



# DAVIS STANDARD®

Where your ideas take shape.

## Liquid Coating & Laminating

## FIVE ROLL COATER

### Overview

Many coaters are used today to achieve various results utilizing an infinite amount of coating formulations. Each formulation can be applied with many types of coaters. The objective is to determine which coater best accomplishes your goals to produce the best product possible.

With UV curable silicone, film substrates, and low coat-weights, the five roll transfer roll coater is an excellent candidate to achieve your best possible product. The use of multiple rolls to reduce the wet film thickness and smooth the laydown of coating is why the five roll coater is the coater of choice.

### Features

- Sleeve system to allow for quick product changes, easy web width change for undercut applicator, easy rubber component changes, and low down time
- Large diameter rolls which reduce misting and minimize roll deflection
- 4" (102 mm) nip opening for easy thread up and easy access for cleaning and safety
- Three dimensional tapered drip pan
- Easy to convert to two or three roll coater
- New micrometer nip adjustment for precise control
- Air / hydraulic cylinder nip loading
- All five rolls are AC or DC driven to customer's specifications

# FIVE ROLL COATER

## THEORY OF OPERATION

The Five Roll Coater utilizes five coating rolls:

1. **OUTERGATE ROLL - [CHROME]** is used to maintain a coating feed pond with the help of end dams located at both ends of nip 2-1. The speed of this roll is set to a crawl. The roll primarily supports the pond and is not used to control coat weight. It turns at a slow speed only to prevent a flat spot on the face of the roll.
2. **INNERGATE ROLL - [RUBBER]** is the main coat weight controlling device after the nip 2-1 has been set. The speed of the roll determines the coat weight. The faster the roll turns the higher the resulting coat weight. The degree of change in coat weight is dependent upon the width of footprint in nip 2-1. The smaller the footprint, the greater the increase in coat weight as the speed increases.
3. **INTERMEDIATE ROLL - [CHROME]** is used to shear thin the silicone and affect the appearance. The two nips it supports are nips 4-3 and 3-2. These nips are varied to provide a shear force to the coating. The amount of shear needed is dependent upon the viscosity of the silicone. Higher viscosities require more shear to achieve lower coat weight.
4. **APPLICATOR ROLL - [RUBBER]** applies the silicone to the web. It also is the second part of the footprint control for nips 5-4 and 4-3. The speed of the applicator roll is varied + 5% to achieve optimum coating appearance.
5. **BACKUP ROLL - [CHROME]** controls web tension and creates the nip between 5 and 4. The nip, also referred to as the footprint, is set to different widths dependent upon the choice of substrate. For paper substrates a large footprint is needed to force the silicone to penetrate the surface of the web and apply a uniform coating. Paper substrates are comprised of many layers of intertwined fibers which create an uneven surface. With a light footprint not all fibers may be coated, thusly a non-uniform layer of coating is applied. The result is known as a pinhole. Film substrates are generally smooth so a light nip will suffice.

## TYPICAL SPECIFICATIONS

Roll Face	24-120 inches (610-3048 mm)
Speed	up to 3000 fpm (914 mpm)
Roll Diameter	12 inches (305 mm)

## OPTIONAL FEATURES

- Mist removal system
- All rolls temperature controlled to maintain process conditions during operation

