

Lucite
International
Cassel Works
PO Box 8
Billingham
TS23 1LE

From: C. Rule
Shift Analyst

To: D. P. Lawson Copies to: Lab database

Our ref.	Your ref.	Ext.	Date
Cassel/13/01		5112	30/10/13

A Study of the effects of ROV on Resimac – Resichem 511-UCEN Activator as a lining material used on the ROV bund.

Background

The lining used to line the ROV bund has not been effective. This lining material should be able to withstand the contents of the bund without degrading. This investigation was to find out if a component of the contents held in the bund (i.e. ROV) would degrade a potential new lining, Resichem 511-UCEN Activator, in anyway over time.

Investigation

The samples were weighed and a photo of the top, bottom and side of each sample was taken. Four beakers were then labeled up and two filled with ROV and two filled with Oleum. The samples were then immersed in the acid solutions and left to soak for a week, they were flipped every 24 hours and monitored for initial changes. After a week the samples were removed and cleaned and a visual check for corrosion carried out. They were then dried off and re-weighed to see if any weight loss/gain had occurred. When this was done they were placed back into the correct beaker with fresh solution and checked on a weekly basis for a period of four weeks.

Results

	Resimac UCEN-511 Red - In Oleum	Resimac UCEN-511 Grey - In Oleum	Resimac UCEN-511 Red - In ROV	Resimac UCEN-511 Grey - In ROV
Initial Weight 24/09/2013	30.3108	30.6088	31.2694	30.8286
Weight in (g) after 1 Week	30.3034	30.6016	31.2859	30.8500
Weight in (g) after 2 Week	30.2867	30.5757	31.2865	30.8567
Weight in (g) after 3 Week	30.2495	30.5486	31.2748	30.8350
Weight in (g) after 4 Week	30.2462	30.5486	31.2737	30.8317
Total weight difference in (g) after 4 Weeks	-0.0646	-0.0602	0.0043	0.0031

24/09/2013 Week 1	Resimac UCEN-511 Red - In Oleum	Resimac UCEN-511 Grey - In Oleum	Resimac UCEN-511 Red - In ROV	Resimac UCEN-511 Grey - In ROV
Initial Observations @ 10am	Instant colour change to purple/brown	Instant colour change to dark brown	No instant change	No instant change
10:30	Leakage of colour into solution	Leakage of colour into solution	Purple/brown colour change	Colour change to dark brown
11:00	Further Leakage of colour into solution	Further Leakage of colour into solution	Leakage of colour into solution	Leakage of colour into solution
11:30	Further Leakage of colour into solution	Further Leakage of colour into solution	Further Leakage of colour into solution	Further Leakage of colour into solution
12:00	No further leakage or colour change	No further leakage or colour change	No further leakage or colour change	No further leakage or colour change
12:30	No further change	No further change	No further change	No further change
13:00	No further change	No further change	No further change	No further change

01/10/2013 Week 2	Resimac UCEN-511 Red - In Oleum	Resimac UCEN-511 Grey - In Oleum	Resimac UCEN-511 Red - In ROV	Resimac UCEN-511 Grey - In ROV
Initial Observations @ 10am	Instant colour change to purple/brown	Instant colour change to dark brown	No instant change	No instant change
10:30	No further change	No further change	No further change	No further change
11:00	Slight leakage of colour into solution	Slight leakage of colour into solution	No further change	No further change
11:30	Further Leakage of colour into solution	No further change	No further change	Slight colour change to dark brown
12:00	No further change	No further change	No further change	No further change
12:30	No further change	No further change	No further change	No further change
13:00	No further change	No further change	No further change	No further change

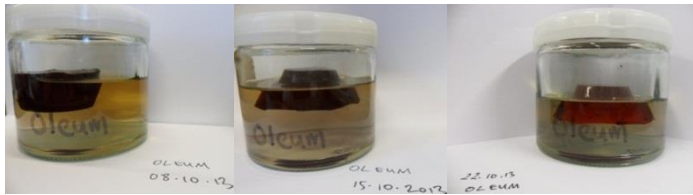
08/10/2013 Week 3	Resimac UCEN-511 Red - In Oleum	Resimac UCEN-511 Grey - In Oleum	Resimac UCEN-511 Red - In ROV	Resimac UCEN-511 Grey - In ROV
Initial Observations @ 10am	Slight leakage of colour into solution	Instant colour change to purple/brown & slight leakage of colour into solution.	No instant change	Colour change to dark brown
10:30	Further Leakage of colour into solution	Further Leakage of colour into solution	Slight leakage of colour into solution	Very slight leakage of colour into solution
11:00	Further Leakage of colour into solution	Further Leakage of colour into solution	No further change	No further change
11:30	No further change	No further change	No further change	No further change
12:00	No further change	No further change	No further change	No further change
12:30	No further change	No further change	No further change	No further change
13:00	No further change	No further change	No further change	No further change

15/10/2013 Week 4	Resimac UCEN-511 Red - In Oleum	Resimac UCEN-511 Grey - In Oleum	Resimac UCEN-511 Red - In ROV	Resimac UCEN-511 Grey - In ROV
Initial Observations @ 1pm	No instant change	Colour change to dark grey	No instant change	Colour change to dark brown/brick red.
13:30	Slight leakage of colour into solution	Leakage of colour into solution	No further change	Very slight leakage of colour into solution
14:00	No change	No change	No further change	No further change
14:30	further leakage of colour	further leakage of colour	No further change	No further change
15:00	No change	No change	No further change	No further change
15:30	No further change	No further change	No further change	No further change
16:00	No further change	No further change	No further change	No further change

Original red samples (Oleum)



Oleum solution after 2, 3 and 4 weeks



Samples removed and dried after 1 week



Samples removed and dried after 2 weeks



Samples removed and dried after 3 weeks



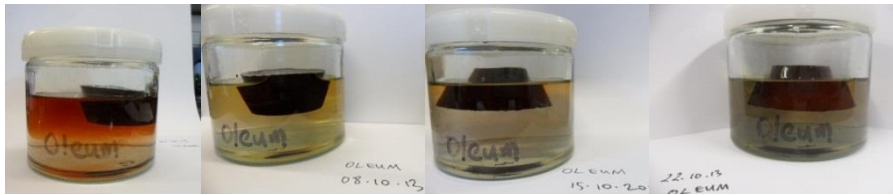
Samples removed and dried after 4 weeks



Original grey Samples (Oleum)



Oleum solution after 1, 2, 3 and 4 weeks



Samples removed and dried after 1 week



Samples removed and dried after 2 weeks



Samples removed and dried after 3 weeks



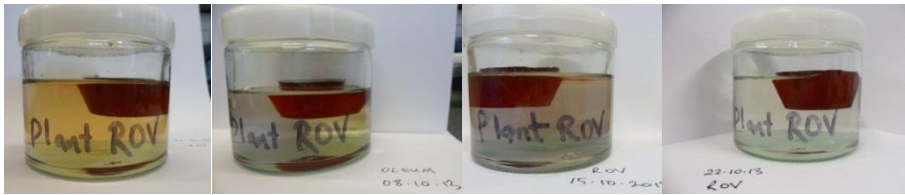
Samples removed and dried after 4 weeks



Original red samples (ROV)



ROV solution after 1 week



Samples removed and dried after 1 week



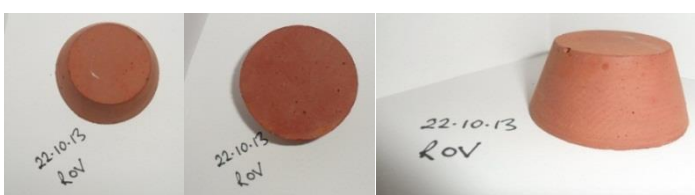
Samples removed and dried after 2 weeks



Samples removed and dried after 3 weeks



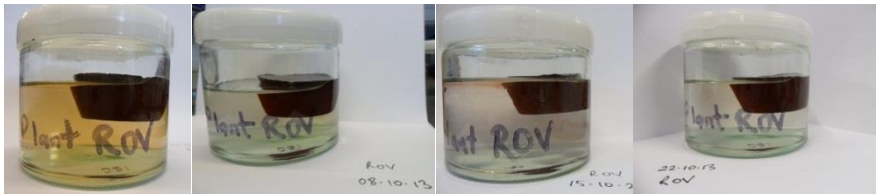
Samples removed and dried after 4 weeks



Original grey samples (ROV)



ROV solution after 1 week



Samples removed and dried after 1 week



Samples removed and dried after 2 weeks



Samples removed and dried after 3 weeks



Samples removed and dried after 4 weeks



Conclusion

It would appear that the immersion into a solution of Oleum, over a four week period, has little or no effect on the test sample, with the exception of the discoloration seen in the photos in the results section above. The test sample lost a negligible amount of weight over the four weeks, 0.06g, there were no other visible signs of corrosion on the sample.

There was a very negligible increase in the overall weight of the samples immersed in the ROV, 0.004g, this could be due to the sample absorbing some of the solution which resulted in the slight weight difference, and again, other than visual discoloration and loss of sheen, there was no evidence of corrosion on test samples.