Flocculants & Coagulants

Key Concept!

Definitions:

Coagulants:

- Chemicals that neutralize the electrical charge on suspended particles (often negative).
- Promotes clumping into microflocs.
- Makes particles unstable & sticky.
- Acts FAST.
- E.g., Alum, Ferric salts.

Destabilization (Coagulation) leads to Bridging (Flocculation)

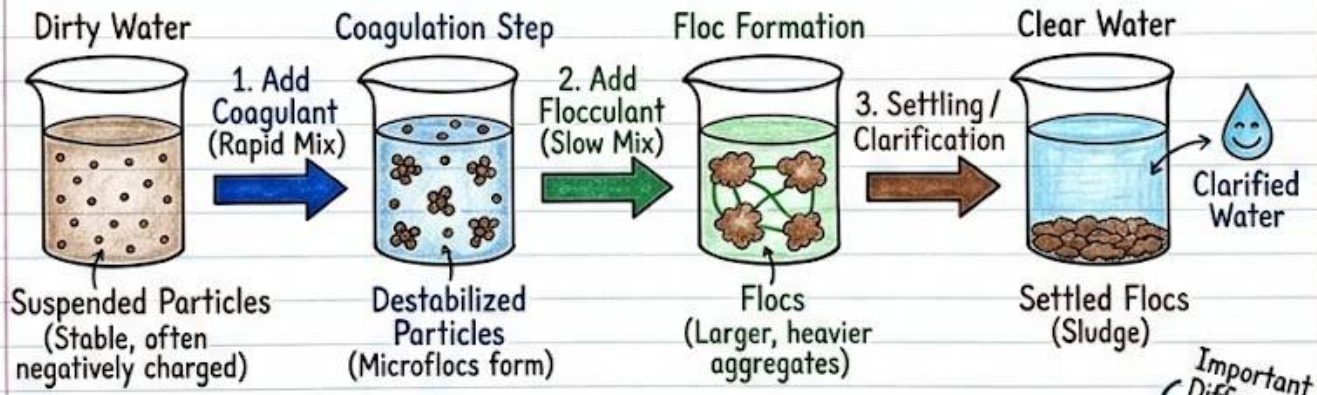
Don't Forget!

Flocculants:

- Substances (often polymers) that bind microflocs together.
- Forms larger, heavier clumps called "flocs".
- Acts as a bridge between particles.
- SLOWER process.
- E.g., Polyelectrolytes (polymers).

Key Concept!

Water Treatment Process Flow:



Important Difference!

Comparison Table (Quick Review):

Feature	Coagulants (Blue Pen)	Flocculants (Green Pen)
• Purpose	Destabilize particles by charge neutralization.	Bridge microflocs into large, settleable aggregates.
• Examples	Aluminum Sulfate (Alum), Ferric Chloride, Polyaluminum Chloride (PAC).	Polyacrylamide (PAM), various organic polymers.
• Stage of Use	Added first, during rapid mixing (flash mix).	Added later, during slow mixing (flocculation stage).
• Mechanism	Chemical charge neutralization.	Physical bridging / interparticle linking.

Don't Forget!

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