usalco®

How To Use the Total Cost Method to Compare Coagulants

LEADERS IN CLEAN WATER SOLUTIONS

Objective

The Importance of Comparing Costs Across Different Treatment Methods

Providing a world-class water treatment portfolio with industry leading brands

AlcoPAS™ DelPAC® UltraFLOC® UltraPAC®

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Strategically-located manufacturing facilities

>40,000

Customer deliveries annually

>1 in 3

Americans' drinking water needs served

- Widest range of Basicities
- Maximize Metal Content
- Highest Charge Efficiency
- Complete range of Aluminum and Iron Based coagulants, with a range of Polymers

Fuel Efficiency – Automobile Comparison

Scenario:

Buyer commutes ~ 400 total miles weekly
Children + Spouse – *child car seats not required
Current gas price $3.00 per gallon

Average MPG ratings for a 2022 year model

Toyota Yaris	~ 37 MPG
Land Rover Range Rover	~ 21 MPG

Calculation:

Range Rover requires 19 gal to travel 400 miles, $\frac{400}{21} = 19$ gal
19 gal * $3/gal = $57 per week for the Range Rover

Yaris requires 10.8 gal to travel 400 miles, $\frac{400}{37} = 10.8$ gal
10.8 gal * $3 per gal = $32 per week for the Yaris

Annual Fuel Savings of $639 if the Yaris is chosen as the commuter vehicle, or $0.03 / mile

Fuel Efficiency – Automobile Comparison

- **Annual Fuel Savings of $639 if the Yaris is chosen as the commuter vehicle, or $0.03 / mile**

Additional variables for buyers to consider to generate an approximate total cost of ownership:

Purchase Price	Appearance
Safety Ratings	Projected Maintenance Costs
Cargo Space	Warranty Costs
Driving Experience	Insurance Costs

Total Cost Can Also Apply to Chemistry!

Generate the metrics to contrast

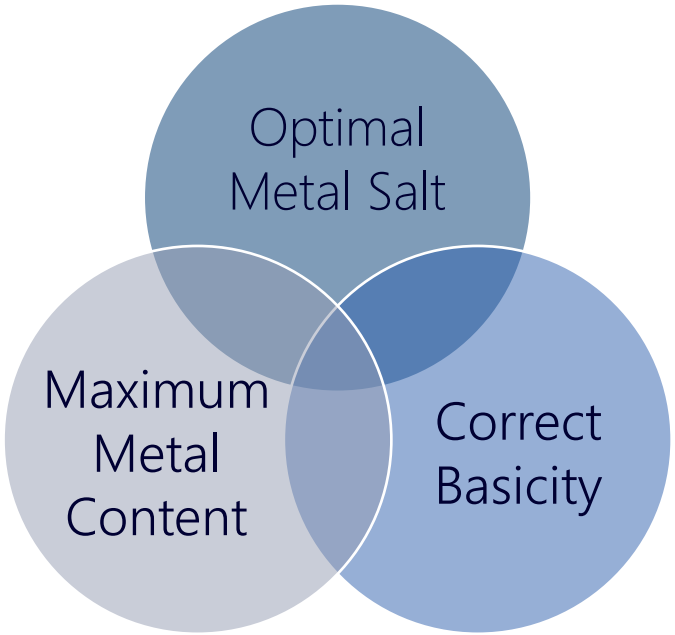
1. **Bench Testing**
   Testing in a controlled environment that mimics actual water treatment plant conditions

2. **Representative Trials**
   The goal of this trial is to provide real-world performance data. Understand what the impact on the process will be

3. **Run Total Cost Analysis**
   Post-trial, analyze the data to calculate the total cost of treating a million gallons of water with the incumbent, and proposed coagulant

Treating Water Effectively Requires the right Coagulant
One size fits all approach is Inefficient

Three Key Components of Effective Coagulants



The Most Efficient Coagulant for the Application

Coagulant Comparison Example

Scenario Variables

Current program is Aluminum Sulfate 60ppm dosed as-is
The proposed program is Polyaluminum Chloride at 20ppm as-is
Alum program requires 13ppm of 50% Sodium Hydroxide
Polyaluminum Chloride program requires 7ppm 50% Sodium Hydroxide
Facility average production 30 MGD
Alum cost per lb - $0.08 / lb as-is liquid
Polyaluminum cost per lb - $0.25 / lb as-is liquid
50% Sodium Hydroxide cost per lb $0.14 / lb as-is liquid

Coagulant Comparison Example

How do we contrast coagulants?

- Determine the cost of each coagulant per day and then divide by Million Gallons of water treated

Calculations - Math

The current program is Aluminum Sulfate, 60ppm dosed as-is cost of $0.08 / lb.
60ppm x 30mgd x 8.34 = 15,012 lbs per day
15,012 lbs x $0.08 / lb = $1200.96 Cost per day
Cost per day $1200.96 / 30 mgd = $40.03 per million gallons treated
Proposed program Polyaluminum Chloride dosed at 20ppm, cost $0.25 / lb
20ppm x 30mgd x 8.34 = 5,004 lbs per day
5,004 lbs x $0.25 / lb = $1,251
$1,251 cost per day / 30mgd = $41.70 per million gallons treated

Coagulant Comparison Example

Calculations – Sodium Hydroxide

Sodium Hydroxide when fed with Aluminum Sulfate 13ppm dosed as-is cost $0.14 / lb
13ppm x 30mgd x 8.34 = 3,252 lbs per day
3,252 lbs x $0.14 / lb = $455.28 cost per day / 30 mgd = $15.18 per million gallons
Sodium Hydroxide when fed with Polyaluminum Chloride dosed at 7ppm costing $0.14 / lb
7ppm x 30mgd x 8.34 = 1,751 lbs per day
1,751 lbs x $0.14 / lb = $245.14 cost per day / 30mgd = $8.17 per million gallons

Coagulant Comparison Example

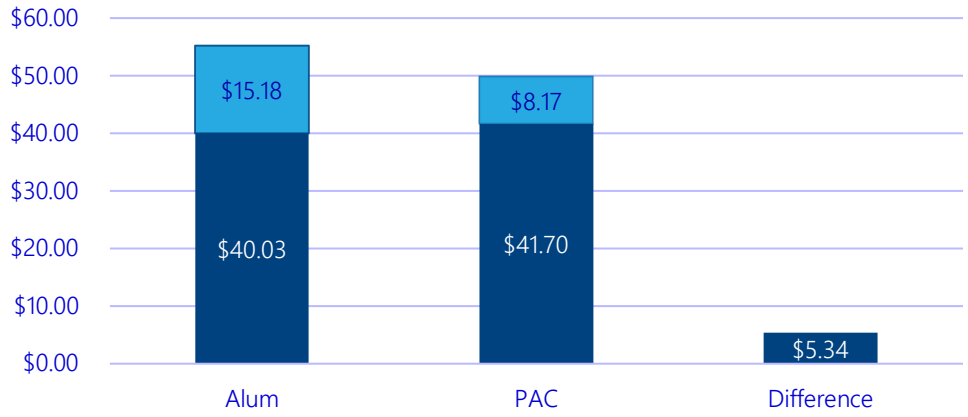
Calculations – Total Treatment Cost

Alum Program cost $40.03 + $15.18 = $55.21 / MG

Polyaluminum Chloride Program cost $41.70 + $8.17 = $49.87 / MG

Difference $55.21 - $49.87 = $5.34 / MG

30MGD x 365 days = 10,950 Million gallons x $5.34 = $58,473



Coagulant Comparison Example

Other Potential Savings – Requires Deliberate Analysis

Customer Service / Reliability of Supply
Sludge Handling Improvements – Labor Savings
Fewer Chemical Deliveries – Labor Savings
Improved Safety Posture - Fewer Chemical Deliveries and Less Handling
Improved Filter Performance – Media Life, Water, and Electricity Savings
Overall Electricity Savings

Thank You for Tuning In!

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