

COATING WORLD[®]

SPECIAL REPORT ON NONSTICK COATINGS AND HOUSEWARES FOR RETAILERS

Which Is Better For Your New Product: A Non-Reinforced Or A Reinforced Nonstick Coating?

In the last issue of “CoatingWorld” we reviewed various methods of applying nonstick coating, to give you more flexibility and control during the development cycle of nonstick-coated products.

Another important consideration is whether to use a conventional, non-reinforced nonstick coating or one that is reinforced. First, a bit of background.

Brief history

Nonstick coatings were first introduced to consumers in the early 1960s. The first nonsticks were made primarily of polytetrafluoroethylene (PTFE). PTFE has the lowest coefficient of friction of any known solid, providing excellent release and making it easy to clean. But it is also soft and, if at all mistreated, subject to immediate wear. This softness led to a stigma in the market: pans coated with early nonstick products were referred to as “disposable”. This also restricted nonstick coatings to lower-end products.

Over the years, reputable manufacturers of nonsticks made important advancements in nonstick technology. Nonsticks became more durable, longer lasting, more “scratch resistant”. While better, these nonsticks were nevertheless still subject to wear from normal use.

Then came a breakthrough.

Reinforced coatings

Reinforced nonstick coatings are those in which microscopic, hard elements are used as binders or “locking agents”, helping to strengthen and solidify the coatings. They do this by introducing hard elements into the coating which also protrude up into the

next layer of coating to help lock the layers together.

There are two types of these coatings, internally and externally reinforced. Internally reinforced coatings are those into which the reinforcing agents are mixed prior to application. Because of their irregular shapes, the hard particles are locked into the coating (not unlike the peanuts in peanut brittle), and those which protrude above the surface are locked into the next layer of coating as well, greatly increasing resistance to wear and abrasion.

Externally reinforced coatings are those where the surface of the substrate is sprayed with a reinforcing element prior to the application of the coating. Typical is the “arc-spray” process, in which a stainless-steel alloy is sprayed onto the surface of the pan at extremely high temperatures. The alloy reaches the surface in a liquid state, then cools and hardens to form a matrix, much like a series of “peaks” and “valleys”. Then, several layers of nonstick are applied, filling the “valleys” and covering the “peaks”, locked into place by the stainless-steel matrix.

If metal utensils are jabbed into the coating, they skip along the tiny “peaks” but cannot gouge out the nonstick in



Molten stainless steel is applied to the surface, building up a matrix of “peaks” and “valleys”.



Why externally reinforced Excalibur offers unsurpassed durability: arc-spraying molten stainless steel onto the surface of the pan to form a matrix of “peaks” and “valleys”.

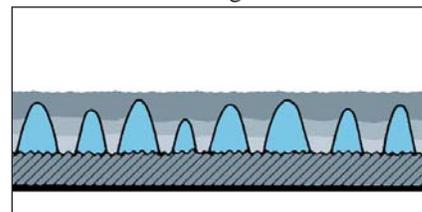
the “valleys”. While the coating may appear scratched, it will still continue to perform.

The best-known of these is a product called “Excalibur[®]” (actually a product developed by Whitford).

Before Excalibur, manufacturers were afraid to put nonstick coatings on anything but mid- to low-range cookware, due principally to the reputation of nonsticks as “disposable”.

It was the unsurpassed durability of Excalibur that carried nonsticks to the high end of cookware, especially stainless-steel cookware. Many manufacturers feel so positive about Excalibur that they offer guarantees on the nonstick coating, some for the life of the pan.

The reinforcing elements used

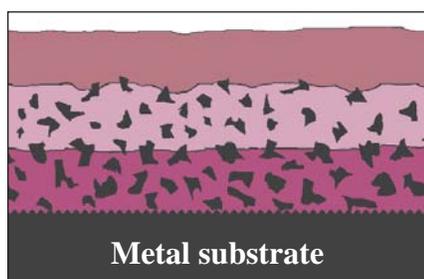


The nonstick is applied into and over the “peaks”, locked into place by the stainless steel.

range from ceramic to titanium, as well as stainless steel. Most are harder than the materials used in cooking utensils, which means that these coatings can stand up to almost anything.

How long can reinforced coatings last?

It is generally accepted in the non-stick industry that traditional non-reinforced coatings can last about 5 years under normal use.



Typical internal reinforcement. The hard reinforcing materials are mixed mostly into the primer coat, and somewhat into the midcoat.

Both types of reinforced coatings increase the durability and life span of the coating. The best internally and externally reinforced coatings will last three to four times as long (and a few even longer).

Until recently, reinforced coatings were primarily made up of three layers of coating, all applied via spray guns. Therefore, they were used mostly on gourmet and upper-moderate product — especially since the majority of coatings on the market

	Non-reinforced	Internally reinforced	Externally reinforced
Market level	Promotional, opening price point, moderate	Opening price point to gourmet	Upper moderate, gourmet
Application methods	Spray, curtain, roller coating	Spray, curtain coating	Spray only
Impact on price	Low	Low to medium	High
Whitford brands	Xylan®	Quantum2, QuanTanium®	Excalibur®
Coating options	1-, 2-, 3-coats	2-, 3-coats	3-coats only

were not reinforced.

Today, thanks to further advancements in technology, reinforced coatings are also available in two-coat systems and can be applied by other, more efficient methods, helping to control costs.

Greatly increased durability, of course, is why these newer coatings carry so many warranties, a marketing tool that has helped promote the sale of more expensive nonstick cookware.

However, these improvements come at a cost, since the technology used to improve the durability and overall performance of the coatings is not inexpensive.

What does this mean for retailers?

Understanding the differences between non-reinforced and reinforced nonsticks can help retailers market their products more effectively. But it is also important to know

these differences at the development and sourcing stages. These expanded options create more tools for product developers and those sourcing imports. They also provide more leverage from initial concept throughout the development cycle.

Comparing pricing and performance on non-reinforced and reinforced coatings will help retailers identify the ideal combination to achieve their target price and desired quality level. Evaluating different levels of reinforced coatings can further expand the options open to retailers.

Whitford can help retailers every step of the way, not only by providing information on the many different coatings that are available, but also by providing facilities for testing the retailer's products as they are developed. This testing is free of charge.

If you would like more information, please contact Fran Attilio at the address shown in "Frequently Asked Questions" below.

Frequently Asked Questions

Question: "Is there a procedure for testing (and predicting) just how long a nonstick coating will last?"

Answer: "Actually, there are many test procedures (as discussed in detail in "CoatingWorld" Volume IV).

"Most procedures replicate the wear a nonstick would normally receive in a kitchen from stirring with a

metal spoon, for example, or rubbing with a normal cleansing pad, or putting it into a restaurant, where it will suffer accelerated abuse.

"Whitford uses industry-standard tests, as well as many that Whitford has developed on its own, to test coating life. How long they will last is judged according to the number of test cycles they survive, compared to other coatings tested in the same way. Specific years of life will depend on the person using the pan".

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:

- An amazing new internally reinforced coating that is eclipsing all test records to date.

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