AQUABOND
Chemistry for Tomorrow

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ABI Jar Test Bulletin

What is a jar test?

A **jar test** is a bench-scale simulation of your coagulation–flocculation–settling process. You take a representative sample of your raw water, dose different amounts (and sometimes types) of coagulant into several jars, mix, let them flocculate and settle, then compare:

1. **Settled turbidity / clarity**
2. **Floc size, strength, and settling speed**
3. **pH and alkalinity impact**
4. **Sludge volume and character**

For Aqua PAC, jar testing is how you:

- Select PAC vs alum or ferric
- Find the **optimal PAC dose** for that specific water
- Fine-tune polymer dose and pH adjustment
- Prove performance and savings to the customer

Jar testing is the bridge between “general dosage guidelines” and **tailored application**.

Jar Testing with Aqua PAC

While general dosage guidelines are useful, every water source is unique. Aqua PAC performance is best optimized through jar testing—a simple bench-scale procedure that simulates your coagulation, flocculation, and settling process. By testing several Aqua PAC doses side-by-side, operators can quickly identify the optimum dose that delivers:

- Maximum turbidity and colour reduction
- Strong, dense, fast-settling floc
- Minimum sludge volume
- Lowest practical chemical cost

Here’s a clean, practical procedure you can publish as “Jar Testing with Aqua PAC”.

Collect a representative water sample

Start here

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The jar test is only as good as the sample you use.

- Take raw water from the same point your plant draws from
- Avoid surface scum or settled sludge—sample mid-depth
- Collect enough volume (6–8 L) for multiple jars
- Measure baseline **pH, turbidity, temperature, alkalinity**

Prepare your test jars

Setup

Use identical jars and volumes so results are comparable.

- Fill 4–6 jars with the same volume (e.g., 1,000 mL each)
- Label jars with planned PAC doses (e.g., 20, 40, 60, 80 mg/L)
- Place jars on a gang stirrer or use consistent manual mixing

Prepare Aqua PAC dosing plan

Recommended

Choose a dose range that brackets your expected optimum.

- Use your general guidelines (e.g., 10–60 mg/L for drinking water, 50–250 mg/L for industrial)
- Convert target doses to mL or µL of PAC based on product strength
- Plan at least one **lower**, one **mid**, and one **higher** dose

Perform rapid mix (coagulation)

Critical

Rapid mixing ensures PAC is evenly dispersed and reacts quickly.

- Start stirrer at high speed (e.g., 200–300 RPM) for 30–60 seconds
- Add the calculated PAC dose to each jar during rapid mix
- Keep timing consistent across all jars

Perform slow mix (flocculation)

Observe floc

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Gentle mixing allows flocs to grow without breaking.

- Reduce speed to 30–60 RPM for 10–20 minutes
- Watch floc formation: size, density, and how quickly it appears
- Note which dose produces **strong, dense, well-formed floc**

Allow settling

Key comparison

Settling reveals true liquid–solid separation performance.

- Stop mixing and let jars sit undisturbed for 20–30 minutes
- Observe sludge blanket height and clarity of supernatant
- Measure settled turbidity with a turbid meter if available

Evaluate results and choose optimum dose

Decision point

Pick the dose that balances clarity, sludge, and chemical cost.

- Compare turbidity, colour, and visual clarity between jars
- Note sludge volume and character (dense vs fluffy)
- Choose the lowest PAC dose that achieves target clarity and stable floc
- Record pH changes and adjust future dosing if needed

Validate in the plant

Apply

Use jar test results to set trial doses and fine-tune on site.

- Start plant dosing at the selected jar test optimum
- Monitor turbidity, sludge, and polymer usage
- Adjust slightly up or down based on real-world performance

  Repeat jar tests when raw water quality changes significantly

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