

Reviewer 3 reports: The introduction proved sufficient background and includes all relevant references. The paper is clearly structured and quite understandable. Thanks for sharing your findings. However, there is some clarification necessary.

Table 6 (new number) shows fitting results of EIS data, which are very questionable. No information on reproducibility is made. Looking at shifting values for R_{sol} , the whole fitting cannot be really explained. Why does it increase until 168 h followed by a decrease? Pore solution should remain constant during experiment. Please re-write this part with more detailed explanations.

Response: Thank you for the comment.

Authors reported that the surface chemistry of steel is governed by many factors, such as the ion composition of the pore solution and its change in time and the degree of pore saturation [B]. These changes resulted in a different passivation process and a thicker passive film with a higher proportion of Fe^{2+} oxides.

[B] H. Zheng, C.S. Poon, W. Li, Mechanistic study on initial passivation and surface chemistry of steel bars in nano-silica cement pastes, *Cem. Concr. Compos.*, 112 (2020), Article 103661.

Thus, one can speculate that some change in time of pH of the cement extract solution (Figure 7) may contribute to change in the ion composition at the interface metal/electrolyte and therefore, R_{sol} value does not remain constant during the experiment. In the text, a new paragraph is included.

Lines 392-398 (after Figure 11):

“It can be noted (Table 6) that the R_{sol} value increases over time and one can speculate that this fact is closely related with the pH diminishing of the cement extract solution and change of ion composition at the interface metal/solution. It was mentioned before that the local acidification [H^+] of the solution may involve the presence of new ions, such as: iron (Fe^{2+}) released ions; HCO_3^- ions as predominate species (after the dissolution of CO_2 from air) and the concentration increase of H_2S (due to the dissolved MnS , Equation 4).”

Rev.3: Table 7 (new number Table 6) shows fitting results of EIS data, which are very questionable

Response: The adjusted values resumed in Table 6 have good fit $\chi^2 (10^{-4})$ in the most cases and it is observable in EIS diagrams.

Rev.3: Chapter 3.5.2 talks about EC-Noise measurements for PI. Conclusions drawn are very questionable. This part shall be removed, since no proof is given that pitting corrosion occurred at the specimens investigated. Within such artificial pore solution no pitting would be expected if no chlorides are involved.

Response: The chapter 3.5.2 was removed. The goal of the presented results was to compare the corrosion attack on the alloy surfaces observed even in the absence of chloride. The fluctuation of corrosion current or potential (at OCP), considered as EN, is a common method for characterization of uniform or localized corrosion of metals, not necessary in the presence of pitting attacks.