

TEST REPORT N° CFM 14 LAB 19

Corrosion behaviour of

**Powers injection system AC100-PRO for rebar connection
(Powers Fasteners Europe)**

**DeWalt injection system AC100-PRO for rebar connection
(DeWalt)**

**Powers AC100+ Gold adhesive (Powers Fasteners, Inc. –
DeWalt).**

This test report attests only to the characteristics of the object submitted for testing but does not prejudge the characteristics of similar products. So it does not constitute a product certification in the sense of article L 115-27 of the consumer code and of the law of June 3, 1994.

The reproduction of this test report is only authorized in its integral form.

It comprises 5 pages.

1. SCOPE

This tests report aims to study corrosion behaviour of rebars embedded in concrete by means of different types of resins.

2. REFERENCE TEXTS

These tests were performed according to "EOTA Technical report", TR 023, Edition November 2006, Part 3.3.4 : Corrosion resistance of rebar.

3. ORIGIN, IDENTIFICATION

All the samples submitted for testing were forwarded to the laboratory by the manufacturer.

4. DATE OF TESTING

October 2008 to January 2009

5. CONTEXT

Carbonation is a chemical phenomenon that occurs in concrete where calcium hydroxide in the concrete reacts with carbon dioxide from air and forms insoluble calcium carbonate. This reaction leads to lower pH in the concrete and may result in corrosion of reinforcing steel. In order to avoid this damage, some alkaline compounds, for instance, can be introduced into concrete and in this way, re-create a basic environment around steel.

Synthetic mortars are used, in case of post installed rebars, to fix them in concrete. But these synthetic mortars must also protect steel against corrosion. Therefore, tests led, assess the corrosion behaviour of different resins according to "EOTA Technical report", TR 023, Edition November 2006, Part 3.3.4 : Corrosion resistance of rebar.

6. EXPERIMENTAL METHOD

After 21 days drying of the concrete, made of C20/25, prepared according to ETAG 001, Annex A and with chloride content of 0.4% relative to cement, rebars were installed by means of synthetic mortar provided by the manufacturer. One synthetic mortar available under the 3 following designation was tested :

- Powers injection system AC100-PRO for rebar connection (Powers Fasteners Europe),
- DeWalt injection system AC100-PRO for rebar connection (DeWalt) and
- Powers AC100+ Gold adhesive (Powers Fasteners, Inc. - DeWalt).

The test was lead for 3 months.

Finally, the current flow and the potential were followed during the last third of testing period.

7. RESULTS AND DISCUSSION

The results of potential measurements are gathered in figure 1 :

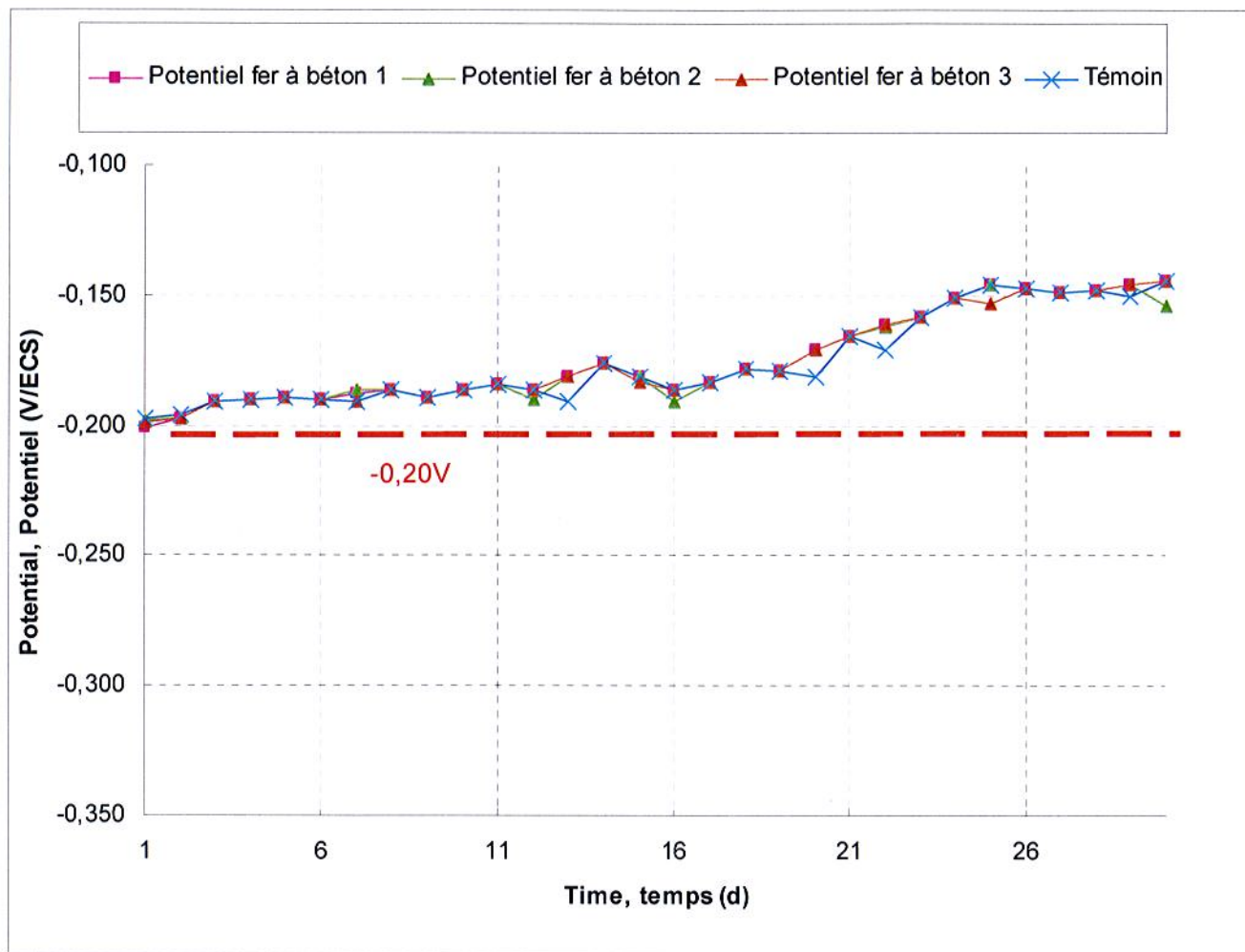


Figure 1 : Potential against duration (0.4%)

The results of current flow are gathered in figure 2 :

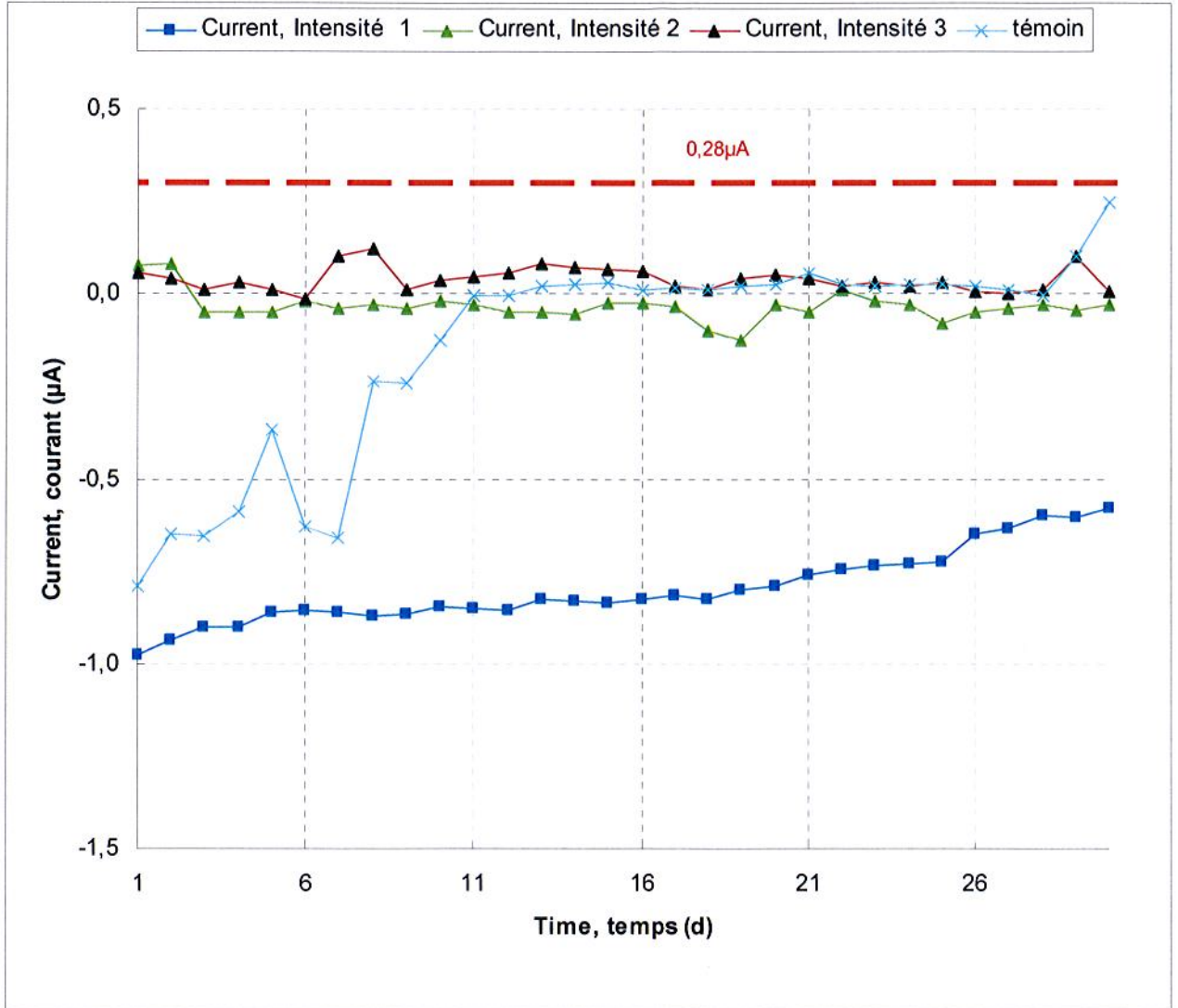


Figure 2 : Current flow against duration

- Requirements :

Potential criterion : **the daily mean value shall not be below : - 0.2 V**
Current criterion : **the daily mean value shall not exceed : 0.28 μ A**

- Sample (EASF, chloride content of 0.4% relative to cement) :

The potential was above -0.2 V/CSE

The daily mean value of the current doesn't exceed 0.28 μ A

Marne-La-Vallée, June, 18 th 2014

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