EEP21 Input paper

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Task Number Task 2

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Experience with use of fluoropolymer-based paint on marine structures

# Summary

To keep sharing the experience of using paint with fluoropolymer-like additives on the surface of marine structures which show accumulation of biological fouling.

## Purpose of the document

The input paper presented at the EEP20 “EEP20-48 Antifouling paint” reports the results achieved after using this kind of paint on submerged freeboard of floating beacons.

In this case an incrustation-resistant layer was applied on both internal and external surfaces of the metallic tube containing the level sensor of an hydrometric station to be installed in a critical area because of the proliferation of living organisms.

# DIFFICULTIES

Fixed or floating marine structures housing weather stations with submerged sensors and electronic equipment are affected by proliferating biological incrustations that tend to block their sensors.

In order to minimize this effect, marine structures are subjected to strict maintenance so as to lower the risk of common faults and loss of reliability of registered data due to the progressive obstruction of sensors.

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1. The submerged structure painted with standard product shows crustaceans (left half) and (right half) painted with antifouling blue colour has no biological incrustations.

# MATERIAL FEATURES

The paint scheme implemented by International Marine Coatings, consists firstly in a layer of anti-corrosion epoxy “Intershield 300”, followed by a second element which acts as a linking layer “Intersleek 731”, and lastly, a final coating with silicon elastomers base “Intersleek 970” which gives an elastic, soft and rubbery texture.

The difference between an enduring coating and the loss of its service life resides in the careful blend and application of the different components, which are presented in three separate containers as one single unit.

Once the components are mixed they must be utilized within a specific time frame, given its brief lifespan; therefore, it is essential to allocate time and amount of material in accordance with the work to be done before the material sets.

## Implementation experience

### Preparing the surface

In order to obtain the right adherence of the paint scheme, surfaces must be dry, clean and uncontaminated.

As tested, the inner and outer surfaces of the metallic tubes underwent abrasive blasting attaining a roughness of 85 micrometres.



1. The image shows abrasive blasting applied upon the inner surface of the tube.

### Paint application supervision

It is essential that coating intervals, weather parameters and the correct application of each of the three elements that compose this paint scheme are respected in order to prevent their deterioration during the painting process.

Two key variables to heed when supervising the process are: thickness of each layer and setting time, which depends on ambient temperature and humidity.

Final thickness of each layer must not be less than 150 microns when dry, i.e. 200 microns when still wet, which depends on the method of application, considering airless spray painting to be most recommended. Mechanical procedures such as brushing or rolling are only recommended for the repairing and maintenance of small surfaces.

For the paint to harden properly it must be foreseen that ambient temperature does not fall below 0°C (32°F) and humidity stays above 30%.

### Parameters registered during painting

It took three days to apply antifouling paint on the marine structure due to the impact of oscillating weather conditions upon setting time. The following values were determined:

* Surface temperature between 14°C and 20°C degrees
* Dew point between 3°C and 8°C degrees.
* Ambient humidity between 55 y 80%
* Setting time of each layers: from 6 to 18 hours.



1. Metallic tube with anti-corrosion epoxy coating applied on its internal and external surface.



1. Metallic tubes with final coating, ready to be mounted on floating beacon.

### Precautions about final coating on surface

As well as silicon elastomers, the finish coating on the surface is elastic (rubber), considerably soft and impact-resistant although it is exposed to mechanical damage, namely: scratches, dents and tearing. It is critical to protect the painted surface from any mechanical damage that may remove the paint uncovering a grip surface that allows crustaceans to adhere.