# HACH 2100P

## StablCal Calibration

# Calibration

**Calibration of the 2100P Turbidimeter is based on formazin, the primary standard for turbidity. A formazin recalibration should be performed at least once every three months.**

**Hach Company only recommends the use of StablCal® Stabilized Formazin or formazin standards for the calibration of Hach turbidimeters.**

# Prepare Sample Cells

1. Thoroughly clean the sample cell.

**2.** Apply a small bead of silicone oil from the top to the bottom of the cell-- just enough to coat the cell with a thin layer of oil.

**3.** Using a soft, lint-free cloth, spread the oil uniformly, then wipe off the excess so that only a thin coat of oil is left. The cell should appear nearly dry with little or no visible oil.

# Calibration with StablCal stds.

**1.** Slowly invert the sample cell 2-3 times.

**2.** Allow the standard to stand undisturbed for 2-3 minutes.

**3.** Prepare the vial for measurement using traditional preparation techniques. This usually consists of oiling the vial. This step will eliminate any optical variations in the sample vial.

**4.** Let the vial stand for one minute. The standard is now ready for use

**Important Note: These instructions do not apply to <0.1-NTU* StablCal Standards; <0.1NTU StablCal Standards should NOT be shaken or inverted.**

# Calibration with StablCal stds.

**1.** use StablCal <0.1 NTU standard.

**2.** Insert the sample cell in the cell compartment aligning the orientation mark on the cell with the mark on the front of the cell compartment. Close the lid. Press **I/O**. **Note:** Choose signal average mode option (on or off) before pressing **CAL** – the **SIGNAL AVERAGE** key is not functional in calibration mode.

**3.** Press: **CAL.** The **CAL** and **S0** icons will be displayed (the **0** will flash). The 4-digit display will show the value of the S0 standard for the previous calibration. If the blank value was forced to 0.0, the display will be blank (as shown). Press →to get a numerical display.

# Calibration with StablCal stds.

**4.** Press: **READ.** The instrument will count from 60 to 0, (67 to 0 if signal average is on), read the blank and use it to calculate a correction factor for the 20 NTU standard measurement. the display will automatically increment to the next standard. Remove the sample cell from the cell compartment.

**5.** The display will show the **S1** (with the1 flashing) and **20 NTU**or the value of the S1 standard for the previous calibration. Insert the 20 NTU Stablcal std. sample cell into the cell compartment by aligning the orientation mark on the cell with the mark on the front of the cell compartment. Close the lid.

**6.** Press: **READ** The instrument will count from 60 to 0 (67 to 0 if signal average is on), measure the turbidity and store the value. The display will automatically increment to the next standard. Remove the sample cell from the cell compartment.

# Calibration with StablCal stds.

**7. Follow the previous procedure in steps 5 and 6 for the 100 NTU and 800 NTU StablCal stds.** The display will show the **S2** (with the 2 flashing) for the 100 NTU std and will show S3 (with the 3 flashing) for the 800 NTU std.

**8**. When the 800 NTU std is finished reading the display will increment back to the S0 display. Remove the sample cell from the cell compartment.

**9.** Press: **CAL** to accept the calibration. The instrument will return to measurement mode automatically. **Calibration is complete.**

# Using Gelex® Secondary Turbidity Standards

The instrument comes with Gelex Secondary Standards which are particulate suspensions similar to formazin primary standards in light scattering characteristics. NTU values on the Gelex standards indicate the range for which they should be used. Due to minor variations in glass and individual instrument optical systems, the true value of the Gelex standards must be determined against formazin in the same instrument they will be used with for later calibration checks.

# Assigning Values to Gelex Standards

**1.** Calibrate the instrument with StablCal Formazin standards.

**2.** Select automatic range mode using the **RANGE** key.

**3.** Thoroughly clean the outside of the Gelex vials and apply a thin coating of silicone oil.

**4.** Place the 0-10 NTU Gelex standard in the cell compartment so the diamond on the vial aligns with the orientation mark on the instrument. Close the sample lid.

**5.** Press: **READ**. Record the displayed value, remove the vial from the instrument and mark the value on the band near the top of the vial.

**6.** Repeat *step 3* through *step 5* for the other Gelex standards, being Careful to orient the cells properly.

# Using Gelex® Secondary Turbidity Standards

**The 2100P Turbidimeter does not require formazin calibration before every measurement as some turbidimeters do but you need to check the instrument calibration using the appropriate Gelex Secondary Standard.**

**If the reading is not within 5% of the previously established value, recalibrate the instrument with**

- **StablCal Stabilized Formazin Primary Standard or formazin primary standard**

# 2100P Taking Readings

**1.** Collect a representative sample in a clean container. Fill a sample cell to the line taking care to handle the sample cell by the top. Cap the cell.

**2.** Wipe the cell with a soft, lint-free cloth to remove water spots and fingerprints.

**3.** Apply a thin film of silicone oil. Wipe with a soft cloth to obtain an even film over the entire surface.

**4.** Press: **I/O**. The instrument will turn on. Place the instrument on a flat, sturdy surface. Do not hold the instrument while making measurements.

**5.** Insert the sample cell in the instrument cell compartment so the diamond or orientation mark aligns with the raised orientation mark in front of the cell compartment. **Close the lid.**

**6.** Select automatic range selection by pressing the **RANGE** key. The display will show **AUTO RNG** when the instrument is in automatic range selection.

**7.** Select signal averaging mode by pressing the **SIGNAL AVERAGE** key. The display will show **SIG AVG** when the instrument is using signal averaging. Use signal average mode if the sample causes a noisy signal (display changes constantly).

**8.** Press: **READ** The display will show **- - - - NTU**, then the turbidity in NTU. Record the turbidity after the lamp symbol turns off.