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## Total Suspended Solids by Membrane Filtration (Millipore)

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### **Summary:**

Total Suspended Solids by Membrane Filtration (Millipore) analysis performed by Oilfield Labs of America closely follows the prescribed methodologies prescribed in ***NACE Standard 0173 Methods for Determining Quality of Subsurface Injection Water Using Membrane Filters - Appendix C-Supplementary Suspended Solids Test Methods***. A 0.45 $\mu$  cellulose-ester filter, 47 mm wide is required for this test to be performed properly. It is highly recommended that the filters be purchased pre-weighed from OLA. It is best practice to weigh the filters in all of the steps on the same 4-place balance. The summary of the process is as follows.

- A pre-weighed filter is purchased from OLA and a measured volume of the sample stream to be measured is passed through the filter being careful to record the volume used. It is best to dry the filter before putting it back into the supplied petri dish to return to the lab.
- Once the filter is received back into the lab, it is dried and weighed, this is the Initial Weight. Then at least 100 mls of deionized water is passed through the filter to remove any water soluble salts. These are not used in the calculation of TSS. The sample is dried and then weighed. This is the H<sub>2</sub>O Weight.
- 100 mls of xylene is passed through the filter or until the solvent runs clean. The filter is then dried and weighed. This is the Xylene Weight.
- 100 mls of a 25% glacial acetic acid is then passed through the filter. The filter is then dried and weighed. This is the Acetic Acid Rinse Weight.
- 100 mls of a 15% hydrochloric acid solution is passed through the filter. The filter is then dried and weighed. This is the HCl Rinse Weight.

### **Calculations:**

All results will be reported in mg/L. The equations below will be used by using grams the respective weights and mL to report the amount of sample filtered.

- $1000 * (\text{H}_2\text{O Weight} - \text{Initial Weight}) * (1000 / \text{Volume of Sample (mL)}) = \text{“Total Suspended Solids (TSS)”}$
- $1000 * (\text{H}_2\text{O Weight} - \text{Xylene Weight}) * (1000 / \text{Volume of Sample (mL)}) = \text{“Hydrocarbon Solubles”}$  (Hydrocarbons and Organics)
- $1000 * (\text{Xylene Weight} - \text{Acetic Acid Rinse Weight}) * (1000 / \text{Volume of Sample (mL)}) = \text{“Carbonates”}$
- $1000 * (\text{Acetic Acid Rinse Weight} - \text{HCl Rinse Weight}) * (1000 / \text{Volume of Sample (mL)}) = \text{“Iron Oxide/Sulfides”}$
- $1000 * (\text{Xylene Weight} - \text{HCl Rinse Weight}) * (1000 / \text{Volume of Sample (mL)}) = \text{“Total Acid Soluble Material”}$
- $1000 * (\text{H}_2\text{O Weight} - \text{HCl Rinse Weight}) * (1000 / \text{Volume of Sample (mL)}) = \text{“Acid Insoluble”}$

### **Reporting:**

All results are reported out both in numeric tabular form as well as graphically in a pie chart format.