

Detachment of plasters applied on ceilings and walls: a safety problem

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Abstract

The loss of adhesion of plasters has as a consequence the separation between mortar and support, an anomaly designated as detachment; which may endanger the users' safety.

The loss of adhesion can appear due to different factors: problems related to the background (dust, demoulding oil, poor suction or excessive suction, etc.); problems related with the plaster composition, as the use of hydrophobic admixtures; problems related to application (high thickness of the plaster coat, absence of an adhesion coat, disrespect for drying periods between coats, etc.).

This problem is getting more and more important nowadays, because of short times for construction, untrained workmanship and the tendency to use hydrophobic materials and smooth surfaces. The fall of a fragment of heavy mortar from the ceiling of a house or from an external high wall can seriously hurt the users, or even kill somebody, thus the understanding of causes and the specification of preventive measures is a safety issue.

This paper presents an analysis of this problem, showing shortly some examples and their causes and describing a case study about the detachment of a cement ceiling plaster. Concerning the case study, an experimental analysis was developed with the purpose to determine adhesion degree in the remaining plasters and to identify the cause of the anomaly.

In situ pull-off tests were carried out and compared with reference values and a set of laboratory tests were accomplished to acknowledge the influence of each factor. The tests results permitted the definition of the functional capacity of the plasters and the planning of repair actions.