

CERTINCOAT™

Coating System



**An innovative hot-end coating process that improves the quality of glass bottles...
cuts operating costs...and boosts the productivity of glass packaging operations**

M&T™



**The new patented
CERTINCOAT*
Coating System
gives you all the
advantages of tin
oxide coatings—and
none of the
problems!**

Applying a hot-end coating of tin oxide preserves the strength of glass bottles to reduce breakage. Allows faster filling-line speeds. And improves appearance, as well.

But conventional coating materials react with moisture to clog coating equipment and give off corrosive by-products. Corrosive by-products that can eat away blowers, exhaust systems, conveyors, and roofs. By-products that make it difficult to apply a uniform tin oxide coating to the bottle.

Basically, conventional systems are *inefficient*. Which makes them

expensive to use over the long run.

That's where the CERTINCOAT Coating System from M&T can help.

The CERTINCOAT System is a patented coating *system*. It consists of a precision metering pump, a high efficiency coating hood, and the proprietary CERTINCOAT TC100 coating material. All three components—pump, hood and material—are designed to work *together*...to provide controllable, reliable, superior coating.



In the United States, where the CERTINCOAT System is used by almost every glass bottle manufacturer, product appearance has improved significantly.

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The CERTINCOAT Coating System is engineered for accurate, reliable performance.

Double-loop circulation system increases efficiency of the coating hood.

The CERTINCOAT System's coating hood features double-loop circulation for more efficient performance.

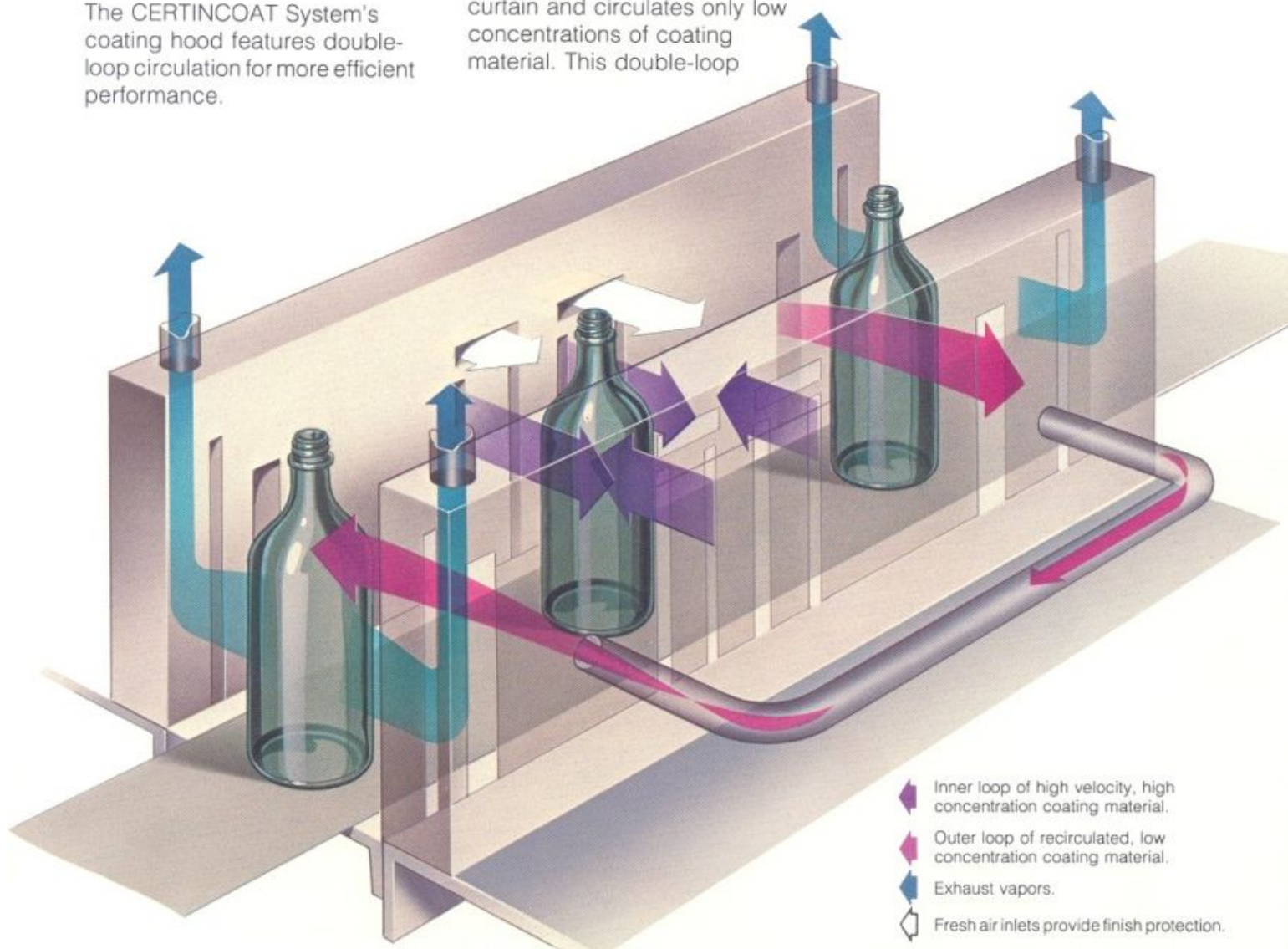
Here's how it works:

The inner loop receives and recirculates the CERTINCOAT TC100 coating material. Because CERTINCOAT TC100 coating material has a low reactivity with moisture, it can be recirculated with no loss in effectiveness.

The outer loop acts as an air curtain and circulates only low concentrations of coating material. This double-loop

provides high efficiency and a uniform coating on every bottle.

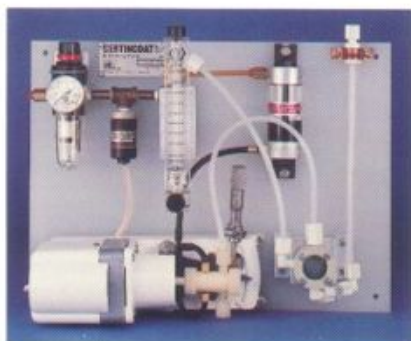
Another air flow system within the hood assures excellent finish protection. What's more, the hood can be easily adjusted to handle a wide range of bottle sizes and shapes.



...engineered for accurate, reliable performance.

Metering pump makes it easy to monitor and adjust usage rates.

To meet the tough demands of hot-end coating, we designed a new metering pump specifically for the CERTINCOAT System.



It draws CERTINCOAT TC100 material directly from its drum through a novel pumping process. This allows for precise control of small quantities of coating material—typically one to two liters a day.

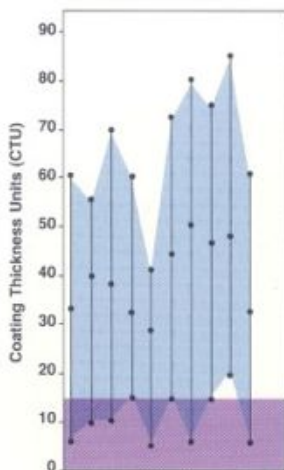
Controls are designed for convenient monitoring and adjustment. The pump is simple in design and features high reliability with very little maintenance. All CERTINCOAT pumps are fully tested and calibrated to ensure accurate performance.

CERTINCOAT TC100 coating material...

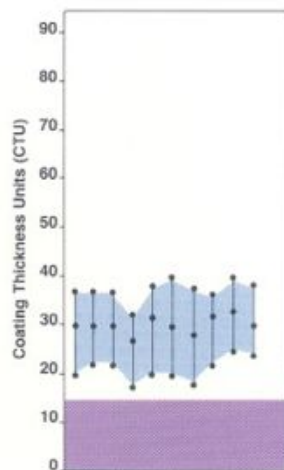
Description	Stable, liquid organotin
Physical form	Clear, straw to brown-colored liquid
Specific mass	1.7 kg/L
Boiling point	190 - 200°C @ 760 mm 92 - 100°C @ 10 mm
Freezing point	-63°C
Permissible exposure limit	0.1 mg Sn/m ³

Better coating uniformity reduces material usage, improves bottle appearance and ensures good scratch resistance.

Ten ounce beverage bottles randomly selected show tin tetrachloride bottles coated at an average of 40 CTU's had minimum values well below 15 CTU's. Same bottles run on CERTINCOAT System were given an average of only 30 CTU's with all minimum values above 15 CTU's.



Ten bottles coated with tin tetrachloride at rate of 11 kg/day.



Ten bottles coated with CERTINCOAT System at rate of 3 kg/day.

Upper points indicate maximum coating thickness on bottle, center points indicate average thickness and lower points indicate minimum thickness.

7 powerful reasons why the CERTINCOAT System should be coating bottles on your production line:

1 The CERTINCOAT System improves the quality of glass containers to help sell consumer products. A brilliant appearance makes a bottle—and its contents—more appealing to consumers. Bottles coated with the CERTINCOAT System (and we'll be glad to show you some samples) have a clear, sparkling appearance; the blue and gold tints that sometimes result from other coatings are eliminated. And, of course, the CERTINCOAT System helps keep glass surfaces free of unsightly scratches.

2 Fewer rejects. The CERTINCOAT System is engineered to provide a consistent coating with excellent finish protection. Rejects due to poor hot-end coating are greatly reduced.

3 You spend less on coating because the CERTINCOAT System applies coating more efficiently. Other systems apply only a small

percentage of the coating material to the bottles while a large percentage goes up the vent stack as waste. The CERTINCOAT System, however, is three to four times more efficient than conventional systems.

4 And the CERTINCOAT System uses less coating per bottle. Because our process provides a more uniform coating, you use less coating per bottle to achieve the desired scratch resistance. Field experience proves an average of 20 to 25 coating thickness units (CTUs) of CERTINCOAT TC100 coating produces the same resistance to abrasion as an average of 35 CTUs of tin tetrachloride or titanium-based chemicals. The CERTINCOAT System provides better coating uniformity and that translates into lower coating costs for you.

5 The system runs reliably and requires very little maintenance. The CERTINCOAT System has demonstrated its high reliability and efficient performance during several years of operation. The system is easy to operate and requires little maintenance. In addition, its performance isn't affected by humidity or temperature. With the CERTINCOAT System, your line keeps producing high quality ware while you avoid costly downtime.

6 Cold-end coating is improved. Because the coating is so uniformly applied, the CERTINCOAT System provides a better surface for receiving your cold-end coating. The leading edge and the trailing edge, even on unusually shaped bottles, have excellent coating uniformity. Better lubricity results: bottles slide easily against one another to keep filling lines rolling and to prevent breakage.

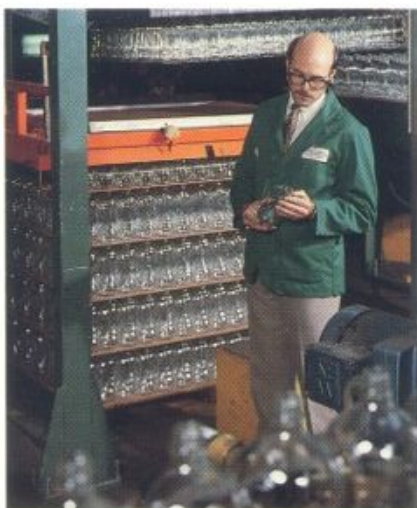
7 The CERTINCOAT System can put you in the bulk packaging business. Bottles coated with the CERTINCOAT System and your regular cold-end coating, have superior scratch resistance—consistently and reliably. Which means you can store and ship bottles on reusable pallets instead of disposable cardboard boxes. Since bulk pallets store more bottles in less space, you can put more bottles in your warehouse and use fewer trucks to make your shipments. You and your customers can get impressive cost savings by employing bulk packaging.



The CERTINCOAT System can be tailored to your specific coating operation.

The CERTINCOAT System is more than a chemical or a pump or a coating hood. It's a complete system—designed to improve the quality of your ware and the efficiency of your coating line.

Our team of technical experts can help tailor the CERTINCOAT System to meet your specific application. In addition, M&T will provide the training and instruction you need to make sure your people use the system safely and effectively.



Bulk packaging offers manufacturers and packagers an opportunity to substantially cut costs. Now, with the CERTINCOAT System, bottles can be bulk packaged without worrying about scratching.



Packagers recognize the value of a good looking bottle to increase consumer appeal. The CERTINCOAT System has made it easier to achieve the highest quality.

About M&T Chemicals

M&T has long been a leading supplier of specialty chemicals to the glass industry. We pioneered many important developments in tin chemistry. Since 1908, we've been awarded over 4,200 patents—many for new products and applications based on organotin chemistry. Today, M&T Chemicals is the world's largest developer and manufacturer of specialty organotin chemicals.

We've built our business and our reputation by providing not only proven products, but also the best technical service. While the CERTINCOAT System is easy to install and operate, we don't forget our customers after the sale is made. M&T will provide technical support in helping you get the most from your CERTINCOAT System.

The next step

For more information on the CERTINCOAT System, contact our company at any of the sales offices listed below.

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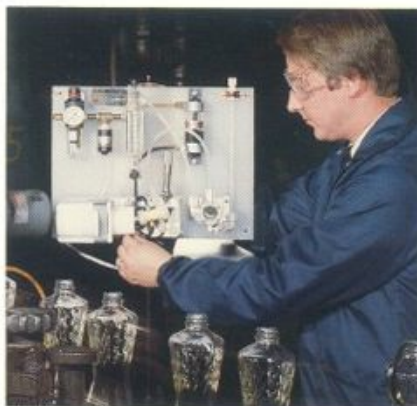
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Only a small amount of routine maintenance is required to keep the CERTINCOAT pump operating reliably.