

***Turbidimeter Calibration and  
Measurement with Hach Meter 2100P***

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**Calibration Check**

- 1) Press the power key (bottom right) to turn the meter on. Place the instrument on a flat, sturdy surface. Do not hold the instrument while making measurements.
- 2) Set the range to 

AUTO RNG
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 (displayed on the screen) by pressing the RANGE key.
- 3) Continue pressing until see **AUTO RNG**
- 4) Thoroughly clean the outside of the Gelex vials (with a kim wipe) and then apply a thin coating of silicone oil. Use 1 drop of silicon oil per vial. Apply oil uniformly by wiping with the soft cloth (black cloth in the turbidimeter kit). A thin layer of oil fills in and masks minor scratches and other imperfections in the glass. **Avoid application of excess oil!!** Applying excess oil may retain dirt and contaminate the instrument's cell compartment. Stray light and air bubbles in the samples are other potential sources of incorrect measurement.

**“DON'T touch the glass. Hold by the lid.”** This minimizes the risk getting dirt, scratches and fingerprints on the glass which can cause faulty measurements.

- 5) Place the 0-10 NTU Gelex standard in the cell compartment so that diamond on the vial aligns with the orientation mark on the instrument. **Close the sample lid.**
- 6) Press READ. The display will show '----- NTU' and then the turbidity in NTU (Nephelometric Turbidity Units). Record the turbidity after the lamp (bulb) symbol turns off. Remove the vial from the instrument.
- 7) Repeat the steps 3 through 6 for the second Gelex standard i.e., 0-100 NTU.
- 8) If both the Gelex standards read within the 5% of the label value go to step 10.
- 9) *If any of the Gelex standard reading are not within 5% of the label values try to clean the vials again. Make sure no dust, fingerprints, paper fibers etc. are present on the vial. If it doesn't work go ahead with the sample measurement and report the problem to the lab personnel.*

### **Sample Measurement**

- 10) Make sure the sample has been brought to the room temperature before proceeding.  
Cold samples tend to produce condensation (fogging) on the outside of the sample cell when measuring in relatively warm/humid environment.
- 11) Invert the sample bottle to mix the particles that might have settled during sample storage and transport.
- 12) Pour the sample into the sample cell and rinse it with the sample 2 times with cap on it.
- 13) Pour the sample into the sample cell to start the measurement.
- 14) Wipe the cell with kim wipes to remove water spots and fingerprints. Apply thin film of silicone oil as described in step 3.
- 15) Turn the power on if you had turned it off after calibration check or if the meter turned itself off (meter turns itself off after 5.5 minutes of no activity).
- 16) Insert the sample cell in the instrument cell compartment so that the orientation mark on the sample cell (white diamond) aligns with the raised orientation mark in front of the compartment of the meter. Close the lid.
- 17) Make sure the 

AUTO RNG
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 is still showing on the bottom of screen.
- 18) Press READ. The display will show '----- NTU' and then the turbidity in NTU. Record the turbidity after the lamp symbol turns off.  
  
18a) Drain the sample cell; refill the sample cell with the water sample. Follow step #12 through 18a to obtain three replicate readings in total.
- 19) Only one calibration check per day is necessary. You don't have to check the calibration before each sample.
- 20) After measurement, rinse the dirty sample cells with tap water (3 times). Follow the sample cleaning procedure described in the next step.

### **Sample Cell Cleaning**

- 21) Make the soap solution: Add 3 teaspoons of the **conc.** soap solution to about ¼ gallons of tap water.
- 22) Soak the sample cell and the cap in soap solution for 15 minutes. Rinse the sample cell and the cap with tap water for at least 5-6 times. Then rinse it with DI water 3 times (Both inside and outside of the cell; use the DI water bottle for rinsing). Let the stuff dry over a paper towel till it is **completely dry**. Store the sample cell in the turbidity meter kit until next measurement. Handle the sample cell only by the top neck to minimize dirt, scratches and fingerprints, as these may cause faulty measurement in future.