
Spray Booth Air Velocity Measurement At Face

1.0 Maintenance Objective & Frequency

The objective of this procedure is to measure and verify the air velocity at the face of the spray booth to ensure it meets the minimum requirement of 100 feet per minute (fpm) as per NFPA 33 standards. Proper face velocity ensures overspray is captured, operator safety is maintained, and paint finish quality is optimized. This PM must be performed quarterly or whenever a change in booth performance is suspected.

2.0 Lockout/Tagout (LOTO) & Safety

- **Electrical Isolation:** Disconnect main power to the spray booth exhaust fan and lighting at the disconnect switch. Apply personal lock and tag.
- **Pneumatic Isolation:** Close the compressed air supply valve to the booth and bleed any residual pressure from the lines.
- **Mandatory PPE:** Safety glasses, nitrile gloves, and a respirator rated for organic vapors (if residual paint fumes are present).
- **Confined Space:** Do not enter the booth interior without proper confined space entry procedures if the booth is large enough to be considered a confined space.

3.0 Required Tools, Parts & Lubricants

- Hot-wire or vane anemometer with a measurement range of 0-500 fpm and accuracy of $\pm 3\%$ of reading
- Measuring tape (25 ft / 7.6 m minimum)
- Masking tape and marker for grid marking
- Ladder or step stool (if booth opening is high)
- Clipboard and data recording sheet (or tablet with ServiceGrid open)
- Calibration certificate for the anemometer (must be within current validity period)

4.0 Step-by-Step Maintenance Procedure

1. Perform LOTO as described in Section 2.0. Verify zero energy state by attempting to start the exhaust fan (it should not run).
2. Measure the width and height of the spray booth face opening using the measuring tape. Record these dimensions.
3. Divide the face opening into a grid of equal-area rectangles. For a standard booth, use a 3x3 grid (9 measurement points). For larger booths, use a 4x4 grid (16 points). Mark the center of each rectangle with masking tape.
4. Remove the LOTO and restore power to the exhaust fan only. Do not turn on the spray booth lights or compressed air yet.
5. Allow the exhaust fan to run for a minimum of 5 minutes to stabilize airflow.
6. Position the anemometer at the first grid point, holding it perpendicular to the face of the booth. The sensor must be placed 6 inches (150 mm) from the face of the filter or opening, not directly against it.

7. Wait 15 seconds for the reading to stabilize, then record the velocity in fpm on the data sheet. Repeat for all grid points.
8. Calculate the average face velocity by summing all recorded readings and dividing by the number of grid points. The average must be at least 100 fpm. If any individual reading is below 80 fpm, flag the booth for filter replacement or duct cleaning.
9. If the average is below 100 fpm, inspect the exhaust filters for clogging, the fan belt for tension, and the ductwork for obstructions. Replace filters or adjust belt tension as needed, then repeat the measurement.
10. Record the final average velocity, date, and technician name in the PM log within ServiceGrid. Attach the raw data sheet as a note.

5.0 Verification & Return to Service

1. Ensure all grid measurement points have been recorded and the average face velocity meets or exceeds 100 fpm.
2. Remove all masking tape markers from the booth face.
3. Restore power to the spray booth lights and compressed air supply.
4. Perform a visual check of the booth interior for any tools or debris left behind.
5. Run a short test cycle with the booth empty to confirm normal operation (lights, fan, air).
6. Sign off on the PM work order in ServiceGrid, confirming the booth is ready for production.

Regulatory Disclaimer: This document is a generic maintenance template provided for educational and informational purposes only. It does not constitute professional engineering or reliability advice. The end-user assumes all liability for validating all step sequences, torque specs, and LOTO protocols against specific machinery OEM manuals before deployment to a live production floor.