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## TECHNICAL SERVICE LABORATORY REPORT

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*To:* Paul Allcock *c.c.:*  
*From:* Antony Hudson  
*Report No:* TSLR 858  
*Date:* 23<sup>rd</sup> August 2013  
*Subject:* **Corrosion Resistance of Marine Flame Retardants**

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### SCOPE

FLAMETECT NX2 is a newly developed liquid flame retardant for use on marine textiles. The product has been approved by BTTG to comply with the IMO 2010 Fire Test Procedures Code for a variety of textiles. The product also contains an anti-microbial agent.

The purpose of this study is to evaluate the potential for metal corrosion when FLAMETECT NX2 is applied in a marine environment.

In addition to FLAMETECT NX2, the existing product FLAMETECT NITRO was also included in the study. FLAMETECT NITRO was a precursor in the development of FLAMETECT NX2, and utilises similar chemistry, though it does not contain any anti-microbial ingredients.

Alongside the flame retardants, controls samples comprising of tap water and a 5% sodium chloride solution respectively, were also tested.

## TEST METHOD

The corrosion tests were performed in duplicate for each sample, according to the following procedure:

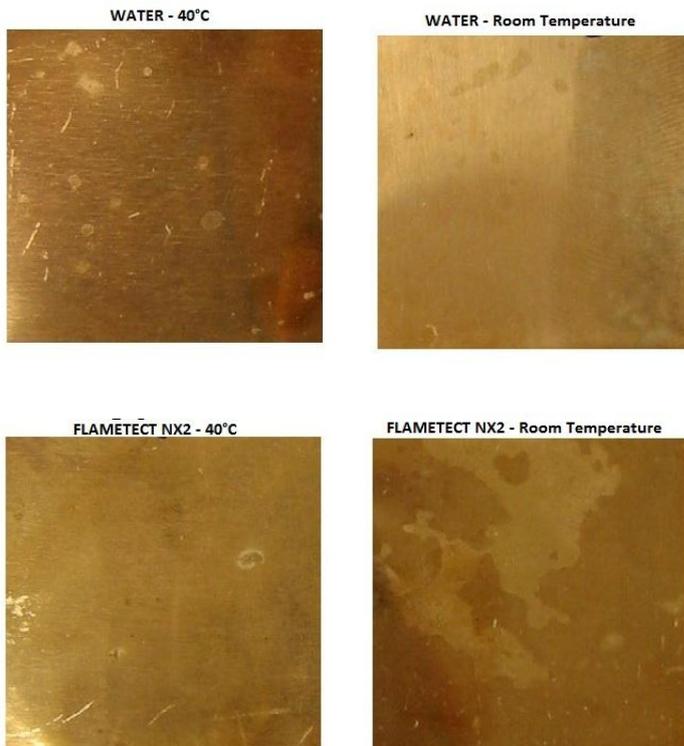
100g of the test sample is placed into a clean 125ml plastic container. A copper coupon measuring (50mm x 50mm x 0.092mm) is placed at the bottom of the container, and the lid is sealed.

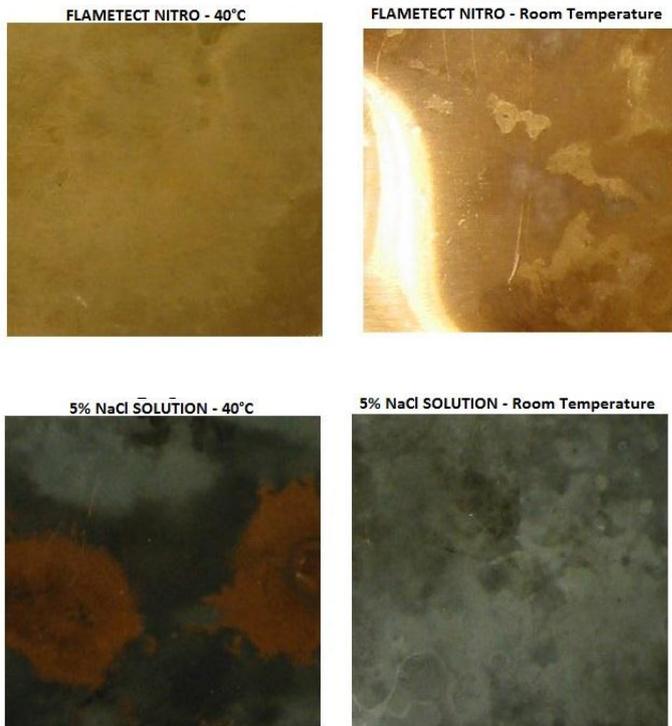
Each set of duplicate samples is stored at room temperature, and a further set of samples is stored at 40°C. All of the samples are stored for a period of 4 weeks, undisturbed except for brief and occasional opening of the containers for visual inspection.

At the end of the test period, the copper coupons are removed from the liquid, and immersed in sulphuric acid at room temperature for no longer than 30 seconds to remove loose corrosion products. The coupons are then washed immediately with running water and dried. The coupons are then examined for surface defects.

## RESULTS

Photos of the test panels after 4 weeks were as follows:





## CONCLUSIONS

Although showing some minor perforations and pitting, the copper coupons immersed in both FLAMETECT NX2 and FLAMETECT NITRO did not show significantly more corrosion damage than the coupons stored in tap water. By comparison, the coupons stored in a 5% salt solution showed major symptoms of corrosion.

The conclusion of the study therefore, is that no significant corrosion issues would be expected from the treatment of textiles with FLAMETECT NX2 in a marine environment.