

**Emission Factor Documentation for AP-42  
Section 12.20**

**Electroplating**

**Final Report**

**For U. S. Environmental Protection Agency  
Office of Air Quality Planning and Standards  
Emission Factor and Inventory Group**

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Table 12.20-1. EMISSION FACTORS FOR CHROMIUM ELECTROPLATING<sup>a</sup>

Process	Chromium Compounds <sup>b</sup>		EMISSION FACTOR RATING	Total PM <sup>c</sup>		EMISSION FACTOR RATING
	grains/A-hr	grains/dscf		grains/A-hr	grains/dscf	
Hard chromium electroplating <sup>d</sup> (SCC 3-09-010-18)	0.12	NA	B	0.25	NA	C
-- with moisture extractor <sup>e</sup>	NA	0.00014	D	NA	0.00028	E
-- with polypropylene balls <sup>f</sup>	NA	0.00042	D	NA	0.00088	E
-- with fume suppressant <sup>g</sup>	NA	0.00016	D	NA	0.00034	E
-- with fume suppressant and polypropylene balls <sup>h</sup>	NA	3.0 x 10 <sup>-5</sup>	D	NA	6.3 x 10 <sup>-5</sup>	E
-- with packed-bed scrubber <sup>j</sup>	NA	2.1 x 10 <sup>-5</sup>	D	NA	4.4 x 10 <sup>-5</sup>	E
-- with packed-bed scrubber, fume suppressant, and polypropylene balls <sup>k</sup>	NA	2.6 x 10 <sup>-6</sup>	D	NA	5.5 x 10 <sup>-6</sup>	E
-- with chevron-blade mist eliminator <sup>m</sup>	NA	8.8 x 10 <sup>-5</sup>	D	NA	0.00018	E
-- with mesh-pad mist eliminator <sup>n</sup>	NA	1.2 x 10 <sup>-5</sup>	D	NA	2.6 x 10 <sup>-5</sup>	E
-- with packed-bed scrubber and mesh-pad eliminator <sup>p</sup>	NA	3.2 x 10 <sup>-8</sup>	E	NA	6.7 x 10 <sup>-8</sup>	E
-- with composite mesh-pad mist eliminator <sup>q</sup>	NA	3.8 x 10 <sup>-6</sup>	D	NA	8.0 x 10 <sup>-6</sup>	E
Decorative chromium electroplating <sup>r</sup> (SCC 3-09-010-28)	0.033	NA	D	0.069	NA	E
-- with fume suppressant <sup>s</sup>	NA	1.2 x 10 <sup>-6</sup>	D	NA	2.5 x 10 <sup>-6</sup>	E

<sup>a</sup> For chromium electroplating tanks only. Factors represent uncontrolled emissions unless otherwise noted. Emission factors based on total energy input in units of grains per ampere-hour (grains/A-hr) and based on concentrations in units of grains per dry standard cubic foot (grains/dscf). To convert from grains/A-hr to mg/A-hr multiply by 64.8. To convert grains/dscf to mg/dscf, multiply by 2,290. To convert grains/A-hr to grains/dscf, multiply by 0.01. To convert grains/dscf to grains/A-hr multiply by 100. Note that there is considerable uncertainty in these latter two conversion factors because of differences in tank geometry, ventilation, and control device performance. For controlled emissions, factors based on concentration should be used whenever possible. SCC = Source Classification Code. NA = units not applicable.

<sup>b</sup> Comprised almost completely of hexavalent chromium.

<sup>c</sup> Total PM includes filterable and condensible PM. However, condensible PM is likely to be negligible. All PM from chromium electroplating sources is likely to be emitted as PM-10. Factors estimated based on assumption that PM consists entirely of chromic acid mist.

<sup>d</sup> References 5-13,15,17-18,23-25,28,34.

<sup>e</sup> References 8,14.

<sup>f</sup> Reference 10.

<sup>g</sup> Reference 15.

<sup>h</sup> References 18,23-25.

<sup>j</sup> References 11-13,18,32,34-35.

<sup>k</sup> References 18, 40-42.

<sup>m</sup> References 5-7.

<sup>n</sup> References 8-10,21,28.

<sup>p</sup> Reference 37.

<sup>q</sup> References 11-13.

<sup>r</sup> References 19-20,25-26.

<sup>s</sup> References 20, 25-26.