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# T N E M E T E C H



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## SUBJECT

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High Volume Low Pressure (HVLP) Spray Application

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## PURPOSE

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To educate applicators on HVLP spray applications.

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## GENERAL

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First, it should be understood exactly what HVLP means. High Volume Low Pressure refers to the use of air and has little to do with the volume of material. High Volume of air at the gun (CFM) with Low pressure at the tip (PSI). It is not uncommon for this equipment to require as much as 25 CFM at the gun inlet to produce 3-10 psi at the tip. The use of 1/4" air lines, quick disconnects and long hoses should be avoided, so as not to restrict the CFM. For example, 25 feet of 1/4" ID hose causes a pressure drop of 26 psi between the source and the gun, while the same length of 5/16" ID hose only causes a drop of 12 psi. The overall advantage of an HVLP system is that a user obtains very high transfer efficiency and an overall reduction in material consumption rates.

The use of Turbine HVLP Sprayers can be problematic due to the air being heated by the friction produced by the turbine as the air passes through it. The heated air may affect the finish of the coating due to the solvent flashing-off too quickly causing a heavy orange peel finish and over-lap marks. The heated air can reduce the sag resistance causing runs and sags and may affect the cure of the coating. For these reasons Tnemec does not recommend the use of Turbine HVLP Sprayers.

Tnemec has successfully sprayed a variety of Tnemec coatings such as zinc-rich urethanes, epoxies and polyurethanes with solids up to 70% using compressed air HVLP spray guns with comparable results to conventional air spray. It should be noted that to produce finer finishes, production rates would drop. Applicator technique, tip and baffle selection, thinning rates, air pressure, and gun adjustment are much more critical than conventional air spray. A typical configuration for the DeVilbiss & the Binks HVLP guns are outlined below. It is very important however, that you contact Technical Services for your particular project need as the set-up below may require different configuration parameters.

GUN	DeVibiss JGA HVLP	Binks Mach 1 HVLP
FLUID TIP	83 MP "E" with 83 Baffle	97
AIR CAP	83 MP	97P
AIR HOSE ID	5/16"-3/8"	5/16"-3/8"
FLUID HOSE	3/8"-1/2"	3/8"-1/2"
GUN INLET PRESSURE	65 psi*	50 psi*
TIP PRESSURE	10 psi*	10 psi*
POT PRESSURE	15-25 psi	15-25 psi

\*NOTE: Depending on hose length, larger ID may be required. Do not use more pressure than necessary to atomize material being applied. To provide optimum performance and insure compliance with air quality regulations, an air cap test gauge kit can be used to determine actual air cap pressure being used. When the gun is triggered on without material flow, adjust regulated pressure to desired setting to provide a maximum of 10 psi at the air cap.

In conventional air spray paint atomization occurs via high velocity using air pressure ranging from 40 -80 psi. The high velocity atomized paint particles tend to bounce off the object and bypass the work with overspray and transfer efficiencies range from 15 to 30 percent. Using HVLP transfer rates are increased because the atomized paint particles are delivered at low pressure and there is less overspray, bounce back and blow back. Typically the transfer efficiency with HVLP is 60 percent or greater.

Because of the higher transfer rates, first time users of HVLP may find they are experiencing problems with runs, sags or curtains with the applied material. Applicator technique may need to be adjusted, such as less passes or faster passes, to produce a finish that will be acceptable.

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