MCP SERVER | NO CODE | CLOUD HOSTED

Water Hardener & Softener Balancer MCP for AI Agents

Calculate precise mineral concentrations and manage water treatment ratios.

The Water Hardener & Softener Balancer is a precision calculation MCP designed for industrial water treatment. It determines exactly how much chemical concentrate you need to mix with distilled water to hit a specific Parts Per Million (PPM) target. It also checks if your desired mineral concentration falls within safety ranges and calculates how many full batches of treated water you can produce from your remaining stock.

A+ Quality Score 100/100

ppm | water-treatment | mineral-balance | precision-calculation | distilled-water

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vinkius.com/mcp/water-hardener-softener-balancer

SCAN TO VIEW

The connectivity layer between AI and the world's software.

Vinkius sits between AI and every application. All communication passes through Vinkius Cloud via the Model Context Protocol (MCP) — with governance, observability, and security at every layer.

Your AI Connections Run Through Vinkius Cloud

The world's largest managed MCP catalog

Vinkius is the connectivity layer where AI connects to the software your business already runs. We handle the hosting, the security, the credentials, the uptime — you get agents that actually do things.

We operate the world's largest managed MCP catalog. Major SaaS platforms, CRMs, databases, and cloud providers — running, monitored, production-ready. This MCP server is hosted and maintained by the Vinkius Cloud for AI Agents.

> *The agent doesn't manage credentials, doesn't manage uptime, doesn't manage security. Vinkius does.*
>
> — Architecture principle

Four Pillars of the Vinkius Runtime

01 — Security by design

Credentials stay encrypted at rest via AES-256. The AI agent never touches raw keys — they're injected into a sandboxed V8 isolate at runtime. Actions are logged, and connections have an emergency kill switch.

02 — Built on MCP Fusion

This MCP server was built with **MCP Fusion**, the open-source framework (Apache 2.0) that powers the entire Vinkius catalog. Schema-as-firewall strips undeclared fields, compiled PII redaction runs at zero overhead, and cryptographic lockfiles produce git-diffable audit trails.

03 — Deterministic observability

Eight immutable metrics per endpoint: request volume, p95 latency, error rate, active connections, cost attribution. A live payload feed logs every tool call with mutation detection.

04 — Autonomous operations

Servers are deployed, monitored, and patched autonomously. New capabilities and security patches ship weekly. Zero-downtime deployments ensure continuous availability across all managed MCP servers.

AES-256	Ed25519	24h TTL	V8 Isolate
Encryption at rest	PKI vault signatures	Ephemeral session keys	Sandboxed execution

One Token. Instant Access.

Every MCP server on Vinkius is accessed through a **Connection Token**. Tokens are generated in the cloud dashboard and produce a unique MCP endpoint URL. Paste this URL into any MCP-compatible client — no SDK required.

A single token can serve **multiple AI clients simultaneously**, or you can issue separate tokens per client for granular access control. Each token tracks its own request count, last activity timestamp, and can be individually enabled or revoked.

MCP ENDPOINT

```
https://edge.vinkius.com/{token}/mcp
```

Claude · Cursor · VS Code · Windsurf · Grok · Gemini

Security Is the Architecture

Security in Vinkius is not a feature — it's the foundation of the runtime. The gateway enforces multiple independent protection layers between AI agents and third-party APIs.

01 — Ed25519 PKI Vault

Every workspace has an Ed25519 Master Key. Session keys are generated ephemerally (24h TTL) and signed by the Master Key. Credentials never leave the vault boundary.

02 — V8 Isolate Sandboxing

Tool code runs inside isolated-vm V8 isolates with 64 MB memory caps and per-request timeouts. No filesystem access, no network access except through the SSRF-guarded fetch bridge.

03 — SSRF Guard

All outbound HTTP requests are DNS-resolved and validated before execution. Private IP ranges (10.x, 172.16-31.x, 192.168.x, AWS metadata 169.254.x) are blocked at the network layer.

04 — DLP & PII Redaction

A ResponseGuard pipeline intercepts every tool response. Configurable redaction patterns strip sensitive fields (emails, SSNs, card numbers) before data reaches the AI agent.

05 — Cryptographic Audit Trail

Every request is signed into a SHA-256 hash chain with Ed25519 signatures. Events form a tamper-proof, SIEM-exportable forensic record.

06 — Honeytoken Trap System

Phantom credentials are injected into isolated environments. If a honeytoken is used outside Vinkius infrastructure, the server is quarantined instantly.

Emergency Kill Switch

EU AI Act Art. 14(1) Compliant

The kill switch is an **emergency halt** mechanism — not a simple toggle. When triggered, it executes three actions atomically:

01 — Server deactivated

The MCP server is immediately taken offline across the entire cluster.

02 — All tokens revoked

Every connection token is invalidated. Total lockout — reconnection blocked until new tokens are issued.

03 — WebSocket connections killed

Active connections terminated via Redis pubsub broadcast. Propagates to every runtime node in the cluster.

Full Visibility. Zero Guesswork.

The Vinkius cloud dashboard includes a full MCP Governance suite — real-time analytics and security controls for production AI operations.

Control Plane

KPI dashboard with request volume, latency, success rate, token consumption, and AI-generated operational briefings.

Agent Activity

Which AI clients are connecting, how often, and what they're doing — real-time session tracking.

FinOps

Cost tracking per tool, payload compression savings, budget optimization signals, and consumption trends.

Tool Health

Slowest and most error-prone tools, with actionable root-cause insights and performance baselines.

Firewall & DLP

PII redaction activity, sensitive data protection counters, and security event timeline.

Incident Log

Error trends, failure rates, status-code breakdowns, and forensic audit trail access.

> Get started at **cloud.vinkius.com** — connect your AI agent in under 60 seconds.

Water Hardener & Softener Balancer MCP

3 tools available
Cloud-hosted on Vinkius

Mixing chemicals for industrial processes is precise work; getting the ratios wrong means costly equipment damage or non-compliant output. This MCP handles that complexity by providing accurate calculations for adjusting mineral content in distilled water. You simply input your desired target PPM and the total volume, and it tells you precisely how much liquid concentrate to add. Beyond basic mixing, it lets you check if your chosen concentration is safe for standard use. Furthermore, if you're managing large inventories, you can calculate exactly how many full batches of treated water you can run with what's left in storage. Because calculating these chemical balances often involves multiple variables—batch size, current PPM, and remaining stock—it's helpful to have all this logic centralized. If your organization manages various types of specialized industrial tools, connecting through the Vinkius catalog makes sure you find every specific calculation tool you need.

Core Capabilities

01 — Calculate required concentrate volume

It tells you the exact milliliter amount of chemical solution needed to raise or lower a batch's mineral content to your target PPM.

02 — Check compliance and safety status

The MCP evaluates if a specific desired concentration falls within recognized industry safety and operational ranges for the water type.

03 — Estimate remaining batch capacity

It takes your current stock of concentrate and calculates how many complete, full-sized batches of treated water you can still produce.

One Click on Vinkius — From Prompt to Execution

Available at **vinkius.com/mcp/water-hardener-softener-balancer** — connect your AI agent in three steps.

01 Start by defining the parameters: specify the total volume of distilled water (in liters) and the target PPM for your solution.

02 The MCP calculates the precise amount of concentrate needed, ensuring the final mixture hits the required mineral balance. It also confirms that this target level is safe for use.

03 Finally, it reviews your current chemical stock to estimate how many full batches you can complete with what's left.

The bottom line is, instead of manually solving complex chemistry equations across multiple spreadsheets, the MCP handles all calculations in one place.

Built For

Water treatment plant operators and industrial lab technicians need this. They deal with chemical mixtures daily where small errors cost thousands in equipment damage or regulatory fines. This tool takes the guesswork out of mineral balancing, letting them focus on maintaining quality output.

Water Treatment Plant Operator

Uses it to calculate dosing adjustments for chemical feed systems based on incoming raw water quality and required outflow standards.

Industrial Lab Technician

Runs precise mixing calculations when preparing specialized solutions for testing or equipment flushing, ensuring the concentration is exactly right.

Chemical Supply Manager

Calculates remaining inventory capacity to predict when new concentrate shipments are required, preventing costly production halts.

What Changes When You Connect

01 Avoid costly downtime. By using `batch_capacity_calculator`, you immediately know your remaining chemical stock, allowing time to order replacements before production stops.

02 Guarantee compliance every time. The `check_ppm_safety_status` tool verifies if your target concentration falls within accepted industry safety tiers, eliminating regulatory risk.

03 Perfect dosing on the first try. Need 10 liters of water at exactly 50 PPM? Use `calculate_injection_volume` to get the precise milliliter volume of concentrate required.

04 Save time compared to spreadsheets. Instead of manually cross-referencing flow rates and chemical ratios, your agent gets an instant calculation directly in your workflow.

05 Know your limits instantly. You can quickly assess if a high concentration target is even viable for your system using the safety status tool.

Real-World Applications

Flushing equipment to meet new standards

A technician needs to flush industrial piping that must meet a low-mineral standard. They ask their agent, who uses `calculate_injection_volume` and confirms the required concentrate volume for a massive batch size, ensuring they don't overshoot or undershoot the PPM target.

Planning large-scale chemical orders

The supply manager needs to know how long their current 50 gallons of softener concentrate will last. The agent uses `batch_capacity_calculator` and reports that they have enough material for exactly 42 more production cycles.

Verifying chemical safety before mixing

A new process requires a high-PPM solution, but the operator isn't sure if it's safe. The agent runs `check_ppm_safety_status` and immediately flags that the 800 PPM target exceeds standard usage guidelines.

Patterns to Avoid

Calculating ratios manually in spreadsheets

✗ AVOID

Opening multiple tabs, cross-referencing flow meters, and manually calculating chemical dilution rates leads to calculation errors and wasted time.

✓ INSTEAD

Use the Water Hardener & Softener Balancer MCP. Use `calculate_injection_volume` to determine the necessary amount of concentrate for a specific batch size in one step.

Guessing concentration safety limits

✗ AVOID

Operating under the assumption that high mineral content is fine, risking equipment corrosion and non-compliant product output.

✓ INSTEAD

Always run `check_ppm_safety_status` first. This validates your target PPM against established industry standards before you commit to mixing.

Not tracking remaining supply

✗ AVOID

Starting a large production run only to realize the concentrate stock is critically low mid-shift, causing an immediate operational halt.

✓ INSTEAD

Use `batch_capacity_calculator` regularly. It provides clear metrics on how many full batches you can still produce with your current inventory.

The Right Fit

Use this MCP if your core job involves chemical mixing, water quality control, or managing industrial fluid ratios where PPM precision is non-negotiable. If you need to calculate dilutions for a specific volume and target concentration, the `calculate_injection_volume` tool handles it perfectly. You should also use it when predicting inventory based on consumption rate, relying on `batch_capacity_calculator`. Don't use this if you are simply filtering water or performing basic physical chemistry (like

measuring pH). For simple data logging or viewing historical reports, a specialized database query MCP is better suited.

Water Hardener & Softener Balancer: Solving Mineral Balancing in Water Treatment

Right now, determining the correct mineral concentration for industrial water involves tedious manual steps. You have to check source water data against desired output standards, then use complex formulas to calculate how much chemical additive is required based on volume and current inventory. It's a process ripe for human error—one wrong decimal point can ruin an entire batch.

With this MCP, the whole process gets distilled down. You ask your agent what volume you need, and it instantly runs `calculate_injection_volume` to give you the exact milliliter amount of concentrate required. You stop calculating; you start mixing.

Water Hardener & Softener Balancer: Managing PPM Safety in Water Treatment

Before running any mix, engineers typically have to consult multiple regulatory documents and safety sheets just to confirm if their desired final concentration is even acceptable. This means cross-referencing several external sources before writing a single line of code or mixing chemicals.

Now, the agent handles that check automatically. You simply verify your target level with `check_ppm_safety_status` and get an instant pass/fail status against standard safety tiers. It's immediate confirmation for critical decision-making.

Water Hardener & Softener Balancer: 3 Precision Mineral Balance Tools

Use these three tools to calculate required chemical volumes, verify concentration safety, and estimate batch capacity for industrial water treatment.

#	TOOL	DESCRIPTION
01	`check_ppm_safety_status`	Evaluates a requested concentration level and reports whether it meets standard safety guidelines for the water type.
02	`batch_capacity_calculator`	Determines how many complete units of treated water can be produced given your current supply of concentrated chemicals.
03	`calculate_injection_volume`	Figures out the exact liquid volume of concentrate needed to adjust a specific batch size to a desired PPM.

See It in Action

Real prompts you can use once this MCP is connected to your AI agent through Vinkius Cloud.

U I need 50 liters of treated water at a maximum of 10 PPM. How much concentrate should I use?

Calculations Complete:
- **Target Volume:** 50 L
- **Desired PPM:** 10
- **Required Concentrate:** 2.5 mL

Please add 2.5 mL of your existing solution to achieve the target mineral mass, resulting in a total contribution of 0.5 mg of mineral mass.

U Before I use 300 PPM for my process, is that level safe according to standard guidelines?

Safety Check:
- **Target Concentration:** 300 PPM
- **Status:** ✅ Standard Safety Tier
- **Notes:** This concentration falls within the accepted operating range for general industrial use. Keep monitoring pH levels as well.

U If I have a bottle with 150 mL of concentrate, how many 20-liter batches can I make at 80 PPM?

Batch Capacity Report:
- **Total Concentrate Remaining:** 150 mL
- **Target Batch Size:** 20 L
- **Calculated Yield:** You have enough material to prepare **7 complete batches** with your current stock.

Frequently Asked Questions

01 **How do I use the Water Hardener & Softener Balancer MCP for precise PPM calculations?**

You tell the agent your target volume and desired concentration. It then uses its tools to calculate exactly how many milliliters of chemical concentrate you need to add, giving you a highly accurate mixing ratio.

02 **Can this Water Hardener & Softener Balancer MCP check if my target PPM is safe?**

Yes. The MCP runs the concentration through an internal safety validation tool. It immediately tells you whether your desired level falls within standard operating and environmental guidelines.

03 **What if I need to know how many batches I can make with my chemicals? Does Water Hardener & Softener Balancer support that?**

Absolutely. You input your total remaining concentrate volume, and the MCP figures out how many full production cycles you can run before needing a resupply.

04 **Is this better than using traditional chemical calculators for water treatment?**

It's faster and less error-prone. Instead of juggling multiple sheets, the Water Hardener & Softener Balancer runs all calculations—volume, PPM, and safety checks—in a single interaction.

05 **Does this MCP work for different types of water mineral adjustments?**

Yes, it is designed to handle general mineral content adjustment in distilled water. It calculates the necessary dosing volume regardless of how many variables you are balancing.

Go Live in 60 Seconds

Get your connection token from **cloud.vinkius.com**, then paste the endpoint URL into any MCP-compatible client.

YOUR MCP ENDPOINT

```
https://edge.vinkius.com/[TOKEN]/mcp
```

CLIENT	WHERE TO CONFIGURE
Claude AI	Profile → Customize → Connectors → "+" → Add custom connector → Paste endpoint
Cursor	Settings → Features → MCP Servers → "+ Add New MCP Server" → Type: SSE → Paste endpoint
VS Code	Ctrl/Cmd+Shift+P → "MCP: Add Server" → add `"water-hardener-softener-balancer": { "url": "…" }`
Windsurf	MCP Settings → `mcp_settings.json` → Add endpoint URL
ChatGPT	Settings → Tools & plugins → Add MCP server → Paste endpoint
Gemini	Extensions → Add MCP Server → Paste endpoint URL

ASK AN AI ABOUT THIS

Let your preferred AI explain this MCP server

- Ask ChatGPT
- Ask Claude
- Ask Perplexity
- Ask Gemini
- Ask Grok

READY TO CONNECT

Water Hardener & Softener Balancer is live on Vinkius Cloud.

Get your connection token, paste it into your AI agent, and start building. No SDK. No deployment. Just results.

Start at cloud.vinkius.com →

vinkius.com · support@vinkius.com

INDEPENDENT PLATFORM DISCLAIMER

DOCUMENT INFORMATION

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MCP Server	Water Hardener & Softener Balancer MCP
Server ID	`019f26f1-9841-72b3-8992-8f65d935a2a9`
Platform	Vinkius Cloud for AI Agents
Endpoint	`https://edge.vinkius.com/{token}/mcp`

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