

# VoluCheck - PTSA System Volume Verification Kit

PTSA is a colorless fluorescent dye that has been widely used for the determination of water volume for open and closed recirculating systems. The Pyxis **VoluCheck** PTSA System Volume Verification Kit comprises a laminated calculation and instruction sheet, Quantity 10 - 0.45 micron syringe filters and the following pre-weighted PTSA solutions: The Pyxis **SP-350, SP-380 Series, SP-400, SP-710 Series or SP-910** units should be used for measurement of the PTSA residual.



## VoluCheck – Pyxis PTSA Volume Verification Kit

<b>Kit Name</b>	<b>Bottles in the Kit</b>	<b>Bottle Size</b> <i>Used for Calculation</i> <i>Will Vary from Actual Content</i>	<b>Volume Treated Per Bottle</b>	<b>System Volume (gal) Range</b>
<b>VoluCheck 1K</b>	10	2 oz.	One bottle to 1,000 gal → 100 ppb PTSA increase.	1,000 – 10,000 US Gallons
<b>VoluCheck 10K</b>	10	4 oz.	One bottle to 10,000 gal → 100 ppb PTSA increase.	10,000 - 100,000 US Gallons
<b>VoluCheck 100K</b>	4	16 oz.	One bottle to 100,000 gal → 100 ppb PTSA increase.	100,000 - 400,000 US Gallons

- Includes 1-0.45micron Filter Syringe / Instruction & Calculation Sheet / Prepackaged PTSA Dosing Bottles
- Bottle liquid volume will vary from Bottle Size Used for Calculation

## Pyxis SP-350 For Testing PTSA

Fluorometer Name	Part #	Item Description	Price \$/each
SP-350	50206	Handheld PTSA Only (0-300ppb)	Contact Pyxis Lab For Price

### **VoluCheck Application Details**

The PTSA volume verification method is suitable in most recirculating water systems. Closed systems treated with high levels of nitrite (>500 ppm) or containing high level suspended solids (>100 NTU) should be pre-flushed before using the PTSA sizing method to accurately determine the system volume. These elevated levels can interfere with the PTSA measurement. System flushing until nitrite residual is below 100ppm or turbidity is below 40 NTU is recommended. The Pyxis SP-350 can be used to check if the water is suitable for the method.

### **Procedure**

1. Use SP-350 to measure the PTSA background. Fill the SP-350 sample cell with the system water. Record the initial background reading as ppb PTSA. If the system water is heavily colored or turbid, filter the water with the 0.45 micron syringe filter.
2. Make a rough estimate of the system volume range to determine which PTSA solution bottle should be added according to information in the table above.
3. Add the first full bottle from your **VoluCheck** kit to the system. Let the system recirculate and mix for 30 minutes (if the system recirculation rate is low and has many stagnant areas, allow longer mixing time). If necessary, add second or more full bottles to achieve the ideal target PTSA concentration in the range of 80 to 260 ppb. Record the total PTSA solution added in Ounces (oz.) and the final PTSA concentration. Calculate system volume by below.

## VoluCheck 1K Kit Formula

**Volume (US Gallons) =**

**(Bottle Size Ounces Added x 50,000) / (PTSA in ppb Final – PTSA ppb Background)**

## VoluCheck 10K Kit Formula

**Volume (US Gallons) =**

**(Bottle Size Ounces Added x 250,000) / (PTSA in ppb Final – PTSA ppb Background)**

## VoluCheck 100K Kit Formula

**Volume (US Gallons) =**

**(Bottle Size Ounces Added x 625,000) / (PTSA in ppb Final – PTSA ppb Background)**

**Tips**

1. If the system is already treated with a PTSA traced product, you can still use the VoluCheck method to determine the system volume if the baseline PTSA level is less than 140 ppb. If not, consider flushing the system first to reduce baseline PTSA residual before proceeding with the VoluCheck test.
2. This PTSA sizing method is not suitable for systems treated with Quaternary Amines or other Cationic Biocides & Polymers such as Bellacide 355.
3. Up to 2 ppm free chlorine will not affect the PTSA reading.
4. The method is suitable for the chilled and hot (< 200 °F) water systems.
5. PTSA loss by system demand is uncommon. If a stable reading cannot be established in 6 hours, please check if fresh makeup water is being added due to unknown leaks.
6. Reaching a stable plateau reading slowly may indicate that the system has massive stagnant sections.
7. If the volume being tested is greater than 400,000 gallons, additional **VoluCheck 100K** kits will be necessary.
8. The presence of elevated color and turbidity in the sample can attenuate the excitation and emission light strength, resulting in a lower PTSA reading. Dyed closed loop samples may also cause a negative interference. In this situation, you should dilute your sample with DI water prior to testing, then multiply your device reading by dilution factor. (ie. 10 parts DI Water to 1 part Sample Water = Multiply Final PTSA reading x 10)