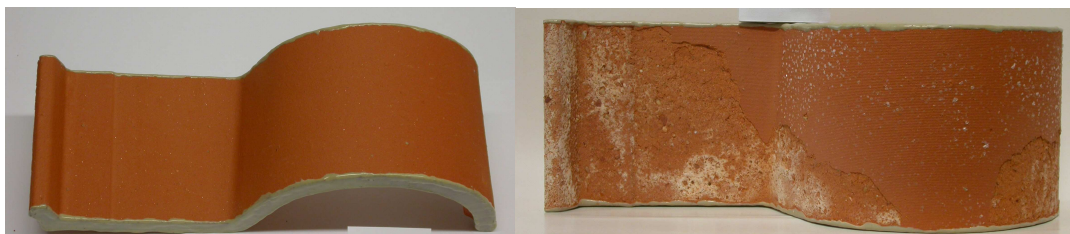
An experimental study is being carried out to evaluate the performance of the clay roofing tiles subjected to sea environment, based on artificial accelerated weathering tests of exposition to salt mist. The weathering tests were designed with a basis EN 14147 and adapted to what was thought to be realistic conditions for this product in the referred climatic conditions [1]. These tests are being carried out in a climatic chamber where the specimens are subjected to sets of cycles of wetting with a salty solution and subsequent drying [2, 3].

The study includes the roofing tiles characterization, the development of accelerated weathering tests, the evaluation of the weathering effect through observation and physical and chemical tests and also the comparison with roofing tiles that suffered natural weathering in coastal zones of Portugal.

The experimental results must permit to identify the parameters – both composition and manufacture parameters – having a higher contribute to decay of the roofing tiles, providing industry with relevant data to improve the manufacture process.

Different types of tiles have already been subjected to the weathering tests. The weathering effects were studied through visual assessment, weight variations and from non-destructive physical tests, performed before and after 10, 20 and 30 cycles.

Before the cycles, the specimens have been subjected to water absorption by immersion, sound speed propagation and water absorption tests, which results demonstrate different physical characteristics between the various types of tiles. During the weathering tests, the specimens showed differences in behaviour, clearly seen just with visual assessment. After 10, 20 and 30 cycles the specimens have been subjected, so far, to sound speed propagation tests. Following desalinization they will be submitted to the same water absorption tests made before.



References

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