

TSS tips and tricks September 2021

You know how to run these tests, but for improved accuracy here are some tips

TSS:

Make sure your balance is accurate, you need a 4 place analytical balance that you verify each month to show it's meeting the accuracy you need. You need at least 1 weight that is class 1 or 2 and was checked within the last 5yrs by an outside metrology company. Using a weight near the range your sample weights are recorded is best.

Do not use filter equipment that does not meet the method equipment criteria. Make sure your filter frit is not clogged/has a build up of gunk in it. Replace these frits when needed.

Use magnetic or clamped equipment, do not use gooch crucibles or filters with widely spaced holes. Use aluminum pans if you can, these are easy to label and cool quickly.

Make sure the dry weight of the new filter is taken and is accurate. Predry these for ~1hr and take the weight after it's cooled in the dessicator. *If using pre-dried filters verifying the weight provided or analyze a blank (500ml DI water sample). The comparison would need to show it's within 0.5mg to the certificate (0.0005g). If they provide this certificate that is also acceptable.*

Remember to use small forceps to handle the filters to avoid tearing them.

Seat the filter with a squirt of DI water.

Use enough sample. Filter 500ml if your effluent is low in solids. With a 1mg dry weight and 500ml sample, your RL will be 2mg/L which meets DNR specifications.

Make sure that sample is well mixed. Avoid letting the solids settle, do a quick pour and mixing well. If pipetting influents/high solid samples, use a wide bore pipet, take from a sample that is mixed on magnetic stirrer.

Rinse all the equipment to remove stuck on solids. Make sure any solids from the graduated cylinder and the tower of the filtration apparatus is well rinsed. Three times with DI water.

Dry the sample at 103-105°C. If the temperature was < 103, bring it back to the right range and dry for the minimum time. If it was more than 105, re-do the analysis from a sample that was stored in the fridge after addressing the temperature issue if the sample is within the 7 day hold time. If the oven is repeatedly outside the allowable range this must be resolved, if the oven is old and cannot be repaired then it's likely time to be replaced. Driving off the water (and not the solid material) is the key.

If you do not dry WW samples for at least 8hrs, then you need to do the constant weight check. Repeat the dry, cool and reweigh until change is within +/- 0.0005g or 4% whichever is less.

Use the weight of the room temperature (from dessicator) TSS filter or filter with the pan.

Remember that humidity or a pad/pan that is cooling off while being weighed will cause problems with getting an accurate TSS result.

Did you know the PTs have limits that are pretty tight (fixed limits)? For example, if the PT was made to be 100mg the upper limit is likely ~110%, so if you report 110.1 that could cause your PT (if it's 100mg) to fail. Usually it's best to report 3 significant figures (99.6 or 109 for example), but also follow the PT vendor instructions.

Record time in, date in, time out, date out, initials and be able to show the oven temp was within the range on working days when TSS samples are in the oven being dried.