

## OnCap™ Slip Additives

### Challenge

Plastics can be naturally sticky and have a high coefficient of friction when coming in contact with other plastic parts or a variety of other surfaces. This can cause operational or functional performance problems such as:

- Parts sticking to the mold surface during ejection
- Displayed products not sliding across store shelves
- Push/pull caps sticking together, making it difficult to open the container
- Minor differences in part dimensions, making it difficult for assembled parts to go together
- Sheet or film adhering to itself, making separation difficult
- Scratch and scuff marks caused by parts rubbing together



### Solution

Slip additives can help address these concerns. Slip chemistries are typically fatty amides such as erucamides or oleamides. When these materials are added to a polymer, they migrate or “bloom” to the surface. At the surface they form a lubricating layer that decreases the coefficient of friction, which allows the polymer to “slip” more easily across another surface.

### Value

Slip additives provide value to both the processor and the OEM. For the processor, fewer parts sticking in the mold leads to a reduction in reject parts and an increase in production throughput. For sheet and film processors, slips reduce polymer build-up on the die that can cause surface flaws, and facilitate quicker separation of sheet or film, leading to improved efficiency and reduced cost of product.

For OEMs, the use of slip additives can result in improved consumer satisfaction, as products are easier to use and have better aesthetics, leading to increased overall sales. For example, push/pull caps open and close with ease, caps and closures require less force to open, film products like garbage bags separate more easily, and durable goods look pristine as scratches are less evident.

### Implementation

OnCap™ slip additives are available in concentrated powder or pellet form in carrier systems that are compatible in



most application resins, but are most commonly used in polyolefins. Typical use rates for the pellet range from 2% to 5%, with typical use rates for the powder ranging from 0.1% to 0.5%. The additive can be metered at the processing machine or preblended in a salt and pepper mix. Slip additives can be combined with colorants into a single OnColor™ Smartbatch™ concentrate.

With these additives, there are a few limitations that need to be observed:

- Overdosing a slip additive can reduce output as the additional lubrication makes it difficult for the material to convey down the screw.
- When used in powder form, the relatively low melting temperature slip additives can bridge in the throat of the machine.
- It can be difficult for ink or labels to adhere for any reasonable duration to the part because of the migration of the slip additive to the surface.

## Application

Slip additives are most widely used in polyethylene and polypropylene film and injection molded part applications. They can also be used in polystyrene applications. Slip additives find use in several markets, including packaging, consumer and industrial goods, building and construction, and transportation.

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