

## An Accelerated Test Method to Evaluate Streaky Soiling of Exterior Walls

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### Abstract

An accelerated test method has been developed to evaluate the resistance of exterior building materials to streaky soiling. The purpose of this work is to investigate the influence of the surface condition of outer walls on soiling caused by running rain water containing dirt. Long streaky soiling, which is caused by running water from the draining board to the outer wall, often appears under windows. This paper describes the validity of an accelerated test method for streaky soiling. Experiments on streaky soiling were carried out by the accelerated test and outdoor exposure using test specimens coated with thirteen different paints that have been developed in recent years. The degree of soiling was evaluated by the color difference before and after the tests using L\*a\*b\* Lab Color Space. The results indicated that the results of the accelerated tests have high correlation to the outdoor exposure test results, and that the resistance of building paints to streaky soiling can be evaluated by the accelerated test method. The tests also confirmed that, as is generally accepted, the smaller the water contact angle, the smaller is the color difference, which is an indication of higher soiling resistance.

**Keywords:** Accelerated Test, Streaky Soiling, Water Contact Angle, Building Paints, Running Water

### 1. Introduction

Exterior building walls are soiled by many factors such as discoloration by sunlight, weathering, marks created by running rain water, efflorescence, rust of metal, adhesion of earth and sand etc.. Among these, streaky soiling caused by run-

ning water is a serious problem that soils the appearance of exterior walls. As shown in **Photograph 1**, streaky soiling appears frequently on parts around the top of parapets, handrails of outer staircases, under windows and around fittings on exterior walls<sup>1)2)3)</sup>.

This paper deals with the validity of an acceler-

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