



Corrosion (Weight Loss) Coupons

Summary:

Corrosion (Weight Loss) Coupon analysis performed by Oilfield Labs of America closely follows the prescribed methodologies prescribed in ***NACE SP0775 Standard Practice Preparation Installation Analysis and Interpretation of Corrosion Coupons in Oilfield Operations***. A pre-weighed piece of metal of a known alloy is inserted in a desired system for a specified length of time. After the coupon has been exposed, it is sent back into the lab for cleaning, and re-weighing to determine the weight loss due to corrosion. It is highly recommended that the metal coupons be purchased pre-weighed from OLA. It is best practice to weigh the coupons in both of the steps on the same 4-place balance. The summary of the process is as follows.

- A pre-weighed, uniquely numbered coupon is purchased from OLA before being placed into the system being tested. The coupon is then placed into the desired system, being careful again to record the date installed. Once the desired exposure time has gone by, it is best to remove the exposed coupon and place it back into its respective envelope to return to the lab, making sure to record the date removed.
- Once the exposed coupon is received back into the lab, it is removed from the envelope and carefully inspected to see that the coupon has not been damaged and that the unique number can be read.
- The coupon is then placed into a jar of clean reagent grade xylene to remove any organic deposition.
- The coupon is then placed into a jar of clean (1:1) hydrochloric acid solution for no more than 20 seconds to remove any acid soluble deposition.
- Finally the coupon is placed into a bead blaster that has been set to 35 psi and tumbled for no more than 1 minute per coupon, no more than 15 coupons at a time. After being bead blasted, the coupon is then weighed again. This is the Final Weight.

Calculations:

All results will be reported in mpy (mils per year). The equations below will be used by using the respective weights in grams, exposure dates in days, and a coupon factor based on the surface area and the density of the alloy being used.

$$\text{mpy} = (W*365*1,000)/(\text{ATD}*(2.54)^3)$$

Where:

W = Initial Weight – Final Weight = weight loss in grams.

A = initial exposed surface area of coupon in square inches.

T = exposure time in days.

D = Density of coupon metal in grams per cubic centimeter.