

Use of graphene as chemical additive for anticorrosive and architectural paints

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It has already been demonstrated graphene exhibits unique electrical, mechanical, and thermal properties that can bring significant improvements for many technical applications [1]. Paint & coating industry is one of the sectors that should be deeply transformed by this new technology. The use of graphene as corrosive inhibitor in industrial coatings has been widely reported in the past [2] but the literature often presents fluctuating performance data under the broad term 'graphene'[3-4], which can be confusing, particularly for paint industry professionals unfamiliar with nanotechnology. Moreover, due to the extensive focus of global R&D efforts on anticorrosive properties [5], the benefits of graphene in architectonic and decorative coatings remain largely underutilized especially in regards with the waterborne latex resin coatings. The objective of this study is to provide clarity regarding real-life applications of graphene in corrosion-resistant coatings and to show the reasons why use of graphene can boost the performance of architectural coatings. Finally, as an illustration, examples of graphene-based chemical additives (figure 1) developed by Gerdau Graphene for different product lines will be presented:

- anticorrosive paints with enhanced corrosion resistance (possibility of substitution of conventional corrosion inhibitors);
- floor paint with enhanced durability;
- wall paint with increased wash resistance.

References

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- [3] J. Lee, D. Berman, Carbon, 6 (2017) 225-231
- [4] R. D. Davidson et al., ACS Applied Nano Materials 2 (2019) 3100-3116
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Figures

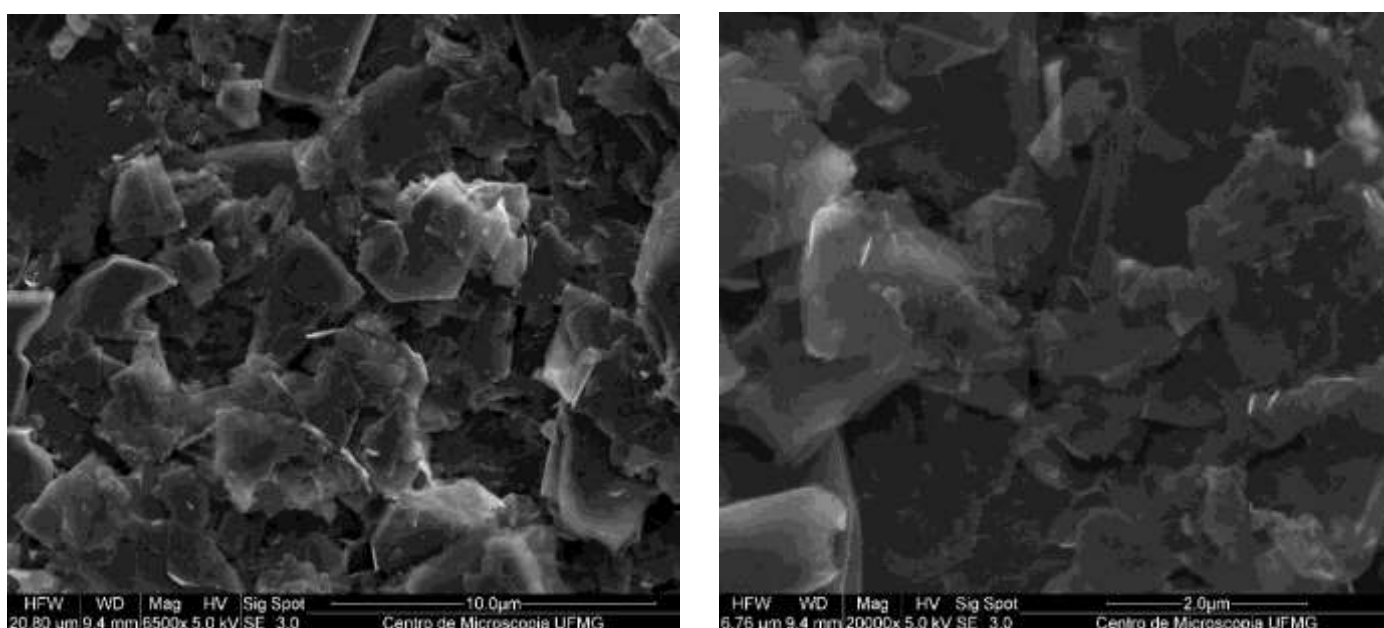


Figure 1: SEM images of an example of graphene dispersion in xylene previously dried used as a chemical additive for anticorrosive coatings