

## The corrosion resistance of Wiron<sup>®</sup>88 in the presence of *S. mutans* and *S. sobrinus* bacteria

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**Abstract** The corrosion resistance of Wiron<sup>®</sup>88, a Ni–Cr–Mo alloy, was evaluated in liquid growth media in the absence and presence of the *Streptococcus sobrinus* and *Streptococcus mutans* strains. Open circuit potential measurements, cyclic voltammetry, linear sweep voltammetry, as well as electronic microscopy coupled to electron diffraction spectroscopy (SEM/EDS), were the main techniques used in this study. It was concluded that the presence of *S. sobrinus* and *S. mutans* have only a slight effect on the corrosion resistance of the Wiron<sup>®</sup>88 alloy, with the *S. mutans* being slightly more aggressive. For both strains the corrosion resistance  $R_p$  is of the same order ( $k\Omega\text{ cm}^2$ ). After 24 h immersion the *S. sobrinus* lead to and  $R_p$  of 11.02, while the *S. mutans* lead to of 5.59  $k\Omega\text{ cm}^2$ . SEM/EDS studies on the Wiron<sup>®</sup>88 samples, with 24 days of immersion, at 37 °C, have confirmed bio-corrosion of the alloy occurring through the dissolution of Ni as  $\text{Ni}^{2+}$

and formation of chromium and molybdenum oxides. The bacterial adhesion to the surface is not uniform.

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