MCP SERVER | NO CODE | CLOUD HOSTED

# Darkroom Chemical Mixing Plan MCP

## Get exact chemical dilution math for your darkroom sessions.

Darkroom Chemical Mixing Plan MCP handles the math for your analog workflows. It calculates the exact amounts of water and concentrate you need based on your tray setup, dilution ratios, and desired waste margins. Instead of manual calculations, your AI client generates complete mixing plans for entire sessions or single batches in seconds.

A+ Quality Score 100/100

darkroom | analog | chemical | photography | precision

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vinkius.com/en/ai-agent-connect/darkroom-chemical-mixing-plan

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.

# Darkroom Chemical Mixing Plan MCP

4 tools available
Cloud-hosted on Vinkius

Stop guessing your dilution ratios or over-mixing chemicals. This MCP handles the precise math required to prepare working solutions for analog film processing. You provide the number of trays, the volume per tray, and your preferred waste margin, and your agent does the rest. It works by calculating the total volume needed and then breaking that down into specific concentrate and water measurements for every chemical in your session.

You can use it to plan a full workflow from developer to fixer or just check the math for a single batch of developer. It even checks your chemical catalog to ensure you're working with valid stock. By offloading these calculations to your AI client, you keep your hands clean and your chemistry consistent.

## Core Capabilities

**01 — Session Planning**

Your agent calculates all necessary chemical volumes for a full darkroom workflow.

**02 — Volume Calculation**

The AI determines exact water and concentrate amounts for specific dilution ratios.

**03 — Waste Margin Management**

Your agent adds a percentage buffer to your total volume to prevent running dry.

**04 — Inventory Verification**

The AI checks your requested chemicals against a predefined catalog.

**05 — Tray Requirement Logic**

Your agent calculates total volume based on your physical tray count and size.

## One Click on Vinkius — From Prompt to Execution

Available at **vinkius.com/en/ai-agent-connect/darkroom-chemical-mixing-plan** — connect your AI agent in three steps.

01 Connect the MCP to Claude, Cursor, or Windsurf via Vinkius.

02 Tell your agent your tray count, volume per tray, and desired chemicals.

03 The agent uses the tools to calculate volumes and check the catalog.

04 Receive a precise list of concentrate and water amounts for your mix.

Connect the MCP to your client and start asking for chemical math.

## Built For

This MCP is built for anyone working with analog film in a traditional darkroom environment.

**Darkroom Technicians**

They hand off complex dilution math and session planning to the AI.

**Analog Photographers**

They use the agent to quickly calculate chemical needs for specific film types.

**Lab Managers**

They use it to ensure consistent chemical batches across multiple workstations.

## What Changes When You Connect

01 Reduces manual math errors during chemical preparation.

02 Prevents chemical waste by calculating exact volumes needed.

03 Speeds up session setup by generating full plans at once.

04 Ensures consistency by using precise dilution ratios.

# Real-World Applications

**Full Session Setup**

Plan every chemical needed for a film processing run, including developer, stop bath, and fixer.

**Single Batch Mixing**

Get the exact water and concentrate amounts for one specific chemical type.

**Waste Buffer Calculation**

Add a 10% or 15% margin to your tray volumes so you don't run out mid-process.

**Catalog Verification**

Confirm that the chemicals you have on hand match your intended workflow.

# Patterns to Avoid

### Manual math guesswork

AVOID

You try to eyeball the dilution ratio for a large batch of developer by just adding water until it looks right.

✓ INSTEAD

Use `calculate_single_mix_batch` to get the exact water and concentrate amounts needed for that specific chemical.

### Ignoring tray capacity

AVOID

You calculate a single batch volume but forget that you have four different trays to fill during the process.

✓ INSTEAD

Run `calculate_tray_requirements` first to find the total volume your physical setup actually requires.

### Using unlisted chemicals

AVOID

You plan a full workflow using a specific developer that isn't actually in your current inventory.

✓ INSTEAD

Run `validate_chemical_stock` to make sure the chemicals you want to use are in your predefined catalog.

## The Right Fit

Connect this MCP if you manage a physical darkroom and need precise dilution math for film processing. Do not use it if you work entirely digitally or don't use standardized chemical catalogs. The decision depends on whether you need to translate tray counts into specific liquid measurements.

# Darkroom Chemical Mixing Plan 4 Tools

These tools handle the math for tray volumes, single chemical batches, and full session workflows. They also verify your chemical stock against your catalog.

| # | TOOL | DESCRIPTION |
|---|---|---|
| 01 | `calculate_tray_requirements` | This tool determines the minimum total volume you need based on your physical darkroom setup. |
| 02 | `generate_full_mixing_plan` | This tool acts as an orchestrator to calculate every component needed for a complete darkroom session. |
| 03 | `validate_chemical_stock` | This tool checks if a specific chemical you want to use is available in your predefined catalog. |
| 04 | `calculate_single_mix_batch` | This tool calculates the exact volumes of water and concentrate required for one specific chemical type. |

# See It in Action

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

**U** I need to fill 3 trays with 500ml each, with a 10% waste margin. I need Developer (1:10) and Stop Bath (1:5).

For 3 trays at 500ml each with 10% waste, the total session volume is 1650ml. Your plan is: Developer: 165ml concentrate and 1485ml water; Stop Bath: 330ml concentrate and 1320ml water.

**U** How much water and concentrate do I need for 1 liter of a 1:9 Developer solution?

For 1 liter of a 1:9 Developer solution, you need 100ml of concentrate and 900ml of water.

**U** Check if 'Fixer' is a valid chemical in the catalog.

Yes, 'Fixer' is a valid chemical in the authorized catalog.

# Frequently Asked Questions

01 **How do I use this MCP with my AI client?**

You connect to the Vinkius-hosted MCP once, and it becomes available in any compatible client like Claude or Cursor.

02 **Can I include a waste margin in my calculations?**

Yes, you can specify a waste margin in your prompt, and the agent will include it in the total volume calculation.

03 **Does it work for any chemical?**

The agent can calculate any ratio you provide, but it can also verify if a chemical exists in your specific catalog.

04 **What kind of math does it perform?**

It calculates the total volume, the amount of concentrate, and the amount of water needed based on your dilution ratios.

05 **Do I need to host this myself?**

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

06 **How do I calculate the total volume needed for my session?**

You can use the `calculate_tray_requirements` tool to determine the total volume based on your tray count and the volume required per tray, including a safety waste margin.

07 **Can I plan a whole session at once?**

Yes, the `generate_full_mixing_plan` tool allows you to input your tray requirements and a list of chemical requests to get a complete mixing plan for the entire session.

08 **How does the waste allowance work?**

The waste allowance is a percentage added to your total volume to account for spills or residue, ensuring you have enough solution to complete your work.

# 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 `"darkroom-chemical-mixing-plan": { "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

# Darkroom Chemical Mixing Plan 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

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## DOCUMENT INFORMATION

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