

# D-M-E Eco-Smart Hot Runner Systems

Engineered to successfully process renewable polymers, including polylactic acid (PLA)



*Every step of the way*

# Eco-Smart Hot Runner Systems

## Eco-Smart—the right choice for your application...and our environment

D-M-E has long recognized the need to address the global environmental concerns that are gradually moving the plastics industry away from reliance on petroleum-based resins and toward starch-based polymers that originate from renewable resources such as corn, vegetable oils and switch grass.

That was the motivation that led to the development of Eco-Smart, the first hot runner system specifically designed to overcome the unique challenges of processing environmentally-friendly polymers like polylactic acid (PLA).

## A proven approach to successfully processing bio-resins

Through extensive real-world-conditions testing with many variations of PLA, Eco-Smart was carefully engineered to meet the major needs cited by customers processing it and other bio-resins. For example, since PLA does not shear thin, Eco-Smart prominently features specially designed nozzle tips that minimize shear. The innovative system's thermal profile accommodates temperature hypersensitivity which is a common characteristic of PLA.



## Providing an ecological molding advantage throughout all regions of the world

Eco-Smart Hot Runner Systems incorporate the D-M-E Global Manifold and Components standard to ensure consistency and reliability. Our global product platforms provide the confidence that your system will operate at peak performance anywhere in the world.

System advantages include an uninterrupted material flow path for reduced shear, front-removable heaters and thermocouples for easy system maintenance, and a thermal isolation component design that improves performance.



## Be a part of "green" polymer processing history

Eco-Smart Hot Runner Systems are designed to help address an increasing environmental burden that has placed the plastics industry at a difficult juncture. As plastics professionals continue to make the decision to be more ecologically responsible by turning to renewable, industrially compostable "green" plastic resins, D-M-E continues to qualify additional polymers for Eco-Smart as

they reach the commercial stage of development. Contact your D-M-E sales representative or visit [www.dme.net/ecosmart](http://www.dme.net/ecosmart) to learn more about how you can successfully apply "green" hot runner technology to your next environmentally-friendly application.



## Durable components overcome unique processing challenges

Eco-Smart is manufactured with an optimal combination of highly wear-resistant and corrosion-resistant components that resist the acidic properties of PLA and its tendency to plate out these acids onto the walls of the molding system. Eco-Smart nozzle assemblies are equipped with the metallurgical properties to withstand the corrosive impact of the acids while meeting the low pressure and stringent cooling requirements of bio-resins.



## Achieving the best results with polylactic acid (PLA)

- PLA best retains the integrity of the material and of the part when it flows at slower velocities and pressures. Full shot capacity of molded parts and the hot runner should equal at least 50 percent of the barrel capacity to help increase part strength and reduce residence time.
- When molded properly, PLA makes an excellent living hinge with moderate wall thickness, but filling PLA across a short, thin-walled section may be problematic without first prototyping the molded part design.
- Corrosion-free, easy-to-clean surfaces are mandatory. A good material choice is high-chromium tool steel which is more resilient to chemical corrosion over time.
- Longer cooling times are required because PLA tends to dissipate heat at a slower rate than polystyrene. PLA processing is optimized with shear-free channels, making through-channel tips more effective than point-tips that divert the channel.

D-M-E, an essential resource to customers worldwide, offers the industry's broadest range of market-leading products, a global logistics infrastructure that ensures speed and accuracy, and a support organization with unsurpassed knowledge and expertise that assists customers when and where they need it. A complete line of mold bases, quick-change mold systems, mold components, mold making and molding supplies, hot runner systems, control systems, cold runner systems for elastomers, and technical services helps customers achieve success every step of the way.



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