

**S20 - SHIELDED METAL ARC WELDING (SMAW), E316, Section 12.19 Table 12.19-1 of AP-42 (1/95)**

**CALCULATION METHODS (for Trace Metals with listed AP-42 emission factors)**

$E_a = U_a \times EF$  (lbs/lb rod)

$E_h = U_h \times EF$  (lbs/lb rod)

**CALCULATION METHODS (for Trace Metals without listed AP-42 emission factors)**

$E_a = U_a \times EF$  (Fume generation rate lbs fume/lb rod x NASSCO Fume Correction Factor) x  $C_i$

$E_h = U_h \times EF$  (Fume generation rate lbs fume/lb rod x NASSCO Fume Correction Factor) x  $C_i$

**NOTES:**

- All emissions are assumed uncontrolled. Control efficiencies must be included in the release point information if applicable.
- Trace metals with specified emission factors listed by the EPA in AP-42 are quantified accordingly.
- Trace metals which are components of the welding rod but not identified by EPA will be quantified by the District's default procedures.
- Default fume generation rates (lbs fume/lb rod) are: 0.01 (GMAW, TIG, & MIG), 0.02 (SMAW & FCAW), and 0.05 (unspecified).
- Default Fume Correction Factors from NASSCO (Dr. Bell) are 0.5464 (GMAW, TIG, & MIG), 0.2865 (SMAW & FCAW), and 1.0 (unspecified)
- Default hexavalent chromium conversion rates from ARB analysis of AWS data are: 0.05 (GMAW, TIG, & MIG), 0.63 (SMAW & FCAW), and 0.10 (unspecified).
- Trace metal EPA emission factors for specific rods are from Tables 12.19-1 & 12.19-2 (1/95) of AP-42.

POLLUTANT	District Emission Factor (lbs/lb rod)	EPA REFERENCE DOCUMENT	EPA FACTOR	(UNITS)	COMMENTS
NOX					
CO					
SOX					
TOG					
ROG					
TSP	1.00E-02				ASSUME PM10 = TSP
PM10	1.00E-02	Table 12.19-1 (1/95) AP-42	10.00	lb/1000 lbs rod	ASSUME PM10 EMISSION RATE = FUME GENERATION RATE (FGR)
Chromium, Nonhexavalent	5.22E-04	Table 12.19-2 (1/95) AP-42	5.22	0.1 lb/1000 lbs rod	
Chromium, Hexavalent	3.32E-04	Table 12.19-2 (1/95) AP-42	3.32		
Cobalt	= 2.87E-03 x $C_i$	District / ARB / NASSCO Procedure	ND		EMISSIONS = $U_a \times FGR \times 0.2865 \times C_i$
Manganese	5.44E-04	Table 12.19-2 (1/95) AP-42	5.44		
Nickel	5.50E-05	Table 12.19-2 (1/95) AP-42	0.55		
Lead	= 2.87E-03 x $C_i$	District / ARB / NASSCO Procedure	ND		EMISSIONS = $U_a \times FGR \times 0.2865 \times C_i$
Metals w/o Emission Factors	= 2.87E-03 x $C_i$	District / ARB / NASSCO procedure	ND		EMISSIONS = $U_a \times FGR \times 0.2865 \times C_i$
Default Electrode					

<b>Composition</b>	<b>Weight %</b>	<b>Reference</b>
Aluminum		
Chromium, Total	19.00%	Based on MSDS 7922-H
Cobalt		
Copper		
Lead		
Manganese	2.00%	Based on MSDS 7922-H
Nickel	12.50%	Based on MSDS 7922-H
Zinc		

*Last Updated on 8/26/99  
By D. Byrnes*