Tips for Turbidity Accuracy

Turbidity is cloudiness in water and can be interpreted as an absence of clarity or brilliance. It is caused by suspended and colloidal matter such as clay, silt, organic and inorganic matter and microscopic organisms and algae. Turbidity is determined by measuring the amount of light scattered when light is passed through a sample.

When using a nephelometric turbidimeter:

1. Samples should be collected in a clean glass or polyethylene container.
2. Samples should be analyzed immediately after collection, because the turbidity can change if the sample is stored.
3. Dirty, scratched, or chipped sample tubes can cause high readings. Sample tubes should be acid washed periodically and lightly oiled with silicon to mask imperfections in the glass. Badly scratched or chipped tubes should be discarded. Always index tubes so they may be oriented consistently in the turbidity meter chamber.
4. Excessive color in the sample, which is over 15 color units, can cause low turbidity readings, since color will absorb light.
5. The sample should be gently inverted a few times for mixing before reading the turbidity, taking care not to introduce air bubbles. Air bubbles in the sample will cause high turbidity readings. A vacuum purge from a syringe attached to a rubber stopper in the sample cell is the best way to remove air bubbles. The best way to release trapped air bubbles attached to glassware sidewalls is to stopper the tube, hold horizontally, and very gently "roll" tube.
6. Any carbon in the sample will also cause low turbidity results, since carbon absorbs light.
7. Particles which cause turbidity are often electrically charged, therefore, electric fields around motors may effect turbidity readings.
8. Vibrations may increase light scattering and result in high turbidity readings. The turbidimeter must be located on a bench with a solid footing.
9. After sample preparation and handling is completed, be sure to wipe all fingerprints from cuvette/sample tube with a lint free wipe before inserting into turbidimeter chamber.
10. Turbidity standards have a shelf life. Formazin standards have very limited shelf life, discard after calibrating. Pourable pre-manufactured standards have a 9 month shelf life. Even sealed standards supplied by the manufacturer can change with time. Consult the manufacturer for replacements or calibration verification.