

Report

Testing of driving rain resistance of Rapido Tynnpuss (thin finishing mortar) before artificial accelerated ageing

This report is a translated version of the original report 102006317 Rapport RVL Products Slagregn før kunstig klimaaldring

The name of Rapido Tynnpuss is today RVL

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KEYWORDS:

Finishing mortar, driving rain, light weight concrete

VERSION

1

DATE

2017-08-14

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PROJECT NO.

102006317

NUMBER OF PAGES:

5 incl. one Appendix

Summary

SINTEF Building and infrastructure has, on behalf of RVL Products AS, performed driving rain tests on two rendered facade fields of light weight concrete. The main purpose with the test was to study the ability Rapido Tynnpuss (thin finishing mortar) has to increase the driving rain resistance.

An assessment of the results is given in chapter 5.

This report deals with only an initial driving rain test **before** accelerated artificial ageing. The report can, of this reason, not be used as documentation to prove that the finishing mortar has sufficient durability to be used on facades in Norwegian climate.

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**REPORT NO.**
102006317
Driving rain
before ageing**CLASSIFICATION**
Restricted**CLASSIFICATION THIS PAGE**
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Table of contents

1. Introduction	3
2. Test specimens.....	3
3. Test method.....	3
4. Results	4
5. Assessment	4
Appendix 1 Pictures belonging to report 102006317 driving rain.....	5

1. Introduction

SINTEF Building and infrastructure has, on behalf of RVL Products AS, performed driving rain tests on two rendered facade fields of light weight concrete. The main purpose with the test was to study the ability Rapido Tynnpuss (thin finishing mortar) has to increase the driving rain resistance.

Rapido Tynnpuss is a cement based, diffusion open finishing mortar for surface treatment of masonry.

This report deals with only an initial driving rain test **before** accelerated artificial ageing.

The tests were completed in May/June 2013.

2. Test specimens

Two specimens measuring 1 m x 1m (height x width) were built of light weight concrete in 100 mm thickness.

The specimens were first primed with Rapido Primer. As soon as the primer has dried, Rapido Tynnpuss was applied (mixing ratio, mortar/water/RVL: 15 kg white mortar/3,0 kg water/1 litre RVL). The mortar was applied in one layer of about 5 mm thickness. The brickwork was done by a hired external workman and the rendering work by RVL Products AS. The test specimens were cured for 6 weeks before testing.

Before the driving rain test was carried out, the test panels were placed in a frame of aluminium where the transitions between the facade fields and the frames were sealed with a sealant to prevent moisture penetration during the test. Exposed area during the test was 0.94 m².

3. Test method

The effect Rapido Tynnpuss has, during driving rain stress, as protection against moisture absorption in underlying masonry, was investigated according to NBI method 29/1983 *Mørtler. Tetthet mot slagregn*. (Mortars, tightness against driving rain). The tests were executed according to the following schedule:

- A. 5 hours on a static overpressure of 750 Pa (corresponding to wind with hurricane force) and sprayed with an amount of water of 1.0 l/(m²·min.). Spraying of water occurs at the upper part of the test pieces.
- B. 5 hours without overpressure and water-spraying (only a dry air flow along the surface).
- C. 36 hours continuous running with the same stress as shown in clause A.

Increasing of weight due to driving rain stress is detected by weighing the test facade fields before and after testing.

Picture 1 and 2 in appendix 1 show the facade fields assembled into the driving rain chamber before the tests were started.

4. Results

Moisture absorption recorded in the test specimens after driving rain tests are documented in Table 1 and is given both as increase of weight in relation to weight before the driving rain tests (weight %), and as increase of weight in relation to exposed wall surface ($\text{kg} / \text{m}^2_{\text{wall}}$).

Table 1: Moisture absorption for two facade fields exposed to driving rain stress

Specimen	Surface treatment	Increase of weight	
		weight %	$\text{kg}/\text{m}^2_{\text{vegg}}$
A	- Rapido Tynnpuss	2,5	1,7
B	- Rapido Tynnpuss	2,2	1,6

SINTEF could observe, after the driving rain test was completed, that the render surface has cracked a bit (see picture 3 in Annex 1).

5. Assessment

SINTEF has earlier carried out driving rain experiments of lime/cement mortars as treatment on light weight concrete surfaces (without additional surface treatment). The results from these experiments show an approximately moisture absorption of almost $4,0 \text{ kg} / \text{m}^2_{\text{wall}}$. The results show also that water penetrates through the masonry.

Comparing such earlier investigations, the results from the tests carried out for RVL Products, show that Rapido Tynnpuss improves the driving rain resistance for a rendered facade compared to a standard two-layer lime/cement mortar without additional treatment.

Appendix 1 **Pictures belonging to report 102006317 driving rain**



Picture 1: Specimens assembled in the driving rain test chamber before the test was started (unexposed side of the specimens)



Picture 2: Specimens assembled in the driving rain test chamber before the test was started (exposed side of the specimens)



Picture 3: One of the specimens after the initial driving rain test



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