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FIRST AMPHIBALANUS AMPHITRITE ADHESION STRENGTH DATA ON THE SELF-POLISHING COATINGS OFF THE AEGEAN SEA

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ABSTRACT

Marine vessels are used in scientific diving activities. The underwater parts of these vehicles are coated with antifouling paints to protect them from fouling organisms [1,2]. Some of these antifouling paints contain toxic biocides and the release of these biocides into the environment is a major threat to the marine world. The aim of this study is to introduce current antifouling technology to the scientific divers and provide a laboratory test in the development of antifouling paints. With this laboratory test, adhesion strength of *Amphibalanus amphitrite* in İzmir Bay were studied and the results were compared with the pseudobarnacle adhesion test. Normally, adhesion tests are performed to evaluate the performance of the antifouling coatings, but the test results can also be used on the biofouling cleaning processes to cause minimal or no damage to the coatings [3-5]. The biofouling process is highly dependent on climatic conditions. For this reason, laboratory tests are required to perform the performance tests of self-polishing coatings in cases where living organisms cannot be reached. For this purpose, different self-polishing antifouling coatings have been formulated. Field tests for the coatings were carried out in the Aegean Sea for 10 weeks. After 10 weeks, scoring system was used to evaluate the field test [6,7]. Then barnacle and pseudobarnacle adhesion tests were conducted on coatings. When the results were compared, a similarity was observed between the adhesion strengths of barnacle and pseudobarnacle with 10 mm diameter in coating 12 (40:40:20 (w/w%), rosin:xylene:BaSO₄). Adhesion strength of barnacles and pseudobarnacles on coating 12 were found as 0.46 MPa and 0.45 MPa, respectively. In conclusion, the present study exhibits first data related to adhesion strength of *A. amphitrite* on rosin-based self-polishing coatings in the Aegean Sea. Moreover, based on field tests, a pseudobarnacle adhesion methodology was developed to mimic barnacles and the correlation between barnacle and pseudobarnacle tests was examined.



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