

**X73 - COPPER SULFATE ELECTROPLATING, HEPA FILTER CONTROLLED**

**CALCULATION METHODS**

$E_a = U_a \times EF$

$E_h = U_h \times EF$

**NOTES:**

- $U_a$  = Annual electrical usage, ampere-hour/year
- $U_h$  = Maximum hourly electrical usage, ampere-hour/ hour
- Assume 99% control efficiency for HEPA filter.
- Assume TSP = PM-10.
- $C_i$  = Weight percent of other listed substance in solution, %.
- $C_{Cu}$  = Weight percent of copper in solution, %.
- "OTHER" pollutants and their corresponding emission factors are to be manually entered.
- Assume 100% capture efficiency.

POLLUTANT	Emission Factor	REFERENCE	ARB	(UNITS)	COMMENTS
	(lbs/amp-hr)	DOCUMENT	FACTOR		
NOX					
CO					
SOX					
TOG					
ROG					
TSP	1.46E-08	Default TSP/PM-10 EF = Cu + SO4 * 5H2O EF's = 1.46E-8 lbs/amp-hr.			
PM10	1.46E-08	Assume that TSP and PM-10 are based on average weight percent of copper in solution.			
COPPER	1.16E-08	AP-42 (July 1996), Table 12.20-4 = 8.1E-5 grains Cu/dscf -> 8.1E-3 grains Cu/amp-hr.			
OTHER	1.16E-8 x Ci/C Cu				

MW of CuSO4 \* 5H2O = 249.5

MW of Cu = 63.5

EF for SO4 \* 5H2O = (1.16E-8)(63.5/249.5) = 2.95E-9