

M C P S E R V E R

N O C O D E

C L O U D H O S T E D

Juice Settling Time Predictor MCP

Calculate sedimentation rates and optimize juice clarity.

Juice Settling Time Predictor MCP uses Stokes' law to model how particles settle in juice. It accounts for temperature, viscosity, and pectin levels to predict exactly how long you need to wait for target turbidity. You can also simulate how enzyme treatments change the settling process to find the most efficient production settings.

A+ Quality Score 100/100

juice

settling-time

pectin

turbidity

stokes-law



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.

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.

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.

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

Encryption at rest

Ed25519

PKI vault signatures

24h TTL

Ephemeral session keys

V8 Isolate

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.

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.

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.

06 — Honeypot Trap System

Phantom credentials are injected into isolated environments. If a honeypot 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.

FinOps

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

Firewall & DLP

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

Agent Activity

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

Tool Health

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

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.

Juice Settling Time Predictor MCP

4 tools available

Cloud-hosted on Vinkius

You can use this MCP to model the clarification process for juice production. It uses Stokes' law to calculate how long it takes for solids to settle based on particle size and liquid properties. Since temperature changes viscosity and pectin levels affect how particles move, the tool lets you adjust these variables to see how they change your results. You can also run simulations to see how adding enzymes might speed up the process by breaking down pectin. Instead of guessing how long a settling tank needs to run, you get specific time estimates and accumulation rates to help plan your production cycles.

Core Capabilities

01 — Sedimentation Modeling

Your agent uses Stokes' law to predict particle movement.

03 — Enzyme Simulation

Your agent compares untreated batches against enzyme-treated batches.

05 — Solids Tracking

Your agent estimates the rate of solids buildup in vessels.

02 — Temperature Optimization

The AI finds the thermal point where viscosity and quality meet.

04 — Turbidity Prediction

The tool calculates the time needed to hit specific clarity targets.

One Click on Vinkius — From Prompt to Execution

Available at vinkius.com/en/ai-agent-connect/juice-settling-time-predictor — connect your AI agent in three steps.

- 01

Connect your preferred client like Claude or Cursor to Vinkius.
- 02

Provide your juice parameters like pectin levels and temperature to your agent.
- 03

The agent uses the MCP tools to run Stokes' law calculations.
- 04

Receive specific time, rate, or temperature recommendations in your chat.

You connect your AI client to Vinkius and start running food science models immediately.

Built For

This MCP is built for professionals managing juice clarification and sedimentation processes.

Food Scientists

They use the tool to model pectin degradation and enzyme effectiveness.

Production Managers

They use the settling time predictions to schedule tank turnover.

Quality Control Technicians

They use the turbidity and accumulation data to monitor batch consistency.

What Changes When You Connect

- 01

Reduces guesswork in settling tank run times.
- 02

Models the specific impact of pectin on sedimentation.
- 03

Simulates enzyme treatments before they are applied to a batch.

- 04 Balances settling speed against juice quality through temperature modeling.
-

Real-World Applications

Production Scheduling

Calculate exact settling times to plan when a tank will be ready for the next batch.

Temperature Tuning

Find the ideal temperature to speed up settling without ruining juice quality.

Enzyme Testing

Run simulations to see if enzyme treatments will actually improve settling efficiency.

Solids Management

Predict how fast solids will accumulate to prevent vessel overflow or clogging.

4 Tools Available

#	TOOL	DESCRIPTION
01	get_accumulation_rate	This tool estimates how fast solids gather at the bottom of your settling vessel.
02	get_optimal_temperature	Use this to find the temperature that balances fast settling with juice quality.
03	get_settling_time	This tool calculates the time required to reach a specific level of clarity.
04	simulate_enzyme_impact	This tool compares settling performance between untreated juice and juice treated with enzymes.

See It in Action

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

U How long will it take for juice with 0.5 pectin content, 25 degrees temperature, 10 solids content, and 0.1 target turbidity to settle?



The predicted settling time is 45 minutes with a predicted turbidity of 0.1.

U What is the accumulation rate for juice with 15 solids content at 20 degrees and 0.4 pectin content?



The accumulation rate is 1.25 units per minute, with a predicted solids mass of 75.0.

U What is the best temperature for juice with 0.3 pectin content and 0.2 target turbidity?



The optimal temperature is 35 degrees Celsius, with an estimated settling time of 30 minutes at this temperature.

Frequently Asked Questions

01 What mathematical model does this MCP use?

The MCP uses Stokes' law to model how particles settle in the juice.

02 Can I simulate enzyme treatments?

Yes, the `simulate_enzyme_impact` tool compares untreated juice to juice treated with enzymes.

03 How does temperature affect the results?

The tool accounts for how temperature changes viscosity, which in turn affects settling speed.

04 Which AI clients can I use with this?

You can use any MCP-compatible client, including Claude, Cursor, Windsurf, and VS Code.

05 Do I need to host the MCP myself?

No, Vinkius hosts and manages the MCP for you. You just connect and use it.

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 <code>"juice-settling-time-predictor": { "url": "..." }</code>
 Windsurf	MCP Settings → <code>mcp_settings.json</code> → 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

Juice Settling Time Predictor 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

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DOCUMENT INFORMATION

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Server ID	01a0abd2-d7e6-71be-b83f-ff51d2c647fd
Platform	Vinkius Cloud for AI Agents
Endpoint	<code>https://edge.vinkius.com/{token}/mcp</code>

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