

COATING WORLD[®]

Vol. IX, 10/01

SPECIAL REPORT ON NONSTICK COATINGS AND HOUSEWARES FOR RETAILERS

Applying Nonstick Coatings: What You Should Know And How It Can Help Improve Your Product

There are several different methods used to apply nonstick coatings. Each has an impact not only on the performance of the coating but also on the cost of applying it.

This volume of "CoatingWorld" discusses each method, what market level it applies to, as well as the benefits and tradeoffs involved.

Understanding this information will enable you to request the proper coating when developing or sourcing product, and to compare pricing based on different application methods — giving you more options and control.

While most retailers have left such decisions up to the manufacturer, understanding each method will give you more awareness and flexibility during the negotiation process. It will also enable you to evaluate and compare test results and production information.

Three basic methods

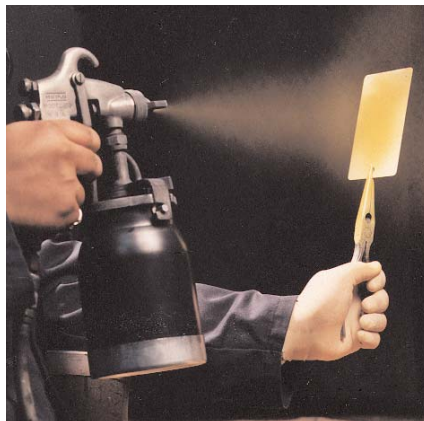
1. Spray coating

Wet coating is loaded into a spray gun and, under pressure, atomized as it is sprayed onto the surface of the item. This can be done by handheld spray guns or, in larger operations, automated with a grouping of spray guns controlled to spray as pans pass by them on a production line.

Spray is used for moderate, upper-moderate and gourmet market levels. Typical applications include interiors, exteriors and handles of cookware; bakeware; small electrics; gadgets; cutlery; decorative housewares.

Advantages

- **Durability:** Because the coating is atomized, it is applied to the surface of



In spraying, a significant percentage of the coating misses the target (referred to as "overspray") and is wasted.

the pan in smaller "droplets" which, when cured, create a somewhat denser (and more durable) coating.

- **Aesthetics:** Properly sprayed products look smoother, cleaner.

Disadvantages

- **Overspray:** In typical spray operations, 35% to 50% of the coating is lost.

- **Slow production:** The best of automated spray lines can process no more than 1,500 pieces per hour (half that of other methods).

2. Curtain coating

Flat metal blanks are placed on a conveyor belt which carries them through a thin, descending "curtain" of coating onto another connecting conveyor belt to be carried away for curing. Coating that does not fall on the metal falls down through an opening into a trough and is pumped back into the "curtain" process.

Used for promotional, opening price-point and moderate market levels, it is now moving to higher end. Typical applications: cookware interiors and exteriors; bakeware; small electrics.

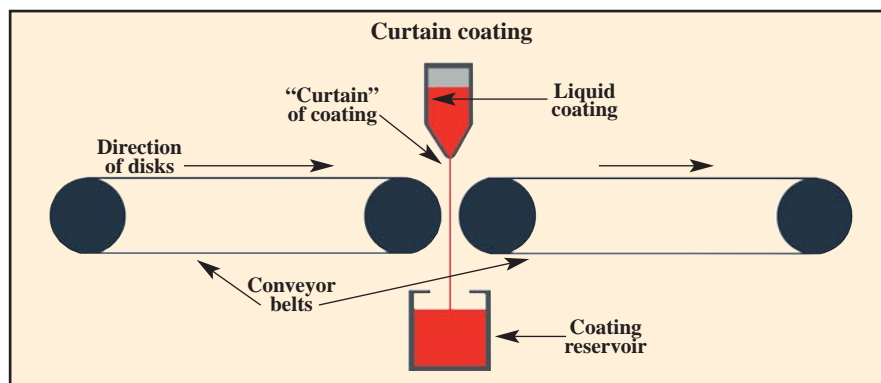
Advantages

- **Speed:** This system can coat from 3,000 to 4,000 pieces per hour.

- **Virtually no waste:** Since the coating touches so few areas other than the disks passing through it, this method wastes less coating than any other.

- **Aesthetics:** Curtain coating is the only one of the non-spray processes that permits a smooth, glossy finish.

- The disks can be as thick or thin as



Curtain coating is the fastest, most efficient, least expensive way to coat metal disks for postforming into pots and pans. Disks are loaded on at the left, carried through the curtain of coating by passing from one belt to the other, and offloaded at the right.

the specification dictates.

Disadvantage

• **Coating problems:** Ordinary coatings do not work well in the curtain coater. Whitford has pioneered a new line of coatings, which provide trouble-free application. In fact, Whitford has pioneered changes in the basic curtain technology that improve its performance in the application of nonstick coatings.

3. Roller coating

Metal disks are passed between two elastomeric rollers, one of which is kept wet with coating which is “rolled” onto the disk, then carried away on a belt to be cured.

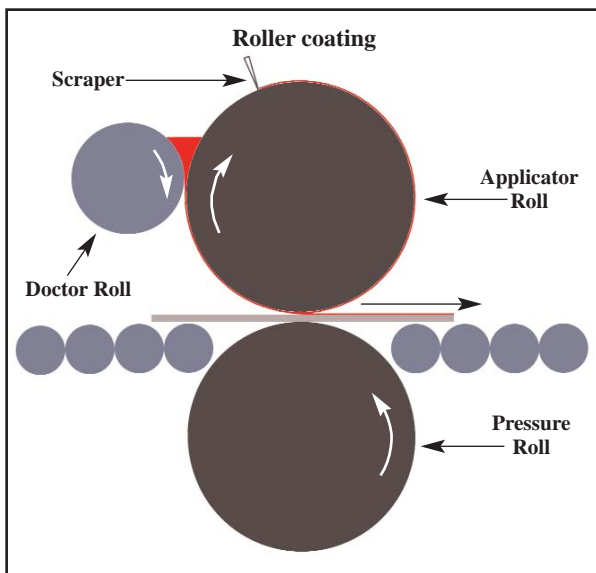
This method is used for promotional and opening price-point levels. Typical applications: cookware interiors and exteriors; bakeware; small electrics.

Advantages

- **Speed:** As fast as curtain coating (from 3,000 to 4,000 pieces per hour).
- **Transfer efficiency:** Virtually all of the coating material is used on the disk (as in curtain coating, there is no “overspray”).

Disadvantages

- **Aesthetics:** The pressure from the



The pressure between the two large rollers leaves striations, or visible ridges, on the surface of the coating that diminish the final product's eye appeal.

rollers create small striations or “ridges” that leave the surface in a roughened form (not unlike the tracks left by a paint roller used on the walls of a room at home). These tracks are visible, and make a smooth, glossy

surface impossible to achieve.

• **Performance:** These same ridges reduce coating life since kitchen instruments tend to wear them off quickly when scraped across the bottom of a pan, removing a significant amount of the nonstick.

• **High equipment cost:** Since the mechanics of roller coating “squeeze” the coating on the surface, it is difficult to achieve proper film thickness in one or two coats. So the process must be repeated up to five times to arrive at a reasonable coating. This means more capital equipment than with other processes.

Make the most of the coating

When you plan a new line of cookware, keep these three methods in mind to help you select the one most suited to your performance and cost requirements. And for more information on this subject (or any other), please contact Fran Attilio at the address below.

COMPARISON OF THREE COATING METHODS

	<u>SPRAY</u>	<u>CURTAIN</u>	<u>ROLLER</u>
<i>Pieces per hour</i>	1,500	3,000-4,000	3,000-4,000
<i>Coating efficiency</i>	50-60%	95%	90+%
<i>Appearance</i>	Smooth, glossy	Smooth, glossy	Ridges, low gloss
<i>Performance</i>	Very good	Good	Fair to poor
<i>Scratch resistance</i>	5-4	4-3	3-2
<i>Abrasion resistance</i>	5-4	5-4	2-1
<i>Release</i>	5-4	5-4	4-3

Note: 5 = best performance, 1 = worst

Frequently Asked Questions

Question: “Why do nonsticks always come in boring black?”

Answer: “Nonsticks actually come in a variety of colors, although most of them are dark — for a very good reason.

“They are dark because many

foods tend to stain (such as tomato sauces). Even ordinary fats can stain. Light-colored nonsticks might be attractive at point-of sale, but would soon look unattractive when used.”

Send questions with your name, address to: Fran Attilio, Whitford Corp., Box 2347, West Chester, PA 19380-0110, call (718) 967-7967 or email: fattilio@whitfordww.com.

Coming in future issues:

- The differences between internally and externally reinforced coatings: when to use each and why.
- New “Soft Touch” coatings.

CoatingWorld is published by Whitford Worldwide, Box 2347, West Chester, PA 19380-0110. Email: sales@whitfordww.com
Web: www.whitfordww.com