

Spray-finish exhaust: interlocks, recirculation and shared ducts

Educational 2024 model IMC 502.7.3.1-502.7.3.6

Spray finishing uses continuous ventilation during application and sufficiently afterward; spray equipment cannot operate unless ventilation runs. Verify the adopted edition and actual process.

Field checks

- **Default routes:** no spray-exhaust recirculation. Each booth or room has its own duct to outdoors. Do not treat a shared shop return as a spray-exhaust path.
- **Recirculation as spray makeup air - unmanned operation:** remove solid particulate; vapor strictly below 25% LFL; approved vapor monitor; alarm and automatic spray shutdown if vapor exceeds 25% LFL; on monitor shutdown, automatically exhaust 100% of the air volume specified in IMC 509.
- **Manned operation:** all unmanned conditions also apply, plus prepared documents demonstrating no life-safety hazard to personnel inside the booth, spraying space or room. Recirculation is not general occupied-space return.
- **Small-booth common exhaust, 502.7.3.5 exception 1:** multiple booths only; combined frontal area no more than 18 square feet; identical sprayed finishing material; interconnected simultaneous operation if more than one fan serves one booth.
- **Treated manifold, 502.7.3.5 exception 2:** treatment needed for pollution control or energy conservation; materials compatible and nonreactive/nonigniting with duct residue; no nitrocellulose finish; overspray filter; automatic sprinklers at every booth/manifold junction in addition to other chapter protection.
- **Independent checks:** exhaust dilution below 25% LFL and applicable opening velocity; fan motors outside booths/ducts and permitted nonsparking construction; listing, fire code and other process rules.

Evidence to collect

Process and SDS; manned/unmanned status; airflow and LFL basis; particulate/monitor approval; high-vapor alarm and spray shutdown; monitor-shutdown 100% exhaust sequence; booth frontal areas, material compatibility, filtration and junction sprinklers if manifolded.

Official model-code source

ICC 2024 IMC Chapter 5 - Sections 502.7.3.1-502.7.3.6

Screening guide only. No project-specific engineering, code approval, fire-code determination or permit outcome is implied.