

Body Shop Spray Coating PTE Evaluation Template

Equipment: Two spray booths with no dryers

Calculations:

The emissions for this company are based on the following assumptions.

Spraying limits:

Time needed for primer, basecoat, and clearcoat spray to dry is 2 hours

Spray time is 10 minutes for each coat = 30 minutes total

Time needed to remove vehicle and replace with another = 5 minutes

Total time is 2 hours + 30 minutes + 5 minutes = 2.5833 hours/vehicle

$8760 / 2.5833 = 3391$ vehicles/yr

Note: A conservative primer usage for one vehicle is 2 quarts or 0.5 gallons/vehicle

Base coat requires 2 quarts/vehicle

Clear coat requires 2 quarts/vehicle

Cleanup is estimated at 1 pint/vehicle or 0.125 gal/vehicle

Paints are manufactured by Sikkens

Primer (lb/gal)(as applied)	VOC: 3.5	Single HAP: 1.39 (Xylene)	Total HAP: 1.74
Basecoat (lb/gal)(as applied)	VOC: 5.2	Single HAP: 1.47 (Xylene)	Total HAP: 1.79
Clearcoat (lb/gal)(as applied)	VOC: 4.2	Single HAP: 0.16 (Xylene)	Total HAP: 1.04
Cleanup (lb/gal) (DuPont)	VOC: 6.7	Single HAP: 0.46 (Xylene)	Total HAP: 1.40

Transfer efficiency of HVLP guns = 65%

Primer: 6.29 lb of solids/gal

Basecoat: 7.36 lb of solids/gal

Clearcoat: 3.51 lb of solids/gal

PTE for Single HAP

Primer: $0.5 \text{ gal/vehicle} * 3391 \text{ vehicles/yr} * 1.39 \text{ lb/gal} * 1 \text{ ton}/2000 \text{ lb} = 1.18 \text{ tpy}$

Basecoat: $0.5 \text{ gal/vehicle} * 3391 \text{ vehicles/yr} * 1.47 \text{ lb/gal} * 1 \text{ ton}/2000 \text{ lb} = 1.25 \text{ tpy}$

Clearcoat: $0.5 \text{ gal/vehicle} * 3391 \text{ vehicles/yr} * 0.16 \text{ lb/gal} * 1 \text{ ton}/2000 \text{ lb} = 0.14 \text{ tpy}$

Cleanup: $0.125 \text{ gal/vehicle} * 3391 \text{ vehicles/yr} * 0.46 \text{ lb/gal} * 1 \text{ ton}/2000 \text{ lb} = 0.10 \text{ tpy}$

Total = $1.18 + 1.25 + 0.14 + 0.10 = 2.67$ for one booth

= 5.34 tpy PTE Single HAP (Xylene) for two booths

PTE for Total HAPS

Primer: $0.5 \text{ gal/vehicle} * 3391 \text{ vehicles/yr} * 1.74 \text{ lb/gal} * 1 \text{ ton}/2000 \text{ lb} = 1.48 \text{ tpy}$

Basecoat: $0.5 \text{ gal/vehicle} * 3391 \text{ vehicles/yr} * 1.79 \text{ lb/gal} * 1 \text{ ton}/2000 \text{ lb} = 1.52 \text{ tpy}$

Clearcoat: $0.5 \text{ gal/vehicle} * 3391 \text{ vehicles/yr} * 1.04 \text{ lb/gal} * 1 \text{ ton}/2000 \text{ lb} = 0.88 \text{ tpy}$

Cleanup: $0.125 \text{ gal/vehicle} * 3391 \text{ vehicles/yr} * 1.40 \text{ lb/gal} * 1 \text{ ton}/2000 \text{ lb} = 0.30 \text{ tpy}$

Total = $1.48 + 1.52 + 0.88 + 0.30 = 4.18$ for one booth

= 8.36 tpy PTE Total HAPs for two booths

PTE for VOC

Primer: $0.5 \text{ gal/vehicle} * 3391 \text{ vehicles/yr} * 3.5 \text{ lb/gal} * 1 \text{ ton}/2000 \text{ lb} = 2.97 \text{ tpy}$

Basecoat: $0.5 \text{ gal/vehicle} * 3391 \text{ vehicles/yr} * 5.2 \text{ lb/gal} * 1 \text{ ton}/2000 \text{ lb} = 4.41 \text{ tpy}$

Clearcoat: $0.5 \text{ gal/vehicle} * 3391 \text{ vehicles/yr} * 4.2 \text{ lb/gal} * 1 \text{ ton}/2000 \text{ lb} = 3.56 \text{ tpy}$

Cleanup: $0.125 \text{ gal/vehicle} * 3391 \text{ vehicles/yr} * 6.7 \text{ lb/gal} * 1 \text{ ton}/2000 \text{ lb} = 1.42 \text{ tpy}$

Total = $2.97 + 4.41 + 3.56 + 1.42 = 12.36 \text{ tpy}$ for one booth

= 24.72 tpy PTE for VOC for two booths

PTE for PM

primer: $0.5 \text{ gal/vehicle} * 3391 \text{ vehicles/yr} * 6.29 \text{ lb/gal} * 1 \text{ ton}/2000 \text{ lb} * (1-.65) = 1.87 \text{ tpy}$

basecoat: $0.5 \text{ gal/vehicle} * 3391 \text{ vehicles/yr} * 7.36 \text{ lb/gal} * 1 \text{ ton}/2000 \text{ lb} * (1-.65) = 2.18 \text{ tpy}$

clearcoat: $0.5 \text{ gal/vehicle} * 3391 \text{ vehicles/yr} * 3.51 \text{ lb/gal} * 1 \text{ ton}/2000 \text{ lb} * (1-.65) = 1.04 \text{ tpy}$

Total = $1.87 + 2.18 + 1.04 = 5.09 \text{ tpy}$ for one booth

= 10.18 tpy PTE for PM for two booths, note this is pre-filter

PTE for PM₁₀

Assuming all PM is PM₁₀: **10.18 tpy**