

M02-M01 - METAL DEPOSITION, PLASMA SPRAY, SITE SPECIFIC TEST RESULTS, PRAXAIR AI-1015 (PWA 1315F) WITH HEPA FILTERS, FLAME SPRAY INC.

CALCULATION METHODS

Annual Emissions: $E_a = U_a \times EF \text{ (lbs/lb sprayed)} \times C_i$
 Hourly Emissions: $E_h = U_h \times EF \text{ (lbs/lb sprayed)} \times C_i$

E_a = Annual emissions of each listed toxic air contaminant per material, (lbs/year)
 E_h = Maximum hourly emissions of each listed toxic air contaminant per material, (lbs/hour)
 U_a = Annual usage of each material sprayed, (lbs/year)
 U_h = Maximum hourly usage of each material sprayed, (lbs/hour)
 EF = Emission Factor (lbs/lb sprayed)
 C_i = Toxic air contaminant specific concentration (weight percent)

NOTES:

- PM10 Emission Factors developed from Sum of Ni & Cr Source Test Results:
 - Flame Spray Inc: 1997 Source Test Material Praxair AI-1015 (PWA 1315F) composition: Cr 20% and Ni 80% = 100%.
- All emissions for this calculation procedure are assumed to be ducted.
- Annual (U_a) and maximum hourly (U_h) throughputs must be individually reported for each material sprayed.
- Site and material specific emission factors should be used where available.
- Combustion related emissions of NOx, CO, SOx, PIC's, etc. are assumed to be negligible as no emissions information currently exists.
- For Emissions Inventory:
 - Trace metal composition is assumed to be equivalent to the PM10 fraction.
 - Base factors on actual Source Test (ST) data if available.
 - Method for estimating annual and max hourly emissions will use Emission Factor PM10 EF (Lb / Lb overall sprayed).

POLLUTANT	DISTRICT EMISSION FACTORS (lbs emitted / lb Overall sprayed)	EMISSION FACTORS (lbs individual metal released / lb individual metal sprayed)	REFERENCE DOCUMENT	TEST LOCATION	(UNITS)	COMMENTS
NOX						
CO						
SOX						
TOG						
VOC						
TSP	1.04E-05	4.07E-05		FLAME SPRAY	lbs/lb material sprayed	Assume PM10 = TSP. Base this estimate on overall usage (lbs of material).
PM10	1.04E-05	4.07E-05		FLAME SPRAY	lbs/lb material sprayed	Base this estimate on overall usage (lbs of material).
Total Chromium	7.38E-06	3.70E-05	Site Specific test result	FLAME SPRAY		
Chromium Hexavalent	7.89E-07	3.94E-06	Site Specific test result	FLAME SPRAY		Hexavalent chromium conversion rates (HCR) based on Flame Spray Inc 1997 Source Test = $Cr_{6+}/Total\ Cr = 7.89E-07/7.38E-06 \approx 11\%$. EF lbs emitted / lb metal in = lb Hex. Cr emitted/lb Total Cr sprayed. $C_i = Total\ Cr\ C_i \times HCR$.
Chromium NonHexavalent	6.60E-06	3.31E-05	Site Specific test result	FLAME SPRAY		NonHexavalent chromium conversion rates based on Flame Spray Inc 1997 Source Test = $1-HCR = 1-(7.89E-07/7.38E-06) \approx 89\%$. $C_i = Total\ Cr\ C_i \times (100\% - HCR)$.

Nickel	2.98E-06	3.73E-06	Site Specific test result	FLAME SPRAY		
* Other Listed Metals	1.04E-05	4.07E-05	Sum of Ni & Cr test results	FLAME SPRAY		Assume other metals released at a rate equal TSP/PM10 EF.

Last Updated on 10/27/2025

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