



## Laser Coding

### Common Substrate Chemistry / Filtration Requirements

<b>Substrate</b>	<b>LGAC's</b> (laser-generated air contaminants)	<b>OSHA PEL / Toxicity</b>	<b>Filters and/or Adsorbents required</b>
<u>PVC</u>	HCl - Resin dust -	5 ppm / high - dusts, 5 mppcf, respirable / low -	(2)  HEPA or near-HEPA
Painted Metal	Low level odor - Nuisance dusts -	5mppcf / respirable - not toxic -	A/C or (1) HEPA or near-HEPA
<u>ABS</u>	Acrylonitrile Butadiene Styrene	2 ppm / high / CA - 1 ppm / high / CA - 100 ppm / high / CA - dusts -	A/C A/C A/C HEPA or near-HEPA
Glass	Fibrous dusts	5 mppcf, respirable -	HEPA
PET	Acetaldehyde CO CO2 Hydrogen cyanide Antimony oxides	200 ppm - 50 ppm - 5,000 ppm - 10 ppm / high - dusts -	(1) (1) (1) A/C or (1) HEPA
Paper labels (printed)	Paper dust Ink dust	Nuisance dust, 5mppcf, respirable. Nuisance dust, 5mppcf, respirable, can be very odorous.	Dusts 95% efficiency filter or HEPA  (1)
Printed cardboard	Paper dust	Same as paper labels	Same as paper labels
Waxed cardboard	Viscous, resinous dust	Nuisance dust, 5mppcf, respirable.	Review on individual basis. "Difficult" dust, plugs filters quickly, usually requires self-cleaning type dust collector.
<u>Polystyrene</u> <u>Polypropylene</u> <u>Thermoplastics</u>	Dust often electrostatic. Variety of gases, often hazardous.	Dust PEL's vary widely.  Often hazardous, usually odorous	HEPA or near-HEPA  (1)
Aluminum <u>Cadmium</u> <u>Chromium</u> <u>Copper</u> Iron oxide Magnesium oxide <u>Nickel</u> <u>Zinc oxide</u>	Dust / ozone Fume Compounds as Cr Fume Fume Total particulate Fume Fume	5mg/m <sup>3</sup> 0.01 mg/m <sup>3</sup> / high, CA 0.5 mg/m <sup>3</sup> / high, CA 0.1 mg/m <sup>3</sup> / high 10.0 mg/m <sup>3</sup> 15.0 mg/m <sup>3</sup> 1.0 mg/m <sup>3</sup> / CA 5.0 mg/m <sup>3</sup> / high	HEPA or near-HEPA (Flammable solid) HEPA HEPA HEPA HEPA HEPA HEPA HEPA
Epoxy resins	Resin dust, Toluene, 2,4-diisocyanate Xylene	5 ppm / high – respirable/low 0.14 mg/m <sup>3</sup> / high, CA 651 mg/m <sup>3</sup> / low	HEPA or near-HEPA A/C A/C
A/C = activated carbon			
(1) = A/C + A/A-impregnated w/ KMnO <sub>4</sub>			
(2) = Acidex - caustic neutralizer			
CA = carcinogen or suspected carcinogen			
<u>underline = high hazard gas/fume: if potential exists to exceed OSHA PEL's, purge from plume &amp; terminate treated air stream outdoors to protect against mechanical or filter failure – particularly in enclosed/poorly ventilated spaces or small rooms.</u>			
ppm = parts per million			
mppcf = million particles per cubic foot			