

## Metallic Coating using Conventional & HVLP Spray Guns Technical Bulletin

### **TB017**

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The following information is as indicated in Parex USA's Metallic Coating product data sheet:

*Metallic Coating may be applied using suitable spray equipment or a paint roller and brush; however spray application is recommended if the smoothest possible finish result is desired.*

*This is especially important when applying Metallic Coating over finely textured or smooth surfaces.*

*Note: Developing the resemblance of metal panels requires proper surface preparation and skilled and controlled application methods.*

The spray application of Metallic Coating to resemble metal panels is as sophisticated as it gets where Parex USA materials are concerned.

Applied as lightly misted or fogged on will cause the finish to be dull and possibly lightly stippled although produce relatively uniform color results. A light coat application (not flowing) can produce a dulling effect; this can also be evident by a light surface stippling/texture. With this result, another application of the coating or a clear sealer may be the only solution.

Applied too heavily, the pigment can crawl, (separate & collect sporadically), producing non-uniform results. Similar results can occur in automotive painting, think applying metallic coating more like painting a car than painting a house.

The equipment necessary to apply the finish - the spray gun, tank, regulator, hoses, compressor, etc. – must all be matched to the job as well as to each other. That equipment must be used and maintained properly, with an appreciation of how and why it works the way it does.

The path to success starts before the spray gun trigger is pulled. No amount of primer or paint will cover up a badly prepared surface.

Some spray applications may require the addition of water to form the proper spraying viscosity. A maximum 32 oz. (0.95L) / 5 gallon pail may be added for spraying. Thinning can affect color intensity and film thickness. It is essential to use the same amount of water per pail.

The chief characteristic that determines the sprayability of coatings and how much wet film may be applied is its viscosity or consistency. Metallic Coating exhibits good surface coverage in a single application with a minimum of 7 mils wet (3 mils dry) per pass. However, two coats may be required to obtain adequate hiding of the substrate and best results.

Always prepare coatings in a clean, dust-free environment. Coatings have a remarkable ability to pick up dirt. Contaminated or dirty coatings will not only clog your spray gun, it will also ruin your paint job. Get in the habit of always pouring coating into the tank through a fine mesh paint strainer. Coatings are never as clean as they appear.

The spray gun is the key component in a finishing system. It is a precision engineered and manufactured instrument. Each type and size is specifically designed to perform a certain, defined range of tasks.

As in most other areas of finishing work, having the right tool for the job goes a long way toward getting professional results.

A thorough understanding of the differences between systems will allow you to select the right gun, to use it properly to produce a high quality finish and to contribute toward a profitable finishing operation.

### **What is a pressure feed gun?**

In this design, the fluid tip is flush with the face of the air cap. The material is pressurized in a separate tank which acts as a pump. The air pressure forces the material through the fluid hose to the gun spray tip and air cap for atomization.

This system is normally used when large quantities of material are to be applied, when the material is too heavy to be siphoned from a container or when fast application is required as with production spraying.

**Conventional Verses HVLP Spray Guns:** Spray finishing with an HVLP (High Volume Low Pressure) spray gun can be highly productive and give superior results, or it can be frustrating and quickly ruin a coating finish project.

The key is, understanding all the **variables** involved, some of which are: adjustments to the spray gun, practice, test-check, and having enough **patience** to make small adjustments and observe the results.

**A higher pressure setting results in better "atomization"** of the liquid, which just means that the spray mist is finer because the droplets are smaller. However, higher pressure also results in **more overspray**.

**Conventional:** Set the pressure tank regulator approximately 30 psi to start, with a 0.70 or 1.8 mm diameter fluid tip nozzle. Gun air pressure needs to be approximately 60 psi.

**HVLP:** Set the pressure tank regulator approximately 25 psi to start, with 0.55 to 1.4 mm diameter fluid tip nozzle. Gun air pressure needs to be approximately 45 psi.

Note that the air pressure **entering** many **HVLP** spray guns cannot exceed 50 PSI, so adjust the pressure regulator on the **air compressor** down to 50 PSI. Excessive pressure at the inlet side of the gun can damage the gun's pressure regulator. Other spray guns may have a different maximum pressure.

Always test by spray applying the material on an area other than the finished surface while adjusting the fluid and air pressure to achieve proper fluid delivery and atomization.

#### 1) Air Volume Adjustment:

When this knob is turned fully clockwise, the air flow is shut off. It takes some experimenting to find the right air flow setting. Too much air flow can make excessive overspray and cause a rippling effect in the liquid that has already been applied to the surface. Excessive air flow can also cause the wet surface to dry too fast, which can create problems in the final results like *blush*.

Too little air flow can result in improper atomization, which may be noticed as spots of liquid on the surface. You may notice that the gun is "spitting" liquid instead of making a nice cloud of spray.

#### 2) Material Volume Adjustment:

This knob is on the top rear of the spray gun. **Turning the knob clockwise closes the valve** and reduces the amount of liquid that flows from the cup into the gun. If the material volume is too low, the spray stream will be weak and it may take a long time to apply the finish. If the material volume is too high, the problems of inadequate air volume may show up because you are basically trying to atomize too much liquid for the volume of air flowing through the gun.

Note that the air volume and material volume can be **adjusted together**. There may many settings of air volume and material volume that will give excellent results. When both valves are opened slightly, you basically have a low capacity spray gun, which could give results similar to an "airbrush" which can be used in the application of faux finishing techniques.

An airbrush is essentially a small-volume sprayer for fine detail work. In theory you can use an HVLP sprayer in place of an airbrush, but the tool is much heavier so it's much more difficult to control and get the precision results that are possible with an airbrush.

When both air and material volume are increased, the spray gun can reach its maximum capacity in how much surface can be covered per unit of time. Open up these valves a lot, and you can spray a lot more square feet per minute. But either air volume or material volume may still need to be adjusted / tweaked to give the best results.

### 3) Fan Width Adjustment:

This control, which is usually on the side of the gun body, adjusts how much the spray stream is "flattened" into an oval shape. With the fan control fully off (turned clockwise) the spray stream will create a round spot.

A wide oval spray pattern lets you cover more area quicker, but if the fan is too wide the droplets of liquid may not "flow" together properly, resulting in a lumpy surface commonly called "orange peel".

If the fan width is set too small, it will take more side-to-side passes to cover the area being sprayed, but the bigger problem is the fact that it's easy to apply too much liquid and have problems with runs and sags.

Note that the fan spray pattern can usually be adjusted from vertical to horizontal, or any angle in between, simply by loosening the air cap (the removable cover on the front of the spray gun) and rotating the nozzle. Leave the spray pattern at vertical, but a horizontal pattern is useful if you're spraying something tall and narrow.

**Tip:** When adjusting the spray gun, try to get a cloud of mist similar to what comes out of a quality can of spray paint.

Other Variables: There are other "adjustments" involved in spray finishing that don't involve the spray gun.

### Thinning Of the Coating:

When the coating is thinned (diluted) with water it's easier to atomize, but thinning also changes the speed of drying which can have a whole set of consequences. Too much thinning (as previously mentioned) can also create problems in the final results, like blushing.

### Distance from Spray Gun to Work Surface:

Hold the gun approximately 15-18 inches (38- 46 cm) from and perpendicular to the surface at all times.

However, this distance can be altered, and sometimes it's difficult to maintain the desired distance. If the distance is too great, the droplets of liquid can start to dry before they hit the surface, and then droplets won't melt together, leaving a stippled surface or orange peel.

If the distance is too close, the coating may be too thick, which can cause runs and sags and other problems from drying too slowly. The air flow from the gun may create problems (like rippling) when the distance is too close.

Spray in steady passes moving parallel to the surface across the area with a 50% overlap. Follow with additional passes in the opposite direction - cross hatch pattern as the first coat. Allow to dry until dry to the touch, prior to proceeding with additional applications, 1 to 4 hours depending upon temperature, humidity and substrate.

Spray a second application using the same procedure. When dry, the panel should have a uniform appearance.

### Speed of Travel:

How fast you move the spray gun from side to side will affect the amount of liquid applied on a given area. Slow travel means a heavier coat. Fast travel means a lighter coat but possibly problems with droplets blending together.

When spraying metallic stain, the results may be a speckled appearance. In theory, too fast of a travel rate could create a lumpy appearance because the droplets are too far apart to blend together. In general, too fast of a travel rate seems to cause fewer problems than moving too slowly.

### Amount of Overlap Between Passes:

The general rule is to make each pass overlap the previous by 50%. Easier said than done; if you don't use spray guns very often, you get out of practice. Sometimes it can be difficult to keep the overlap constant, or to achieve that 50% overlap.

**Too much overlap** will apply a heavier coat, which might cause runs and sags and other problems.

**Too little overlap** can create bands or streaks where the material isn't thick enough. See Parex USA technical bulletin "Conventional & HVLP Pressure Feed Spray Guns" for more information on type and use of spraying equipment.

### **LIMITATIONS:**

Ambient and surface temperatures must be 40° F (4.4° C) or higher during application and drying time. Provide supplemental heat and protection from precipitation as needed.

Use only on surfaces that are sound, clean, dry, and free from any residue which may affect the ability Metallic Coating to bond to the surface. Not recommended for wearing surfaces.

Avoid spraying surfaces over 90° F. Application in direct sunlight during hot weather may cause the Metallic Coating to dry too quickly and adversely affect aesthetics.

Tarp the wall or use appropriate methods to provide shade as necessary when applying in direct sunlight during hot weather.

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#### **Corporate Office**

Parex USA, Inc.  
4125 E. La Palma Ave., Suite 250  
Anaheim, CA 92807  
(866) 516-0061  
Tech Support: (800) 226-2424

#### **Facilities**

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