
TECHNICAL REPORT

SEA TO SKY INNOVATIONS AS

TESTING THE EFFICIENCY OF SPC F1 SURFACE
PREPARATION COMPOUND

REPORT No. BGN-R2702067

REVISION No. 01

TECHNICAL REPORT

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Summary:

Det Norske Veritas, Section for Materials and Inspection Technology in Bergen, was employed by Sea to Sky Innovation to test their rust remover, SPC F1 Surface Preparation Compound.

The testing encompassed evaluation of the efficiency of the product. This included detection of possible SPC F1 Surface Preparation Compound residuals on a surface which had been treated with the product and then washed with water. Further it included a condensation chamber test. In this test SPC F1 Surface Preparation Compound was applied on rusted panels and left for approximately 4 hours for the product to remove the rust. The panels were then washed with water, dried and coated with a ballast tank epoxy coating.

The coated panels were exposed in a condensation chamber for 6 months. A visual inspection was carried out every second month.

Element analyses, carried out by means of a scanning electron microscope, showed no traces of SPC F1 Surface Preparation Compound on the surface of the panels after cleaning and water hosing.

No blisters or rust could be detected on the condensation chamber test panels as a result of the testing.

The testing shows that the SPC F1 Surface Preparation Compound efficiently removes corrosion products from a corroded surface and further gives a satisfactory basis for following application of an epoxy coating like the one used in this test.

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Indexing terms

CORROSION
COATINGS
CLEANING
TESTING

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- Strictly confidential

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1 INTRODUCTION

Det Norske Veritas, Section for Materials and Inspection Technology in Bergen, was employed by Sea to Sky Innovation to test their rust remover, SPC F1 Surface Preparation Compound with regard to cleaning efficiency.

SPC F1 Surface Preparation Compound is according to the producer an environmental friendly water based product. The use of it is meant to be an alternative cleaning method (removal of rust) in connection with paint work.

2 SCOPE OF WORK

- Detection of possible SPC F1 Surface Preparation Compound residuals on a surface treated with the product and then washed with water.
- Condensation chamber test to evaluate the performance of a coating applied to a steel surface treated with SPC F1 Surface Preparation Compound.

3 PROCEDURE

3.1 Panel preparation

SPC F1 Surface Preparation Compound was applied on four ST 37 steel panels that had been exposed to sea water for a week. The panels were marked 9, 10, 11 and 3.

After an induction time sufficient enough to remove the rust (approximately 4 hours) the panels were flushed with cold tap water and air dried. 3 of the panels (9, 10 and 11) were then coated with approximately 200 micrometer (μm) epoxy ballast tank coating while the fourth (3) was left uncoated for later analyses. A blast cleaned panel was coated with the same coating system and used as a reference panel in the later testing. This panel was marked Ref.

3.2 Detection of possible SPC F1 Surface Preparation residuals

The surface of test panel no. 3 was analysed for determination of eventual residual elements from the SPC F1 Surface Preparation Compound. A blast cleaned steel panel, flushed with cold tap water, was used as a reference. This panel was marked Ref. 2.

The analyses were performed as qualitative analyses by means of a JEOL JSM 5800 scanning electron microscope.

3.3 Condensation chamber test

Test panels nos. 9, 10 and 11 and the reference panel, marked Ref. were placed in a condensation chamber and exposed for six months. Every second month the panels were visually examined for evaluation of development of blisters and rust.

The test was carried out according to ISO 6270.

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4 RESULTS

4.1 Results from the element analyses

The results showed no difference between the elements detected on test panel 3 and those detected on the reference panel, F2. This indicates that no SPC F1 Surface preparation Compound residuals were left on the test panel's surface as a result of the performed rust removal.

4.2 Results from the condensation chamber test

The results are given in table 4-1 below. Pictures of the panels are given in Appendix A.

Table 4-1

| Panel no | Exposure time | Blister size / density | Exposure time | Blister size / density | Exposure time | Blister size / density |
|----------|---------------|------------------------|---------------|------------------------|---------------|------------------------|
| 9 | 2 months: | No blisters | 4 months: | No blisters | 6 months: | No blisters |
| 10 | 2 months: | No blisters | 4 months: | No blisters | 6 months: | No blisters |
| 11 | 2 months: | No blisters | 4 months: | No blisters | 6 months: | No blisters |
| Ref | 2 months: | No blisters | 4 months: | No blisters | 6 months: | No blisters |

5 COMMENTS / CONCLUSION

No residuals of SPC F1 could be detected as result of the element analyses.

No blisters developed on the panels during the condensation chamber test. The testing shows that the SPC F1 Surface Preparation Compound efficiently removes corrosion products from a corroded steel surface and further gives a satisfactory basis for later application of an epoxy coating system like the one used.

APPENDIX

A

PHOTO DOCUMENTATION

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