



Pollution Prevention & Spray Paint Transfer Efficiency

Information Sheet



Background

Transfer efficiency refers to the percentage of how much coating material adheres to a surface compared to how much material is wasted in its application. The material that is wasted or doesn't reach the intended surface is referred to as overspray. Excessive overspray is wasteful and costly as most sprayers fail to reach a transfer efficiency of 50% and usually only reach about 30-40%. Not only is excessive overspray wasteful, but the toxins, solvents, and other ingredients in paints and coatings lead to increased VOCs (volatile organic compounds), air emissions, and potentially hazardous waste. Increasing transfer efficiency will increase productivity and efficiency and reduce purchasing costs, air emissions, toxins, solvents, and other potentially hazardous materials to save your business money and improve its environmental impact.

Best Management Practices

Proper spray training:

The use of proper spray techniques can increase transfer efficiency by reducing overspray. Applying coating materials right the first time with proper techniques will eliminate the need for additional coats and wasted materials. Sprayers should be properly trained and continuously updated on best techniques.

- **Distance:** The sprayer should maintain a certain distance from the intended surface depending on the type of spray applicator being used, coating material, and intended surface. This distance should remain constant throughout the coating process.
- **Arm movement:** The spray applicator should not be arced or tilted while spraying. The applicator should be held perpendicular to its intended surface and at right angles. When spraying smaller surfaces, sprayer should keep arm still and maintain movement in the wrist.

- **Pressure:** Use the lowest pressure applicable to the intended surface and coating materials when spraying. Lower pressures will result in less material rebound off surface and less overspray, increasing transfer efficiency.
- **Trigger:** The spray applicator should be triggered with each stroke. Start each stroke before pulling the trigger and release the trigger before the end of each stroke as the release of material from spray applicator is delayed. This will result in more even coverage, less material buildup, and conserve paint/coating to effectively minimize overspray.
- **Select the right nozzle:** Select the nozzle that is most appropriate for the coating material used and the intended surface. Spray nozzles for wider ranges (like fan nozzles) should not be used on small parts, and spray nozzles with little range should not be used on larger parts. Using the correct nozzle for a specific application will help increase accuracy and reduce overspray.



Image depicts two spray paint guns with two different nozzle sizes.

The actions outlined do not replace or ensure compliance with regulatory standards set by the Indiana Department of Environmental Management (IDEM). If regulatory or compliance assistance is needed, refer to IDEM's **Compliance and Technical Assistance Program (CTAP)**.

- **Spray Pattern:** Before spraying, the sprayer should know what pattern they are making or strokes they are using. Use straight, uniform lines, and avoid going over the minimum film thickness needed for the intended surface. This will help prevent uneven coverage of surface that may require more paint/coating to produce desired finish.

Storage temperature:

Sprayers should avoid storing coating materials in low temperatures as the temperature of the materials will affect its viscosity (material's resistance to flow/change shape or thickness). Lower temperatures will result in higher viscosities that require higher pressure to spray which decreases transfer efficiency.

Reduce use of toxins, solvents, and chemicals:

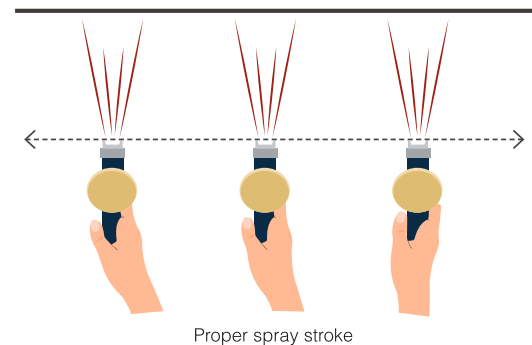
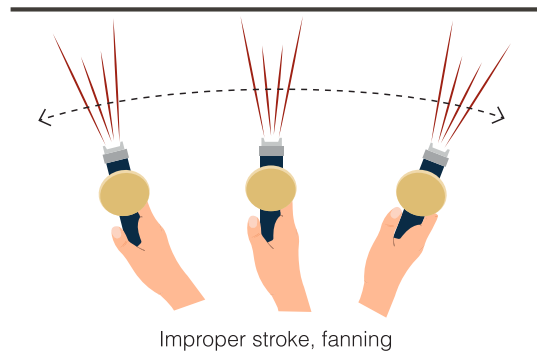
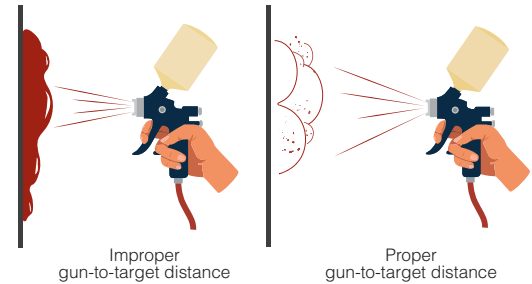
Whenever possible, purchase and use the least amount of toxins, solvents, chemicals, and other potentially hazardous materials necessary. Do not paint or coat parts or surfaces if not necessary and only add additives to coating materials when required. Additionally, do not open new containers of coating materials if one is already open and keep lids sealed on containers to prevent spills and evaporation of materials.

Maintenance:

Keep up with regular cleaning and maintenance by inspecting parts, spray applicators, and storage areas for broken parts, leaks, or spills. Maintain good house-keeping measures like grouping light and dark paintings/coatings separately and designating specific spray applicators for specific coating material colors or types.

Rules, regulations and permits may require specific spray gun use and minimum transfer efficiency, as well as require training programs for operators. Hazardous waste generator requirements may also apply. Factors like paint characteristics and usage determine unusable status. Using water-based paint can reduce hazardous waste.

Refer to a product's technical datasheet (TDS) for manufacturer's recommendations. The TDS provides detailed information on a product's characteristics, how a product performs, and other specifications. A TDS is important to ensure that the spray application product meets the needs of the user and is used correctly and safely.



Resources

IDEM's Compliance and Technical Assistance Program (CTAP) is a free and confidential service available to all Indiana businesses and regulated entities for on-site and remote assistance. Contact **CTAP** at (317) 232-8172 or use the **CTAP online Portal** at <https://portal.idem.IN.gov/ctap> to submit a request for confidential regulatory and technical assistance. For more information, visit idem.IN.gov/CTAP.

For more information and resources on spray paint transfer efficiency, pollution prevention strategies, visit idem.IN.gov/prevention.

